

Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 725 7 November / November 2025 No. 53637

PART 1 OF 7

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government printing
Department:
Government Printing Works
REPUBLIC OF SOUTH AFRICA

HIGH ALERT: SCAM WARNING!!!

TO ALL SUPPLIERS AND SERVICE PROVIDERS OF THE GOVERNMENT PRINTING WORKS

It has come to the attention of the *GOVERNMENT PRINTING WORKS* that there are certain unscrupulous companies and individuals who are defrauding unsuspecting businesses disguised as representatives of the *Government Printing Works* (*GPW*).

The scam involves the fraudsters using the letterhead of *GPW* to send out fake tender bids to companies and requests to supply equipment and goods.

Although the contact person's name on the letter may be of an existing official, the contact details on the letter are not the same as the *Government Printing Works*'. When searching on the Internet for the address of the company that has sent the fake tender document, the address does not exist.

The banking details are in a private name and not company name. Government will never ask you to deposit any funds for any business transaction. *GPW* has alerted the relevant law enforcement authorities to investigate this scam to protect legitimate businesses as well as the name of the organisation.

Example of e-mails these fraudsters are using:

PROCUREMENT@GPW-GOV.ORG

Should you suspect that you are a victim of a scam, you must urgently contact the police and inform the *GPW*.

GPW has an official email with the domain as **@gpw.gov.za**

Government e-mails DO NOT have org in their e-mail addresses. All of these fraudsters also use the same or very similar telephone numbers. Although such number with an area code 012 looks like a landline, it is not fixed to any property.

GPW will never send you an e-mail asking you to supply equipment and goods without a purchase/order number. *GPW* does not procure goods for another level of Government. The organisation will not be liable for actions that result in companies or individuals being resultant victims of such a scam.

Government Printing Works gives businesses the opportunity to supply goods and services through RFQ / Tendering process. In order to be eligible to bid to provide goods and services, suppliers must be registered on the National Treasury's Central Supplier Database (CSD). To be registered, they must meet all current legislative requirements (e.g. have a valid tax clearance certificate and be in good standing with the South African Revenue Services - SARS).

The tender process is managed through the Supply Chain Management (SCM) system of the department. SCM is highly regulated to minimise the risk of fraud, and to meet objectives which include value for money, open and effective competition, equitability, accountability, fair dealing, transparency and an ethical approach. Relevant legislation, regulations, policies, guidelines and instructions can be found on the tender's website.

Fake Tenders

National Treasury's CSD has launched the Government Order Scam campaign to combat fraudulent requests for quotes (RFQs). Such fraudulent requests have resulted in innocent companies losing money. We work hard at preventing and fighting fraud, but criminal activity is always a risk.

How tender scams work

There are many types of tender scams. Here are some of the more frequent scenarios:

Fraudsters use what appears to be government department stationery with fictitious logos and contact details to send a fake RFQ to a company to invite it to urgently supply goods. Shortly after the company has submitted its quote, it receives notification that it has won the tender. The company delivers the goods to someone who poses as an official or at a fake site. The Department has no idea of this transaction made in its name. The company is then never paid and suffers a loss.

OR

Fraudsters use what appears to be government department stationery with fictitious logos and contact details to send a fake RFQ to Company A to invite it to urgently supply goods. Typically, the tender specification is so unique that only Company B (a fictitious company created by the fraudster) can supply the goods in question.

Shortly after Company A has submitted its quote it receives notification that it has won the tender. Company A orders the goods and pays a deposit to the fictitious Company B. Once Company B receives the money, it disappears. Company A's money is stolen in the process.

Protect yourself from being scammed

- If you are registered on the supplier databases and you receive a request to tender or quote that seems to be from a government department, contact the department to confirm that the request is legitimate. Do not use the contact details on the tender document as these might be fraudulent.
- Compare tender details with those that appear in the Tender Bulletin, available online at **www.gpwonline.co.za**
- Make sure you familiarise yourself with how government procures goods and services. Visit the tender website for more information on how to tender.
- If you are uncomfortable about the request received, consider visiting the government department and/or the place of delivery and/or the service provider from whom you will be sourcing the goods.
- In the unlikely event that you are asked for a deposit to make a bid, contact the SCM unit of the department in question to ask whether this is in fact correct.

Any incidents of corruption, fraud, theft and misuse of government property in the *Government Printing Works* can be reported to:

Supply Chain Management: Ms. Anna Marie Du Toit, Tel. (012) 748 6292.
Email: **Annamarie.DuToit@gpw.gov.za**

Marketing and Stakeholder Relations: Ms Bonakele Mbhele, at Tel. (012) 748 6193.
Email: **Bonakele.Mbhele@gpw.gov.za**

Security Services: Mr Daniel Legoabe, at tel. (012) 748 6176.
Email: **Daniel.Legoabe@gpw.gov.za**

Closing times for **ORDINARY WEEKLY** *GOVERNMENT GAZETTE* 2025

*The closing time is **15:00** sharp on the following days:*

- **24 December,** Wednesday for the issue of Friday **03 January 2025**
- **03 January,** Friday for the issue of Friday **10 January 2025**
- **10 January,** Friday for the issue of Friday **17 January 2025**
- **17 January,** Friday for the issue of Friday **24 January 2025**
- **24 January,** Friday for the issue of Friday **31 January 2025**
- **31 January,** Friday for the issue of Friday **07 February 2025**
- **07 February,** Friday for the issue of Friday **14 February 2025**
- **14 February,** Friday for the issue of Friday **21 February 2025**
- **21 February,** Friday for the issue of Friday **28 February 2025**
- **28 February,** Friday for the issue of Friday **07 March 2025**
- **07 March,** Friday for the issue of Friday **14 March 2025**
- **13 March,** Thursday for the issue of Thursday **20 March 2025**
- **20 March,** Thursday for the issue of Friday **28 March 2025**
- **28 March,** Friday for the issue of Friday **04 April 2025**
- **04 April,** Friday for the issue of Friday **11 April 2025**
- **10 April,** Thursday for the issue of Thursday **17 April 2025**
- **16 April,** Wednesday for the issue of Friday **25 April 2025**
- **23 April,** Wednesday for the issue of Friday **02 May 2025**
- **02 May,** Friday for the issue of Friday **09 May 2025**
- **09 May,** Friday for the issue of Friday **16 May 2025**
- **16 May,** Friday for the issue of Friday **23 May 2025**
- **23 May,** Friday for the issue of Friday **30 May 2025**
- **30 May,** Friday for the issue of Friday **06 June 2025**
- **06 June,** Friday for the issue of Friday **13 June 2025**
- **12 June,** Thursday for the issue of Friday **20 June 2025**
- **20 June,** Friday for the issue of Friday **27 June 2025**
- **27 June,** Friday for the issue of Friday **04 July 2025**
- **04 July,** Friday for the issue of Friday **11 July 2025**
- **11 July,** Friday for the issue of Friday **18 July 2025**
- **18 July,** Friday for the issue of Friday **25 July 2025**
- **25 July,** Friday for the issue of Friday **01 August 2025**
- **01 August,** Friday for the issue of Friday **08 August 2025**
- **08 August,** Friday for the issue of Friday **15 August 2025**
- **15 August,** Friday for the issue of Friday **22 August 2025**
- **22 August,** Friday for the issue of Friday **29 August 2025**
- **29 August,** Friday for the issue of Friday **05 September 2025**
- **05 September,** Friday for the issue of Friday **12 September 2025**
- **12 September,** Friday for the issue of Friday **19 September 2025**
- **18 September,** Thursday for the issue of Friday **26 September 2025**
- **26 September,** Friday for the issue of Friday **03 October 2025**
- **03 October,** Friday for the issue of Friday **10 October 2025**
- **10 October,** Friday for the issue of Friday **17 October 2025**
- **17 October,** Friday for the issue of Friday **24 October 2025**
- **24 October,** Friday for the issue of Friday **31 October 2025**
- **31 October,** Friday for the issue of Friday **07 November 2025**
- **07 November,** Friday for the issue of Friday **14 November 2025**
- **14 November,** Friday for the issue of Friday **21 November 2025**
- **21 November,** Friday for the issue of Friday **28 November 2025**
- **28 November,** Friday for the issue of Friday **5 December 2025**
- **05 December,** Friday for the issue of Friday **12 December 2025**
- **11 December,** Thursday for the issue of Friday **19 December 2025**
- **17 December,** Wednesday for the issue of Wednesday **24 December 2025**

LIST OF TARIFF RATES

FOR PUBLICATION OF NOTICES

COMMENCEMENT: 1 APRIL 2018

NATIONAL AND PROVINCIAL

Notice sizes for National, Provincial & Tender gazettes 1/4, 2/4, 3/4, 4/4 per page. Notices submitted will be charged at R1008.80 per full page, pro-rated based on the above categories.

Pricing for National, Provincial - Variable Priced Notices		
Notice Type	**Page Space**	**New Price (R)**
Ordinary National, Provincial	1/4 - Quarter Page	252.20
Ordinary National, Provincial	2/4 - Half Page	504.40
Ordinary National, Provincial	3/4 - Three Quarter Page	756.60
Ordinary National, Provincial	4/4 - Full Page	1008.80

EXTRA-ORDINARY

All Extra-ordinary National and Provincial gazette notices are non-standard notices and attract a variable price based on the number of pages submitted.

The pricing structure for National and Provincial notices which are submitted as **Extra ordinary submissions** will be charged at R**3026.32** per page.

GOVERNMENT PRINTING WORKS - BUSINESS RULES

The **Government Printing Works** (**GPW**) has established rules for submitting notices in line with its electronic notice processing system, which requires the use of electronic *Adobe* Forms. Please ensure that you adhere to these guidelines when completing and submitting your notice submission.

Closing Times for Acceptance of Notices

1. The *Government Gazette* and *Government Tender Bulletin* are weekly publications that are published on Fridays and the closing time for the acceptance of notices is strictly applied according to the scheduled time for each gazette.

2. Please refer to the Submission Notice Deadline schedule in the table below. This schedule is also published online on the Government Printing works website www.gpwonline.co.za

   All re-submissions will be subject to the standard cut-off times.
   All notices received after the closing time will be rejected.

Government Gazette Type	Publication Frequency	Publication Date	Submission Deadline	Cancellations Deadline
National Gazette	Weekly	Friday	Friday 15h00 for next Friday	Tuesday, 15h00 - 3 working days prior to publication
Regulation Gazette	Weekly	Friday	Friday 15h00 for next Friday	Tuesday, 15h00 - 3 working days prior to publication
Petrol Price Gazette	Monthly	Tuesday before 1st Wednesday of the month	One day before publication	1 working day prior to publication
Road Carrier Permits	Weekly	Friday	Thursday 15h00 for next Friday	3 working days prior to publication
Unclaimed Monies (Justice, Labour or Lawyers)	January / September 2 per year	Last Friday	One week before publication	3 working days prior to publication
Parliament (Acts, White Paper, Green Paper)	As required	Any day of the week	None	3 working days prior to publication
Manuals	Bi- Monthly	2nd and last Thursday of the month	One week before publication	3 working days prior to publication
State of Budget (National Treasury)	Monthly	30th or last Friday of the month	One week before publication	3 working days prior to publication
Extraordinary Gazettes	As required	Any day of the week	*Before 10h00 on publication date*	*Before 10h00 on publication date*
Legal Gazettes A, B and C	Weekly	Friday	One week before publication	Tuesday, 15h00 - 3 working days prior to publication
Tender Bulletin	Weekly	Friday	Friday 15h00 for next Friday	Tuesday, 15h00 - 3 working days prior to publication
Gauteng	Weekly	Wednesday	Two weeks before publication	3 days **after** submission deadline
Eastern Cape	Weekly	Monday	One week before publication	3 working days prior to publication
Northern Cape	Weekly	Monday	One week before publication	3 working days prior to publication
North West	Weekly	Tuesday	One week before publication	3 working days prior to publication
KwaZulu-Natal	Weekly	Thursday	One week before publication	3 working days prior to publication
Limpopo	Weekly	Friday	One week before publication	3 working days prior to publication
Mpumalanga	Weekly	Friday	One week before publication	3 working days prior to publication

GOVERNMENT PRINTING WORKS - BUSINESS RULES

Government Gazette Type	Publication Frequency	Publication Date	Submission Deadline	Cancellations Deadline
Gauteng Liquor License Gazette	Monthly	Wednesday before the First Friday of the month	Two weeks before publication	3 working days **after** submission deadline
Northern Cape Liquor License Gazette	Monthly	First Friday of the month	Two weeks before publication	3 working days **after** submission deadline
National Liquor License Gazette	Monthly	First Friday of the month	Two weeks before publication	3 working days **after** submission deadline
Mpumalanga Liquor License Gazette	Bi-Monthly	Second & Fourth Friday	One week before publication	3 working days prior to publication

Extraordinary Gazettes

3. *Extraordinary Gazettes* can have only one publication date. If multiple publications of an *Extraordinary Gazette* are required, a separate Z95/Z95Prov *Adobe* Forms for each publication date must be submitted.

Notice Submission Process

4. Download the latest *Adobe* form, for the relevant notice to be placed, from the **Government Printing Works** website www.gpwonline.co.za.

5. The *Adobe* form needs to be completed electronically using *Adobe Acrobat* / *Acrobat Reader*. Only electronically completed *Adobe* forms will be accepted. No printed, handwritten and/or scanned *Adobe* forms will be accepted.

6. The completed electronic *Adobe* form has to be submitted via email to submit.egazette@gpw.gov.za. The form needs to be submitted in its original electronic *Adobe* format to enable the system to extract the completed information from the form for placement in the publication.

7. Every notice submitted **must** be accompanied by an official **GPW** quotation. This must be obtained from the *eGazette* Contact Centre.

8. Each notice submission should be sent as a single email. The email **must** contain **all documentation relating to a particular notice submission**.

   8.1. Each of the following documents must be attached to the email as a separate attachment:

      8.1.1. An electronically completed *Adobe* form, specific to the type of notice that is to be placed.

         8.1.1.1. For National *Government Gazette* or *Provincial Gazette* notices, the notices must be accompanied by an electronic Z95 or Z95Prov *Adobe* form

         8.1.1.2. The notice content (body copy) **MUST** be a separate attachment.

      8.1.2. A copy of the official **Government Printing Works** quotation you received for your notice. *(Please see Quotation section below for further details)*

      8.1.3. A valid and legible Proof of Payment / Purchase Order: **Government Printing Works** account customer must include a copy of their Purchase Order**. Non-Government Printing Works** account customer needs to submit the proof of payment for the notice

      8.1.4. Where separate notice content is applicable (Z95, Z95 Prov and TForm 3, it should **also** be attached as a separate attachment. *(Please see the Copy Section below, for the specifications)*.

      8.1.5. Any additional notice information if applicable.

GOVERNMENT PRINTING WORKS - BUSINESS RULES

9. The electronic *Adobe* form will be taken as the primary source for the notice information to be published. Instructions that are on the email body or covering letter that contradicts the notice form content will not be considered. The information submitted on the electronic *Adobe* form will be published as-is.

10. To avoid duplicated publication of the same notice and double billing, Please submit your notice **ONLY ONCE.**

11. Notices brought to **GPW** by "walk-in" customers on electronic media can only be submitted in *Adobe* electronic form format. All "walk-in" customers with notices that are not on electronic *Adobe* forms will be routed to the Contact Centre where they will be assisted to complete the forms in the required format.

12. Should a customer submit a bulk submission of hard copy notices delivered by a messenger on behalf of any organisation e.g. newspaper publisher, the messenger will be referred back to the sender as the submission does not adhere to the submission rules.

QUOTATIONS

13. Quotations are valid until the next tariff change.

    13.1. ***Take note:*** **GPW**'s annual tariff increase takes place on ***1 April*** therefore any quotations issued, accepted and submitted for publication up to ***31 March*** will keep the old tariff. For notices to be published from 1 April, a quotation must be obtained from **GPW** with the new tariffs. Where a tariff increase is implemented during the year, **GPW** endeavours to provide customers with 30 days' notice of such changes.

14. Each quotation has a unique number.

15. Form Content notices must be emailed to the *eGazette* Contact Centre for a quotation.

    15.1. The *Adobe* form supplied is uploaded by the Contact Centre Agent and the system automatically calculates the cost of your notice based on the layout/format of the content supplied.

    15.2. It is critical that these *Adobe* Forms are completed correctly and adhere to the guidelines as stipulated by **GPW**.

16. **APPLICABLE ONLY TO GPW ACCOUNT HOLDERS**:

    16.1. **GPW** Account Customers must provide a valid **GPW** account number to obtain a quotation.

    16.2. Accounts for **GPW** account customers **must** be active with sufficient credit to transact with **GPW** to submit notices.

        16.2.1. If you are unsure about or need to resolve the status of your account, please contact the **GPW** Finance Department prior to submitting your notices. (If the account status is not resolved prior to submission of your notice, the notice will be failed during the process).

17. **APPLICABLE ONLY TO CASH CUSTOMERS:**

    17.1. Cash customers doing **bulk payments** must use a **single email address** in order to use the **same proof of payment** for submitting multiple notices.

18. The responsibility lies with you, the customer, to ensure that the payment made for your notice(s) to be published is sufficient to cover the cost of the notice(s).

19. Each quotation will be associated with one proof of payment / purchase order / cash receipt.

    19.1. This means that **the quotation number can only be used once to make a payment.**

GOVERNMENT PRINTING WORKS - BUSINESS RULES

COPY (SEPARATE NOTICE CONTENT DOCUMENT)

20. Where the copy is part of a separate attachment document for Z95, Z95Prov and TForm03

20.1. Copy of notices must be supplied in a separate document and may not constitute part of any covering letter, purchase order, proof of payment or other attached documents.

The content document should contain only one notice. (You may include the different translations of the same notice in the same document).

20.2. The notice should be set on an A4 page, with margins and fonts set as follows:

Page size = A4 Portrait with page margins: Top = 40mm, LH/RH = 16mm, Bottom = 40mm; Use font size: Arial or Helvetica 10pt with 11pt line spacing;

Page size = A4 Landscape with page margins: Top = 16mm, LH/RH = 40mm, Bottom = 16mm; Use font size: Arial or Helvetica 10pt with 11pt line spacing;

CANCELLATIONS

21. Cancellation of notice submissions are accepted by **GPW** according to the deadlines stated in the table above in point 2. Non-compliance to these deadlines will result in your request being failed. Please pay special attention to the different deadlines for each gazette. Please note that any notices cancelled after the cancellation deadline will be published and charged at full cost.

22. Requests for cancellation must be sent by the original sender of the notice and must accompanied by the relevant notice reference number (N-) in the email body.

AMENDMENTS TO NOTICES

23. With effect from 01 October 2015, **GPW** will not longer accept amendments to notices. The cancellation process will need to be followed according to the deadline and a new notice submitted thereafter for the next available publication date.

REJECTIONS

24. All notices not meeting the submission rules will be rejected to the customer to be corrected and resubmitted. Assistance will be available through the Contact Centre should help be required when completing the forms. (012-748 6200 or email info.egazette@gpw.gov.za). Reasons for rejections include the following:

24.1. Incorrectly completed forms and notices submitted in the wrong format, will be rejected.

24.2. Any notice submissions not on the correct *Adobe* electronic form, will be rejected.

24.3. Any notice submissions not accompanied by the proof of payment / purchase order will be rejected and the notice will not be processed.

24.4. Any submissions or re-submissions that miss the submission cut-off times will be rejected to the customer. The Notice needs to be re-submitted with a new publication date.

GOVERNMENT PRINTING WORKS - BUSINESS RULES

APPROVAL OF NOTICES

25. Any notices other than legal notices are subject to the approval of the Government Printer, who may refuse acceptance or further publication of any notice.

26. No amendments will be accepted in respect to separate notice content that was sent with a Z95 or Z95Prov notice submissions. The copy of notice in layout format (previously known as proof-out) is only provided where requested, for Advertiser to see the notice in final Gazette layout. Should they find that the information submitted was incorrect, they should request for a notice cancellation and resubmit the corrected notice, subject to standard submission deadlines. The cancellation is also subject to the stages in the publishing process, i.e. If cancellation is received when production (printing process) has commenced, then the notice cannot be cancelled.

GOVERNMENT PRINTER INDEMNIFIED AGAINST LIABILITY

27. The Government Printer will assume no liability in respect of—

27.1. any delay in the publication of a notice or publication of such notice on any date other than that stipulated by the advertiser;

27.2. erroneous classification of a notice, or the placement of such notice in any section or under any heading other than the section or heading stipulated by the advertiser;

27.3. any editing, revision, omission, typographical errors or errors resulting from faint or indistinct copy.

LIABILITY OF ADVERTISER

28. Advertisers will be held liable for any compensation and costs arising from any action which may be instituted against the Government Printer in consequence of the publication of any notice.

CUSTOMER INQUIRIES

Many of our customers request immediate feedback/confirmation of notice placement in the gazette from our Contact Centre once they have submitted their notice – While **GPW** deems it one of their highest priorities and responsibilities to provide customers with this requested feedback and the best service at all times, we are only able to do so once we have started processing your notice submission.
GPW has a 2-working day turnaround time for processing notices received according to the business rules and deadline submissions.
Please keep this in mind when making inquiries about your notice submission at the Contact Centre.

29. Requests for information, quotations and inquiries must be sent to the Contact Centre ONLY.

30. Requests for Quotations (RFQs) should be received by the Contact Centre at least **2 working days** before the submission deadline for that specific publication.

GOVERNMENT PRINTING WORKS - BUSINESS RULES

Payment of cost

31. The Request for Quotation for placement of the notice should be sent to the Gazette Contact Centre as indicated above, prior to submission of notice for advertising.

32. Payment should then be made, or Purchase Order prepared based on the received quotation, prior to the submission of the notice for advertising as these documents i.e. proof of payment or Purchase order will be required as part of the notice submission, as indicated earlier.

33. Every proof of payment must have a valid **GPW** quotation number as a reference on the proof of payment document.

34. Where there is any doubt about the cost of publication of a notice, and in the case of copy, an enquiry, accompanied by the relevant copy, should be addressed to the Gazette Contact Centre, **Government Printing Works**, Private Bag X85, Pretoria, 0001 email: info.egazette@gpw.gov.za before publication.

35. Overpayment resulting from miscalculation on the part of the advertiser of the cost of publication of a notice will not be refunded, unless the advertiser furnishes adequate reasons why such miscalculation occurred. In the event of underpayments, the difference will be recovered from the advertiser, and future notice(s) will not be published until such time as the full cost of such publication has been duly paid in cash or electronic funds transfer into the **Government Printing Works** banking account.

36. In the event of a notice being cancelled, a refund will be made only if no cost regarding the placing of the notice has been incurred by the **Government Printing Works**.

37. The **Government Printing Works** reserves the right to levy an additional charge in cases where notices, the cost of which has been calculated in accordance with the List of Fixed Tariff Rates, are subsequently found to be excessively lengthy or to contain overmuch or complicated tabulation.

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GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 6804 **7 November 2025**

GENERAL NOTICE IN TERMS OF RESTITUTION OF LAND RIGHTS ACT, 1994 [ACT 22 OF 1994] AS AMENDED

Notice is hereby given in terms of **Section 11(1) of the Restitution of the Land Rights Act 1994 [Act 22 of 1994] as amended,** that a land claim for **Restitution of Land Rights** has been lodged by **Mr. Mrube Manuel Mahlangu** on behalf of Mahlangu Family on the following property mentioned hereunder situated under Thembisile Hani Municipality, in Nkangala District , Mpumalanga Province: **KRP 9510**

NOOITGEDACHT 436 JR

Description of property	Owner of Property	Title Deed Number	Extent of Property	Bonds	Bond Holder	Other Endorsements
Portion 19 of the farm Nooitgedacht 436 JR	National Government of the Republic of South Africa	T25381/1985	33.0464ha	N/A	N/A	N/A
Portion 20 of the farm Nooitgedacht 436 JR	National Government of the Republic of South Africa	T14864/1985	55.0778		Bronkhost Gysbertus Johannes	K1364/1981RM

NB: The total hectares affected by the land claim is 30.9917 ha pending mapping exercise and determination of exact extent of rights lost

The Regional Land Claims Commissioner, Mpumalanga Province will investigate all the claims in terms of the provisions of the Act, any party interested in the above-mentioned property is hereby invited to submit within **30 [thirty days]** from the date of publication of this notice to submit any comments, or further information to:

Commissioner for Restitution of Land Rights
30 Samora Machel Drive
Nelspruit, 1200
Tel No: 013 756 6000
Fax No: 013 752 3859

MR I.H. MAPHUTHA
THE REGIONAL LAND CLAIMS COMMISSIONER, SA
DATE: 23/09/25

DEPARTMENT OF EMPLOYMENT AND LABOUR

NO. 6805 **7 November 2025**

NOTICE IN TERMS OF SECTION 62(7) OF THE LABOUR RELATIONS ACT, 66 OF 1995.

PLEASE TAKE NOTICE THAT: -

The National Bargaining Council for Hairdressing, Cosmetology, Beauty and Skincare Industry ("HCSBC") has served a compliance order on the Twelve Apostles Hotel (Pty) Ltd in terms of which the Bargaining Council contends the operations and service offerings of the Spa facilities of the Twelve Apostles Hotel (Pty) Ltd fall within the scope of registration of the Bargaining Council. Consequently, the Twelve Apostles Hotel (Pty) Ltd has applied to the Commission for Conciliation, Mediation and Arbitration in terms of section 62(1) of the Labour Relations Act 66 of 1995, as amended (LRA), for a demarcation determination to the effect that the operations and service offerings of the Spa facilities is ancillary to the primary operations of a luxury five-star hotel which do not fall within the scope of registration of the HCSBC.

The parties to the dispute, as cited, are as follows:

The Twelve Apostles Hotel (Pty) Ltd	APPLICANT
The National Bargaining Council for Hairdressing, Cosmetology, Beauty and Skincare Industry	RESPONDENT

The Twelve Apostles Hotel (Pty) Ltd, part of The Red Carnation Hotel Collection, is a luxury five-star hotel offering boutique luxury accommodation, dining and related hospitality services.

The HCSBC is a statutory body established under the LRA to regulate employment relations and promote collective bargaining, dispute prevention, and resolution within the industry, encompassing activities such as Hairdressing, Beauty, Cosmetology, and Skincare.

According to the HCSBC, all business entities, including Hotels and companies, and their employees involved in Hairdressing, Beauty, Cosmetology, and Skincare fall within its jurisdiction. They are required to register and comply with all relevant standards set by the HCSBC.

The CCMA believes that the question is of substantial importance and hereby invites written representation by interested persons.

Written representations may be made within 21 calendar days of the date of publication of this notice and should be directed to the CCMA, Western Cape - Cape Town, CCMA House, 78 Darling Street, Cape Town, 8001, or Private Bag X9167, Cape Town, 8000 and marked WECT13875-25. Representations may also be emailed to NeilS@CCMA.org.za and ctn@ccma.org.za.

The CCMA Western Cape may be contacted for any enquiries at telephone number 021 469-0177.

DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 6806 **7 November 2025**

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998)

CONSULTATION ON THE PROPOSED REGULATIONS FOR THE EXPLORATION AND PRODUCTION OF ONSHORE PETROLEUM RESOURCES REQUIRING FRACTURING TECHNOLOGY

I, Dion Travers George, Minister of Forestry, Fisheries and the Environment, hereby consult on the intention to make regulations pertaining to the exploration and production of onshore petroleum resources requiring fracturing technology under sections 44(1)(a) and (1)(aA), read with sections 24(5)(b)(x), 24(5)(h) and section 50A, of the National Environmental Management Act, 1998 (Act No. 107 of 1998) in the Schedule hereto.

This Notice contains a revised version of the documents contained in Government Notice No. 2273 published on 11 July 2022 in Government *Gazette* No. 47112 for public comment and reflects the incorporation of amendments made based on the first call for public comment.

Members of the public are invited to submit written comments or input, within 30 days from the date of the publication of this notice in the Government *Gazette*, or a notification in a newspaper, whichever occurs last, to any of the following addresses:

By post to: Department of Forestry, Fisheries and the Environment
The Director-General
Attention: Mr Simon Moganetsi
Private Bag X447
PRETORIA
0001

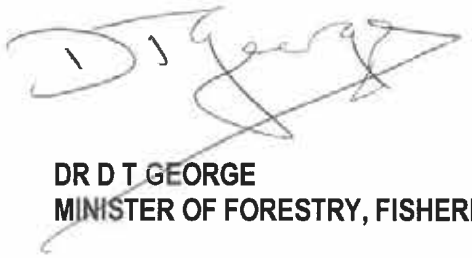
By hand at: Reception, Environment House, 473 Steve Biko Road, Arcadia, Pretoria.
By e-mail: Smoganetsi@dffe.gov.za.

Any enquiries in connection with the Notice can be directed to Mr Simon Moganetsi by phone at 012 399 9309 or by mail at Smoganetsi@dffe.gov.za.
A hard copy of any notice or document associated with this Government *Gazette* can be requested from Ms M Masondo at email: mmasondo@dffe.gov.za or collected at the Department's physical address as indicated above. The documents can be downloaded from the Department's website at https://www.dffe.gov.za/projectprogrammes/environmental_management_instruments and the

Government Notice can be downloaded from the Department's website at https://www.dffe.gov.za/legislation/gazetted_notices

Comments or input received after the closing date may be disregarded.

The Department of Forestry, Fisheries and the Environment complies with the Protection of Personal Information Act, 2013 (Act No. 4 of 2013). Comments received and responses thereto are collated into a comments and responses report which will be made available to the public as part of the consultation process. If a commenting party has any objection to his or her name, or the name of the represented company/ organisation, being made publicly available in the comments and responses report, such objection should be highlighted in bold as part of the comments submitted in response to this Government Notice.



DR D T GEORGE
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT

SCHEDULE

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CHAPTER 1

DEFINITIONS, PURPOSE AND APPLICATION OF THESE REGULATIONS

Definitions

1. In these Regulations, any word or expression to which a meaning has been assigned in the Act shall have the meaning so assigned, and unless the context indicates otherwise—

"additive" means a chemical or mixture of chemicals that are added to the base fluid to change its properties;

"API standard" means the relevant American Petroleum Institute Standards;

"applicant" means a person who applies for an exploration right or a production right in terms of the Mineral and Petroleum Resources Development Act, 2002 and which exploration or production requires fracturing technology and a person who applies for an environmental authorisation in terms of the Act, for an exploration, fracturing or production activity intending to or using fracturing technology;

"baseline monitoring" means the monitoring of key indicators to establish reference conditions of the potentially affected environment prior to fracturing to form the basis for determining a change over time;

"baseline monitoring plan" means the plan identified in regulation 8(2)(b);

"blowout" means an uncontrolled release of hydrocarbons from a well after pressure control systems have failed;

"casing" means piping positioned in a wellbore and cemented in place to prevent soil or rock from caving in and isolates fluids from the surrounding geological formations;

"competent person" has meaning assigned to it in the Mineral and Petroleum Resources Development Regulations, 2004;

"closure certificate" means the certificate contemplated in section 43 of the Mineral and Petroleum Resources Development Act, 2002;

"conductor casing" means the casing that provides structural support for the well, wellhead and completion equipment, and provides hole stability for initial drilling operations;

"consolidated assessment report" means the report containing the environmental information as contemplated in the Minimum Information Requirements for Baseline Monitoring for Onshore Exploration Operations and the Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology;

"days" means calendar days, but if the last day of the period falls on a Saturday, Sunday or public holiday, that period must be extended to the end of the next day which is not a Saturday, Sunday or public holiday;

"decommissioning" means the planned shutdown of an exploration or production well with the plugging of wells, removal of well equipment, production tanks and associated installations, site rehabilitation and

monitoring and where relevant the final decommissioning and closure of the exploration or production operation;

"designated agency" means the agency designated in terms of section 70 of the Mineral and Petroleum Resources Development Act, 2002;

"environmental authorisation" means the authorisation issued by a competent authority for a listed activity or specified activity required in terms of section 24 of the Act;

"Environmental Impact Assessment Regulations" means the Regulations published in terms of sections 24(5) and 44 of the Act;

"exploration right" means a right contemplated in section 80 of the Mineral and Petroleum Resources Development Act, 2002 for onshore exploration;

"flow back" means fracturing additives and other fluids that return to the surface after fracturing has been completed;

"Financial Provisioning Regulations" means the Financial Provisioning Regulations published in terms of section 44(1)(aE), (aF), (aG), (aH) read with sections 24(5)(b)(ix), 24(5)(d), 24N, 24P, 24PA and 24R of the Act;

"fracturing" means an intervention performed on a well to increase production by improving the flow of petroleum from the drainage area into the well bore and includes re-fracturing;

"fracturing fluid" means the mixture of the base fluid and the fracturing additives used to stimulate the free flow of a petroleum reserve;

"government waterwork" means a waterwork owned or controlled by the Minister responsible for water affairs and includes the land on which it is situated and includes any borehole, structure, earthwork or equipment installed or used for or in connection with water use and includes water storage dams, water transfer schemes and flood attenuation works;

"holder" means a person who holds an exploration or production right issued in terms of the Mineral and Petroleum Resources Development Act, 2002 for which the exploration or production operation requires the use of fracturing and a person who holds an environmental authorisation in terms of the Act, for an exploration or production activity which requires or uses fracturing technology;

***"*independent"** means—

(a) that a person has no business, financial, personal or other interest in the activity or application in respect of which that person is appointed in terms of these Regulations excluding normal and fair remuneration for work performed in connection with such tasks; or

(b) that there are no circumstances that may compromise the objectivity of that person in performing such work;

"intermediate casing" means a casing that seals off intermediate rock formations that may have different pressures than deeper or shallower rock formations;

"Karoo Central Astronomy Advantage Area" means the area declared in terms of the Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007) published under Government Notice No. 198 in Government *Gazette* No. 37434 of 12 March 2014;

"liquid waste" means water that has been contaminated with waste products from the hydraulic fracturing operation that can pass through a 0.45-micron filter at a pressure differential of 0,5MPa;

"Mineral and Petroleum Resources Development Act, 2002" means the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002);

"Minimum Information Requirements for Baseline Monitoring for Onshore Exploration Operations" means the minimum information requirements for the baseline monitoring that is to be undertaken prior to fracturing operations being undertaken in an onshore exploration operation published in terms of section 24(5)(h) of the Act;

"Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology" means the minimum information requirements for the impact assessment for onshore exploration and production using fracturing technology published in terms of section 24(5)(h) of the Act;

"month" means calendar month;

"municipal wellfield" means a water resource used by water services institutions to provide water supply services as defined in the Water Services Act, 1997 (Act No. 108 of 1997) and includes future potential identified water resources;

"National Water Act, 1998" means the National Water Act, 1998 (Act No. 36 of 1998);

"national web based environmental screening tool" means the online spatial application contemplated in the Environmental Impact Assessment Regulations available at https://screening.environment.gov.za/screeningtool;

"petroleum" has the meaning assigned to it in the Mineral and Petroleum Resources Development Act, 2002;

"process water" means all water related to exploration and production, including flow back, and contaminated storm-water;

"production casing" means a casing installed through the production zone to isolate the formation and to install the production equipment;

"production right" means a right contemplated in section 84 of the Mineral and Petroleum Resources Development Act, 2002 for onshore production which requires fracturing;

"production well" means a well drilled for the purpose of producing petroleum;

"proppant" means sand or a natural or man-made material that is used during well fracturing to prop open the artificially created or enhanced fractures;

"SANAS" means the South African National Accreditation System;

"spring" means a point where subsurface water emerges at surface, usually as a result of topographical, lithological or structural controls;

"temporary suspension" means a well where either drilling, testing or production activities have temporarily ceased and temporary plugs have been inserted into the well;

"the Act" means the National Environmental Management Act, 1998 (Act No. 107 of 1998);

"usable water" means water which is within the SANS 241-1:2015 Drinking Water Specification or within the South African Water Quality Guidelines Volume 4 Agricultural Use: Irrigation;

"waste" has the meaning assigned to it in the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and includes flow back, fracturing fluids, and process water as well as well drilling waste;

"watercourse" has the meaning assigned to it in the National Water Act, 1998;

"water use license" means a water use licence issued in terms of the National Water Act, 1998 for the exploration or production of onshore naturally occurring hydrocarbons that require fracturing;

"well" means a drilled hole used for the purpose of exploration or production of petroleum resources;

"well engineer" means an engineer in the field of petroleum engineering or a related geological field involved in either the design, construction, maintenance, completion and plugging of exploration or production wells, with a minimum of ten years' experience in the field/discipline in question, who has the appropriate accreditation from the relevant institution; and

"well integrity" means the application of technical, operational and organisational solutions to reduce the risk of uncontrolled release of formation fluids throughout the life of a well.

Purpose of these Regulations

2. The purpose of these Regulations is to—

(a) set general and specific requirements, practices and standards for the identification, assessment, avoidance and management of environmental impacts associated with all phases of exploration and production of onshore petroleum resources requiring the use of fracturing technology;
(b) prohibit certain activities related to the exercising of an exploration or production right for onshore petroleum requiring the use of fracturing technology;
(c) identify geographical areas in which exploration or production operations for onshore petroleum requiring the use of fracturing technology are prohibited or restricted;
(d) provide for the preparation and implementation of a baseline monitoring plan prior to the commencement of exploration operations which will require the use of fracturing technology;
(e) set general and specific requirements for ongoing environmental monitoring of exploration and production operations using fracturing technology;
(f) give effect to the coordination between decision-making authorities on the requirements for baseline monitoring, public participation, impact assessment requirements and integrated operational monitoring; and

(g) facilitate the submission of a consolidated assessment report to support the application for a water use licence and an environmental authorisation, through the implementation of minimum information requirements.

Application of these Regulations

3. These Regulations apply throughout the Republic of South Africa to all exploration and production operations of onshore petroleum resources intending to and using fracturing technology.

CHAPTER 2

PROHIBITIONS AND RESTRICTIONS

Prohibited Activities

4. The following activities are prohibited in the exercising of an exploration or production right for onshore petroleum resources using fracturing technology:

(a) in areas where the rainfall is under 400mm per annum, the abstraction of water except from deep saline aquifers, for any purpose in the exploration or production operation other than for drinking, domestic use or the preparation of slurry for cement mixtures on which tests will be conducted;
(b) the disposal of process water from the exploration or production operation without at least one reuse;
(c) the discharge or disposal of fracturing fluids, process water or any other component of process water–

(i) into a water resource without treatment to limits which comply to the water quality discharge limits contemplated in Appendix 4;
(ii) onto land through irrigation without treatment to limits which comply to the water quality irrigation limits contemplated in Appendix 4;
(iii) to a government waste water treatment works; or
(iv) underground, including through the use of re-injection wells;

(d) the disposal to landfill, of sludge with a moisture content of >40% or that liberates moisture under pressure in landfill conditions and which has not been stabilised by treatment;
(e) the storage of process water for reuse or disposal in pits, retention dams or pollution control dams;
(f) the storage of drill cuttings, sludge and waste other than in above ground tanks or leakproof skips;
(g) the use of groundwater monitoring boreholes for abstraction purposes; and
(h) the use of substances identified in Appendix 2 as additives to fracturing fluids.

Prohibited areas

5. The exploration and production of petroleum resources, including directional drilling are prohibited within–

(a) heritage sites and sites containing heritage resources, objects or structures defined in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) or the Kwa-Zulu Natal Amafa and Research Institute Act, 2018 (Act No. 5 of 2018);
(b) areas identified in terms of section 48(1)(a) and (c) of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003);
(c) the Sutherland Central Astronomy Advantage Area identified in figure 1 of Government Notice No. 199 published in Government *Gazette* No. 37434 on 12 March 2014;
(d) the Karoo Central Astronomy Advantage Area 3 described in paragraph 3(4) of the schedule and identified in figure 1 of Government Notice No. 198 published in Government *Gazette* No. 37434 on 12 March 2014;
(e) ten kilometres of the protection corridors containing the Square Kilometre Array radio astronomy stations identified in Annexure A to Schedule A of Government Notice No. 1411 published in Government *Gazette* No, 41321 on 15 December 2017;
(f) five kilometres of any government waterworks and dams with a safety risk;
(g) within a strategic water source area as identified on the national web based environmental screening tool and within five kilometres of the edge of such strategic water source areas;
(h) five kilometres from the edge of towns and highly populated areas; and
(i) five kilometres from the edge of a thermal or cold spring.

Restricted areas

6. (1) Subject to subregulation (2) the exploration and production of a petroleum resource using fracturing may not take place in the following geographical areas:

(a) within five kilometres from the edge of an existing or proposed municipal wellfield, including its aquifer, water supply boreholes and groundwater supply infrastructure;
(b) in the area located outside of the Karoo Central Astronomy Advantage Area 3, but within the boundaries of the Karoo Central Astronomy Advantage Area 1 described in paragraph 3(2) and 3(4) of the Schedules and identified in figure 1 of Government Notice No. 198 published in Government *Gazette* No. 37434 on 12 March 2014.

(2) The competent authority may authorise the activities contemplated in subregulation (1), based on a motivation and supporting evidence that demonstrate that environmental impacts can be avoided or adequately mitigated in the geographical areas contemplated in subregulation (1), and subject to approval from the relevant authority responsible for the management of the areas contemplated in subregulation(1), which approval must be obtained prior to submitting the applications for environmental authorisation contemplated in subregulation 8(1), 8(7) and 8(13)(a):

CHAPTER 3

REQUIREMENTS FOR THE EXPLORATION OR PRODUCTION OF ONSHORE PETROLEUM REQUIRING THE USE OF FRACTURING

Environmental obligation of an applicant or holder

7. Every applicant and holder has an obligation to—

(a) identify, assess, avoid and if avoidance is not possible, to mitigate, manage and monitor all potential environmental impacts that may arise from exercising an exploration or production right for onshore petroleum requiring the use of fracturing technology;
(b) determine the pre-fracturing baseline conditions through the preparation of a baseline monitoring plan for approval by the competent authority;
(c) through assessment, determine the possible changes to the pre-fracturing conditions and the severity of the changes, identify avoidance and mitigation measures and report on the acceptability of the changes in the documentation submitted as part of the application process for environmental authorisation;
(d) through all phases of the operations, monitor and assess any changes to the baseline environmental attributes and determine and report on the associated risk through ongoing monitoring and reporting;
(e) ensure that all materials used and procedures adhere to international best practises and standards;
(f) decommission all exploration and production wells, remove any structures and rehabilitate the area used for exploration and production operations, as well as any area affected by the operations, monitor the continued integrity of the decommissioning and rehabilitation and report on the findings;
(g) provide funding for the decommissioning, rehabilitation and closure of the exploration and production operations as prescribed in the Financial Provisioning Regulations;
(h) be in possession of all relevant rights, permits, authorisations, approvals, consents and licences prior to the exercising of an exploration or production right; and
(i) meet the design, construction and testing standards identified in regulations 10, 11, 12, 13 and Appendix 1.

Submission of applications and implementation of monitoring plans

8. (1) On acceptance of an application for an exploration right in terms of section 79 of the Mineral and Petroleum Resources Development Act, 2002, an applicant must submit to the competent authority an application for an environmental authorisation, for an onshore seismic survey which requires an exploration right, contemplated in activity 21C of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014.

(2) At the intervals contemplated in the Environmental Impact Assessment Regulations an applicant must submit to the competent authority for approval –

(a) a consolidated assessment report and environmental management programme which comply with the Minimum Information Requirements for Baseline Monitoring for Onshore Exploration Operations;
(b) a baseline monitoring plan which complies with the Minimum Information Requirements for Baseline Monitoring for Onshore Exploration;
(c) the relevant plans, reports, templates or spreadsheets contemplated in the Financial Provisioning Regulations; and
(d) proof of the arrangements made to secure the financial provision.

(3) The competent authority must obtain the concurrence of the Minister responsible for water affairs prior to approving any baseline monitoring plan contemplated in subregulation (2)(b).

(4) The holder must submit to the competent authority, prior to commencement of exploration operations contemplated in subregualtion (8)(1), proof of the availability of the financial provision;

(5) On commencement of the exploration operation contemplated in subregulation (8)(1), the holder must–

(a) commence with the implementation of the baseline monitoring plan; and
(b) continue the required monitoring for a period of no less than twenty four months.

(6) On completion of the implementation of the baseline monitoring plan, the holder must prepare a baseline monitoring report which details the outcome of the monitoring programme.

(7) Prior to the commencement of exploration operations which require the use of fracturing technology, an applicant must submit to the competent authority an application for environmental authorisation for activity 20A of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014.

(8) After the submission of the application contemplated in subregulation (7), at the intervals contemplated in the Environmental Impact Assessment Regulations, an applicant must submit to the competent authority for approval a scoping report which complies with Part 1 of the requirements of the Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology.

(9) After the acceptance of the scoping report, the applicant must, at intervals contemplated in the Environmental Impact Assessment Regulations, submit to the competent authority for approval, a consolidated assessment report which–

(a) has considered the results of the baseline monitoring report contemplated in subregulation (6);
(b) complies with the Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology; and
(c) includes the following appendices:
    i. the environmental management programme which must include a “chance find protocol”;
    ii. an integrated operational monitoring plan for all identified environmental themes;
    iii. an integrated water and wastewater management plan;
    iv. an emergency and spill contingency plan;
    v. a solid waste management plan;
    vi. a preliminary well layout including a buffer to allow for movement of the well pad without the need for an amendment to the environmental authorisation;
    vii. a well design based on the geological information obtained through the drilling of the stratigraphic wells;
    viii. the drillilng fluid to be used;
    ix. a list of fracturing fluids to be used;
    x. the relevant plans and reports contemplated in the Financial Provisioning Regulations; and
    xi. proof of the arrangements made to secure the financial provision.

(10) The holder must, prior to commencement, submit proof of the availability of the financial provision.

(11) Prior to the commencement of the exploration and fracturing operation contemplated in subregulation (7), the holder must commence with the implementation of the approved programmes and plans, contemplated in subregulation (9)(c)(i) to (v).

(12) Throughout the exploration operation contemplated in subregulation (7), the holder must provide the monitoring results in the form of integrated operational monitoring reports, which comply with the approved integrated operational monitoring plan contemplated in subregulation 9(c)(ii), to the competent authority, designated agency and the Minister responsible for water affairs at intervals which comply with the approved integrated operational monitoring plan.

(13) On acceptance of the application for a production right in terms of section 83 of the Mineral and Petroleum Resources Development Act, 2002, the applicant must submit to the competent authority—

(a) an application for an environmental authorisation for the onshore production of petroleum contemplated in activity 20 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014; and
(b) at the intervals indicated in the Environmental Impact Assessment Regulations, a scoping report which complies with the Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology.

(14) On acceptance of the scoping report contemplated in subregulation (13)(b), the applicant must submit to the competent authority, at the intervals contemplated in the Environmental Impact Assessment Regulations, a consolidated assessment report which–

(a) includes and has considered the results of the baseline monitoring report as contemplated in subregulation (6) and the integrated operational monitoring plan as contemplated in subregulation 9(c)(ii);
(b) complies with the Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology; and
(c) includes the following appendices;
    i. the environmental management programme which must include a “chance find protocol”;
    ii. an integrated operational monitoring plan for all identified environmental themes;
    iii. an integrated water and wastewater management plan;
    iv. an emergency and spill contingency plan;
    v. a solid waste management plan;
    vi. a well layout including a buffer to allow for movement of the well pad without the need for an amendment to the environmental authorisation;
    vii. a well design based on the geological information obtained through the drilling of the exploration wells;
    viii. the drilling fluid to be used;
    ix. a list of fracturing fluids to be used;
    x. the relevant plans and reports contemplated in the Financial Provisioning Regulations; and
    xi. proof of the arrangements made to secure the financial provision.

(15) On commencement of the production operation the holder must commence with the implementation of the approved programmes and plans contemplated in subregulation (14)(c)(i) to (v).

(16) Prior to commencement of the production operations the holder must submit proof of the availability of the financial provision.

(17) Throughout the production operation, the holder must provide the monitoring results in the form of integrated operational monitoring reports, which comply with the approved integrated operational monitoring plan contemplated in subregulation (14)(c)(ii), to the competent authority, designated agency and the Minister responsible for water affairs at intervals which comply with the approved integrated operational monitoring plan.

CHAPTER 4

STANDARDS FOR THE EXPLORATION AND PRODUCTION OF ONSHORE PETROLEUM REQUIRING THE USE OF FRACTURING TECHNOLOGY

Responsibility of the applicant or holder to meet standards

9. (1) An applicant or holder of an exploration or production right for onshore petroleum resources using fracturing technology must meet the design, construction and testing standards identified in regulations 10, 11, 12, 13 and Appendix 1.

(2) Should the applicant or holder wish to deviate from a standard requirement identified in Appendix 1 the applicant or holder must submit for approval of the designated agency—

(a) an explanation and detailed design of the proposed alternative;
(b) a comparative technical assessment of the proposed alternative to that contemplated in Appendix 1; and
(c) an indication of how the proposed alternative will provide a comparative or higher level of safety or environmental protection compared with those contemplated Appendix 1.

(3) Any deviation, motivation, design or comparative assessment contemplated in subregulation (2) must be prepared by a well engineer.

Well design and construction

10. (1) All wells must be—

(a) designed by a well engineer and the accreditation of the well engineer must be displayed in the site office of the exploration or production operation; and
(b) designed, constructed and tested as contemplated in the Well Construction Standard contained in Appendix 1.

Cement requirements and compression tests

11. (1) Standards contemplated in Appendix 1 apply to-

(a) all cement used in the operation; and
(b) compression tests.

Casing string tests

12. The holder must undertake casing string tests according to the standard as contemplated in Appendix 1.

Blowout prevention

13. (1) The holder must install blowout prevention equipment, which meet the standard as contemplated in Appendix 1 to all wells operating under pressure.

(2) A well engineer must be present at the well site when blowout prevention equipment is installed and when it is tested.

(3) The holder must ensure that testing of blowout prevention equipment for a drilling or completion operation takes place prior to drilling below the last cemented casing seat.

(4) The holder must maintain a record of the pressure tests which contains the number and location of the well tested, the date of testing and the results signed off by the well engineer.

Well examination

14. (1) The holder must subject the design, construction, operation, and decommissioning of exploration and production wells to an independent well examination undertaken by an independent well engineer and send the endorsement from the well examination to the designed agency.

(2) The results of the well examination tests must at all times demonstrate that the pressure boundary of the well is controlled throughout the life of the well.

(3) The holder must keep a well file, which can be an electronic filing system, which identifies the—

(a) coordinates of the well;
(b) number of the well;
(c) design of the well;
(d) pressure test results; and
(e) the trade name of the fracturing additives used including the monthly amount of additives used per well.

A holder's responsibility to obtain the approval of the designated agency

15. (1) The holder must—

(a) submit test data showing the competency of a proposed cement mixture that meets the requirements of the current AI "API RP 10 B-2 Recommended Practises for Testing Well cements", to the designated agency for approval not less than 5 days prior to the commencement of the cementing operation;
(b) in collaboration with specialist contractors, prior to casting any well casing, submit to the designated agency for approval a programme for cement placement operations;
(c) prior to commencing with fracturing operations, submit for approval by the designated agency-

i. the final well layout;
ii. the final well design;
iii. the results of casing string tests and the formation pressure integrity testing; and

iv. a well examination plan which includes-

(aa) confirmation of groundwater and aquifer isolation;
(bb) measures to address fracture containment;
(cc) measures to manage seismicity risks;
(dd) details of the process water management programme;
(ee) fracturing programme;
(ff) programme for well pressure testing;
(gg) a programme for independent well examination; and
(hh) a programme for final decommissioning and post-decommissioning monitoring.

(2) The designated agency must obtain the concurrence of the Minister responsible for water affairs prior to the approving the commencement of fracturing operations contemplated in subregulation (1)(c).

A holder's responsibility to notify and provide information to the designated agency and the Minister responsible for water affairs

16. (1) The holder must—

(a) ensure that verification inspections, by the designated agency, are undertaken for the following actions before commencement:
i. setting of a casing;
ii. commencing with cementing of casings;
iii. formation pressure integrity testing;
iv. conducting a blowout prevention test; and
v. mechanical integrity testing.

(b) notify the designated agency at least 5 days prior to undertaking any activity contemplated in subregulation (1)(a) to facilitate the verification inspection;
(c) submit to the designated agency, a copy of the well file which meets the requirements contemplated in regulation 14(3) monthly for information purposes;
(d) submit to the designated agency within 5 days after the testing was undertaken, the records and overall summary of the blowout prevention testing for information;
(e) submit to the designated agency within 5 days after the testing was undertaken for information, the records and overall summary of the mechanical integrity tests which information must include:
i. type and volumes of water sources for fracturing operations;
ii. volumes and rates of fracturing fluid pumped into the target zone; and
iii. volumes and release of flowback received during and after each fracturing event.

(f) notify the competent authority, the designated agency the Minister responsible for water affairs and the heritage authority, in writing, at least fourteen days before commencing with the exercising of the exploration or production right, which notification must indicate the proposed date of commencement.

Post-fracturing well report

17. (1) The holder must, within 90 days after fracturing has been completed, compile a detailed post-fracturing well report for each well fractured and submit the report for review and archiving to the designated agency and the Minister responsible for water affairs.

(2) A post-fracturing well report must include as a minimum-

(a) the location of the well, position in co-ordinates and well number;
(b) the actual fracturing fluid compositions, concentrations and total volumes used;
(c) the actual surface and downhole treating pressure range;
(d) the maximum injection treating pressure;
(e) the actual or calculated fracture geometry;
(f) annuli and offset well pressure monitoring records;
(g) confirmation that wellbore integrity was maintained throughout the operation;
(h) the results of chemical testing of flow-back and process water;
(i) the chemical composition of gases released from wells;
(j) an explanation of operational or design variations to the pre-fracturing design;
(k) data and information concerning any related induced seismic events, in a format as provided by the designated agency;
(l) steps taken as a result of any identified induced seismic events or activity; and
(m) plans to continue micro-seismic monitoring.

CHAPTER 5

OPERATIONS AND MANAGEMENT

Management of operations

18. (1) A holder must—

(a) appoint a well engineer to be responsible for the day-to-day management of the operations; and
(b) ensure that the equipment used in fracturing operations is fit for purpose and must meet relevant standards as contemplated in Appendix 1.

(2) A holder may only commence with fracturing operations after the designated agency has approved the requirements contemplated in regulation 15 and all the relevant rights, permits, authorisations, approvals, consents and licences have been obtained.

(3) A holder must immediately suspend fracturing operations if-

(a) directed by the designated agency or competent authority, in writing to do so; or
(b) an anomalous pressure or flow condition is occurring in a way that indicates that the mechanical integrity of the well has been compromised and that continued operations pose a risk to the environment.

(4) A holder must notify the designated agency and the Minister responsible for water affairs, telephonically and then electronically, within 24 hours of suspending fracturing as a result of circumstances contemplated in subregulation (3) to allow for inspection.

(5) Remedial action must be undertaken immediately and the designated agency must be satisfied with the remedial actions prior to issuing a written consent for the recommencement of operations.

(6) The designated agency may only issue a written consent for recommencement of operations as contemplated in subregulation (5) in concurrence with the Minister responsible for water affairs.

Powers and duties of the designated agency

19. (1) The designated agency must provide approvals or request additional information within 5 days of receiving information for approval, unless there is a requirement for concurrence with the Minister responsible for water affairs, in which case the approval or request for additional information is required within 10 days after the concurrence request is made.

(2) Where the concurrence of the Minister responsible for water affairs is required and not provided within the timeframe contemplated in subregulation (1), it will be deemed that approval is given;

(3) The designated agency may, where necessary, require—

(a) a specific cement mixture to be used in a well or an area if evidence of local conditions indicates that specific cement is necessary; or
(b) the installation of an additional cemented casing string or strings in the well.

(4) The designated agency may at the cost of the holder, appoint an independent and competent person to undertake well examination.

Disclosure of information

20. (1) The holder must upload on its website, which must be publicly accessible—

(a) all monitoring and reporting information including the audit reports;
(b) all well information contained in the well file contemplated in regulation 14(3);
(c) the following documentation regarding fracturing fluids as considered through the consolidated assessment report as well as any additions as authorised by the designated agency during fracturing operations:
    i. the hazard status of the substance;
    ii. material safety data sheet information for substances;
    iii. anticipated volumes of fracturing fluid, including proppant, base carrier fluid and each chemical additive to be used within the operation per year for the duration of the fracturing operations;
    iv. the trade name of each additive and its general purpose in the fracturing process;
    v. each chemical intentionally added to the base fluid, including the chemical make up, and if applicable the actual concentration to be used in percentage or by mass; and
    vi. the possible risk of the chemicals and additives to the environment and water resources.

Temporary well suspension, well decommissioning and monitoring

21. (1) The holder must—

(a) decommission an exploration or production well within 180 days after the final use thereof;

(b) where temporary suspension of an exploration well is required, suspend such well for a period not exceeding 180 days from the day on which the exploration well was suspended;
(c) where temporary suspension of a production well is required, suspend such well for a period not exceeding 360 days from the day on which the production well was suspended;
(d) ensure that wells are temporarily suspended or decommissioned as contemplated in the "Onshore Well Decommissioning Guidelines" issued by the Petroleum Agency South Africa, document number: Agency - TC – 001;
(e) prepare a final rehabilitation, decommissioning and closure plan for incorporation into the initial and ongoing reviews of the final rehabilitation, decommissioning and closure plan contemplated in the Financial Provisioning Regulations;
(f) monitor decommissioned wells in compliance with the final rehabilitation, decommissioning and closure plan contemplated in subregulation (1)(e); and
(g) submit the results of the monitoring to the designated agency and the Minister responsible for water affairs on the first working day of each quarter, unless there are identified anomalies, spikes or exceedances of requirements, in which case such anomalies, spikes, or exceedances must be reported within 12 hours of identification.

(2) A holder may only suspend a well—

(a) after obtaining the approval of the designated agency; and
(b) for a period determined by the designated agency, which period may not exceed the timeframes as contemplated in subregulation 21(1)(b) and (c).

CHAPTER 6

GENERAL

General

22. (1) Any water or air quality analysis must be undertaken by a third party using international or SANAS accredited facilities and according to national and international analytical methods.

(2) The results of the analysis must include as a minimum a detailed description of the sampling and testing conducted, including duplicate samples, the chain of custody of the sample and quality control of the testing.

(3) The holder must—

(a) at any time allow the competent authority, designated agency, the Department responsible for water affairs or any other government department or agency which administers any law relating to matters affecting the environment, access to the operation and any relevant documentation to conduct any activities associated with compliance monitoring and enforcement and independent verification;
(b) ensure that the raw data used for any analysis is tabulated, retained, and made available to any relevant authority or stakeholder on request; and
(c) submit the results of any pressure test or strength tests to the designated agency within 7 days of the results being obtained.

(4) Waste containing radioactive materials must be managed in accordance with the National Radioactive Waste Disposal Institute Act, 2008 (Act No. 53 of 2008).

Offences

23. A holder commits an offence if that person contravenes or fails to comply with regulation 4, 5, 6, 8(5)(a), 8(5)(b), 8(11), 8(12), 8(15), 8(17), 9, 10, 12, 13, 14(1), 14(3), 15(1), 16(1)(a), 16(1)(f), 17(1), 18(1), 18(2), 18(3), 18(4),18(5), 20 or 21 of these Regulations.

Penalties

24. Penalties contemplated in section 49B(1) of the Act apply to offences contemplated in these Regulations.

Transitional arrangements

25. (1) Once the Upstream Petroleum Resources Development Bill is passed and brought into operation, any reference to the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) must be construed as a reference to the Upstream Petroleum Resources Development Bill.

(2) Once the Upstream Petroleum Resources Development Bill is passed and brought into operation, and until such time that amendments are made to the Act, the Environmental Impact Assessment Regulations, 2014 and associated Listing Notices, and these Regulations, a reference in these Regulations to−

(a) an exploration right must be construed as a reference to the exploration phase of the petroleum right contemplated in the Upstream Petroleum Resources Development Bill, including all terms and renewals of the exploration phase, of the petroleum right;
(b) a production right must be construed as a reference to the production phase of the petroleum right contemplated in the Upstream Petroleum Resources Development Bill, including all terms and renewals of the production phase, of the petroleum right.

Short title

26. These Regulations are called the Regulations for the Exploration and Production of Onshore Petroleum Resources Requiring Fracturing Technology, 2025.

APPENDIX 1

WELL CONSTRUCTION STANDARDS

1. General

(1) A holder must ensure that a well design is informed by a risk assessment, and is constructed, equipped, commissioned, operated, modified, maintained, suspended and decommissioned in a manner that provides for the control of the well at all times.

(2) The holder must plan for multi-well pads and horizontal drilling technologies in order to optimise the spacing between neighbouring wells and minimize cumulative surface impacts of the operation.

(3) Where an API standard is prescribed, the most current standard is to be used.

2. Objective of well design

The overall objective of a well design is to–

(a) isolate aquifer and permeable zones by employing environmentally protective well casings;
(b) protect groundwater and prevent the migration of polluted water into groundwater, the exploration or production well and the disturbing of deep saline aquifers; and
(c) protect against casing deformation and cement degradation.

3. Well construction

(1) A well must be cased according to current industry standards published by the API "5CT Specification for Casing and Tubing" and the casing thread compound and the use must conform to the API RP 5A3.

(2) A casing installed must have a minimum yield pressure designed to withstand at least 1.2 times the maximum pressure to which the casing may be subjected during drilling, production and fracturing operations.

(3) Casings may not be–

(a) pitted, patched, bent, corroded, crimped;
(b) the threads may not be worn or damaged; and
(c) reconditioned.

(4) Casings must pass the approved hydrostatic pressure and drift test pursuant to API "5CT Specification for Testing and Tubing".

(5) Conductor casing must be set and cemented to a surface to-

(a) isolate shallow aquifers;
(b) stabilize unconsolidated sediments; and
(c) provide a base for equipment to divert shallow natural gas.

(6) Surface casings for exploration or production wells must be-

(a) set to a depth of at least 60m below the base of the deepest water which is usable or at least 100m above the top of the expected petroleum bearing zone, whichever comes first;

(b) installed and be fully cemented to the surface where intermediate casings are not installed;
(c) centralised at the shoe, above and below a stage collar or diverting tool, and through water zones;
(d) centralised in each segment of the wellbore to provide sufficient casing standoff and to foster effective circulation of cement to isolate aquifers, flow-zones, voids, lost circulation zones and hydrocarbon production zones; and
(e) cemented to a surface.

(7) Intermediate casings for exploration and production wells used to isolate usable water -

(a) must be set at least 30 meters below the base of the deepest water found which is usable and must be cemented to the surface to protect unexpected usable water found below the surface casing shoe;
(b) where intermediate casing is set solely to protect usable water encountered below the surface casing shoe and where cementing to the surface is technically infeasible and may result in lost circulation, cement must be brought to a minimum of 180 meters above the shallowest zone of usable water use encountered below the surface casing shoe; and
(c) may not be used as a production string in the well in which it is installed and must not be perforated for purposes of conducting fracturing treatment through it.

(8) A production casing must be set and be fully cemented to 150 meters above the top of the perforated zone.

(9) The location and depths of petroleum bearing zones or usable water zones that are open to the wellbore above the casing shoe, must be confirmed by coring, electric logs, testing or such data from an offset well on the same well pad.

(10) Casings must be centralised in each segment of the wellbore to provide sufficient casing standoff and foster effective circulation of cement to isolate critical zones including aquifers, flow-zones, voids, lost circulation zones and hydrocarbon production zones.

(11) In non-deviated holes, a pipe centraliser must be placed every fourth joint from the collar cement shoe to the ground surface or to the bottom of the collar.

(12) The designated agency may require additional centralisation where necessary in order to ensure the adequacy of the integrity of the well design.

4. Cement requirements and compression testing

(1) Fracturing operations must be isolated from usable water and other permeable zones by ensuring complete cement isolation in each casing annulus.

(2) Cementation of casings must be done by the pump and plug method with a minimum of 25% excess cement and the using of appropriate loss circulation material.

(3) Cement placed in the well bore must meet the standards of API “10 A Specification for cements and materials for well cementing” or ASTM “C150/C150M Standard Specification for Portland Cement”.

(4) Foamed cement slurry must be prepared to minimise its free water content in accordance with API "RP 10B-4 Recommended Practice on Preparation and Testing of Foamed Cement Slurries at Atmospheric Pressure".

(5) Water used for preparing the slurry for the cement mixtures on which tests will be conducted as contemplated in subparagraph (4) must be distilled water or usable water.

(6) Tests contemplated in subparagraph (5) must be conducted using the equipment and procedures established in the current API "RP 10 B-2 Recommended Practise for Testing Well Cements".

(7) The cement used for well construction must have a compressive strength of at least 8273.71kPa (1.200 psi) and the free water separation must be no more than 6 millilitres per 250 millilitres of cement, tested in accordance with the API TR 10TR3.

(8) Cement compressive strength tests must be performed on all cement that will be used in casing strings before its use to ensure that it meets the required strength as contemplated in paragraph (10) and where it does not comply with the standards, the tests must be redone.

(9) After the cement is placed behind the casing, time must be allowed for the cement to set until the cement achieves a calculated compressive strength of at least 3447.38 kPa (500psi) before the casing is disturbed in any way, including installation of a blow-out preventer.

(10) A holder must run a radial cement bond evaluation log and monitor the annular pressure to verify that there is adequate cement bond quality on all casing strings and must carry out remedial cementing if the cement bond is not adequate for drilling ahead.

(11) A copy of the cement job log for a cemented casing string in the well must be maintained in the well file as submitted as required in regulation 14(3).

5. Casing string tests

(1) After the setting and cementing of a casing string, except the conductor casing, and prior to further drilling, the casing string must be tested with water, mud, brine or drilling mud to at least the maximum anticipated treatment pressure but no less than 1.512 kPa per 0.3048 meter (0.22 psi per foot) of casing string length or 10342.12 kPa (1,500 psi), whichever is greater, for a minimum of 30 minutes with less than a 10% pressure loss.

(2) The pressure test must not exceed 70% of the minimum internal yield and if the pressure declines more than 10%, or if there are other indications of a leak, corrective action must be taken before conducting further drilling and fracturing operations.

(3) The pressure under which the well is subjected during the fracturing operations must not exceed the test pressure.

(4) A fracturing string used in the operations must be either strung into a production liner or run with a packer set at least 30 meters below the deepest cement top and must be tested to not less than the maximum anticipated treating pressure minus the annulus pressure applied between the fracturing string and the production or immediate casing.

(5) The pressure test must be considered successful if the pressure applied has been held for a minimum of 30 minutes with no more than 5% pressure loss.

6. Formation pressure integrity test

(1) A holder must, after a successful casing string test, conduct a formation pressure integrity test below the surface casing and below the intermediate casing.

(2) The actual fracturing treatment pressure must not exceed the casing test pressure at any time during fracturing operations.

7. Blowout prevention and pressure testing

(1) A holder must install blowout prevention equipment that meets the current API standard 53 for blowout equipment after setting the casing to shut-off a wellhead which must be supported and secured to prevent stresses on all connections.

(2) Blowout prevention equipment installed at a well that may be subject to fracturing must include a remote blowout prevention actuator that-

(e) is powered by a source other than rig hydraulics;
(f) is located as a minimum 20 meters from the well head; and
(g) has an appropriate related pressure equal to or greater than the induced fracture pressure.

(3) Lines, valves and fittings between the blowout preventer and the remote actuator must be flame resistant and must have a working pressure rating higher than the maximum anticipated well heads surface pressure.

(4) Blowout prevention equipment must have 100% availability at all times.

(5) The blowout prevention equipment must be tested to 100% of related working pressure and the annular-type blowout preventer must be tested to 6894.76 kPa (1,000 psi) at the time of installation in accordance with current API standard 53 for blowout equipment.

(6) Blowout prevention equipment that has failed any pressure test must not be used until it is repaired and has passed the pressure test.

8. Mechanical integrity testing and monitoring

(1) The injection lines and manifold, associated valves, fracturing head or tree and any other well head component or connection not previously tested must be tested with water, mud or brine to at least the maximum anticipated treatment pressure for a minimum of 30 minutes with less than a 5% initial pressure loss.

(2) A record of the pressure test must be maintained and included in the well file.

(3) The pressure exerted on treating equipment including valves, lines, manifolds, fracturing head or tree, casing and fracturing string, if used, must not exceed 95% of the working pressure rating of the weakest component.

(4) A function-tested relief valve and diversion line must be installed and used to divert flow from the fracturing string-casing annulus to an overhead tank in case of fracturing string failure.

(5) The relief valve must be set to limit the annular pressure to no more than 95% of the working pressure rating of the casings forming the annulus.

(6) The fracturing treatment pressure must not exceed the test pressure of any given component at any time during the fracturing operations.

(7) During fracturing, annulus pressure, injection pressure and the rate of injection must be continuously monitored and recorded.

(8) Micro-seismicity (in real time<5 minute delay) must be monitored by a long array of accelerometers located in an offset monitoring well, situated 100m or more away from the well at a comparable depth.

(9) Micro seismic sensors must be designed for temperatures between 175-200^{o}C.

(10) Tiltmeter measurements must be taken with an array of tiltmeters either located in shallow offset wells (10m) at the site surface or in a more sensitive deep offset well of comparable depth to fracturing depth and in the fracturing well which provides information on fracture orientation and direction.

(11) Downhole pressure sensors must be used to provide indirect measurements of fracture height, which are to be connected to the production casing as well as outer casings to monitor well integrity.

(12) Performing temperatures and flow logging along the length of the well must correlate with information on fracture growth.

(13) Proppants must be tagged with radioactive isotopes so that proppant can be analysed to locate where different stages of the proppant went and to locate fracture at depth.

(14) Chemical tracers must be added to fracturing fluid to improve the understanding of fracture fluid loss and flowback.

(15) Temperatures in the well must be measured to trace fluids from shale formations that are at a higher temperature than shallow fluids using fibre-optic sensors to measure temperature, pressure and sound that provides real-time information on fracture locations in the well (fibre-optic sensors are especially valuable for use in downhole high pressure high T situations where electronic gauges fail).

9. Suspended well integrity management

(1) A holder must ensure that management standards and procedures are in place for monitoring wells that are in suspension phase following drilling and fracturing operations, prior to development phase including the status of the equipment and any annulus pressure.

(2) Procedures must take account of the specific circumstances of the well and must include the reporting criteria for any anomaly and a risk assessment of the anomaly.

(3) The suspension of a well-

(a) must be effected in such a way that the well can be re-entered safely and secured using pressure control equipment, without compromising the barrier in place; and
(b) may not jeopardise the future final decommissioning of the well.

10. Well decommissioning or closure

(1) A well that is no longer active, or producing, or for which the approved suspension period determined in terms of regulation 21(1)(b) and (c) has passed, must be plugged and decommissioned in line with the guidance contemplated in regulation 21(1)(d) and reported on in accordance with a final rehabilitation, decommissioning and closure plan reviewed and considered for approval by the competent authority, in compliance with the requirements of the Financial Provisioning Regulations.
(2) The holder must undertake seismic monitoring at the site for a period of 3 years after fracking activities have ceased and include the results of the seismic monitoring in the quarterly audit report.

APPENDIX 2

Prohibited substances

The following substances will not be allowed as additives to fracturing fluids

Chemical Components	Classification	CAS Registry
Methanol (Methyl)	HAP[1]	67-56-1
Ethylene glycol (1,2 – Ethanediol)	HAP	107-21-1
Diesel	Carcinogen, SDWA[2], HAP	68476-34-6
Naphthalene	Carcinogen, HAP	91-20-3
Xylene	SDWA, HAP	1330-20-7
Hydrogen chloride	HAP	7647-01-0
Toluene	SDWA, HAP	108-88-3
Ethylbenzene	SDWA, HAP	100-41-4
Diethanolamine (2,2 iminodiethanol)	HAP	111-42-2
Formaldehyde	Carcinogen, HAP	50-00-0
Sulphuric acid	Carcinogen	7664-93-9
Thiourea	Carcinogen	62-56-6
Benzyl chloride	Carcinogen, HAP	100-44-7
Cumene	HAP	98-82-8
Nitrilotriacetric acid	Carcinogen	139-13-9
Dimethyl formamide	HAP	68-12-2
Phenol	HAP	108-95-2
Benzene	Carcinogen, SDWA & HAP	71-43-2
Di (2-Ethylhexyl) Phthalate	Carcinogen, SDWA & HAP	117-81-7
Acrylamide	Carcinogen, SDWA & HAP	79-06-1
Hydrogen fluoride (Hydrofluoric Acid)	HAP	7664-39-3
Phthalic anhydride	HAP	85-44-9
Acetaldehyde	Carcinogen, HAP	75-07-0
Acetophenone	HAP	98-86-2
Copper	SDWA	7440-50-8
Ethylene oxide	Carcinogen, HAP	75-21-8
Lead	Carcinogen, SDWA & HAP	7439-92-1
Propylene oxide	Carcinogen, HAP	75-56-9
p-Xylene	HAP	106-42-3
1-Methylnaphthalene		90-12-0
2-Butanone (MEK)		78-93-3
Aniline	Carcinogen* ^HAP	62-53-3
2-Methylphenol	^HAP	95-48-7
3- Methylphenol	^HAP	108-39-4
Acetonitrile	^HAP	75-05-8
Phenol	$Mutagenic Cat 2, ^HAP	108-95-2
Thiophene		110-02-1

[1] Hazardous Air Pollutant
[2] Safe Drinking Water Act – is the principle federal law in the United States intended to ensure safe drinking water for the public

Pyrrole		109-97-7
2-Methylnaphthalene		91-57-6
Benzidine	Carcinogen*, ^HAP	92-85-5
Isophorone	Carcinogen (Category 2), ^HAP	78-59-1
Chloroethane	Carcinogen, ^HAP	75-00-3
2-pyrrolidone		616-45-5
Vinyl chloride	Carcinogen*,SDWA,^HAP	75-01-4
Bromomethane	$Mutagenic Cat 2,^HAP	74-83-9
4-methylphenol	^HAP	106-44-5
Acetone		67-64-1
2-Hexanone	Reproductive Toxicity Cat 2,	591-78-6

*As per the International Agency for Research on Cancer (IARC)

$GHS only on germ cell mutagenicity (somatics are not) is classified.

^Initial List of Hazardous Air Pollutants with Modifications | US EPA

APPENDIX 3

STANDARD CONDITIONS APPLICABLE TO AN ENVIRONMENTAL AUTHORISATION FOR AN EXPLORATION AND PRODUCTION ACTIVITY

(1) The following conditions are applicable to an environmental authorisation granted for applications contemplated in subregulation 8(1):

(a) The holder must notify the compliance unit of the competent authority, the designated agency, the relevant heritage resource authority and the Minister responsible for water affairs fourteen days before the commencement of the exploration operations to facilitate compliance inspections.

(b) Prior to the commencement of the exploration operations, the holder of the exploration right must appoint:
  (i) an independent environmental control officer who is required to be on site throughout the operational phase of the exploration operations; and
  (ii) a heritage specialist who is required to fulfil certain tasks and be available on site at specific times to assess any excavations or archaeological or palaeontological finds that could be unearthed through the exploration operations in line with the environmental management programme "chance find protocol".

(c) Once appointed, the holder of the exploration right is required to provide in writing, the names, contact details, expertise and experience of the persons identified in paragraph (1)(b) and in the case of the heritage specialist, the intervals and instances when the specialist is required on site, to the competent authority and designated agency.

(d) The independent environmental control officer will have, amongst others and as a minimum, the duty to:
  (i) prepare and maintain a project file which contains the following information as a minimum;
    (aa) copies of all rights, permits, authorisations, licenses, programmes, plans consents and financial guarantees associated with the exploration operation;
    (bb) the approved environmental management programme;
    (cc) a copy of the approved baseline monitoring plan;
    (dd) details including the certification of the accredited laboratories to which samples are to be sent;
    (ee) emergency response plan for health, environment and safety; and
    (ff) any correspondence including reports and audits sent to or received from any decision making authority or the designated agency where relevant;

  (ii) maintain a site diary documenting the activities being undertaken on site daily;
  (iii) maintain an incident register which includes the remedial measures implemented to deal with an incident as well as the preventative measures implemented to avoid the re-occurrence of such an incident;
  (iv) maintain a complaints register which includes the measures implemented to address the complaint;
  (v) ensure, on a daily basis, that the monitoring is being undertaken in relation to the approved baseline monitoring plan as required;
  (vi) inspect the operations, on a daily basis, to ensure compliance with the environmental management programme;
  (vii) maintain a daily photographic record of the activities being undertaken;
  (viii) prepare and submit to the designated agency and the Minister responsible for water affairs a close out report on finalisation of exploration activities;

(ix) prepare a quarterly audit report which must, as a minimum, include the following:
(aa) the period of the audit;
(bb) compliance with the environmental management programme impact management outcomes and actions;
(cc) compliance with undertaking the monitoring requirements of the baseline monitoring plan as relevant;
(dd) document any audit findings issued; and
(ee) corrective measures for audit findings;
(x) submit the audit report to the compliance unit of the competent authority, the designated agency and the Minister responsible for water affairs and upload the report to the website of the holder.

(e) The audit cycle begins on commencement of operations and is required to be undertaken quarterly, with effect from the commencement date. The audit report must be submitted to the compliance unit of the competent authority, the designated agency and the Minister responsible for water affairs within three days of the end date of the audit.
(f) The heritage specialist will have as a minimum, the duty to–
(i) prepare and maintain a project file which contains copies of the baseline monitoring plan as contemplated in regulation 8(2)(b) and the environmental management programme including the "chance finds protocol" contemplated in regulation 8(2)(a);
(ii) confirm that the site map of all identified heritage or cultural resources required to be monitored including the agreed buffers in which no activities should be undertaken, is correct and complete, and update the site map should any deficiencies be identified;
(iii) ensure, on a monthly basis, that the baseline monitoring is being undertaken in compliance with the approved plan;
(iv) inspect, on a monthly basis, the operations to ensure compliance with the environmental management programme and buffers with respect to the protection of archaeological, palaeontological, cultural or heritage resources; and
(v) inspect, when contacted by the holder, any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, aged ostrich eggshell fragments, charcoal and ash concentrations which could be associated with historic dwellings etc. and ensure that the procedures of the "chance find protocol" are adhered to in such instances.

(g) On commencement of the exploration operations, the requirements of the following programme and plans must be initiated and implemented by the holder:
(i) the approved environmental management programme which must include a chance find protocol for cultural heritage and palaeontological resources;
(ii) the baseline monitoring plan; and
(iii) the plans, reports and calculations required in terms of the Financial Provisioning Regulations.

(2) The following conditions are applicable to the issuing of an environmental authorisation contemplated in regulation 8(7) and 8(13)(a):
(a) The holder must notify the compliance unit of the competent authority, the designated agency, the relevant heritage resource authority and the Minister responsible for water affairs fourteen days before the commencement of the exploration operations or the continuation of exploration activities into production operations, to facilitate compliance inspections.
(b) Prior to the commencement of the exploration or production operations the holder is required to make the following appointments:

(i) the experts identified in paragraph (1)(b); and
(ii) a well engineer who is required to be on site throughout the operational phase of the exploration or production operations.

(c) Once appointed by the holder of the exploration or production right, the holder is required to provide in writing, the names, contact details, expertise and experience of the persons identified in paragraph 2(b) and in the case of the heritage specialist, the intervals and instances when the specialist is required on site, to the competent authority, the designated agency, the relevant heritage resource authority and the Minister responsible for water affairs.

(d) The independent environmental control officer will have the duties identified in paragraph (1)(d) and the following additional duties as a minimum:
(i) in the project file include as a minimum the following information and any updates to that information;
(aa) copies of all rights, permits, authorisations, licenses, programmes, plans consents and financial guarantees associated with the operation;
(bb) copies of site plans indicating the well pads to be constructed and drilled;
(cc) a copy of the approved environmental management programme;
(dd) a copy of the approved integrated operational monitoring plan;
(ee) a copy of the approved water and waste water management plan;
(ff) a copy of the approved solid waste management plan;
(gg) a copy of the emergency and spill contingency plan;
(hh) details including the certification of the accredited laboratories to which samples are to be sent; and
(ii) details including the certification of the waste treatment and waste disposal facilities to which the waste is to be directed; and
(ii) Inspect the operations daily to ensure compliance with the environmental management programme, integrated operational monitoring plan, water and waste water management plan, solid waste management plan, and the emergency and spill contingency plan;
(iii) Prepare a quarterly audit report which complies with the requirements of paragraph (1)(d)(ix). The reference to the baseline monitoring plan in paragraph (1)(d)(ix)(cc) must be read as a reference to the integrated operational monitoring plan;
(iv) Submit and upload the quarterly audit report as per the requirements and audit cycle contemplated in paragraphs 1(d)(x) and (1)(e);

(e) The well engineer will have the following duties as a minimum:
(i) design all wells;
(ii) maintain a well file as contemplated in regulation 14(3) and submit the file to the designated agency;
(iii) inspect the operations on a daily basis to ensure compliance with the well design requirements, the pressure testing requirements and the emergency and spill contingency plan;
(iv) sign off on all pressure test results;
(v) submit the records for mechanical integrity tests to the designated agency on a quarterly basis;
(vi) be present when blowout prevention equipment is installed and tested;
(vii) prepare a technical report on a weekly basis for inclusion in the audit report prepared by the environmental control officer which technical report must as a minimum include the following:
(aa) the period covered by the technical report;
(bb) compliance with the construction requirements of the environmental management programme impact management outcomes and actions;

(cc) compliance with the monitoring requirements of the integrated operational monitoring plan;
(dd) compliance with the water and waste water management plan;
(ee) compliance with the solid waste management plan;
(ff) compliance with the emergency and spill contingency plan;
(gg) a collation of water quality results represented in a graphical form indicating trends and cumulative impacts;
(hh) fracturing fluids and proppants used on site, including the type of chemicals and proppants, quantity used and location of use including well names and locations;
(ii) material data sheets for all fracturing fluids, proppants and chemicals; and
(jj) report any incidents that have happened relating to the operations, or spikes and anomalies in testing, providing details and remedial measures;

(viii) liaise with the environmental control officer weekly to provide input to the audit reports being prepared for the operation;
(ix) identify and report any risks to the environmental control officer;
(x) keep records of all pressure tests and provide the information for quarterly audits;
(xi) keep records (including the raw data) of cement strength and compression testing and provide the information for the quarterly audit reports;
(xii) request inspections from the designated agency as required; and
(xiii) maintain and archive all design and construction records, including topographical surveys and materials test results on all materials used, for access during the operations and after decommissioning and closure.

(f) The holder must ensure that:
(i) all boreholes are capped to avoid tampering with groundwater quality from surface pollution or human interference to ensure that results provided are a true reflection of the boreholes; and
(ii) that the solid waste management plan is updated within the first year of commencement to reflect the nature of the wastes generated including the water content, classification etc. and resubmitted to the competent authority for approval.

APPENDIX 4

WATER QUALITY LIMITS FOR DISCHARGE INTO A WATER RESOURCE AND/OR IRRIGATION WITH WASTEWATER

- These water quality limits will be tailored to site specific conditions as part of the water use license.
- Water containing nuclides or radioactive material must not be discharged into a water resource or irrigated on land.

Water Quality limits for Discharge of Water Containing Waste in terms of section 21(f) of the National Water Act, 1998 (Act No. 36 of 1998)

Parameter	Limit (mg/l)
Acetone (mg/l)	0
Aluminium (mg/l)	5
Ammonia (mg/l)	0.025
Arsenic (mg/l)	0.01
Barium (mg/l)	0.7
Benzene (mg/l)	0
Beryllium (mg/l) found in coal slag	0.004
Boron (mg/l)	0.5
Bromide (mg/l)	0.5
Calcium (mg/l)	32
Cadmium (mg/l)	0.05
Chemical oxygen demand (mg/l)	not exceed 75 mg/l after applying chloride correction
Chloride (mg/l)	5
Chromium (mg/l)	0.012
Chromium (vi) (mg/l)	0.007
Cobalt (mg/l)	0.5
Copper (mg/l)	0
Cyanide (mg/l)	0.001
Diesel (mg/l)	0
Electrical conductivity (milli siemens per m)	Not to be increased by more than 75
Ethyl benzene (mg/l)	0
Feacal Coliform	0

Formaldehyde (mg/l)	0
Fluoride (mg/l)	1
Iron (mg/l)	0.3
Lead (mg/l)	0
Lithium (mg/l)	0.010
Magnesium (mg/l)	0.1
Manganese (mg/l)	0.18
Mercury (mg/l)	0.02
Methane (mg/l)	10
Methanol(mg/l)	0
Molybdenum (mg/l)	0.01
Naphthalene(mg/l)	0
Nickel (mg/l)	0.5
Nitrate/Nitrites (mg/l)	1.5
Ortho-phosphate (mg/l)	1
pH	6.5-8.4
Phenol (mg/l)	0
Potassium-(mg/l)	50
Polycyclic aromatic hydrocarbons (mg/l)	0
Radionuclides (mg/l): $^{228}Ra/^{226}Ra$	0
$S^{18}O$	0
$S^{2}H$	0
Selenium (mg/l)	0.02
Silica (mg/l)	5
Soap, oil or grease (mg/l)	0
Sodium (mg/l)	50
Strontium (mg/l)	0
sulphide (mg/l)	0.05
Temperature (^{o}C)	17-30^{0}C (depends on the type of fish species that is there)
Tin (mg/l)	0.005
Toluene (mg/l)	0
Total dissolved solids (mg/l) Directly proportional to EC	40

Total petroleum hydrocarbons (mg/l)	1
Uranium (mg/l)	0
Vanadium (mg/l)	0.25
Vinyl chloride (mg/l)	0
Xylene (mg/l)	0
Zinc (mg/l)	0.002

DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

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EXECUTIVE SUMMARY

This document present decommissioning guidelines developed to manage and facilitate closure of onshore wells at the end of their lifespan. Aspects considered in the developed of these guidelines focused mainly on managing and minimizing:

- Risk of loss of hydrocarbon containment from hydrocarbon bearing formations previously not in communication with the surface environment.
- Risk of transfer of fluids between formations (crossflow) resulting in unnatural pressurisation or contamination of formations, including freshwater aquifers.
- Risk of onshore wellheads and structures causing an obstruction or danger to other users of the land.

The document describes how such risks might be assessed and how they may generically be managed through well decommissioning design and execution.

The guidelines are to be used for the decommissioning of all onshore wells. They are prescriptive providing a “one-size-fits-all” template for onshore well decommissioning for simple wells with provision for a risk-based approach for complex situations and where quality of cement barriers is uncertain.

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REFERENCES

These guidelines have been prepared through the consultation of industry experts, international regulators, retired experienced engineers, academics, lawyers, and industry short courses service provider. With over 60 years experience of oil and gas drilling, and the abandancey of legacy wells abandoned in South Africa, it was agreed that these guidelines are sound and fit for future decommissioning (plugging and abandonment) of wells.

Preparation of these guidelines draw references to common industry practices including regulations, guidelines and standards adopted in several countries globally, and standards adopted in by major international operations companies which include;

- Guidelines for Suspension and Abandonment of Wells, Oil and Gas UK, issue 6 (2018).
- NORSOK Standard D-010, Well Integrity in Drilling and Well Operations (2021)
- USA Code of Federal Regulations, Title 30 (Mineral Resources), Chapter II (B.S.E.E.) Sub-Chapter B (Offshore), Part 250, Sub-part Q, §250.1715
- American Petroleum Institute, API Recommended Practice 65-3, First Edition, June 2021
- ISO 16530-1:2017 Petroleum and natural gas industries — Well integrity — Part 1: Life cycle governance

Thus, provide South Africa with first set of guidelines to manage and facilitate closure of wells at the end of their life span.

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1. BACKGROUND

1.1 GENERAL BACKGROUND TO WELL PLUGGING & ABANDONMENT (DECOMMISSIONING)

At the end of their useful life, wells and facilities installed in oil and gas fields will be decommissioned to minimise the health, safety and environmental risks to other future users of the location, the wider general public, the local ecology and broader environment. This document addresses the decommissioning, sometimes referred to as Plugging and Abandonment ("P&A") of wells that were drilled either to explore, appraise or produce hydrocarbons and/or to inject water or other substances (for disposal or reservoir pressure maintenance).

Well decommissioning must address a suite of potential risks to the long-term safety to people and the environment. The two principal residual risks posed by abandoned oil and gas wells are the future loss of containment of subsurface hydrocarbons and other fluids and the resulting future liability to the state.

Oil and gas exploration and production operations are undertaken in a large number of countries and are governed by a wide range of regulatory environments and standards. There is clear historic evidence to indicate that these regulatory regimes have not been entirely successful in ensuring effective long term hydrocarbon containment.

Most regulatory regimes rely on a single standard "prescriptive" procedure to deliver all well decommissioning. These regulatory procedures rely on the concept of installing impermeable rock-to-rock equivalent 'barriers' (or Barrier Elements) across the wellbore to ensure hydrocarbon containment and hence replace nature's original containment mechanism, commonly referred to as 'a cap rock', which were penetrated by the wellbore during well construction. These barriers are expected to extend across the whole of the wellbore adjacent to a rock formation with sufficient integrity to be part of the containment mechanism. In most prescriptive well decommissioning regimes, it has been common practice to specify the use of a back-up, dual, barrier philosophy for hydrocarbon containment with a single barrier being acceptable for containment of water.

Further, it is common to specify critical Barrier Element characteristics e.g., any plug forming an element of a Barrier to include a minimum length of cement, and a minimum level of Barrier Element verification, although the exact requirements differ from jurisdiction to jurisdiction, as shown in **Table 1.1.**

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COMPARISON OF BARRIER CRITERIA BY REGULATORY LOCATION					
Requirements	**USA**	**NORSOK D-10 (Norway)**	**Oil & Gas UK (UK)**	**ANP (Brazil)**	**Proposed SA Guideline**
Format	Prescriptive regulation	Prescriptive Guideline	Prescriptive with risk-based deviation	Prescriptive	Prescriptive with elements of risk-based
Number of Barriers	One cement plug and one mechanical plug	Two	Two (or a single combination barrier) for isolation of hydrocarbon zones One for water-bearing	One	Two (or a single combination barrier) for isolation of hydrocarbon zones One for water-bearing Plus environmental plug
Length of Cement Barrier	50' (~15m) plug on top of fundament 200' (~60m) plug with at least 100' above perforations 200' (~60m) annular cement	50m annular cement or 30m if verified by CBL 50m cement plug set on a fundament, otherwise 100m	100' (~30m) good cement Up to (500' (~150m) were good cement has not been verified	60m	30m good cement Up to 150m where good cement has not been verified for the internal cement plug and/or the adjacent annuli
Material	Silent	Characteristics specified	Characteristics specified	API 10A or similar	Characteristics specified matching, as a minimum, API 10A
Cement Across Perforations / Reservoir	Yes (or similar)	Not specified	Not specified	Yes (or similar)	Reinstating the cap rock is the goal
Cement Across Open Casing Shoe	Yes (or similar)	Not specified	Not specified	Yes (or similar)	Not specified depends whether the casing shoe and the adjacent formation is required to act as a barrier
Control Line / Gauge Cable	Not specified	Remove	Remove	Not specified	Remove unless barrier integrity can be demonstrated
Barrier Plug Validation	* Weight test to 15klbs (~6.8T) or * Test to 1,000psi (~68 bar)	* Test to 70 bar above leak-off	* Tag * Weight test (Openhole) * Test to >500psi (~34 bar) above injection pressure or * Inflow test > potential differential	* Weight test to 7T or 7M Pa	* Tag * Weight test (Openhole) * Test to >500psi (~34 bar) above injection pressure or * Inflow test > potential differential

Table 1.1 Comparison of barrier criteria by regulatory regime with proposed South African Well Decommissioning Guidelines

From Table 1.1, it is evident that no one internationally accepted well decommissioning standard exists. However, the NORSOK standard (Norway) and the Oil & Gas UK standards are commonly referred to by other international jurisdictions.

Historically, there has been no formal application and approval process in South Africa for the decommissioning of a well. Therefore, the ensuing guidelines aim to define a suite of well decommissioning expectations aligned with international practice and over-arching South African regulatory requirements

Prescriptive procedures, whilst easy to administer and operate, cannot address every geological, technical or health, safety and environmental well decommissioning situation. To address such challenges, many regulators are replacing their earlier prescriptive decommissioning requirements with goal-oriented guidelines. Goal-oriented guidance provide latitude for well decommissioning that is designed to fit the specific hazards and characteristics of any particular well, while maintaining the overall objective of minimising the risk of a future incident.

As summarised in Table 1.1, these guidelines are a combination of prescriptive and goal orientated approach, providing recommendations for the nature, location, number, size, and verification of barriers required. The guidelines have, in the main, been distilled from the Well Decommissioning Guidelines, Issue 6, Oil & Gas UK, June 2018. These were developed in collaboration between operators and UK regulators and have undergone a number of iterations and are considered to be a suitable foundation for onshore South African circumstances.

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Given the historical absence of a specified suite of South African well decommissioning requirements, there exist a considerable number of wells that were previously abandoned without any formal regulatory approval and sign-off at the time of operations. These new guidelines also serve to provide a framework for the risk-based analysis of any historically abandoned wells.

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2. OBJECTIVES OF WELL DECOMMISSIONING

2.1. OVERVIEW OF OBJECTIVES

Wells present a number of potential risks to the environment and the wider community, most notably:

- A risk of loss of hydrocarbon containment from hydrocarbon bearing formations previously not in communication with the environment;
- A risk of transfer of fluids between formations (cross-flow) resulting in unnatural pressurisation or contamination of formations, including fresh water aquifers;
- A risk of onshore wellheads and structures causing an obstruction or danger to other users of the land.

Well abandonment can be defined as the actions taken to manage these risks to an acceptable level. Any abandonment design should, as a minimum, therefore, explicitly address these risks.

More broadly, abandonment should be managed as a continuation of a broader process of well integrity maintenance across the whole lifecycle of the well and as such should make reference to the underlying principles of good well integrity management, including maintaining dual barrier isolation of hydrocarbons and a competent method of barrier verification.

2.2. OBJECTIVE OF PERMANENT ABANDONMENT

The objective of permanent abandonment is to provide an eternal isolation of each and every formation with potential for flow penetrated during the drilling and construction of the well, in order to prevent any contamination of the environment with outflow of fluids and/or hydrocarbons from the well, and to prevent contamination of any fresh water bearing aquifer.

Furthermore, the well and the surrounding location must be configured such that they pose no danger to other legitimate users of the area e.g., farmers and the local population onshore.

2.3. OBJECTIVE OF TEMPORARY ABANDONMENT (SUSPENSION)

The objective of temporary abandonment (sometimes referred to as suspension), is to provide a combination or permanent and temporary barriers to prevent migration of fluids (hydrocarbons or water) between formations and into the environment, in such a way as to facilitate future well re-entry and future use, or subsequent permanent abandonment.

2.4. LEGACY WELLS

Wells abandoned prior to the introduction of this guideline, and not subjected to the reviews inherent within the Rights relinquishment process, constitute a special case.

It is acknowledged that it may not be appropriate for these wells to meet all the requirements of the good practices detailed within this guideline, and it is recognised that past abandonments may have been designed to comply with differing standards. Nevertheless, there remains the requirement to undertake a risk assessment of the current state of these wells.

It should be noted that, when undertaking this risk assessment, the potential risks associated with any option for re-intervention to improve the isolation barriers should be included. These, along with the anticipated costs, should be balanced against the likely reduction in risk of loss of containment to manage this risk to an acceptable level. Intervention risks should, as a minimum,

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include the additional health and safety exposure from the planned operations and the technical risk of failure for operations that may be made difficult by the current status of the well and the lack of complete and reliable documentation. Technical risks may include the anticipated deterioration of the casing and wellhead integrity, and the difficulty of milling out shallow cement plugs and bridge plugs. Documentation deficiencies include undefined tubing and casing sizes and setting depths, or unknown cement plug depths.

By following the required risk assessment process, it may therefore be determined that the residual risks posed by wells abandoned previously do not warrant re-intervention to reduce these risks.

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3. DESIGNATED AGENCY ONSHORE WELL DECOMMISSIONING GUIDELINES

These guidelines provide recommended practices to aid the effective design and execution of abandonment work programmes, including the nature, number, location, installation and verification of isolation barriers required to temporarily and/or permanently abandon wells.

The guidelines are applicable to all onshore wells licensed through and constructed under the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) ("MPRDA"); whether constructed with the objective of exploration, appraisal, production or injection. In addition, this document provides guidance for abandoned wells constructed before the date of this guideline, and which are now included in any application for Relinquishment of a Production or Exploration Right.

The guidelines are designed to provide practical guidance which can then be interpreted on a case-by-case basis taking into account the constraints applied by the well's construction, the nature (fluid type, fluid composition, pressure, temperature, permeability etc.) of the formations to be isolated and any uncertainties in the well's condition (unknown cement quality, top of cement, casing condition etc.). As such, they represent the **minimum requirements for onshore well decommissioning** for simple wells with provision for a risk-based design approach for complex situations and where quality of cement barriers is uncertain.

Abandonment design begins with an evaluation of the formations required to be isolated. Once these have been identified, the form, number, location, materials, and placement method for any additional isolation barriers must be established. The typical information to be included in any well decommissioning design and application to the Designated agency is included in Appendix C. Background explanatory information to be read in conjunction with the guidelines, is presented in **Appendix D.**

In order to minimise the risk of environmental damage through the loss of containment from hydrocarbon and water bearing formations, it is necessary to abandon wells after the end of their useful life by introducing permanent barriers to flow to surface and between subsurface zones. The guidelines also provide guidance on the evaluation of the potential risks of each well to be decommissioned as prescribed in legislation such as the MPRDA and the NEMA, as detailed in Appendix E to the guidelines.

The guidelines aim to offer guidance to the Regulator in exercising its powers in respect of the decommissioning of onshore wells. However, it should be noted that compliance with the details contained within this guideline will not absolve the rights holder or operator from accountability for designing and implementing effective abandonment, nor from any future liability as provided for in terms of the NEMA or in terms of any other South African law.

In applying the guidelines:

- The words "**must**" or "**shall**" indicates a requirement to be complied with;
- The word "**should**" indicates a recommendation to be complied with unless another course of action can be reasonably justified;
- The words "**may**" or "**can**" indicate a permitted course of action that should be considered as an option;
- **Regulator** refers to as the designated agency.

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The Well Decommissioning Guidelines requirements are laid out in the table below.

3.1 GENERAL
The objective of these guidelines is to provide a structured framework for the decision-making process which forms an integral part of any well decommissioning activity. Well plugging material shall be produced in accordance with the recognised international standards, for example API Spec10, Specifications for Materials and Testing for Well Cements", etc. In advance of any well abandonment operations, appropriate drilling or completion fluids must be pumped into the well in order to provide hydrostatic pressure control and stabilisation of the wellbore. Well decommissioning (plugging and abandonment) operations should incorporate judicious methods and processes in order to ensure acceptable well control from start to finish.
3.2 ZONES WITH FLOW POTENTIAL
The design of the well barriers requires the Operator to undertake a detailed engineering appraisal of the flow potential (including cross flow between formations) within every formation which a well may pass through. An ALARP approach should include a full range of measures to mitigate possible consequences of flow potential. Such assessments should be explained in the well decommissioning application submitted to the designated agency. The evaluation of flow potential should include all possible scenarios. Examples include re-charging of reservoirs, zones that become charged during the life of the well, movement of fluids post-decommissioning, and potential re-development for hydrocarbon extraction. The fundamental principle on which these guidelines are based is the restoration of a cap rock. Following well decommissioning, a specific risk assessment of the potential harm to people and/or damage to the environment is required to demonstrate the degree of flow potential is acceptable.
3.3 WELL DECOMMISSIONING DESIGN
Good practice is that well decommissioning should be considered during well design and construction. The detailed planning for well decommissioning should commence, as a minimum, five years ahead of the well P&A operation to allow sufficient time to gather information regarding changes to the well status and ensure adequate clarity on the scope of work to be undertaken. Typical inputs to the well decommissioning design include well configuration, stratigraphic sequences of each wellbore, cement logs and cementing operation data and documents, formations with suitable barrier properties, and specific well conditions. All supporting data used in the well decommissioning design must accompany the well decommissioning application to designated agency (Appendix C). For wells that have been in production for longer than 10 years or have undergone remedial cement jobs during their lifecycle, cement logging shall be undertaken as part of the well decommissioning design planning to verify the casing cement quality.
3.4 PERMANENT BARRIERS

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3.4.1 Material Requirements

The primary characteristics of positioned barrier materials (not limited to cement) should be as follows:

- *Compatibility* - barrier material must be compatible with all of the adjacent formation geologies.
- *Downhole fluids resistance* - materials must be resistant to fluids such as CO_2, H_2S, hydrocarbons, brine, etc. at anticipated pressures and temperatures.
- *Immovable* - remain at the intended position and depth in the well.
- *Impermeable* - to stop flow of fluids through the bulk material.
- *Load capacity* - mechanical properties suitable to accommodate loads at foreseeable temperatures and pressures. If applicable, consider changes in service over the entire life cycle of the well (e.g., due to conversion of producers to water injectors, steam injection, gas storage, unconsolidated formations etc.).
- *Permanent integrity* - long-term isolation characteristics of the material, not deteriorating over time; risks of cracks and de-bonding over time, are to be considered.
- *Provide an interface seal* - to prevent lateral flow of fluids around the barrier; the material provides a seal along the interface with adjacent materials such as steel pipe or rock; risks of shrinkage and de-coupling should be considered.

3.4.2 Number of Barriers

All penetrated zones in the well with flow potential which have been identified as necessitating isolation should be isolated from the surface by a minimum of one permanent barrier, or two as appropriate.

Where there is an unacceptable risk of crossflow, zones should be isolated from each other.

The actual number of barriers required should be determined by an individual well risk assessment. Note that the numbers below are a general recommendation and for a particular well may be different due to the specific scenario and conditions.

Operators should consider enhancing this requirement based on, but not limited to, considerations such as the following:

- Robustness of the barrier placement and subsequent authentication of integrity;
- Differential pressure across the barrier;
- Impact of a single point failure.

Generally:

- One permanent barrier from surface may be considered if a zone requiring isolation is water-bearing.
- Two permanent barriers from surface are recommended if a zone requiring isolation is

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hydrocarbon-bearing OR water-bearing and significantly over-pressured.

- Two permanent barriers may be combined into a single large permanent barrier (or Combination Barrier) on the condition that the objective is not compromised in any way i.e., such a barrier should be as reliable and effective as two barriers and is an apt method to achieve the purposes that two separate barriers would have provided.

- In addition to the permanent barriers described above, an environmental plug shall also be placed to disconnect the open annuli from the external environment (see Section 3.7).

3.4.3 Barrier Plug Length Requirements

Refer also to "Positions Requirements" below.

The minimum requirements for plugging the *open hole* portion of a wellbore are the placement of a permanent cement plug comprising Good Cement set across Good Cement in the adjacent annuli such that the full cross section of the wellbore is plugged with a Competent Barrier:

- 30m (MD) above hydrocarbon-bearing strata

- 30m (MD) above zones with flow potential

- 30m (MD) above zones with any abnormal geo-pressured strata. Cement should be placed across a competent formation which can withstand migration of formation fluids

- 30m (MD) above the top of all fresh water zones

Plugging of a well shall segregate the *uncased and cased* portions of the wellbore to prevent vertical movement of reservoir fluids from below the casing into the cased portions of the wellbore.

The minimum requirement for plugging to segregate uncased and cased portions of wellbore with Good Cement is one of following:

- A continuous cement plug must be placed from 30m (MD) below to 30m (MD) above the casing shoe

- Via setting a mechanical bridge plug 15-150m (MD) above the casing shoe and minimum of 30m (MD) of cement placed on top of plug

- By the top-down squeeze method using a cement retainer set 15-150m (MD) above the casing shoe, a volume of cement sufficient to fill the wellbore from the retainer to 30m (MD) below the casing shoe must be pumped through the retainer and cement must be pumped above the retainer to cap it with a minimum of 15m (MD) of cement plug;

Plugging of *cased* portions of a wellbore shall be performed in manner that ensures that all hydrocarbons are confined to their respective indigenous strata and are prevented from migration into other strata or to the surface. The minimum requirement for plugging a cased portion of a wellbore with Good Cement are as follows.

If the perforations are isolated from the hole below, the following plugging methods can be used;

- A mechanical bridge plug set no more than 30m (MD) above the top of the perforated interval, and a minimum of 30m (MD) of cement placed on top of the plug

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- By the top-down squeeze method using a cement retainer set 15-30m (MD) above the perforated interval, a sufficient volume of cement pumped through retainer or packer to fill the wellbore from the base of the perforated interval and cement must be pumped above the retainer or packer to cap it with a minimum of 15m (MD) cement plug

- By the displacement method or bull heading, a cement plug at least 30m (MD) in length, with the bottom of the plug no more than 30m (MD) above the perforated interval

- A through-tubing basket plug set no more than 30m (MD) above the perforated interval with at a minimum of 30m (MD) of cement on top of the basket plug; or

- By displacement or bull-heading method, a sufficient volume of cement so as to extend at least 30m (MD) above the uppermost packer in the wellbore and minimum of 30m (MD) of cement in the casing annulus immediately above packer when mechanical bridge plug is used to temporarily isolate the perforations.

- In cases where a "fish" is present in the hole across the perforations and/or above the perforations, preventing the above methods from being achieved, the cement plug should be set as close as possible to those described above.

Casing Stubs / Tubing Stubs / Balanced Cement Plugs within outer casing must be plugged with Good Cement by one of the following;

- A cement plug placed from 30m (MD) below the stub to 30m above the stub

- By the down squeeze method using retainer set no more than 15m (MD) above the stub, a volume of cement pumped below the retainer sufficient to fill the casing stub with 30m of cement unless no injectivity, and cement pumped above the retainer to cap it with a minimum of 30m (MD) cement plug;

- If the casing stub annulus is cemented, a mechanical bridge plug set nor more than 15m (MD) above the casing stub, and cement pumped above the bridge plug to cap it with a minimum of 30m (MD) cement plug;

- By the displacement method, a minimum of 30m (MD) cement plug placed with the bottom of the plug set no more than 15m (MD) above the stub end.

Note: Where distinct zones with flow potential are less than 30m (MD) apart, then the maximum practical column of Good Cement should be placed between the zones.

When a single Combination Barrier is chosen to replace two permanent barriers, it should have:

- A cement column of typically a minimum 60m (MD) of Good Cement, which is considered to constitute such a permanent barrier

- Typically, 60m (MD) of Good Cement above the zone with flow potential

- The internal cement plug adjacent to the annular Good Cement over a cumulative distance of 60m (MD) of overlap

Note: If Good Cement has not been verified for the internal cement plug and/or the adjacent annuli (if present) the isolation barrier lengths should be increased from the minimum 30m to up to 150m.

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Note: The use of plugging materials or techniques other than cement are acceptable if the performance of the plug can be demonstrated to match or exceed that of API cement. For ease of reference, the term cement is used in this guideline.

3.4.4 Sealing Formations

Certain formations (e.g. specific shales or some salts) are renowned to deform on account of subsurface geomechanical stresses. To be considered for use as an open hole annular casing barrier, the sealing formation should be impermeable and have sufficient strength; these properties should be durable at the prevalent conditions.

If it can be demonstrated that the cumulative length of the resulting seal of the formation against the casing is adequate to prevent flow of the existing fluids at the maximum anticipated pressure differentials, then such a seal is acceptable as a replacement for good annular cement.

The internal barrier material should be adjacent to the annular isolation providing sufficient cumulative length above the zone with flow potential.

3.4.5 Existing Annular Materials

Similarly, for existing annular materials, if it can be demonstrated that the cumulative length of the resulting seal of the formation and against the casing is adequate to prevent flow of the present fluids at the maximum anticipated pressures, then such a seal is acceptable as a replacement for good annular cement, provided that the materials and fluids are not corrosive to the casing.

The internal barrier material should be adjacent to the annular isolation providing sufficient cumulative length above the zone with flow potential.

Note that annular sealing materials will be well-specific and the following should be taken into consideration:

- age of the well;
- annular clearance;
- density of the mud;
- mud fluid properties;
- inclination of the well;
- pressure and fluid composition of the zone to be isolated;
- weighting agent.

3.4.6 Alternative Materials and Technologies

A range of alternative barrier materials and technologies have recently been developed or are in development which will offer plugging solutions other than cement. Such solutions require thorough certification and testing, including field trials to be qualified for use as permanent barriers and this may necessitate different barrier lengths to those for cement.

If it can be demonstrated that the cumulative length of the resulting seal of the formation against the casing is adequate to prevent flow of the present fluids at the maximum anticipated pressures, then such a seal is acceptable as a replacement for a good annular cement, provided that the materials and fluids are not corrosive to the casing where present.

The internal barrier material should be adjacent to the annular isolation providing sufficient cumulative length above the zone with flow potential, where the casing remains intact.

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3.4.7 Position Requirements - General

The first Barrier above the zone with flow potential is referred to as the Primary Barrier.

The subsequent Barrier above the zone with flow potential, where required, is referred to as the Secondary Barrier.

A permanent Barrier should:

- Be set above the zone with flow potential across a suitable cap rock;
- Extend across the full cross section of the well including all annuli;
- Have formation fracture pressure at the base of the barrier in excess of the maximum anticipated pressure from the zone being isolated.

A suitable cap rock is impermeable, laterally continuous and has adequate strength and thickness to contain the maximum anticipated pressure from the zone being isolated.

3.4.8 Position Requirements – Open Hole

See also "Length Requirements", above.

This section covers barrier position where the zone with flow potential is not behind the casing (or in open-hole).

For open hole isolations, it is recommended to set a permanent barrier in the cased hole or to extend sufficiently into the cased hole. The barrier across the cased hole is to fully isolate the open hole and allow for a pressure test.

Zones with flow potential that belong to different pressure regimes should be separated by one permanent barrier unless cross-flow is acceptable.

Where the pressure from a zone with flow potential is anticipated to exceed the formation fracture pressure anywhere in the open hole, it should be isolated by two permanent barriers or a combination barrier (as described earlier).

3.4.9 Position Requirements – Cased Hole

See also "Length Requirements", above.

A full lateral barrier in cased hole consists of annulus isolation and overlapping internal casing isolation.

Cemented casing alone is not considered to constitute a permanent barrier to flow which may occur laterally into or out of the wellbore.

Inside the cased hole, a permanent barrier requires both a cement plug or equivalent inside the casing, and overlapping good annular cement or equivalent. The internal barrier should be attempted whether the casing is perforated or not.

3.4.10 Placement - General

In order to achieve the required cement barrier length, allowances will have to be made on volumes to cater for uncertainties during mixing and placement. As examples, it may be necessary to place

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up to:

- 150m (MD) of cement to achieve approximately 30m (MD) of Good Cement.
- 240m (MD) of cement to achieve 60m (MD) Good Cement.

Furthermore, optimisation of the barrier placement and verification of a Competent Barrier will allow reduction of length from the values noted above.

3.4.11 Placement – Through Tubing

In situations when well completion tubulars are left in-hole and permanent barriers are then installed both within and around the completion tubulars, and potentially below the completion string, reliable procedures and appropriate techniques to install such barriers should be established.

3.4.12 Placement – Penetrations through Permanent Barriers

Cables and control lines can be included in permanent barriers as long as the isolations mandated in these guidelines are attained. Appraisal of potential leak paths through the cement plug and subsequent plugging of such paths should be conducted, documented and included in the well decommissioning submission for approval by the Regulator.

3.4.13 Placement – Bull-Heading

Bull-Heading of cement into perforations can be used for placement of a permanent barrier, provided the over-arching principle of cap rock restoration still applies.

Considerations for bull-headed isolation barriers include:

- Ability to verify plug placement by tagging (e.g., wireline access depth in high angle wells);
- Cement slumping;
- Cement channelling;
- Cement contamination;
- Fluid losses into the perforated formation;
- Reservoir injection capability;
- Formation fracturing;
- Small volume/capacities;
- Tubing and casing integrity;
- Tubing debris, such as scale and wax deposits.

3.4.14 High Angle / Horizontal Wells

Decommissioning highly deviated or horizontal wells is in principle similar to that of a standard vertical well. The notable difference is in the methodology of ensuring a satisfactory isolation, which typically is considerably more difficult to realise and verify in high angle or horizontal wells.

3.5 VERIFICATION OF BARRIERS

3.5.1 Wellbore Barriers

It is critical that any permanent barrier should be verified to ensure the barrier is positioned at the required depth and will have the required sealing capability.

A cement barrier should be verified by an appropriate combination of the following:

- The barrier installation should be documented, including records from the cementing operation (cement density, pump rate, volumes pumped, returns during cementing, water-wetting pills, spacers etc).

- The strength development of the cement slurry should be confirmed. This is primarily done using pre-job testing with representative component samples cured at simulated downhole temperature and pressure conditions.

- The position of a barrier should be verified by tagging, or calculation and measurement of pumped volumes and pressures to confirm the depth end length of the cement plug.
  - Tagging with drill-pipe this is typically 10 to 15 klbs with a drill bit;
  - Tagging with wireline, coiled tubing or stinger; the weight will be limited by tools and geometry.

- A pressure test should:
  - Be a minimum of 500 psi above the leak off pressure below the cement barrier (e.g. leak off pressure into perforations or open formation below the casing shoe); but
  - Not exceed the casing strength minus wear allowance or damage the primary casing cement, whichever is lower.

- Inflow test should consider the maximum pressure differential to be experienced by the barrier.

In cased hole, if a pressure tested and tagged mechanical plug or previous cement plug is used as a foundation for the barrier, then

- Pressure-testing of the cement barrier may not be meaningful;

- Tagging may not be necessary if the cement job is executed as planned and fully documented. However, if a decision is made not to tag a cement plug then the rationale should be documented, and risk assessed. This should consider well conditions, plug length and volume, job trends and execution performance, other verification methods and consequence of failure. If circumstances exist that increase the risk (e.g. shortened cement plug, high pressure and temperature, well integrity concerns, method of placement, execution anomalies) then tagging is advisable.

3.5.2 Annular Barriers – General

The annular barrier should be verified by an appropriate combination of:

- Pressure testing (e.g., perforate and test, cased hole annulus test);
- Inflow testing;
- Records from cementing operations (e.g., slurry density, volumes pumped, returns during cementing, differential pressure, fluid losses, centralisation etc);
- Sufficient annular isolation through the original cement job. If the quantity of annular cement (the estimate of TOC) is to be based on differential pressure or monitored volumes during the original cement job (rather than logs for instance), then a longer cement column

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may be required to allow for uncertainty. In this case, a 305m MD column may be considered adequate for the equivalent of two barriers or a combination barrier based on the assumption that sealing has occurred somewhere in the annulus cement. This may be increased, or decreased, on a well-by-well basis depending on the confidence level of the original cementation.;

- Casing annulus pressure history during the life cycle of the well;
- Well-integrity reporting;
- The leak-off test when the casing shoe was drilled out;
- Field experience;
- Modelling of well lifecycle loading;
- Modelling of cement job;
- Logs (e.g., cement bond, temperature, sonic);
- Sampling of annular fluids.

3.5.3 Annular Barriers – Verifying Sealing Formations

In addition to the above, the verification of a formation seal requires:

- Evidence that the formation has the required fracture strength to withstand the maximum anticipated pressures;
- The length of the resulting seal of the formation against the casing is adequate to prevent flow of the present fluids at the maximum anticipated future pressures, for example differential pressure testing across a suitable length;

And/or

- Validation that the bond log response can be interpreted as adequate for the maximum anticipated future pressures. This can be achieved by means of a combination of logging and differential testing experience. Log interpretation should be performed by a senior onshore qualified and trained cement log specialist and documented.

3.5.4 Annular Barriers – Verifying Through-Tubing & Bull-Headed Barriers

In addition, there can be less accurate methods of determining cement quality and quantity in both tubing and annulus after through-tubing or bull-headed barriers are placed. No single verification method should be relied on exclusively. Additional considerations for verification of bull-headed or through-tubing barriers could include:

- Pressure responses during pumping and displacement;
- Reservoir injection characteristics before, during and after placement;
- Cables and control lines outside the tubing;
- The use and effectiveness of cement wiper plugs;
- Accuracy of TOC measurement inside tubing or through-tubing.

3.5.5 Annular Barriers – Liner Laps

Annular cement across a liner lap should not be part of a permanent barrier unless it has been verified (e.g. by pressure testing, inflow testing and/or logging). If the cement quality in the liner lap is uncertain, a verifiable cement barrier should be placed above and/or below the liner lap.

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3.6 SPECIAL CONSIDERATIONS

Additional guidance is provided in Appendix F for the following situations which should each be the subject of a risk assessment:

- Partial Abandonment for Sidetracking;
- Radioactive Sources;
- Hole Angle;
- Multi-Lateral Wells;
- Multi Reservoir Wells;
- Cemented Casing Liner;
- Control Lines, Electrical Submersible Pump Cables and Gauge Cables;
- High Pressure High Temperature (HPHT) Wells;
- Wells Containing H_2S;
- Wells Containing CO_2;
- Wells Containing Mercury and /or NORM;
- Sealing Formations;
- Surveys;
- Deviations from the Guidelines;
- Post Abandonment Operations.

3.7 ADDITIONAL CONSIDERATIONS

Fluids that are positioned above the uppermost barrier in a well and cannot be legally discharged should be removed or contained before wellhead removal. This is the part of the well which will be exposed to the environment after wellhead removal.

Decommissioned wells, and redundant surface equipment, should not present a hazard to other users of the land.

The wellhead equipment and all casing strings to a depth of 1.5-5m below ground should be retrieved and a surface cement plug (or environmental plug) placed across the casing stubs. This environmental plug should not considered a competent barrier.

A well marker plate should be tack welded to the casing stub with the following information recorded.

- Well name;
- Date drilled;
- Date abandoned;
- Total depth in mBGL.

In case of temporary well abandonment longer than 90 days, the guidelines provided above must be followed except that a permanent barrier such as cement is not mandatory for the secondary barrier. A verified temporary barrier such as a pressure tested bridge plug and/or suspension cap may be used. If temporary well abandonment is planned to exceed 90 days duration, a risk assessment shall be conducted and approved by the Regulator.

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4. APPENDICES

APPENDIX A: GLOSSARY OF TERMS AND ABBREVIATIONS

Term / Abbreviation	Explanation
Abandonment Report	Document detailing the planned and actual abandonment activities carried out on a well, including confirmation of the abandoned status of the well.
ALARP	As Low as Reasonably Practicable. A measure of the residual risk associated with an existing or proposed condition or status of a facility.
API	American Petroleum Institute, which has developed more than 700 standards to enhance operational and environmental safety, efficiency and sustainability.
Barrier	An isolation constructed between formations, or between a formation and the environment.
Barrier Element	One part (of two or more) of a Barrier, such as the annular cement opposite an internal abandonment cement plug.
BHA	Bottom Hole Assembly, a set of tools made up together and run on the bottom of a work string.
BOP	Blow Out Preventor, an assembly of valves routinely deployed during well operations and designed to provide emergency pressure control to prevent loss of hydrocarbon containment from the wellbore.
Cap Rock	An impermeable formation, with a sufficiently high fracture strength to withstand the hydraulic pressure potentially applied from another formation and thus act as a sealing element for that formation.
CBL	Cement Bond Log, an acoustic measurement of the quality of cement bonding between the outer surface of casing or other tubular, and the formation. It is primarily used to confirm zonal isolation by assessing the likelihood of a leak path or channel behind casing. Note that other acronyms exist depending on the service provider and era of the electric wireline tool design e.g., SBT = Segmented Bond Tool.
Closure Certificate	Closure Certificate granted in terms of section 43 of the MPRDA.
Closure Plan	A document required under legislation detailing the facilities proposed to be left in place at the point of License or Right relinquishment.
CO_2	Carbon Dioxide.
Combination Barrier	Where primary and secondary permanent barriers are combined into a single large permanent barrier
Competent Barrier	An isolation barrier comprising all the necessary elements in the wellbore and the adjoining formation, and that complies with all requirements in order to be effective.

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Fish	A tool, piece of equipment or debris in the wellbore which is typically creating a blockage and/or preventing an operation.
Fluid(s)	Liquids and/or gases in the formation and the wellbore.
Formation with Flow Potential	A strata (or layer) of rock intersected by the wellbore and containing the capacity to deliver hydraulic pressure via the flow of fluids.
Formation Strength	The hydraulic pressure required to induce fracture and/or integrity failure in the formation.
Gas Gradient	The hydraulic head created by a column of gas in the wellbore.
Good Cement	Cement that has been pumped and confirmed to meet these guidelines with respect to both quantity and quality.
Good Practice	Methods and techniques utilised internationally in the upstream oil and gas industry and commonly accepted as appropriate by experienced and competent industry professionals.
GOR	Gas Oil Ratio
H_2S	Hydrogen Sulphide
HPHT	High Pressure High Temperature
Impermeable	A formation or material that does not permit passage of a fluid (impervious or impenetrable)
Maximum Anticipated Pressure	Post well decommissioning, the maximum pressure expected in the wellbore or formation taking into account potential recharging of the reservoir or other associated developments
MD	Measured depth. The length of the wellbore, as if determined by a measuring along a wellbore. This measurement differs from the true vertical depth (TVD) of the well in all but completely vertical wells.
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)

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NORM	Naturally Occurring Radioactive Material
NPT	Non-Productive Time
Operator's Competent Technical Authority	The Operator's appointed engineer with sufficient experience and knowledge to oversee the design and execution of well abandonment operations. This individual must be responsible for ensuring all abandonment operations are designed and carried out in an effective way, compliant with this guideline, and any other Operator internal standards, procedures and policies, and must have the authority to control and approve well operations plans and activities.
P&A	Plug and abandon = Well Decommissioning
Permanent Barrier	A confirmed barrier that will uphold a seal permanently. A Permanent Barrier must extend laterally across the full cross-section of the well including all annuli. In respect of isolation from surface, the first barrier above the point of potential influx is called the ***Primary Barrier***, and the subsequent barrier above the point of potential influx is called the ***Secondary Barrier***.
Permanent Well Decommissioning	The perpetual isolation from surface, as well as from lower pressurised zones, of any penetrated zones which have flow potential in a well which will not be re-entered at any time in the future.
Swarf	Steel fragments, often thin and curly in nature, produced by milling casing or other tubulars
TOC	Top of cement.
USIT	Ultrasonic Imager Tool, an electronic tool used to confirm the density and homogeneity of cement behind casing. Note that other acronyms exist depending on the service provider and era of the electric wireline tool design.
Well	A well is a single wellbore or accumulation of wellbores from a single well origin at surface, including the original wellbore and any side-tracks.
Xmas Tree	Christmas Tree: An Assembly of valves, seals and external connections installed on a wellhead to provide shut-in and pressure control capability on a completed well on a permanent basis.
Zone with Flow Potential	One or more formations with flow potential that due to, either being in communication with one another or displaying similar pressure characteristics, are treated as a single formation for abandonment purposes.

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APPENDIX B: SUMMARY OF LEGAL REQUIREMENTS FOR WELL DECOMMISSIONING

There were no approved regulations relating to decommissioning of onshore wells in the past, and these current guidelines initiate some form of standards to provide guidance and support to decommissioning of wells in South Africa.

These guidelines are referred to, on section 20 (2) in the Proposed Regulations Pertaining to the Exploration and Production of Onshore Oil and Gas Requiring Hydraulic Fracturing were published in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

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APPENDIX C: CONTENTS OF A WELL DECOMMISSIONG SUBMISSION TO THE DESIGNATED AGENCY

In considering all well decommissioning plans, the designated agency must balance the following issues:

- Ensure economic recovery is maximised from a reservoir;
- Promote safe and technically feasible decommissioning solutions;
- Minimise adverse effects on the subsurface, surface and atmospheric environment; and
- Minimise adverse impact on other users of the location.

To allow the designated agency to verify that these issues are being appropriately addressed in the submitted well decommissioning plan, the submission should contain the following minimum requirements:

1. Executive Summary with Abandonment Form (example provided in Figure C-1, below).
2. Abandonment Summary
   - 2.1 Reason For Abandonment (including an assessment of any remaining recoverable petroleum volumes);
   - 2.2 Summary of Well Engineering History;
   - 2.3 Abandonment Programme (including the proposed well abandonment procedure and details of any proposed barriers e.g., location, capacity, length and volume of any cement plugs);
   - 2.4 Bottom Hole Pressure & Temperature Data.
3. Summary Risk Analysis & Mitigations – including an assessment of potential short-term Operational Risks and potential long-term Abandoned Well Integrity Risks and how they have been mitigated by the proposed programme.
4. Enclosures (as appropriate to the well being abandoned):
   - Encl.1 Well Location Map.
   - Encl.2 Structural Map & Geological Cross Section (showing the well path) including any aquifers.
   - Encl.3 Petrophysical Analysis of the well (incl. details of all hydrocarbon-bearing intervals).
   - Encl.4 Current Completion Schematic.
   - Encl.5 Perforation Chart.
   - Encl.6 Well Test Record.
   - Encl.7 Tabulation of Annular Pressure History.
   - Encl.8 Cement Verification Evidence.
   - Encl.9 Production History Tabulation & Plot. This should state Initially In Place Petroleum Volumes accessed by the well and provide details of the cumulative production of oil, gas and water and give an estimate of the current Recovery Factor for each reservoir zone.
   - Encl.10 Decline Curve Analysis (including an analysis of any remaining petroleum volumes).
   - Encl.11 Blowdown Report (including, Time of Test, Choke Size, Tubing Pressure, Casing Pressure, Samples of petroleum and water, any pertinent remarks).
   - Encl.12 Volumetric & Economic Analysis of any Hydrocarbon-bearing zones including undeveloped intervals.
   - Encl.13 Proposed Abandonment Schematic.
   - Encl.14 Breakdown of Well Decommissioning Duration and Estimated Cost (AACE Class 3).

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Encl.15 Analysis of Potential Risks to the Environment

Enclosures 9, 10, 11 and 12 aim to allow designated agency to verify that economic recovery has been maximised from any well.

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FIGURE C-1
WELL ABANDONMENT SUMMARY

Ref. No.:
Issued Date:
Issued By:
PASA Approval Date:

FIELD NAME:		WELL NAME:		SLOT NAME:	
WELL TYPE:	e.g. Development Well (Deviated well)			PLATFORM LINE PRESSURE:	

REASON FOR ABANDONMENT

- ☐ Completely Depleted
- ☐ Production Sub-Economic
- ☐ Technical Problems – Specify
- ☐ Other, Specify

ATTACHMENT CHECKLIST

- ☐ Well Location Map
- ☐ Structural Map & Geological Cross Section
- ☐ Petrophysical Analysis
- ☐ Completion Schematic
- ☐ Perforation Chart
- ☐ Well Test Record
- ☐ Tabulation of Annular Pressure
- ☐ Production History Tabulation & Plot
- ☐ Decline Curve Analysis & Blowdown report
- ☐ Volumetric & Economic Analysis of any Unperforated Sands
- ☐ Abandonment Schematic
- ☐ Breakdown of Well Decommissioning Duration & Cost
- ☐ Analysis of Potential Risks to the Environment

CASING TO BE PULLED

- ☐ No
- ☐ Yes

Detail:

ARTIFICIAL RECOVERY

- ☐ No
- ☐ Yes

Detail:

FISH IN HOLE

- ☐ No
- ☐ Yes

Detail:

UNCEMENTED CASING LEAKS

- ☐ No
- ☐ Yes

Detail:

WELL STATUS

- ☐ Shut-in
- ☐ Periodical Production
- ☐ Producing

Last Shut-in date:
Rate:
Daily Rate:

CUMULATIVE PRODUCTION

Gas	???	bscf
Condensate	???	mbbl
Oil	???	mbbl
Water	???	mbbl

WELL DATA

Initial Rate			Most Recent Test (Before well die)			Initial Static Pressure (Psi)			Current Static Pressure (Psi)		
Gas:	???	mmscfd	Gas:	???	mmscfd	Wellhead Tubing:	???	psi	Wellhead Tubing:	???	psi
Condensate:	???	bpd	Condensate:	???	bpd	Production Casing:	???	psi	Production Casing:	???	psi
Oil:	???	bpd	Oil:	???	bpd						
Water:	???	bpd	Water:	???	bpd						
Flow Pressure:	???	psi	Flow Pressure:	???	psi						
Duration:	???	hrs	Duration:	???	hrs	Duration:	???	hrs	Duration:	???	hrs
Date:			Date:			Date:			Date:		

CURRENT AND PREVIOUS ABANDONED ZONE

Sand Name	Perforation (m MD)		Date of Abandonment	Method of Isolation	Plug Depth
	Top	*Bottom*			

CASING HISTORY

Casing String	Casing Size	Casing Depth	Cement Top	Stage Cement Top
Surface Casing	*9 5/8"*	*??? mBRT*	*??? mBRT*	*??? mBRT*
Intermediate Casing	*7"*	*??? MBRT*	*??? MBRT*	*??? MBRT*
Production Casing	*3 ½"*	*??? mBRT*	*??? mBRT*	*??? mBRT*

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Name: Title:
Signature: Date:

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ANNEXURE D: WELL DECOMMISSIONING TECHNICAL CONSIDERATIONS & PRACTICES

D.1 ISOLATIONS

Each formation penetrated during the drilling and construction of the well, and which exhibits a flow potential, should be isolated as part of the abandonment.

Multiple formations that are in natural hydraulic communication or are demonstrably at similar hydraulic pressures can be treated as a single zone.

Water bearing zones require a single barrier isolation from the environment.

Hydrocarbon bearing zones require dual barrier isolation from the environment. This may be simplified to a single barrier, in certain circumstances, provided this can be demonstrated to be as, or more, effective and reliable than the dual barrier alternative.

In addition, a single barrier isolation should be applied between each zone within the wellbore. See **Figure D.1**

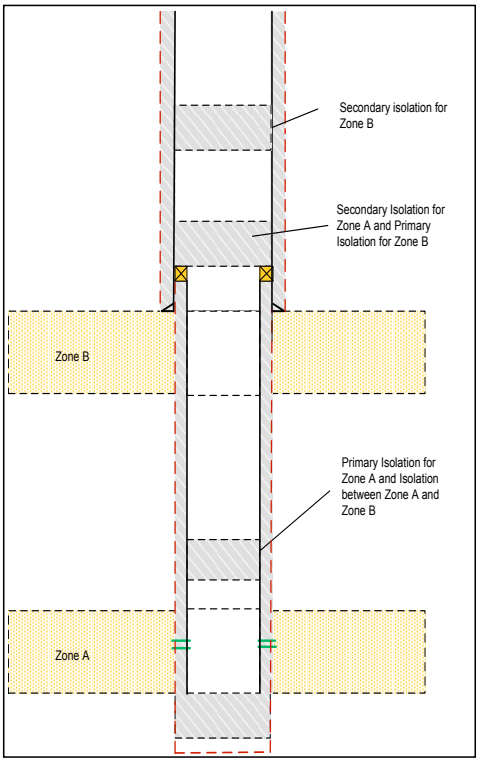
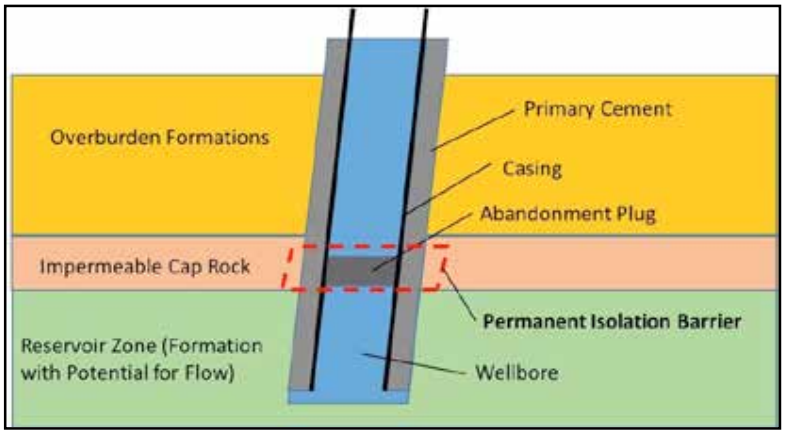


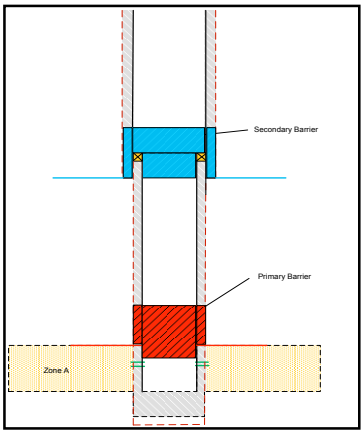
Figure D.1 Isolation of Multiple Zones

D.2 BARRIERS

The aim of a primary permanent isolation barrier is to reinstate the containment or 'Cap Rock' originally in place for the formation or zone. To be considered as a Competent Barrier it must be:

- Contiguous across the whole of the wellbore
- Of sufficient length along the wellbore
- Located at such a depth that the adjacent formation is impermeable and is of sufficient strength to withstand the potential wellbore pressure it may be required to isolate in the future i.e. a Cap Rock - see **Figure D.2**.
- Each Barrier may be made up of a number of Barrier Elements. See **Figure D.3**





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Figure D.2: Reinstatement of the Cap Rock

Figure D.3: Multiple Barrier Elements

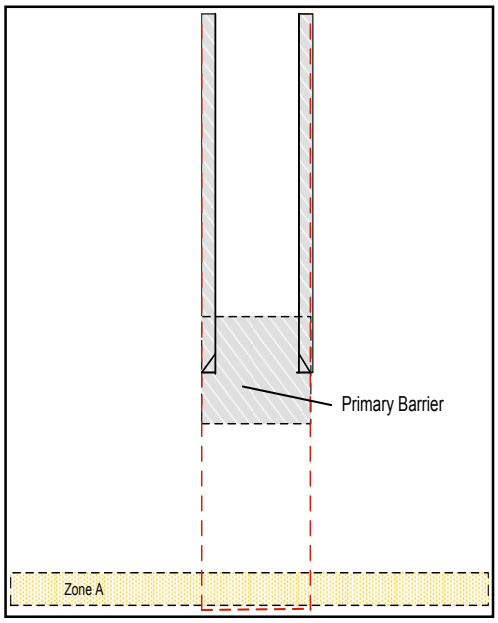
D.3 BARRIER LOCATION

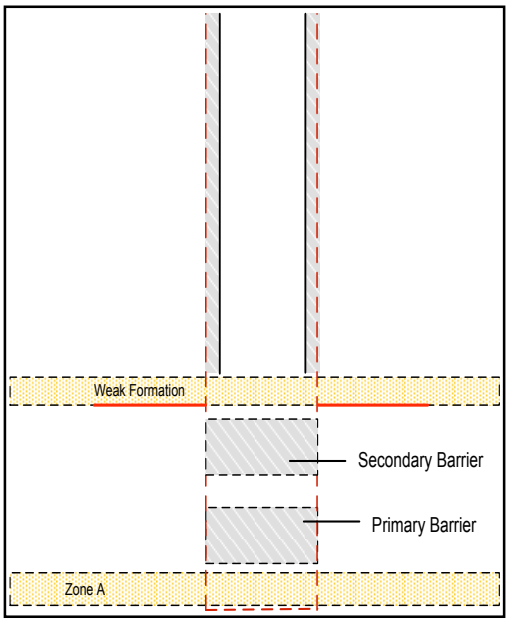
An isolation plug, forming a Barrier Element, should be set as close as practicable to the uppermost point of potential inflow from a formation or zone, taking due regard for all other considerations within this guideline.

Note that the Secondary Barrier for one formation may contain Barrier Elements that are also part of the Primary Barrier for a shallower formation.

Open Hole

In addition to the requirements above, a Barrier is required in cased hole, or extending a minimum of 30m (100') into cased hole. See **Figure D.4**. This Barrier is to fully isolate the open hole.





``**Figure D.4: Open Hole Isolation**

Figure D.5: Open Hole Isolation of Weak Formation

Where the pressure from a formation in open hole is anticipated to exceed the formation fracture pressure anywhere in the open hole, the weaker zone should be isolated from the higher-pressure Zone A by 2 barriers. A further open hole barrier will be required above the weak formation as described in **Figure D.5**.

Cased Hole

Cemented casing is not considered a permanent barrier to lateral flow within the wellbore, due to the potential degradation of the steel casing over time. However, casing cement can be considered as a barrier to vertical flow if there is sufficient evidence regarding its quality and extent, as illustrated in **Figure D.6.**

Top of Cement (TOC) and cement bond quality can be confirmed by cement bond logging, or by recording operational parameters during casing cementation. If the TOC is estimated based on cementing reports, then a longer cement column shall be required to allow for TOC uncertainty.

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If the cement quality and annular TOC (or top of good cement) is verified by cement bond logging, then the depth of the top of (good) cement can be assumed to be as recorded. If the annular TOC is estimated from cementing reports, then a specified minimum cement plug length above the base of the internal Primary Barrier cement plug is required, as illustrated in **Figure D.7.**

Problems during casing cementation should be investigated, and if doubt remains regarding the quality and/or quantity (height) of annular cement then remedial cementation, such should be considered.

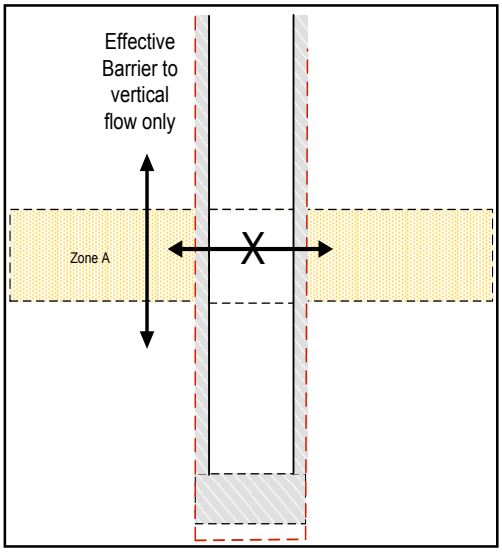


Figure D.6: Cemented Casing as a Barrier

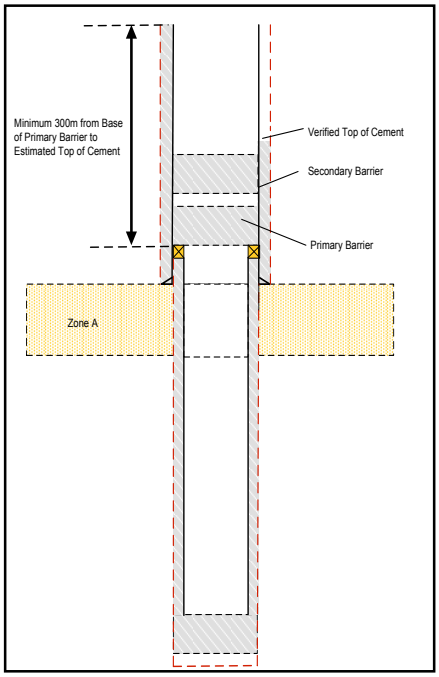


Figure D.7: Annular Cement Requirements

D.4 INTERMEDIATE FORMATIONS

Hydrocarbon bearing formations intersected by the well, but not necessarily viewed as production formations, should be treated similarly to hydrocarbon production zones. However, multiple formations with similar pressure regimes can be treated as a single zone as there is no pressure differential to drive cross-flow. Often, only a single isolation barrier will be required, at or close to the surface/seabed, in order to isolate multiple water bearing formations with potential to flow encountered relatively high up in the wellbore.

It must be noted that care should be taken to isolate any fresh water zone, with potential to be used as a water source, from the other formations including saline aquifers, in order to ensure no future contamination of water resources.

D.5 TEMPORARY ABANDONMENT (SUSPENSION)

Wells may be shut-in or suspended for a short duration, to allow BOP maintenance, Xmas tree change-out etc. In such cases, good well integrity maintenance and well control procedures should apply.

Well suspension for longer periods (referred to as Temporary Abandonment), where a well is typically not monitored frequently, should provide competent, verified, isolation of formations as per these guidelines.

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The same minimum number of barriers are required as for permanent abandonment; however, these may include suitably designed and pressure tested (or otherwise verified) mechanical devices, including bridge plugs, wellhead seals, pressure containing suspension caps etc.

Kill weight fluid only constitutes an acceptable Barrier Element when it can be monitored and maintained and is therefore not usually applicable for Temporary Abandonment.

A cemented shoe track is only an acceptable Barrier Element when it is specially designed, and suitably tested, to be one. Similarly, cemented liner is only considered a barrier element when suitably tested, see below.

Shoe track valves, run as an aid to cementing, do not qualify as a Barrier Element.

The Temporary Abandonment should be designed to facilitate both well re-entry for reuse, and future permanent well abandonment.

The setting of any plugging system or device as part of a Secondary Barrier is of particular importance, ensuring it can be easily removed without compromising safety or well control, even when the primary barrier below has failed.

D.6 PERMANENT BARRIERS

Permanent plugging materials employed as Barrier Elements must be made of cement, or a material with similar functional properties. Critical properties are:

- Very low permeability, resulting in a release rate of <1m3 gas/year
- Long lasting, with characteristics that do not deteriorate over time
- Ability to withstand the maximum differential pressure anticipated at the barrier location
- Non-shrinking
- Ability to bond to casing and formation
- Resistance to reaction with, or degradation by, all elements of the wellbore contents including critically H_2S and CO_2 if potentially present.

In designing the specific recipe of the cement, care should be taken to ensure that each of these factors is addressed.

When considering an alternative material to cement, care must be taken to consider whether it has a proven track record in applicable circumstances, and this choice should be subject to specific review and acceptance by the Regulator. In principle, an alternative material should provide a performance equal, or in excess, of cement.

A support, commonly referred to as a fundament, such as a bridge plug or viscous pill, to prevent slumping of the cement slurry is recommended for all cement plugs.

It should be noted that mechanical plugs and viscous pills do not constitute permanent Barrier Elements.

Casing and tubing do not constitute permanent Barrier Elements either, although it is permissible for these to be present across the Barrier Element length, as in the case of balanced plugs circulated behind perforated tubing or original primary cement behind casing.

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It should be noted that control line and/or instrument cable and/or power cable is not generally advisable across the full length of Barrier Element, as, due to the nature of their design and/or material and method of fastening to the host tubular, they provide a potential leak path either now or in the future.

D.7 TEMPORARY ABANDONMENT (SUSPENSION) BARRIERS

Temporary Abandonment Barrier Elements may be made of metal and/or elastomers, including suitably designed tools such as bridge plugs, wellhead seals and pressure containing suspension caps. See **Figure D.8**.

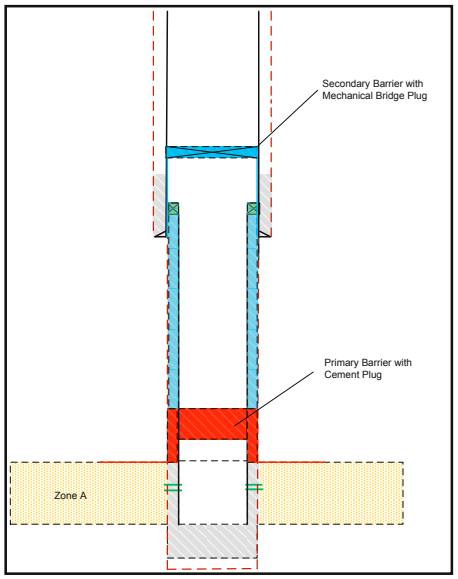


Figure D.8: Temporary Suspension Barriers

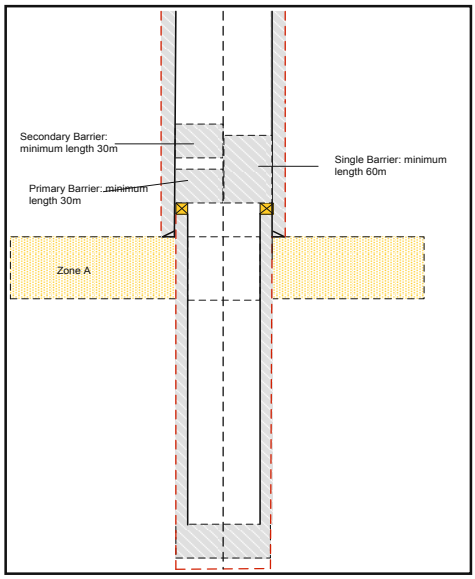


Figure D.9: Cement Plug Lengths

D.8 LENGTH OF CEMENT PLUGS

It is considered 'good practice' for an isolation cement plug to have a minimum 'along hole' length of 30m of 'Good Cement'. However, the installation method for the plug should be considered, and where there is an increased risk of contamination, and/or the cement quality has not been verified, the volume should be increased to provide up to 150m of cement. Increased risk of contamination may be due to:

- Small cement volumes,
- Minimal spacer volume,
- Difficulty cleaning the wellbore,
- Directional or horizontal well trajectory,
- Large bore circulation (through tubing or casing for example), or
- Setting a balanced plug behind casing or tubing

In addition, hole inclination may also raise concerns regarding the actual length of cement achieved. In the instance of the barrier location being at inclinations of more than about 65°, the cement plug length 'Along Hole' should be calculated in order to provide a specified minimum 'thickness' where appropriate.

In instances where a single Combination Barrier is used to isolate a hydrocarbon Zone from surface, the Barrier Element length should be doubled. See **Figure D.9**

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Where primary cement behind casing is employed as a Barrier Element, this element should extend for at least the same length as the internal plug. Where there is a lack of confidence in the quality of the annular cement, the Barrier Element length inside and outside the tubular should be increased to 150m or more. Where there is doubt about the actual top of cement in the annulus, the theoretical top of cement in the annulus should extend above the base of the barrier plug by a minimum specified amount 'Along Hole'.

D.9 POTENTIAL INSTALLATION TECHNIQUES

To maximise the likelihood of achieving a successful barrier, cement plug installation methods should be carefully chosen.

The wellbore at the barrier depth should be suitably prepared with surfaces cleaned of contamination and in a water-wet condition.

Cement plug volumes should be chosen to take account of contamination and any shrinkage, and to take account of inner string eccentricity.

Wherever practicable, a fundament should be installed at the base of the cement plug location, in order to prevent or minimise the risk of slumping. This fundament may be a bridge plug, a viscous gel pill or some other device or material. It should be noted that these fundaments do not constitute a Competent Barrier Element.

D.10 CEMENT PROGRAMME DESIGN AND EXECUTION

Effective cementing is critical to successful well abandonment, and both the design and execution phases must be considered with care.

Cement plugs can fail to achieve their objectives in a variety of ways, but the failure modes can be grouped under the following headings:

- Incorrect cement design or failure to mix the cement in accordance with the approved design, resulting in excessive solids settling, free water and/or shrinkage.
- Contamination of the cement slurry with other fluids to the point where the cement fails to set, or fails to achieve the required compressive strength. Note: Contamination at the top of the plug should be expected and planned for.
- Failure to achieve complete circumferential coverage across the wellbore or around an annulus, commonly known as boycotting.
- Failure to prevent fluid connectivity from below the plug to above due to 'roping' or 'slumping' with the wellbore contents.

The principal root causes of failure can be listed as follows:

Design

- Poor well evaluation.
- Poor written procedures.
- Incorrect design temperatures.
- Incorrect mix water composition.
- No firm base for cement plug.
- Directional wells
- Eccentric tubulars

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Execution

- Contamination (as little as 10% by volume Oil Based Mud contamination may significantly impact the compressive strength).
- Poor mud and hole conditioning.
- Inappropriate chemical wash and spacer fluid design or failure to execute the design.
- Sub-optimal pump rates.
- Insufficient slurry volume.
- Execution delays.
- Impatience to set and tag the plug.
- Over-displacement (take into account the tubulars' actual dimensions to accurately calculate displacement volumes).

All these factors should be addressed in any cement plug programme, with particular attention to:

- Compatibility of recipe with hole contents and anticipated temperature,
- Sufficient plug volume to allow for contamination potential,
- Proper hole cleaning and water wetting of the casing/tubulars,
- Use of a fundament below the plug (viscous gel or bridge plug for example) to prevent slumping,
- Choice of circulation rates to minimise mixing with the wellbore fluid,
- Use of spacers before and after the cement slurry to minimise contamination,
- Avoidance of over-displacement to minimise mixing and contamination,
- Rotation of the delivery pipe (if possible) whilst pumping cement to maximise circumferential coverage, but without reciprocation which encourages mixing and contamination.

D.11 THROUGH TUBING OPERATIONS

There must be high confidence regarding the presence and quality of the cement behind the casing at the barrier depth. Care must be taken to ensure that the formation strength at the barrier depth is sufficient, particularly if the barrier plug is set above the production packer.

Allowance should be made, and/or mitigation measures (such as a viscous pill as annulus plug fundament) taken for potential slumping or fingering in the annulus of any balanced plug. The use of the tubing as a circulating conduit should also be properly assessed, as the diameter may increase the risk of mixing and contamination.

Allowance should also be made for hole inclination, tubing eccentricity and small radial clearances such that there is good confidence that full radial coverage of the annulus will be achieved.

Care must be taken to verify the location and depth of the cement plug in both the tubing and annulus as there is no single reliable measurement technique to confirm this. Tagging cement inside the tubing combined with operations quality control and pressure testing should be used in combination. No single method should be relied upon.

D.12 REMEDIAL CEMENTATION

Poor quality of primary cementation, or a lack of knowledge or confidence regarding the quality or presence of Good Cement behind casing, may lead to a requirement to take remedial action during the well abandonment operations.

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There are a number of methods which can be considered from section milling the casing and back-reaming to the formation, or cutting and pulling the casing to expose the annulus at the necessary depth, to 'perforate-and-squeeze' techniques. Each technique has advantages and disadvantages, see **Table D.1** below:

Method	Advantages	Disadvantages
Casing section milling	Clear evidence of 'rock-to-rock' barrier placement.	Casing milling can be straightforward, but there is a significant risk of operational performance problems, particularly when the casing is un-cemented. Milling multiple casing sections can also be problematic, particularly in deviated and/or un-centralised sections. Swarf handling at surface, build-up in the BOP ram cavities and balling around the BHA are all cited as concerns associated with this technique. Finally, this technique is often viewed as both time consuming and costly.
Cut and pull inner casing(s) and set cement plug across or above the resultant stump	When successful, this provides an unequivocal barrier across the complete wellbore which can be both pressure tested and tagged/weight tested.	Pulling casing can be extremely difficult, or even infeasible if there is barite fallout or residual (poor) cement behind the casing, or if corrosion has weakened the string to such an extent it parts under the tensile load imparted during pulling operations. It also requires significant pulling and large diameter pipe handling capacity at surface, and significant laydown area and large volumes of backload of recovered pipe from location. This can be time consuming and thus expensive, particularly if multiple casings are to be removed.
Perforate and squeeze cement into the annulus below a cement retainer/squeeze packer	This is a relatively swift and simple operation, which limits expense.	The volumes of cement effectively squeezed into the annulus are highly dependent on the state of the annulus contents, with channels potentially packing off after only small volumes have been squeezed. With such small volumes there is significant residual uncertainty with regard to the length and effectiveness of the annular barrier created, and poor verification of the barrier. The annular Barrier Element can only be pressure tested or logged if the cement plug inside the casing is drilled out. The location of cement is largely unknown if more

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		than one casing annulus is to be cemented.
Perforate, wash and cement using proprietary tooling	This tooling has been shown to be successful in a number of applications and the technique demonstrates that reasonable circulation and subsequently large volumes of cement are being obtained behind the casing.	There remains some uncertainty as to the cleanliness of the annulus after the washing process, and thus it is not clear where the cement is going and how long or effective the annular Barrier Element is. The annular Barrier Element can only be pressure tested or logged if the cement plug inside the casing is drilled out. The results of the operation become less certain when multiple annuli are to be cemented.
Inject cement into the annulus from surface	This is a relatively swift and simple operation, which limits expense.	Relies on injectivity below the casing shoe. The quality of the annular cement barrier is uncertain due to potential debris and contamination in the annulus, slumping of the cement and or fluid channelling, eccentricity of the casing etc. Difficult to verify the top of Good Cement but pressure testing the annulus is possible.

Table D.1: Comparison of Remedial Cementation Techniques

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In evaluating the options, care should be taken to understand both the likelihood of a successful barrier and the method of verification. The unknowns in relation to the well condition, the potential for deviations from the planned operation (such as casing parting or becoming stuck), and the impact these may have on both the likely cost and barrier effectiveness should also be understood.

In addition to remedial cementing, other materials and techniques for remediation of poor annular cement are available including resins, bismuth or thermite. These novel methods may offer the opportunity for rig-less remediation but are typically reserved for situations where the use of cement is not applicable or has been unsuccessful.

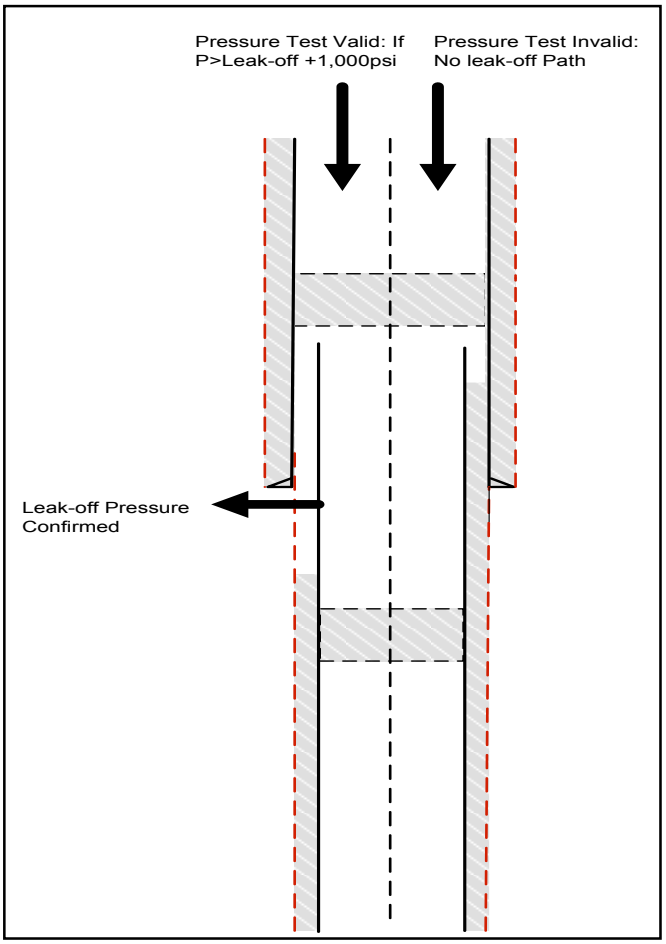


Figure D.11: Leak-off Path for Pressure Test

D.13 BARRIER ELEMENT VERIFICATION

Each element of a Barrier requires some form of verification. Where possible, a pressure test of each element of the Barrier should be performed. This can be by inflow test or a positive test from above. As a minimum, this should be with a differential pressure of a specified amount above the expected leak-off below the element for a specified period of time. A positive pressure test without a known leak path downstream of the Barrier Element is not valid unless specific measures are implemented to confirm that the test pressure is actually being applied to the Barrier Element being verified. See **Figure D.11**

In addition, where the Barrier Element is placed inside the wellbore, a tag and weight test may be performed to confirm that i) the plug is at the planned location and ii) that the cement has set correctly. A minimum weight of a specified amount should be set down on the top of the plug to confirm rigidity.

When cement from the original well construction forms a Barrier Element, the efficacy of this cement should be established beyond reasonable doubt. Ideally this is provided by a combination of a pressure test of the annulus (if possible) and a CBL or USIT-type log across the relevant depth forming the barrier. In the absence of such a log, the drilling and cementing reports should provide good evidence that Good Cement is present at the desired depth. The analysis of the reports should include confirmation of hole gauge, spacer fluid and cement volumes pumped, 'bumping' of wiper plugs, full returns through the cement job and/or an estimated top of cement a specified distance or percentage of the volume pumped

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above the top of the Barrier Element depth. In cases where the cement cannot be, and/or has not been pressure tested, such as a liner cementation where the pressure test was undertaken after the liner hanger/packer had been set, this cement should not form a Barrier Element unless verified by some other means.

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APPENDIX E: WELL DECOMMISSIONING ENVIRONMENTAL RISK CONSIDERATIONS

An Environmental Risk Assessment must be carried out at the time of relinquishment or expiry of a production right or an exploration right granted in terms of the MPRDA, and a closure plan, environmental risk report and final performance assessment report must be prepared in support of an application to the Regulator for a Closure Certificate.

The risk assessment aims to assist in establishing what actions must be undertaken in order to return it 'to its natural or predetermined state, or to a land use which conforms to the generally accepted principle of sustainable development' in line with Section 38(1)(d) of the MPRDA.

At a minimum, the environmental risk assessment report must identify the risks associated with any infrastructure (including wells) and evaluate the significance of these risks by assessing the potential impact and the likelihood of occurrence.

This guideline describes a goal orientated approach which conforms to this requirement in terms of both abandonment design and assessment of residual risk. The process includes a screening qualitative step to categorise risk as insignificant, significant or of uncertain significance. These categories are defined as follows:

- Insignificant Risks are risks which have been calculated to have a low residual risk, i.e., both the residual impacts and likelihood of all unwanted events are shown to be insignificant in nature. Wells with risks categorised as 'insignificant' can be considered suitably abandoned and could form part of the application for a Closure Certificate without the need for further work to reduce the level of risk;

- Uncertain Risks are risks that have been calculated to have a moderate residual risk i.e., both the residual impacts and likelihood of all unwanted events are shown to be moderate in nature. The residual likelihood may be significant whilst the impact may be of a moderate to insignificant nature. Wells categorised as 'uncertain' should be assessed to determine if the risk level can be reduced by further gathering of data or evidence of Barrier effectiveness. These wells may also require other interventions to reduce the level of risk; and

- Significant Risks are risks which have been calculated to have a high residual risk i.e. both the residual impacts and likelihood of all unwanted events are shown to be significant in nature. Wells categorised as 'significant' should be considered as requiring further risk reduction (e.g. such as well intervention) to achieve abandoned status.

For the risks to be considered acceptable, it must be demonstrated that there are no further risk reduction measures that are 'reasonably practicable' to implement to further reduce the residual risk. In order to determine whether there are any additional risk reduction measures which could be implemented, a formalised assessment should be undertaken where the cost of further risk reduction should be balanced against any benefit that may be received. Where the costs of a measure are shown to be grossly disproportionate to any benefit that may be gained as result of its implementation, the measure may then be discarded. All other measures should be considered for implementation. All wells falling into the Uncertain or Significant categories may require quantitative assessment to demonstrate that the actions taken reduce the level of risk to an acceptable state.

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This process must be recorded, subjected to external review, and presented to the Regulator as part of an application for Closure Certificate and/or as part of a justification for deviation. The Regulator has the discretion to subject the risk assessment to further external review.

The practices embodied within this guideline can be utilised to demonstrate that suitable measures have been taken to reduce the risk of future loss of containment.

The risk assessment process may be used to inform deviation from the guidelines contained in this document.

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APPENDIX F: SPECIAL CONSIDERATIONS

F.1 PARTIAL ABANDONMENT FOR SIDETRACKING

The cement plug(s) to abandon the original mother wellbore should be designed, installed and verified in order that it can form part of the subsequent future permanent abandonment. If the plug is used as a kick-off plug, after kick-off, it should conform to the requirements as part of the eventual abandonment.

Note: the final abandonment for all boreholes of the well should comply with these guidelines.

F.2 RADIOACTIVE SOURCES

Ideally, radioactive sources should be retrieved prior to final abandonment. However, it is appreciated that this may not always be possible. If retrieval is not possible, local regulations should apply, including encapsulation registration and location marking as required. The presence of radio-active material should be noted within any reports or plans submitted to the Regulator for the purposes of obtaining a Closure Certificate.

F.3 HOLE ANGLE

Where cement barriers are to be installed at hole inclinations greater than about 65°, care should be taken with the design of the installation method(s) to ensure that good cement coverage can be expected to be obtained over the required length and the complete circumference of the wellbore. This should also be verifiable.

Where appropriate, plug lengths should be treated as true vertical heights rather than 'along hole' lengths.

F.4 MULTI-LATERAL WELLS

The added complexity of these wells should be fully considered at the time of well construction and abandonment design. Key issues to consider will include:

- Future abandonment issues where access to the original or previous wellbore(s)will be difficult.
- Isolation of annuli above the wellbore intersections.
- Potential for differential pressures between wellbores during abandonment operations and/or longer
  term.

F.5 MULTIPLE RESERVOIRS

Multiple reservoir zones that are not in natural hydraulic communication or are not demonstrably at similar hydraulic pressures cannot be treated as a single zone and should be isolated from each other.

F.6 CEMENTED CASING LINER

Where a liner hanger has been set inside and previous casing or liner, it is common practice to set the liner top packer prior to pressure testing the liner top. In this case, the cement behind the liner (the liner lap) has not been pressure tested and cannot be considered as a competent Barrier Element unless other barrier verification methods are acceptable.

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F.7 CONTROL LINES, ELECTRICAL SUBMERSIBLE PUMP (ESP) CABLES AND GAUGE CABLES

Due to their design and/or material of construction, these items present a potential leak path over time and therefore must not form part of any Permanent Barrier unless specific measures are adopted to overcome this issue.

F.8 HIGH PRESSURE HIGH TEMPERATURE (HPHT) WELLS

These wells bring additional complexity and increased performance requirements from the abandonment barriers to be installed. Special attention should be given to the following during all aspects of abandonment design:

- Recharging of reservoir pressure.
- Casing deformation.
- Temperature cycling during the well's operational life.
- The impact of high temperature on Barrier Element performance including cement degradation and elastomeric seal degradation.
- Reservoir compaction and overburden subsidence.

F.9 WELLS CONTAINING H2S

For wells containing H_2S, or anticipated to contain H_2S in the future, barrier materials must be chosen to withstand the impact of chemical degradation, corrosion and embrittlement.

F.10 WELLS CONTAINING CO2

For wells containing CO_2, the corrosive impact of CO_2, when in contact with water, on cement and metals must be included in the choice of materials.

In addition, CO_2 can alter the permeability and strength of formations and cement due chemical interactions with these materials.

F.11 WELLS CONTAINING NORM AND/OR MERCURY

For wells containing NORM and/or Mercury will require specific waste management and safety management considerations during decommissioning.

F.12 SEALING FORMATIONS

Some formations, such as some shales and salts, are known to be able to close annular spaces in open-hole annuli.

If the formation is impermeable and of sufficient strength, and it can be demonstrated that a formation seal against the cement or casing is adequate to prevent flow at the anticipated future pressures, then this can replace Good Cement as an annular Barrier Element.

Verification of a sealing formation requires:

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- Proof of adequate fracture strength
- A leak test demonstrating a seal between perforations at 30m (100') spacing.
- Verification of sufficient seal length (see section 8) through two (2) independent bond logs indicating bond strength as good as, or better than, cement.

Subject to Regulator approval, such verification may be conducted for the formation across a field or region, rather than for every well to be abandoned.

F.13 SURVEYS

All permanently abandoned well locations should be visually surveyed and monitored using a 4-gas hand-held monitor or FLIR. The monitoring should start at most one year and repeated at five years after the abandonment to demonstrate that abandonment has been effective.

Surveys should continue periodically on a 5-yearly cycle until no longer required in terms of applicable legislation.

F.14 DEVIATIONS FROM THE GUIDELINES

During the design and planning phase, all proposed deviations from the guidelines should be reviewed and approved by the Operator's Competent Person, and be discussed and accepted by the Regulator.

As a minimum, a documented risk assessment process should form part of such a motivation.

During operations, a management of change process should be implemented to ensure all changes to the programme of work that may affect the final abandonment status are properly reviewed and approved prior to execution. As a minimum, changes with this potential impact should be reviewed and approved by the Operator's Competent Technical Authority, and be discussed and accepted by the Regulator.

F.15 POST DECOMMISSIONING ACTIVITIES

On completion of the abandonment work programme, a Well Decommissioning Report should be compiled containing, as a minimum:

- Details of the work programme actually carried out;
- Detailed reports of wireline, logging, fluid mixing and sampling, cementing, pumping, pressure testing, tubing, casing, wellhead and conductor removal, location surveys;
- Details of all deviations from these guidelines;
- Confirmation of all correspondence and approvals from the operator;
- A wellbore status diagram showing the as-left status of the well.

This report should be submitted to the Regulator for review and acceptance no later than 3 months after completion of the final operations.

Detailed reports of all surveys of temporary abandoned (suspended) wells should be copied to the Regulator no less than 3 months after completion of the survey.

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DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 6808 **7 November 2025**

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998
(ACT NO. 107 OF 1998)

CONSULTATION ON THE INTENTION TO PRESCRIBE MINIMUM INFORMATION REQUIREMENTS FOR THE EXPLORATION AND PRODUCTION OF ONSHORE PETROLEUM USING FRACTURING TECHNOLOGY

I, Dion Travers George, Minister of Forestry, Fisheries and the Environment, hereby consult on the intention to prescribe Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology, Revision 0, October 2025 in terms of section 24(5)(h) of the National Environmental Management Act, 1998 (Act No. 107 of 1998). These draft Minimum Information Requirements are published simultaneously with, and are intended to support, the proposed Regulations for the Exploration and Production of Onshore Petroleum Using Fracturing Technology, 2025.

Members of the public are invited to submit written comments or input, within 30 days from the date of the publication of this notice in the Government *Gazette*, or a notification in a newspaper, whichever occurs last, to any of the following addresses:

By post to: Department of Forestry, Fisheries and the Environment
The Director-General
Attention: Mr Simon Moganetsi
Private Bag X447
PRETORIA
0001

By hand at: Reception, Environment House, 473 Steve Biko Road, Arcadia, Pretoria.
By e-mail: Smoganetsi@dffe.gov.za.
Any enquiries in connection with the notice can be directed to Mr Simon Moganetsi at 012 399 9309 or by mail at Smoganetsi@dffe.gov.za.

A hard copy of any notice or document associated with this Government *Gazette* can be requested from Ms M Masondo at email: mmasondo@dffe.gov.za or collected at the Department's physical address as indicated above. The documents can be downloaded from the Department's website at https://www.dffe.gov.za/projectprogrammes/environmental_management_instruments and the Government Notice can be downloaded from the Department's website at https://www.dffe.gov.za/legislation/gazetted_notices.

Comments or input received after the closing date may be disregarded.

The Department of Forestry, Fisheries and the Environment complies with the Protection of Personal Information Act, 2013 (Act No. 4 of 2013). Comments received and responses thereto are collated into a comments and response report which will be made available to the public as part of the consultation process. If a commenting party has any objection to his or her name, or the name of the represented company/ organisation, being made publicly available in the comments and responses report, such objection should be highlighted in bold as part of the comments submitted in response to this Government Notice.



DR DION TRAVERS GEORGE
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT

SCHEDULE

1. The Department of Forestry, Fisheries and the Environment has, through an inter-governmental drafting process, developed the draft Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology, Revision 0, October 2025 (MIRs for Exploration and Production) which supports the proposed Regulations for the Exploration and Production of Onshore Petroleum Resources Requiring Fracturing Technology.

2. The MIRs for Exploration and Production focusses on the onshore exploration and production of petroleum which requires the use of fracturing technology and has been developed with the following objectives, namely to-
   2.1. identify and consolidate the assessment and reporting requirements of all decision-making authorities into one document;
   2.2. facilitate the combination of the information prepared in line with these MIRs for Exploration and Production into one consolidated assessment report to inform decision-making by all relevant decision-making authorities;
   2.3. facilitate consultation with stakeholders on the consolidated assessment report, integrated operational monitoring plan and environmental management programme through one integrated public participation process; and
   2.4. facilitate the submission of the consolidated assessment report, integrated operational monitoring plan and environmental management programme to all decision-making authorities.

3. The MIR for Exploration and Production can be accessed at https://www.dffe.gov.za/projectprogrammes/environmental_management_instruments and the Government Notice can be downloaded from the Department's website at https://www.dffe.gov.za/legislation/gazetted_notices

forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

October 2025, Revision 0

Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology

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Definitions

"animal" means a particular kind of living organism, one that can move voluntarily and can find and digest food and includes birds and insects;

"coalbed methane" means natural gas extracted from coal beds;

"consolidated assessment report" means the report contemplated in regulation 8(9) of the NEMA Fracturing Regulations;

"cumulative impact" means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities;

"designated Agency" means the agency designated in terms of section 70 of the Mineral and Petroleum Resources Act, 2002;

"Environmental Impact Assessment Regulations" means the regulations published in terms of sections 24(5) and 44 of the Act;

"environmental permissions" means the relevant rights, permits, authorisations and licences that must be obtained by the developer prior to the exercising of an exploration or production right to which these minimum information requirements relate and includes:

(a) an exploration right issued in terms of section 80 of the Mineral and Petroleum Resources Development Act, 2002;
(b) A production right issued in terms of section 83 of the Mineral and Petroleum Resources Development Act, 2002;
(b) a heritage permit issued in terms of Chapter 2 of the National Heritage Resources Act, 1999, or a written approval issued in terms of Chapters 8 and 9 of the Kwa-Zulu Natal Amafa and Research Institute Act 2018 (Act No. 5 of 2018) where relevant;
(c) an environmental authorisation issued for activity 20 or 20A of Listing Notice 2 of the Environmental Impact Assessment Regulations, 2014;
(d) a water use licence issued in terms of the National Water Act, 1998 (Act No. 36 of 1998); and
(e) approval from the Minister responsible for mineral resources of the plans, reports and the determination of financial provision as contemplated in the Financial Provisioning Regulations.

"exploration" means any activity which includes onshore 2-D and 3-D seismic investigations which could include the drilling of exploration wells, with the intention of locating a petroleum reserve including coal bed methane and includes the use of stimulation technologies limited to fracturing and re-fracturing;

"exploration well" means a stratigraphic well drilled for the purpose of obtaining specific geological and geophysical information to prove, define and assess the existence and commerciality of a petroleum reserve;

"Financial Provisioning Regulations" means the Financial Provisioning Regulations published in terms of section 44(1)(aE), (aF), (aG), (aH) read with sections 24(5)(b)(ix), 24(5)(d), 24N, 24P, 24PA and 24R of the Act;

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“flow back” means fracturing additives and other fluids that return to the surface after fracturing has been completed;

“fracturing” means an intervention performed on a well to increase production by improving the flow of petroleum including coal bed methane from the drainage area into the well bore and includes fracturing and re-fracturing;

"fracturing fluid" means the mixture of the base fluid and the fracturing additives used to stimulate the free flow of a petroleum reserve;

“**incidental activity**” includes all operations and activities reasonably necessary for undertaking an exploration and production activity using hydraulic fracturing;

“Minimum Information Requirement for Baseline Monitoring for Onshore Exploration” means the minimum information requirements for the baseline monitoring that is to be undertaken prior to fracturing operations being undertaken in an onshore exploration operation published in terms of section 24(5)(h) of the Act;

“Minimum Information Requirements for the Exploration and Production of Onshore Petroleum using Fracturing Technology” means the minimum information requirements for the impact assessment for onshore exploration and production using fracturing technology, published in terms of section 24(5)(h) of the Act;

“national web based environmental screening tool” means the online spatial application contemplated in the Environmental Impact Assessment Regulations available at https://screening.environment.gov.za/screeningtool;

“**petroleum”** has the meaning assigned to it in the Mineral and Petroleum Resources Development Act, 2002;

“production operation” means any operation, activity or matter that relates to the onshore exploration, appraisal, development and production of petroleum;

“screening report” means the report prepared by the national web based environmental screening tool accessible at https://screening.environment.gov.za;

"seismic monitoring" means the monitoring of seismic activity using a network of calibrated seismological equipment in order to produce readings on magnitude, depth, location, error and time of each seismic event;

“site” means the area within which the exploration or production operations will take place;

“study area” means the site within which the exploration or production operations will take place and includes the area beyond the site where the operations could impact the environment and which must be determined by the relevant specialist for each environmental theme with a focus on areas to be considered for fracturing and production operations; and

“well engineer” means an engineer in the field of petroleum engineering or a related geological field involved in either the design, construction, maintenance, completion and plugging of exploration or production wells, with a minimum of ten years’ experience in the field/discipline in question, who has the appropriate accreditation from the relevant institution.

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Abbreviations

2-D	two dimensional
3-D	three dimensional
CA	competent authority
CH_4	Methane
CO	Cobalt
CV	curriculum vitae
C_6H_6	Benzene
DA	designated agency
DMPR	Department of Mineral and Petroleum Resources
DWS	Department of Water and Sanitation
EAP	environmental assessment practitioner
EIA	environmental impact assessment
EIA Regulations	Environmental Impact Assessment Regulations
EMPr	environmental management programme
EWT	Endangered Wildlife Trust
H_2S	Hydrogen sulphide
HIA	heritage impact assessment
I&APs	interested and affected parties
MIR	Minimum Information Requirement
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NGO	non-governmental organisation
NHRA	National Heritage Resources Act, 1999 (Act No. 48 of 1999)
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides
NWA	National Water Act, 1998 (Act No. 36 of 1998)
O_3	Ozone
PAHs	Polycyclic aromatic hydrocarbons
PASA	Petroleum Agency SA
Pb	Lead
PM_{10}	Particulate matter includes particles less than 10 µm in diameter
$PM_{2.5}$	Particulate matter includes particles less than 2.5 µm in diameter
SAHRA	South African Heritage Resources Agency
SACNASP	South African Council for Natural and Scientific Professions
SEA	strategic environmental assessment
SO_2	Sulfur dioxide
SVOCs	Semi-volatile organic compounds
VOCs	Volatile organic compounds

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WGS84	a reference system used by the satellite navigation systems like GPS and used in various mapping applications

i) Preamble

Petroleum exploration and production using fracturing technology is a complex, capital intensive process which can have a significant impact on the environment should the necessary environmental precautionary and management measures not be in place. In line with the complexity of the process, several government authorities are involved with the management of the associated environmental impacts through the various licence, permit and authorisation requirements, jointly referred to as environmental permissions of the respective decision-making departments.

Due to the number of environmental permissions required and the lengthy and complicated process to obtain such permissions, Cabinet, through the *National Development Plan* and Parliament, through the *Report of the High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change*, called for a coordinated and synchronised approach to the issuing of the various environmental permissions to avoid overlaps and unnecessary duplication which leads to time delays and excessive costs for developers. Environmental authorisations,[1] water use licences,[2] heritage permits[3] and mining rights[4] were specifically identified as needing a coordinated effort.

The integration of environmental permissions is provided for in the National Water Act, 1998[5] (NWA), the National Environmental Management Act, 1998[6] (NEMA), the Mineral and Petroleum Resources Development Act, 2002[7] (MPRDA) the National Heritage Resources Act 1999 (NHRA)[8], and the Kwa-Zulu Natal Amafa and Research Institute Act 2018 (Act No. 5 of 2018) (KZNARI Act). Section 22(4) of the National Water Act, 1998, anticipates and promotes cooperative governance and arrangements with other organs of state to combine respective licencing requirements into a single licence requirement. In addition, section 41(5) of the NWA requires that the Minister responsible for water affairs align and integrate the process for consideration of water use license applications with the timeframes and processes applicable to applications for licenses, permits or rights for prospecting, exploration, mining and production in terms of the MPRDA and environmental authorisations in terms of NEMA. NEMA similarly envisages an integrated process. In terms of section 24C(12), applications required under NEMA or a specific environmental management Act (SEMA) must be submitted simultaneously to all relevant departments after the mining application has been accepted by the Department of Minerals and Petroleum Resources (DMPR)/ designated agency. In this regard it should be noted that the NWA is a SEMA. In addition, section 50A(2)(d) of NEMA requires that the Ministers responsible for mineral resources, water affairs and the environment must agree to synchronise timeframes for consideration and issuing of authorisations in terms of their respective legislation. Section 41(7) of the Environmental Impact Assessment Regulations, 2014 (EIA Regulations) indicates that where an environmental authorisation is required and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation processes may be combined on condition that all relevant authorities agree to such combination of processes.

The MPRDA similarly promotes coordination. Sections 79(4)(a) and 83(4)(a) promote the coordination of consultation requirements. Section 79 of the MPRDA requires that, if the designated agency accepted the MPRDA application for an exploration right the designated agency must, within 14 days of the receipt of the application notify the applicant in writing to consult in the prescribed manner

[1] Issued in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998).
[2] issued in terms of the National Water Act, 1998 (Act No. 36 of 1998).
[3] issued in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999).
[4] issued in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
[5] The National Water Act, 1998 (Act No. 36 of 1998).
[6] The Nataional Environmental Management Act, 1998 (Act No. 107 of 1998).
[7] The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
[8] National Heritage Resources Act, 1999 (Act No. 25 of 1998)

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with interested and affected parties on the application and to include result of the consultation in the NEMA Chapter 5 environmental reports, which were subjected to a 30-day public comment period. Integration is also anticipated under the NHRA. Section 38(8) of the NHRA provides for the heritage impact assessment required under section 38(2)(a) of the NHRA to be provided through the EIA process in terms of the EIA Regulations, where an environmental authorisation is required. Section 41(8) of the (KZNARI Act) makes similar provision for integration where an environmental authorisation is required related to a heritage resource in Kwa-Zulu Natal.

Over and above Cabinet's request for an integrated authorisation process, when lifting the moratorium on the exploration of shale gas in August 2012, a step-wise approach was agreed to with only normal exploration being allowed as a first phase and the use of fracturing being allowed only after a number of additional steps had been achieved.

In line with and in order to facilitate the step wise authorisation approach envisaged, amendments were made to the EIA Regulations, Listing Notices in June 2021, which split the authorisation process for exploration and production of petroleum resources[9] into three distinct phases, which are:

- Exploration which anticipates the use of fracturing technology (seismic surveys);
- Exploration which includes the use of fracturing technology; and
- Production of petroleum resources using fracturing technology.

The three phased authorisation process is intended to facilitate the collection of environmental information at each stage of the process and to assess and consider the cumulative environmental impacts to promote environmental protection and informed decision-making.

To respond to Parliament's request for a more coordinated approach to considering environmental permissions, the relevant decision-making authorities have agreed to develop a series of Minimum Information Requirements (MIRs) to achieve the objectives indicated below related to onshore exploration and production of petroleum intending to and utilising fracturing technology:

The objectives of the MIRs are to:

- Identify and consolidate the assessment and reporting requirements of all decision-making authorities for all phases of exploration and production into two minimum information requirements documents;
- Combine the information prepared for the exploration of petroleum anticipating fracturing into one consolidated assessment report and baseline monitoring plan which conforms to the first MIR in the series;
- Combine the information prepared for the phase of exploration utilising fracturing technology or for the production phase into a consolidated assessment report and environmental management programme which conform to the second MIR in the series;
- Facilitate consultation with stakeholders on the consolidated assessment report, integrated operational monitoring plan and environmental programme for each phase of exploration and production, through one integrated public participation process; and
- Facilitate the submission of the consolidated assessment reports, monitoring plans and programmes for each phase of exploration and production, which incorporates the information required by all decision-making authorities, to the relevant authorities for consideration and decision-making where relevant.

[9] In the context of this Minimum Information Requirement, petroleum resources include all hydrocarbons.

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ii) The Minimum Information Requirement series

The EIA Regulations include the requirement to apply MIR in instances where a Government Notice, gazetted by the Minister responsible for environmental affairs, provides for the application of such MIR. The respective provisions in the EIA Regulations which deal with the content requirements of an application for environmental authorisation, basic assessment report, specialist report, scoping report and environmental impact assessment report, include the ability of the Minister responsible for the environment to require compliance with MIR relevant to the application as identified and gazetted by such Minister in a Government Notice.

In addition, the NWA Water Use Licence Application and Appeals Regulations, 2017 (NWA Water Use Licence Regulations) and the draft *Regulations for the Use of Water for Exploration and Production of Onshore Naturally Occurring Hydrocarbons that Require Stimulation, Including Hydraulic Fracturing and Underground Coal Gasification, to Extract, and any Activity Incidental Thereto that may Impact Detrimentally on the Water Resource, 2021* (NWA Regulations for Naturally Occurring Hydrocarbons), both refer to providing information in relation to a MIR.

There are two MIRs in this series. This document represents the second MIR in the series and is entitled "*The Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology*". As the name implies, this MIR focuses on the exploration and production of onshore petroleum that require and use fracturing technology. The document guides the process required by each decision-making authority related to the:

- Identification of the environmental sensitivity of the site including the underground footprint, on which the exploration or production operations are proposed to take place;
- Identification of expected impacts related to the exploration or production operations relative to the environmental sensitivity of the site and the baseline monitoring conditions;
- Identification of the specialist impact assessments and reports that will be required to assess and mitigate potential impacts and risks including the prediction of cumulative impacts;
- Determination of risks, the likelihood, extent and severity of such impacts and risks occurring;
- Consideration of expected severity of impacts after mitigation and the acceptability of the residual impacts and risk;
- Proposed layout of the infrastructure and exploration or production wells in relation to the environmental sensitivity of the site and the principles of impact avoidance, management and mitigation; and
- Identification of ongoing monitoring, reporting and auditing requirements through the exploration or production operations.

This MIR does not set out or explain the regulatory procedures (i.e., application forms and information required at application) but rather deal with the project specific details, the social, cultural, environmental and technical information requirements which are to be consulted on and submitted in support of the applications for various required environmental permissions. For guidance on the regulatory steps and information required to submit applications to the decision-making authorities, the applicant must consult the various statutes or regulations and guidance documents.

This MIR relates to phases 2 and 3 of the onshore exploration and production process for petroleum using fracturing technology. These two phases are identified as follows in Listing Notice 2 of the EIA Regulations:

- The second phase of exploration which involves the use of fracturing technology which is listed as activity 20A of Listing Notice 2, as "An exploration operation which requires the use of fracturing

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technology as well as any other applicable activity as contained in this Listing Notice, Listing Notice 1 of 2014 or Listing Notice 3 of 2014 required for such fracturing."; and

- The third phase is the production and is listed as activity 20 of Listing Notice 2 as "Any activity including the operation of that activity which requires a production right in terms of section 83 of the MPRDA, as well as any other applicable activity as contained in this Listing Notice, Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required to exercise the production right.".

This MIR is also applicable to the applications for water use licenses for exploration and production, as a controlled activity, as contemplated in the NWA Regulations for Naturally Occurring Hydrocarbons.

Applicants must take note of the need to submit the applications simultaneously to the relevant decision-making authorities as required by section 24C(12) of NEMA in relation to exploration which requires the use of fracturing technology and which triggers activity 20A of Listing Notice 2, or after the application for a production right, contemplated in section 83 of the MPRDA has been accepted by the designated agency, to allow for an integrated public participation process.

The phasing of the applications, facilitating a step-wise authorisation procedure, has several advantages which include among others:

- Rationalising the ever-increasing amount of environmental data and reserve determination information being generated to inform the fracturing phase of exploration or production which allows for informed decision-making;
- Facilitating public participation on the baseline monitoring plan before decision-making in terms of different regulatory requirements;
- The execution of the baseline monitoring plan for a minimum of 24 months prior to any fracturing operations being implemented, should all the necessary authorisations be granted;
- The approval of the integrated operational monitoring plans prior to implementation; and
- The ability to consider cumulative impacts in a more realistic manner as ongoing monitoring data collected through the operations can be assessed against the pre-drilling and fracturing baseline conditions.

iii) Introduction to the minimum information requirements for phases 2 and 3 of the onshore exploration and production of petroleum using fracturing technology

This MIR contains the prescribed assessment and report content for the technical documents required for environmental permissions relevant to onshore exploration and production of petroleum using fracturing technology. The assessment and report content for all relevant environmental permissions must comply with this MIR and failure to do so will result in the reports not being accepted by the relevant decision-making authority. The report requirements of this MIR must, among others, meet the requirements of the EIA Regulations, the technical requirements of the NWA Water Use Licence Regulations, 2017, the requirements of section 38(3) of the NHRA and section 41(3) of the KZNARI Act where relevant.

The MIR has been developed through the findings of the Strategic Environmental Assessment of Shale Gas Development in the Central Karoo, June 2017[10]; internal literature reviews; the requirements of the EIA Regulations and the NWA Water Use Licence Regulations; the knowledge of officials represented on the interdepartmental committee for the development of this MIR, the draft NEMA "Regulations for the Exploration and Production of Onshore Petroleum Resources Requiring Fracturing Technology, 2024", the MPRDA Regulations for Petroleum Exploration and Production of 3 June 2015,

[10] The Strategic Environmental Assessment of Shale Gas Development in the Central Karoo, June 2017 can be accessed at https://seasgd.csir.co.za/.

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which were set aside by the Supreme Court of Appeal and stakeholders who contributed through the consultation process.

This MIR must be read with the draft NEMA Fracturing Regulations, prepared in terms of NEMA, the draft NWA Regulations for Naturally Occurring Hydrocarbons, sections 38(1), (3) and (8) of the NHRA and sections 41(1), (3) and (8) of the KZNARI Act where relevant and the EIA Regulations.

The experience, understanding and capability of the environmental assessment practitioner (EAP) and specialists to follow the requirements and to reach the intended outcomes of the MIR are crucial and must be demonstrated in the section on qualifications and experience in undertaking similar work as identified in Part 1 Chapter 2 and Part 2 Chapter 2 of this MIR.

iv) Structure of the Minimum Information Requirement

In order to capture the required information and produce one draft combined assessment and operational monitoring plan which complies with the assessment requirements of all decision-making authorities, the MIR has been drafted in two parts.

Part 1 deals with the Plan of Study for Scoping and Part 2 deals with the impact that will result from the activities to be undertaken on the site through the continued 2-D and 3-D seismic investigations, the use of fracturing technology as well as production operations. These impacts and the severity thereof are to be determined by specialists through analytical methods where relevant. This section also deals with mitigation measures to be implemented through an environmental management programme and the operational monitoring requirements.

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PART 1 – SCOPING PROCESS

1. Chapter 1 – General Requirements

1.1 The scoping process

The exploration and production of petroleum utilising fracturing technology are both activities that require a-

- Right in terms of the MPRDA. For exploration, the right is required under section 80 of the MPRDA and for production, section 84 of the MPRDA;
- Environmental authorisation in terms of the EIA Regulations. For exploration of petroleum requiring the use of fracturing technology, an environmental authorisation is required under activity 20A of Listing Notice 2 and for the production of petroleum an environmental authorisation is required under activity 20 of Listing Notice 2;
- Water use licence in terms of the NWA Water Use Licence Regulations. The exploration or production of onshore naturally occurring hydrocarbons that requires stimulation, including hydraulic fracturing, or underground gasification, to extract, and any incidental activity that may impact detrimentally on the water resource has been declared as a controlled activity in terms of Government Notice 999 of 2015;[11] and
- Heritage permit in terms of Chapter 2 of the NHRA, or a written approval issued in terms of Chapters 8 or 9 of the KZNARI Act, should any significant[12] heritage resource need to be removed, moved or disturbed.

In terms of section 24C(12) of NEMA, once the designated agency has accepted the application for an exploration or production right in terms of the MPRDA the applicant must simultaneously apply for an environmental authorisation required in terms of NEMA and a licence, permit or authorisation in terms of a specific environmental management Act (SEMA).[13] Although not a SEMA, the need for a permit issued in terms of Chapter 2 of the NHRA, or a written approval in terms of Chapters 8 or 9 of the KZNARI Act, will be determined through the review of the heritage impact assessment which will be included in the assessments to be submitted in the consolidated assessment report. Therefore, as soon as the application in terms of the MPRDA has been accepted, the applicant must submit the applications for a WUL and environmental authorisation, and make contact with the relevant heritage resources agency (HRA) to determine their requirements.

In terms of the application for environmental authorisation, regulation 15 of the EIA Regulations, read with the Listing Notices, determine that the process to apply for an environmental authorisation for a Listing Notice 2 activity, is a *scoping and environmental impact reporting process*. The first step in this process is *scoping*, the outcome of which is a *scoping report* which includes a *plan of study* which sets out how the environmental impact assessment process will be undertaken and which specialist reports will be prepared (plan of study). The scoping report is submitted to the designated agency for review and submission to the competent authority for decision making. Should the competent authority accept the scoping report and approve the plan of study, the applicant can proceed with the second step in the process which is to implement the tasks approved in the plan of study. This part of the MIR deals with the objectives and the requirements for the scoping process and the content of the scoping report and plan of study.

[11] Government Notice No. 999, published in Government *Gazette* No. 39299 on 16 October 2015.

[12] Significant in this context means that the heritage resource has been determined by the HRA as being A Grade I, II or III resource.

[13] The National Water Act is a specific environmental management Act.

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Once the designated agency has accepted the application for an exploration or production right, the applicant must-

- Submit the application for environmental authorisation to the designated agency;
- Submit the application for a water use license for the controlled activity related to the exploration or production of onshore hydrocarbons requiring stimulation;
- Engage with the relevant national or provincial HRA on the requirements in terms of the NHRA or the KZNARI Act; and
- Consult with interested and affected parties (I&APs) on the draft scoping report and the application for an exploration or production right.

Within the intervals contemplated in the EIA Regulations, the application, the draft scoping report, and the final scoping report which has been subjected to a 30 days public comment period and includes comment from the authorising authorities, must be submitted to the designed agency, for consideration and a recommendation to the competent authority on whether or not environmental authorisation should be granted.

1.2 The objectives of the scoping process

The scoping phase is a crucial step in the overall process and has several functions. Broadly, the objectives of the scoping phase are to-

- Notify I&APs of the applications lodged with the relevant decision-making authorities in terms of the relevant legislation;
- Provide a location for the proposed project;
- Describe and define the scope of the project;
- Motivate the need and desirability of the proposed project generally and in the context of the preferred site;
- Document the site selection process followed which must include a discussion on, and ranking of, the alternative sites considered, if relevant, and the reason for discarding them in the process to identify the preferred site;
- Provide a motivation for not considering alternatives sites, if none were considered (alternative site selection may not be relevant to exploration or production operations where a specific reserve is being investigated);
- Scope the opinion of the public in the study area to gain any insights from the public on any site-specific concern or sensitivity, for example cultural, religious or biodiversity aspects, that must be considered through the assessment process and to document them;
- Understand the oral history of the site and study area;
- Identify and confirm the preferred site on which the impact assessment will be undertaken;
- Identify and confirm the study area in which the public participation process is proposed to be undertaken;
- Identify the key issues to be assessed in the assessment phase;
- Confirm the proposed specialist assessments to be undertaken based on the activity impacts as identified in the screening report produced by the national web based environmental screening tool (screening tool) and on the site sensitivity verification;
- Confirm the requirements for the water use license application technical reports to be undertaken;
- Introduce the specialists to be utilised, including the expertise of the specialist and the methodology to be utilised to identify and assess the risks the activity will impose throughout the life of the operations;

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- Document the proposed public participation process followed to finalise the scoping report, including the inputs received and the manner in which the inputs were considered; and
- Detail the further public participation process to be followed in the environmental impact report process.

The draft and final scoping report are to be compiled by the EAP based on information provided by the applicant, the professional knowledge of the EAP and inputs from specialists. Once the scoping report is consulted and accepted by the competent authority, the scope of the project will have been determined and agreed to by the competent authority. Although there is no equivalent scoping process in the procedures of other decision-making authorities, the draft scoping report and plan of study is to be submitted to all other decision-making authorities for their input, prior to finalisation.

Chapter 2 provides more detailed information on the content of the draft scoping report and final scoping report.

2. Chapter 2 – Content of the draft scoping report and final scoping report

2.1 General information

The content of the draft and final scoping report will be similar, however, the final scoping report will include the outcome of the public participation process that was undertaken on the draft scoping report and all sections in the final document will be updated with the outcomes of the scoping process that were found to be relevant. The supporting information in the final scoping report will be more comprehensive than those contained in the draft scoping report, in that the evidence of public participation will be included.

2.2 Summary for decision-makers

A summary for decision-makers is to be included in the draft and final scoping report. The summary must provide a concise project location and scope, the need and desirability of the project, a short description of the environmental sensitivity of the site and the proposed specialist assessments to be undertaken. In addition, the summary must include a short outline of process that is proposed to be followed to generate the consolidated assessment report and environmental management programme, including how the views and contributions of I&APs will be scoped and documented. The summary for decision-makers in the final scoping report must include a concise input on the outcome of the public participation process followed on the draft scoping report, highlighting any specific issues that the environmental impact assessment process needs to consider.

2.3 Project description, location and contact information:

The draft scoping report must include as a minimum, the following information related to project description, the location of the project and the contact details of the EAP who prepared the report:

- The name of the project;
- A short description of the project, including the anticipated duration of the operations;
- The proposed location of the project,[14] including the farm name or names with the relevant portion number or numbers and the relevant surveyor general's twenty-one-digit codes;[15]
- Details of the property owner or owners;

[14] The farm names and SG codes are available from the screening report produced by the screening tool.
[15] Coordinates of the project location will be provided in the screening tool report which will be attached to the draft and final scoping report and does not need to be duplicated.

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- The relevant major river catchment in which the project is to be undertaken;
- The current land use on the site and the land uses of adjacent sites;
- The name and contact details of the applicant. The contact details should include relevant telephone and cell phone numbers, the business street and postal address;
- The experience that the applicant has with undertaking similar projects;
- The name and contact details for the appointed EAP and specialists, which must include a business contact as well as a personal cell phone number;
- The company details for the EAP and specialists including the physical and postal address; and
- An annotated location map showing the context of the proposed site including as a minimum, major road, towns, major topographical features, the 1;100-year flood lines, railroads, farming infrastructure if relevant, rivers and streams, main tourist features etc.

2.4 Project scope:

The EAP and the relevant specialist should jointly agree on the scope of the project to ensure that the requirements of each specialist is articulated in the scope as the scope will no longer be included in each specialist assessment report or study. The draft and final scoping report must include the following information related to project description and scope:

- A detailed description of the scope of the project, including any associated structures or infrastructure to be developed;
- The identified activity that will be triggered in relation to the EIA Regulations Listing Notices;[16]
- The water uses being applied for in terms of the NWA Water Use Licence Regulations;
- The scope of the heritage impact assessment as agreed with the relevant heritage resources agency in terms of section 38(3) of the NHRA or section 41(3) of the KZNARI Act;
- The right being applied for in terms of the MPRDA;
- The reserve being investigated;
- The technology to be used in the exploration or production activities;
- Need and desirability of the project;[17]
- The legislative and policy context including any strategies or plans within which the project is located and the manner in which the project responds to this context;
- A detailed description of the site selection process undertaken including the outcome of the site selection process which must have considered the following:[18]
    - the various alternative sites identified;
    - the environmental attributes associated with each site focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
    - the impacts and risk associated with each site including the nature, significance, consequence, extent, duration and probability of such identified impacts and risk occurring, including the degree to which the impacts may cause irreplaceable loss of resources;
    - the degree to which the impacts on the site can be avoided, managed, mitigated or reversed;
    - the methodology used in identifying and ranking the nature, significance, consequence, extent, duration and probability of the potential environmental impacts and risks associated with each site; and
    - the site selection matrix used.
- If no alternative sites have been considered the motivation for not considering alternatives sites (alternative site selection may not be relevant to exploration or production operations where a specific reserve is being investigated);

[16] For a mining activity the associated activities are incuded in the main mining activity and the associated activities are not to be seperatly identified.
[17] This information must be provided in accordance with DFFE's *Guideline on Need and Desirability, 2017*,
[18] Much of the information required on the site selection process can be taken from the final scoping report.

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- The exploration or production technology proposed to be used as well as a discussion on any alternative exploration or production technologies that have been considered which must include-
  - the risks and impacts associated with each technology;
  - possible positive and negative impacts that the proposed technology could have on the environment and the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; and
  - possible mitigation measures that could be applied and the level of residual risk for each technology;
- If no alternative exploration or production technology has been considered, the motivation for not considering such alternatives;
- The intended use or management of the gas released through exploration; and
- Existing licenses, authorisations or rights which exist for the land within the project site.

2.5 Supporting documentation

The draft and final scoping report must be accompanied by supporting documents which attests to the information provided in specialist impact assessment reports for this section. The following supporting information must be included under this heading:

- The acceptance letter from the designated agency for the application for an exploration or production right;
- From the EAP and specialists who have undertaken the site sensitivity verification inspections and who are to undertake the relevant specialist impact assessments:
  - a short profile of the EAP and the EAP's company, where relevant;
  - a short profile of every specialist and specialist's company;
  - an abbreviated CV of the EAP and the identified specialists, including a short profile of similar work undertaken and the relevant years of experience;
  - declaration of independence of the EAP and specialists;
  - EAP and specialists' companies B-BBEEE certification;
  - power of attorney;
  - copy of the professional registration for the EAP and specialists; and
  - a signed declaration of independence from the EAP and specialists.

3. CHAPTER 3 – Plan of Study for Scoping

3.1 Screening and specialist assessments

As of 4 October 2019, it is compulsory that a screening report produced by the national environmental web based environmental screening tool (screening tool), as contemplated in regulation 16(1)(b)(v) of the EIA Regulations, must accompany all applications for environmental authorisation submitted to the competent authority. This requirement is also applicable to an application for onshore exploration operations which require the use of fracturing technology in terms of activity 20A of Listing Notice 2 of the EIA Regulations as well as an application for an environmental authorisation for a production right in terms of section 83 of the MPRDA. The requirement for screening is to ensure that sites with high environmental sensitivity, including sensitive water resources are identified and avoided where possible or where they cannot be avoided, impacts are mitigated to an acceptable level.

The screening report also identifies an initial list of specialist assessments to be undertaken based on the known impacts of the relevant activity applied for. The list of specialist assessments to be undertaken is to be finalised based on the outcome of the site sensitivity verification undertaken by either the EAP or specialist whichever is applicable for the specific environmental theme, the outcome of the pre-application meeting and site visit held with representatives of the DFFE, DWS and the

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engagement with the relevant Heritage Resources Authority (HRA). The requirements for the site sensitivity verification inspection and the level of expertise required to undertake the site sensitivity verification inspection per theme are identified in relevant Government Notice 320 of March 2020,[19] and Government Notice 1150 of October 2020.[20] Once the environmental sensitivity of the site is confirmed or revised for each environmental theme under consideration, and the requirements of the DWS and the relevant HRA have been confirmed, the list of specialist impact assessments/compliance statements to be undertaken must be identified in the plan of study for impact assessment. Where the site sensitivity verification has identified that a specific specialist assessment identified in the screening report is not necessary, the EAP or specialist must motivate this to the relevant authorising authority and include the motivation in the plan of study for impact assessment under the relevant heading, including the supporting evidence.

3.2 Specialist impact assessments identified

Based on the environmental sensitivity of the preferred site, as identified in the screening report, the site sensitivity verification,[21] the requirements as identified by the DWS and the relevant HRA, as well as any additional desk top information or information obtained from the provincial authorities or state owned entities, the EAP is to provide the following information on the specialist impact assessments to be undertaken:

- The specialist impact assessments identified in the screening report related to the activity to be undertaken;
- A motivation, should any one of the assessments be regarded as not being necessary;
- The technical reports to be undertaken as identified in the NWA Water Use License Regulations including waste treatment and management options;
- A proposed list of specialist impact assessment reports to be undertaken must be provided, indicating the outline of such assessments, which must include a consideration of the measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored;
- The names of the specialists identified to undertake the relevant specialist assessments, including their expertise and record of previous work undertaken in the same field;
- The season in which the specialist assessment is to be undertaken where relevant;
- Contact details of the proposed specialist, including a street address and postal address if relevant of the specialist's company. The telephone and cell phone details for the specialist as well as the telephone details of the specialist's company;
- The proposed methodology to be used to undertake the specialist studies, including any guidelines or models that will be utilised to guide the field work or assessment; and
- Any gaps in knowledge.

The following preliminary list of impact specialist assessments have been identified for the exploration or production of petroleum requiring fracturing:

- Agricultural impact assessment;
- Terrestrial biodiversity impact assessment;
- Aquatic biodiversity impact assessment;
- Animal species impact assessment;
- Aquatic species impact assessment;

[19] Published under Government Notice 320 published in Government *Gazette* No. 43110 on the 20 March 2020.
[20] Published under Government Notice 1150 published in Government Gazette No. 43855 on 30 October 2020, as amended.
[21] The site sensitivity verification must be undertaken in line with the relevant prescribed site sensitivity verification requirements identified in Government Notice No. 320 published on 20 March 2020 where no specific protocol has been prescribed or in line with the specific prescribed protocol.

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- Noise and artificial light impact assessment;
- Climate change impact assessment;
- Air quality impact assessment;
- Seismicity impact assessment;
- Socio-economic impact assessment;
- Cultural heritage and palaeontology impact assessment;
- Hydrology study;
- Hydrogeology study;
- Wetland and riparian delineation study;
- Traffic impact study (including the possibility of utilising rail); and
- Radio frequency interference study (SKA, defence, aviation and weather services);

Based on the specialist impact assessments, the EAP and specialists will prepare the following plans, programmes, well designs, and lists during the environmental impact assessment process:

- Water and waste water management plan (including stormwater management);
- Solid waste management plan;
- Emergency and spill contingency plan;
- Integrated operational monitoring plan;
- Financial provisioning plans, reports and calculations to secure financial provision;
- Proposed well layout;
- Proposed well design;
- List of fracturing fluids and additives; and
- Environmental management programme.

A copy of the screening report generated from the screening tool must be submitted as part of the supporting information for this section, and the assessments identified in the plan of study must be discussed in relation to the screening tool list.

3.3 The proposed public participation process

The plan of study for scoping must include the outline of the environmental impact reporting process that will be undertaken (specialist assessments) as well as a plan for the proposed public participation process that will be followed through the environmental impact assessment process. The content of the public participation plan within the draft and final scoping process will be the same, however, the public participation plan in the draft scoping report will focus on the proposed public participation process that will be followed through the environmental impact assessment phase, while the public participation plan in the final scoping report will include the outcome of the public participation process that was undertaken on the draft scoping report, including the comments and responses report indicating the manner in which the comments were considered.

3.3.1 Public participation plan in the draft and final plan of study for the environmental impact assessment process

The proposed public participation plan in the plan of study for the environmental impact assessment process as contained in the draft and final scoping report must include as a minimum the following information:

- Objectives of the public participation process;
- The identified study area for undertaking the public participation process, including the rational for its inclusion;
- The proposed database of I&APs to be engaged;

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- An outline of the public participation process to be followed which must include the following:
  - Advertising that will be undertaken;
  - The locations where adverts/notice boards are to be placed;
  - Meetings to be held, giving detail about the time, the number, the language to be used, venues etc.;
  - The availability of a background information document, where and how such information will be made available, to whom and in what languages;
  - How I&AP registration will be undertaken including the location of registration desks to be set up, if relevant;
  - When consultation with the designated agency and other state owned entities will take place and the form of that consultation;
  - How documents will be circulated;
  - How I&APs will be informed of the availability of documents or other correspondence;
  - How information will be accessed, noting that some I&APs may not have access to emails.
- Intervals for public comment; and
- Dates and times of interactions other than public meetings.

3.3.2 The supporting information for the public participation process followed

The final scoping report must be accompanied by supporting documents which attests to the information provided in the final scoping report related to the outcome of the public participation on the draft scoping report. The following supporting information, as a minimum, must be included under this heading:

- Final list of I&APs;
- Copy of the background information document;
- Copies of adverts and posters if relevant;
- Photographs of posters, adverts or notices placed on site or at other venues where relevant;
- Comments and responses report, including an indication on how the inputs were considered or reasons for not considering them;
- Confirmation of registration of I&APs;
- Confirmation of arrangements around meetings;
- Attendance registers;
- Minutes of meetings or interactions including recorded inputs;
- Slides of presentations and any documentation circulated in support of the meetings;
- Presentations made at any public participation meetings; and
- Attendance registers of any meetings held on the draft scoping report.

3.4 Submission of the final scoping report

The final scoping report including the plan of study for the environmental impact assessment process which must have been subjected to a public participation process of 30 days[22] must be submitted to the designated agency (on behalf of the competent authority), together with the supporting documentation, within the intervals contemplated in the EIA Regulations.

After receipt of the final scoping report, the competent authority must, within the intervals contemplated in the EIA Regulations, accept the scoping report or refuse environmental authorisation

[22] Usually the consultation timeframe for a WUL application is 60 days in line with section 41(4) of the National Water Act, however, in line with the requirements of section 41(5) of the NWA, where a proposed operation also requires an application for a right or permit in terms of the MPRDA and an application for an environmental authorisation in terms of the NEMA, the Minister responsible for water affairs must align and integrate the process for consideration of the WUL with the application timeframes and processes for the NEMA application, which includes the timeframes for public participation processes.

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if the proposed activity is in conflict with a prohibition in legislation or the scoping report does not comply with the requirements of the EIA Regulations, any applicable protocol or minimum information requirements and the applicant is unable or unwilling to comply with the relevant requirements within the prescribed timeframe. If the report is accepted the applicant may continue with the tasks identified in the plan of study.

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PART 2 – ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

1. General information

1.1 The objectives of the environmental impact assessment process

The decision-making authorities have agreed that one consolidated assessment report, which meets the requirements of this MIR, will be utilised by all decision-making authorities to ensure a streamlined and efficient process for the consideration of, and decision-making on, applications for environmental permissions. Therefore, the consolidated assessment report must include adequate information to support the application processes for environmental authorisation, exploration or production rights, WUL and the heritage impact assessment required by the relevant HRA. In addition, the public participation process will be an integrated process that meet the objectives of Chapter 6 of EIA Regulations, the public review requirements of the application and technical report for the WUL, and the consultation on the environmental reports, required in terms of the MPRDA. In order to achieve this alignment, it has been agreed that a 30-day comment period will be required on the draft consolidated assessment report.

Therefore, the process to be followed by the EAP, on behalf of the applicant, is as follows - once the final scoping report has been accepted by the competent authority, the draft consolidated assessment report must be submitted to the decision-making authorities and identified I&APs for consideration and comment for a period of 30 days. The environmental impact assessment report, which reflects the inputs of the public participation process must be submitted to the decision-making authorities for consideration and decision-making.

Should it be identified during the comment period that additional assessment work and significant changes to the consolidated assessment report are required, the EAP, on behalf of the applicant, must address the identified shortcomings and submit the revised consolidated assessment report to the decision-making authorities and the I&APs for a further 30-day public participation period. The revised document, which reflects the outcome of the additional public participation, must be submitted to the decision-making authorities for decision-making.

The environmental impact assessment process is the most time sensitive and protracted phase of the decision-making process as this phase includes field work, modelling and the preparation of detailed reports and plans. There are several specialist studies that must be undertaken to understand the social and cultural context of the study area, the site conditions including the environmental sensitivity of the site, the geohydrology of the site, the effects of the impacts on the environment including the water environment and the ability to mitigate and manage the identified impacts. It is important that the field work is planned well in advance, and in some cases undertaken prior to the finalisation of the scoping process to ensure that the work is undertaken within the season which will best reveal the attribute being considered.

Much of the information prepared for the scoping phase will be used in the general chapter of the consolidated assessment report, for example, the project description, scope and supporting documentation provided with respect to the EAP and the relevant specialists. The assessment process is to be undertaken in a consultative manner which is intended to enhance the understanding of impacts and determine the acceptability of proposed mitigation measures. In addition, the content of the draft and final consolidated assessment report will be similar, however, the final consolidated assessment report will include the outcome of the public participation process that was undertaken on the draft report and all sections in the final document will be updated with any outcomes of the public participation process that were found to be relevant. In addition, the supporting information in

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the consolidated assessment report will be more comprehensive, in that the evidence of public participation will be included.

Broadly, the objectives of the environmental impact assessment process are to-

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the approved site as contemplated in the accepted scoping report;
- Focus on confirming the environmental, cultural and social sensitivity of site for a number of environmental themes;
- Identify the possible impacts of activity on the environment;
- Identify possible alternatives where relevant;
- Identify and assess the significance of the impacts in relation to extent, duration and probability of occurrence of the possible impacts of the activity on the environment;
- Identify and discuss possible mitigation and management measures;
- Determine the residual impacts after mitigation;
- Determine the ability to mitigate and manage the impacts;
- Where relevant, consider the cumulative impacts;
- Provide a substantive statement on the acceptability or not of the exploration or production operation per environmental theme;
- Identify the ideal location which has the lowest level of environmental sensitivity for the proposed site having considered the mitigation hierarchy;
- Determine the management and mitigation measures that must be included in the environmental management programme, the water and waste water management plan, the solid waste management plan and the draft emergency and spill prevention plan;
- Identify the residual risk that need to be managed and monitored that are to be incorporated in the operational environmental monitoring plan; and
- Prepare the draft plans and report related to financial provisioning.

The draft consolidated assessment report and final consolidated assessment report is to be compiled by the EAP based on information provided by the applicant, the professional knowledge of the EAP and inputs provided by the specialists and engineers, and in the case of the final report, the inputs from the public participation process.

Paragraph 2 provides the detailed information required in the draft consolidated assessment report and final consolidated assessment report.

2. Content of the draft and final consolidated impact assessment report

2.1 General information

Within the intervals contemplated in the EIA Regulations, after the acceptance of the final scoping report and the plan of study for scoping, the applicant must submit to the decision-making authorities the consolidated assessment report with the following headings, and which includes the information under respective Chapter headings identified below:

- Chapter 1 - Summary for decision-makers
- Chapter 2 - Project description
- Chapter 3 - Scope of the project
- Chapter 4 - Public participation report
- Chapter 5 - Specialist assessment reports

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- Section 5.1 - Agricultural impact assessment
- Section 5.2 - Terrestrial biodiversity impact assessment
- Section 5.3 - Aquatic biodiversity impact assessment and wetland and riparian delineation study
- Section 5.4 - Animal and plant species impact assessments
- Section 5.5 - Noise and artificial light impact assessment
- Section 5.6 - Climate change impact assessment
- Section 5.7 - Air quality impact assessment
- Section 5.8 - Seismicity risk assessment
- Section 5.9 - Socio economic impact assessment
- Section 5.10 - Heritage impact assessment
- Section 5.11 - Hydrology study (surface water)
- Section 5.12 - Hydrogeology study (groundwater)
- Section 5 13 - Traffic impact study (including the possibility of utilising rail)
- Section 5.14 - Radio frequency interference study (SKA, defence, aviation and weather services)

- Chapter 6 – Plans, layouts and designs
  - Section 6.1 - Water and waste water management plan
  - Section 6.2 - Solid waste management plan
  - Section 6.3 - Emergency and spill contingency plan
  - Section 6.4 - Operational monitoring plan
  - Section 6.5 - Well layout
  - Section 6.6 - Well design
- Chapter 7 - Environmental management programme
- Chapter 8 - Financial provisioning plans, reports and calculations
- Chapter 9 - Supporting information
  - Section 9.1 - EAP and specialist information
  - Section 9.2 - Public participation documentation
  - Section 9.3 - Impact assessments

2.2 Chapter 1 - Summary for decision-makers

The first chapter of the draft and final consolidated assessment report is the summary for decision-makers. The summary is to provide a concise project location and scope, the need and desirability of the project, a short description of the environmental sensitivity of the site[23] and the anticipated assessments to be undertaken to confirm the sensitivity. In addition, the summary must include the proposed process that will be followed to generate the consolidated assessment report and environmental management programme, including how the views and contributions of I&APs will be obtained and documented. The summary for the final consolidated assessment report must include an outline of the outcome of the public participation process followed in the draft consolidated assessment report, highlighting any specific issues that the environmental impact assessment process considered.

2.3 Chapter 2 - Project description

The second chapter of the draft consolidated assessment report and final consolidated assessment report is the detailed project description. This chapter must include the following information related to project description, the location of the project and the contact details of the EAP who prepared the report:

- The name of the project;

[23] This can be taken from the sensitivity identified in the screening report for the site.

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- A short description of the project, including the anticipated duration;
- The proposed location of the project,[24] including the farm name or names with the relevant portion number or numbers and the relevant surveyor general's twenty-one-digit codes as well as the coordinates of the site;
- Details of the property owner/s;
- The relevant major river catchment in which the project is to be undertaken;
- The current land use and adjacent land uses;
- The name and contact details of the applicant. The contact details should include relevant telephone and cell phone numbers, the business street and postal address;
- The experience that the applicant has with undertaking similar projects;
- The name and contact details for the appointed EAP, which must include a business contact as well as a personal cell phone number;
- The company details for the EAP including telephone numbers, and physical and postal address; and
- An annotated location map, the land use context surrounding the proposed project, major roads, towns, major topographical features, the 1;100-year flood lines, railroads, and substations where relevant.

All supporting documentation related to the EAP or specialists must be provided in Chapter 9.

2.4 Chapter 3 - Project scope

Chapter 3 of the draft and final consolidated assessment report is the project scope. The project scope must provide a full understanding of the activities to be undertaken through all phases of the project and must include the following information:

- A detailed description of what activities are to be undertaken through the construction, operation and closure of the project, as well as any associated structures or infrastructure to be developed if any;
- The identified activity that will be triggered in relation to the EIA Regulations Listing Notices;[25]
- The water uses being applied for in terms of the NWA Water Use Licence Regulations;
- The scope of the heritage impact assessment as agreed with the relevant heritage resources agency in terms of section 38(3) of the NHRA or section 41(3) of the KZNARI Act;
- The right being applied for in terms of the MPRDA;
- Confirmation of acceptance of the scoping report and plan of study for the environmental impact assessment process;
- The reserve being investigated;
- A discussion on the technology to be utilised in the exploration or production activities including any alternative technologies considered if relevant;
- Need and desirability of the project;[26]
- The legislative and policy context including any strategies or plans within which the project is located and the manner in which the project responds to this context;
- Details of the preferred site as approved in the scoping report; and
- Existing licenses, authorisations or rights which exist for the land within the site area.

Any supporting documentation related to the project scope must be provided in Chapter 9.

[24] The farm names, SG codes and site coordinates are available from the screening report produced by the screening tool.
[25] For a mining activity the associated activities are included in the main mining activity and the associated activities are not to be separately identified.
[26] This information must be provided in accordance with DFFE's *Guideline on Need and Desirability, 2017*.

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2.5 Chapter 4 - Public participation

Once the scoping report and plan of study for scoping have been accepted by the competent authority and discussed with the DWS and the relevant HRA, the public participation process on the draft consolidated assessment report can begin.

As indicated in the preamble, one of the objectives of the introduction of MIRs is to combine the information prepared to apply for environmental permissions, to develop a project which anticipates and then utilises fracturing technology, into one consolidated assessment document to allow for one combined public participation process. This will provide for an efficient and cost-effective public participation process and reduce stakeholder fatigue.

Providing the public with adequate opportunity to engage with the project and provide inputs is a crucial component of any project. It is widely acknowledged that the exploration and production of petroleum resources as well as the use of fracturing technology are highly complex and controversial topics. It is therefore vital for the applicant to carefully consider the extent and methods to be used in the public participation process.

When communicating information on complex or controversial projects, applicants should consider extending their efforts beyond the use of company stakeholder databases, commercial media, email communication, providing information on websites, site notices and single language background information documents. The approaches to stakeholder communication should be context specific to adequately inform stakeholders of the proposed project, and specific attention must be placed on reaching stakeholders in rural areas, which would include communities that may be affected and farmers, as petroleum exploration and production operations are often located in remote areas.

The applicant's approach to stakeholder engagement (to disseminate information and register stakeholders) through more accessible means could include among others:

- Community and commercial radio stations;
- Notifying local ward councillors and traditional leaders;
- Notifying national and local non-governmental organisations, community-based organisations, and farmers associations located within the study area;
- Providing a background information document;
- Placing these background information documents in strategic places frequented by stakeholders which could include community halls, churches, taverns and notice boards in malls/shopping centres;
- Affixing notice boards on the boundary fence of the site;
- Physically or in the form of registered delivery, inform adjoining and adjacent landowners of the project; and
- Using local and community news media.

Registration should then take place using accessible means which could include;

- Social media apps for example Facebook and WhatsApp;
- Email;
- Prepaid SMS; and
- Dedicated information desks set up at malls, filling stations, farmers cooperation's or shopping complexes in the affected community.

When registering stakeholders, the applicant must consider the protection of privacy of stakeholders. No personal details may be used for purposes other than the project under consideration in terms of

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the Protection of Personal Information Act, 2013.[27] Once interested and affected parties have registered, innovative ways of distributing further information about the project which must be consulted on must be considered which could include among others;

- Free download SMS;
- Providing access to pre-paid or free download apps;
- Email;
- Locating documents in libraries, municipal offices and offices of community-based organisations or non-governmental organisations; and
- At the offices of the relevant national and provincial Departments or a municipal office.

In person meetings with affected community members could be held. Such meetings should be organised at accessible venues such as community halls or municipal offices, also catering for people with disabilities. The EAP must provide accessible information to allow stakeholders who have no experience with fracturing technologies and the impacts thereof to follow the discussions and for knowledge to be transferred.

Virtual meetings can be an effective means of communication for a selected audience who have access to internet but virtual meetings cannot be the only method of stakeholder consultation. The timing of meetings is important, stakeholders must be able to conveniently attend meetings, so planning meetings outside of worktime is suggested.

Consideration should be given to the appropriate use of language. Background information documents should include, but not be limited to, versions in the predominant language of the study area. Technical documents should include an executive summary in the predominant language of the study area, and slide presentations should also be translated. Allowing for interpreters at public meetings is important to allow stakeholders to express themselves without a language barrier. Where appropriate, recorded verbal inputs from illiterate stakeholders must be provided for.

2.5.1 Section 4.1- Public Participation Report

After acceptance of the scoping report and the approval of the final plan of study for the consolidated assessment report by the competent authority, the approved public participation process must be implemented. The outcome of the public participation process must be written up in a public participation report to be included as chapter 4 in the consolidated assessment report. This chapter in the draft consolidated assessment report will be the same as that identified in the approved plan of study for scoping in that it will outline the process to be followed, however the consolidated assessment report will include the outcome of the public participation process undertaken. The public participation report must, as a minimum, include the following information:

- Objectives of the public participation process;
- Identified study area of the project impact, including the rationale for the identification of the area;
- Identify the assumptions made and gaps in knowledge;
- An outline of the public participation process followed, indicating what actions were undertaken, venues, dates and times of interactions;
- How the actions undertaken aligned to that which was approved in the plan of study for scoping;
- The audience reached in relation to the identified study area of the project impact;
- The participants at any meeting, including attendance registers;
- Minutes of meetings or interactions, including recorded inputs;

[27] The Protection of Personal Information Act, 2013 (Act No. 4 of 2013).

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- Objectives and outcomes of any information sessions held where relevant;
- Consultation undertaken with the local municipality, the site owners and site occupiers as well as adjacent site owners or occupiers;
- Which documents were consulted and how were the documents distributed and located;
- How persons without access to the internet access and transport were accommodated;
- How issues of language were considered; and
- Copies or photographs of all correspondence, documents, notices etc. distributed or erected;
- A summary of the issues raised by interested and affected parties and an indication of the manner in which the issues were incorporated or the reasons for not including the comments, in the form of a comments and responses report.

2.6 Chapter 5 – Impact assessment reports

Impact assessments prepared by specialists, provide the basis for the information provided in the consolidated impact assessment report. The EAP utilises the findings of the impact assessment reports to identify impacts related to specific environmental themes and together with the specialist, determine the significance, probability and duration of the impacts. In addition, the impact assessments identify possible mitigation measures, the residual impacts after mitigation and the general acceptability of the activity in relation to the specific environmental theme investigated. Noting that the EAP relies on these assessments, it is imperative that a specialist who undertakes the assessment is suitably qualified, undertakes the assessment utilising generally acceptable sector methodologies, models and guidelines, has undertaken the assessment within the season which would best highlight any impacts and has undertaken an independent assessment.

To support the final scoping report and plan of study, the specialist or EAP, would need to have undertaken a site sensitivity verification as identified in paragraph 3.2 of Chapter 3 of Part 1. This site sensitivity verification would have followed either the prescribed general requirements for a site sensitivity verification where no specific protocol has been prescribed or a specific site sensitivity verification as identified in the prescribed protocol for the specific environmental theme under discussion.[28] To support the environmental impact assessment process the specialists, would be required to undertake the specialist impact assessments as identified and approved in the plan of study.

The Minister responsible for environmental affairs has prescribed protocols for identified specialist assessments for specific environmental themes. Further protocols for additional environmental themes are being developed and will be developed in the future. Where a protocol has been prescribed for a specific theme this protocol must be used to undertake the assessment and inform the report content. Where no specific protocol has been prescribed, Appendix 6 of the EIA Regulations informs the general content requirements of a specialist impact assessment report. These requirements must include among others, the following:

- An indication of the scope and purpose for which the report was prepared;
- An indication of the age of the data used in support of the assessment;
- A description of the existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;
- The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;

[28] The general and specific prescribed site sensitivity verification requirements are identified in Government Notice No. 320 published 20 March 2020 and Government Notice No. 1150 published 30 October 2020 as amended by Government Notice No. 3717 published 28 July 2023.

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- A description of the methodology adopted in undertaking the assessment including the equipment and modelling used where relevant;
- A map superimposing the activity including associated structures or infrastructure on the environmental sensitivities;
- Impacts identified, including the severity of impacts, significance and duration;
- Any mitigation measures that could be applied;
- The severity of impacts after mitigation;
- Mitigation to be applied through the construction and operational phase, for inclusion in the EMPr;
- An indication of any areas to be avoided due to sensitivity including any buffers;
- A discussion on any assumptions made and any uncertainties or gaps in knowledge which exist and could impact on the findings;
- A reasoned opinion on whether the activity should be authorised, and
- Any conditions that should be included in the environmental authorisation for the activity.

The final specialist impact assessment will be updated with any relevant inputs made by I&APs during the public participation process. The EAP will consider findings of each of the specialist impact assessments in the consolidated assessment report and will include any mitigation measures identified in the specialist assessment impact study, in the EMPr. Any conditions identified as being necessary by the specialist and which must be applied will also be identified in the consolidated assessment report. The specialist impact assessment and any supporting documents to be attached by the relevant specialist will be included in Chapter 9.

2.7 Section 5.1 – Agricultural agro-ecosystem impact assessment

2.7.1 General

Exploration and production of petroleum generally takes place in undeveloped areas which would have an agricultural zoning and would be used for agricultural purposes, e.g. either crop production or animal grazing. The infrastructural requirements to support petroleum exploration or production also have the ability to fragment agricultural resources. As food security is fundamentally important, a major concern from an agricultural perspective is the possible loss of high potential agricultural land, the curtailment of agricultural activities or the fragmentation of agricultural land leading to further loss of agricultural productivity.

The aspects to be covered under this heading relate to the current status of the agricultural land and the impacts that the exploration or production activities would have on that status. The manner in which to consider these impacts have been included in the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources*[29] and are therefore not repeated here. Having applied the requirements of the site sensitivity verification in the scoping phase, the agricultural specialist must apply the assessment requirements of the agricultural resources protocol.

2.7.2 Content of the agricultural agro-ecosystem impact assessment report

The impacts on agricultural land must be reported on in line with the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources"*. The agricultural agro-ecosystem impact assessment report must be signed off by the specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes, for onshore petroleum

[29] Government Notice No. 320 published 20 March 2020.

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exploration and production using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

The findings of the agricultural agro-ecosystem impact assessment must contain –

- A reasoned opinion, based on the findings of the impact assessment, regarding the acceptability or not, of the development related to agricultural land and any conditions to be included in the environmental authorisation should the project be approved, if relevant; and
- A discussion on the application of the impact mitigation hierarchy and where areas of high agricultural potential cannot be avoided, the mitigation measures which must be implemented to mitigate the impacts of the exploration or production activities on agriculture. These mitigation measures must be transferred by the EAP into an environmental management programme to be included in Chapter 7.

2.8 Section 5.2 – Terrestrial biodiversity impact assessment

2.8.1 General

Petroleum exploration and production operations can, among others, impact on terrestrial biodiversity through the loss of indigenous vegetation due to clearing, changes to the ecological functioning and processes, the establishment and spread of declared weeds and invader plants due to clearing and disturbance of vegetation, increased runoff and erosion due to the presence of hard surfaces and compaction that changes the infiltration and runoff properties of the landscape, the interference with ecological corridors, and the general disturbance of habitats. These impacts would be experienced during the construction and operational phases of petroleum exploration and production operations. The phased nature of production activities will also result in cumulative impacts which will be experienced throughout the production phase.

It is therefore necessary to consider these impacts and to avoid them or where avoidance is not possible to mitigate against such impacts. The manner in which to consider these impacts have been included in the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity*[30]*"* and are therefore not repeated here. Having applied the requirements of the site sensitivity verification in the scoping phase, the biodiversity specialist must apply the assessment requirements of the terrestrial biodiversity protocol.

2.8.2 Content of the terrestrial biodiversity impact assessment

The impacts on terrestrial biodiversity must be reported on in line with the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity".* The terrestrial biodiversity impact assessment must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring

[30] Government Notice No. 320 published 20 March 2020.

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requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

The findings of the terrestrial biodiversity impact assessment must contain –

- A reasoned opinion, based on the findings of the impact assessment, regarding the acceptability or not, of the development related to the impact of the project on biodiversity and any conditions to be included in the environmental authorisation should the project be approved, if relevant; and
- A discussion on the application of the impact mitigation hierarchy and where areas of high terrestrial biodiversity cannot be avoided, the mitigation measures which must be implemented to mitigate the impacts of the exploration or production activities on biodiversity. These mitigation measures must be transferred by the EAP into an environmental management programme to be included in Chapter 7.

2.9 Section 5.3 – Aquatic biodiversity impact assessment and wetland/riparian delineation study

2.9.1 General

Riparian areas and wetlands are crucial to deliver ecosystems services which include, among others, maintaining habitats for species and biota diversity, riverbank stability, erosion prevention and maintaining water quality. It is therefore important to identify these features in the environment, and to protect them from disturbance. Avoidance of the loss of wetlands and impacts to rivers and wetlands is a priority.

Impacts to wetlands and riparian areas could occur during the construction and operational phases of onshore petroleum exploration and production using fracturing technology. The phased nature of production activities could also result in cumulative impacts which will be experienced throughout the production phase.

In order to determine the potential impacts from the proposed onshore petroleum exploration and production operations on riparian areas and wetlands, and to ensure that these impacts are avoided, or where they cannot be entirely avoided, that adequate mitigation measures are proposed, it is necessary to conduct the following studies:

- A wetland and/or riparian delineation in accordance with DWAF guidelines[31] and utilising relevant indicators;[32]
- Determine the present ecological state of the wetland or riparian areas, and identify species of conservation concern and habitats that are found or could potentially be found on the site; and
- Assess the ecological importance and sensitivity of the wetlands and riparian zones identified.

Aspects to be considered in wetland delineation include the terrain unit indicator, the soil form indicator, the soil wetness indicator and the vegetation indicator.

In addition to the studies identified above, the biodiversity specialist must apply the assessment requirements identified in the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity*".[33]

[31] Guideline document, "A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas", DWAF (2005).
[32] Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas, (2008).
[33] Government Notice No. 320 published 20 March 2020.

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2.9.2 Content of the aquatic biodiversity impact assessment and wetland/riparian delineation study

The impacts on aquatic biodiversity and the outcome of the wetland and riparian delineation study must be reported on in line with the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity".* In addition, the results of the wetland and riparian delineation studies must be presented in map format with a Google Earth overlay. The aquatic biodiversity impact assessment and wetland/riparian delineation study must be signed off by the specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring, to ensure that cumulative impacts can be monitored over time.

The findings of the aquatic biodiversity impact assessment and the wetland and riparian study must contain –

- A reasoned opinion, based on the findings of the impact assessment, regarding the acceptability or not, of the development related to the impact of the project on aquatic biodiversity and any conditions to be included in the environmental authorisation should the project be approved, if relevant; and
- A discussion on the application of the impact mitigation hierarchy and where areas of high aquatic biodiversity cannot be avoided, the mitigation measures which must be implemented to mitigate the impacts of the exploration or production activities on aquatic biodiversity. These mitigation measures must be transferred by the EAP into an environmental management programme to be included in Chapter 7.

2.10 Section 5.4 – Animal and plant species impact assessments

2.10.1 General

The species specialist impact assessments must consider animal and plant species of conservation concern. The aim of the specialist impact assessments is to determine the state of animal and plant habitats and animal and plant communities on the site, to determine the possible impact that activities related to onshore petroleum exploration and production operations will have on these species, to identify areas to be avoided and to provide recommendations to avoid, limit or mitigate impacts. Species of conservation concern are those species listed by conservation authorities as being on the IUCN 'Red List' of threatened species[34] at risk of extinction, or on the South African's National Red List website[35] as critically endangered, endangered or vulnerable or listed as nationally rare.

The specialist impact assessment is required to determine the potential for occurrence of species of conservation concern in the study area, the possible impact on populations of species of conservation concern and on overall species richness, genetic variability, population dynamics and habitats important for species of conservation concern. Impacts to species of conservation concern would relate to ecosystem functions which would include habitat fragmentation, disruption to ecological corridors, changes to abiotic environmental conditions, changes to disturbance regimes, impedance of movement of material or water and cumulative impacts as the impacts related to onshore

[34] https://www.iucnredlist.org/
35 http://speciesstatus.sanbi.org/

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petroleum exploration and production operations will occur during the construction and operational phases.

In order to identify the impacts referred to above, the species specialists must apply the assessment requirements identified in the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on animal species*[36] and the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on plant species"*.

2.10.2 Content of the animal and plant species impact assessment report

The impacts on animal and plant species of conservation concern must be reported on in line with the "*Protocol for the specialist assessment and minimum report content requirements for environmental impacts on animal species"* and the *"Protocol for the specialist assessment and minimum report content requirements for environmental impacts on plant species".* The animal and plant species specialist impact assessment report must be signed off by the specialist and must be included in the consolidated assessment report, to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

The findings of the animal and plant species impact assessment must contain –

- A reasoned opinion, based on the findings of the impact assessment, regarding the acceptability or not, of the development related to the impact of the project on animal species and any conditions to be included in the environmental authorisation should the project be approved, if relevant; and
- A discussion on the application of the impact mitigation hierarchy and where areas of high animal species biodiversity cannot be avoided, the mitigation measures which must be implemented to mitigate the impacts of the exploration or production activities on animal species. These mitigation measures must be transferred by the EAP into an environmental management programme to be included in Chapter 7.

2.11 Section 5.5 – Noise and artificial lighting impact assessments

Exploration and production operations for petroleum resources are generally located in rural areas with low levels of noise and artificial light. These areas are also known to have an aesthetic visual quality. The change of land use associated with the exploration and production of petroleum has an industrial connotation that could interrupt the scenic characteristics and the "sense of place" value of these landscapes.

2.11.1 General

Increased noise and light could impact negatively on animal species through displacement and the interruption of breeding or feeding habits. On humans, the impact from increased noise and light and a change of "sense of place" can manifest through health and emotional impacts as well as impacts to tourism. As such, a noise and light specialist study is required, to determine the impacts of noise, light and visual impacts.

[36] Government Notice No. 1150 published 30 October 2020 and amended through Government Notice No. 3717 published 28 July 2023.

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A "*Protocol for the specialist assessment and minimum report content requirements for noise impacts"* has been gazetted[37] and the specialist or EAP is required to undertake a noise assessment in accordance with this protocol.

During the onshore petroleum exploration and production using fracturing technology, artificial light will be required to provide for human safety and increased productivity. This light, however, when poorly designed and installed can be a nuisance and impact negatively on the health and wellbeing of humans and on animal species and the sense of place of the study area. The potential impacts of artificial light are related both to spill light, which is the illumination that is produced by a light source or combination of light sources at a point, and glare, which is associated with the brightness of light as experienced by an observer. As such the potential impacts of light on the study area is to be determined. In order to assess the light impact of the proposed operation, the following steps must be implemented:

- Review the applicable legislation, Regulations and guidelines that apply to the need for and restriction on artificial lighting;
- Identify the study area in which the light study is to be undertaken, including a rational;
- Prepare a draft artificial lighting layout based on the needs of the operation;
- Identify the artificial light that will be generated by the operation on the basis of the draft artificial lighting layout;
- Identify existing artificial light sources on the site and in the study area;
- Identify sensitive receptors both human and animal;
- Based on the draft artificial lighting layout, determine the potential generation of artificial light and glare from the operation and assess the impacts on human receptors, the identified animal species and the sense of place, against the baseline (new moon phase);
- Consider the impact of the additional artificial light from various lines of sight;
- Consider any mitigation measures which could be applied to reduce the impacts as well as any amendments that need to be made to the draft artificial lighting layout. Such mitigation measures could include-
  - switching off lights between certain times;
  - installing dimmers, timers, flashing rate and motion sensors;
  - mounting lights low and the lowest intensity lighting appropriate for the task to be undertaken;
  - using non-reflective, dark surfaces;
  - keeping bollard lights shielded as far as possible;
  - permanently direct pole mounted lighting downwards;
  - using amber lighting;
  - using long wavelength lights and LED lights to allow for lighting controls to be fitted;
  - remotely computer-controlled lighting;
  - only adding light for specific purposes;
  - considering planting screening vegetation;
- Identify the monitoring and auditing requirement that must be implemented.

2.11.2 Content of the noise and artificial lighting impact assessments report

The outcome of the noise impact assessment must be reported on in line with the "*Protocol for the specialist assessment and minimum report content requirements for noise impacts"*.

[37] Government Notice No. 320 published 20 March 2020.

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The outcome of the artificial lighting assessment must be documented in a specialist impact assessment report which must include as a minimum the following aspects-

- Summary of findings;
- Detail the applicable legislation, Regulations or guidelines related to light impact assessment;
- Identify the site considered on a map, indicating-
  - the locations at which the existing night light from the site have been taken;
  - the location of the sensitive receptors;
  - the location of the existing lighting sources;
- Describe the methodology used to assess the additional light impact;
- Provide the dates on which the light assessment was undertaken;
- The weather conditions and any conditions that would impact on the results;
- Identify the methodology used to assess the existing light impacts;
- Mitigation measures to be included in the EMPr;
- Monitoring and auditing requirements; and
- Revised artificial lighting layout.

The noise and artificial lighting specialist impact assessment report must be signed off by the specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

The findings of the noise and artificial lighting impact assessment must contain a reasoned opinion, based on the findings of the impact assessment, regarding the acceptability or not, of the development related to the impact of the project on sense of place and any conditions to be included in the environmental authorisation should the project be approved, if relevant.

2.12 Section 5.6 – Climate Change impact assessment

South Africa is a signatory to the Paris Agreement which is a global commitment to cut greenhouse gas (GHG) emissions in order to keep the rise in mean global temperature to well below 2 °C above preindustrial levels, and preferably limit the increase to 1.5 °C. GHG emissions are expressed as units of CO_2 equivalence (CO_2-eq). To meet this commitment, South Africa has pledged a nationally determined contribution to global mitigation efforts of limiting its GHG emissions to between 398 to 510 Mt CO_2-eq in 2025, reducing to between 350 and 420 Mt CO_2-eq in 2030, moving towards achieving the ultimate goal of net-zero CO_2-eq emissions by 2050. Net-zero means that emissions of CO_2-eq due to human activities, and removals of these gases, are in balance over a given period.

2.12.1 General

Exploration and production of operations for petroleum resources will contribute to GHG emissions through the materials used for the construction of the operations and infrastructure, through fugitive emission when extracting and transporting gas and through the use of the gas extracted. As such, part of the decision-making process for exploration and production operations, must determine the GHG contribution of the facility for all phases of the operations and consider the impact of these emissions on the cumulative GHG contributions of the country's GHG inventory. As gas has lower CO_2 emissions than coal and petroleum liquids the use of gas in the energy sector will reduce overall CO_2 emissions

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from the sector, therefore there is no need to consider avoided emissions from the transition (where its used if for an Open Cycle Gas Turbine).

The objective of the climate change impact assessment is to –

- Identify the climate change policy and legislative context and to indicate conformance to such policy and legislation;
- Identify the proposed project's prospective contribution to climate change through the calculation of GHG emissions of all phases of the project;
- Consider how these GHG emissions will impact on the country's global GHG reduction commitments;
- Consider the impact on any carbon sinks; and
- Determine the possible impact of climate change on the project's core operations to identify appropriate measures to make the project resilient to these impacts.

Although the consequence of the project's GHG emissions on the regional environment have traditionally been considered in a climate change impact assessment, it is understood that the impacts of climate change are global in nature and that the GHG emissions from individual projects or source cannot be connected directly to any specific climate change impact. Therefore, rather than embark on a theoretical exercise to determine the impacts of the GHG emission from a specific exploration or production project on the regional environment, this guidance requires the consideration of how the GHG emissions from the project impact on the carbon budget set[38] for the relevant sector and the country as a whole. In addition, this guidance requires the determination of the project's potential to reduce its GHG emissions (including the emissions from the use of the gas extracted) in line with relevant national reduction targets, through efficiencies, alternatives, offsets or carbon sinks.

2.12.2 Content of a climate change impact assessment

The climate change impact assessment must be undertaken by a SACNASP registered professional in the field of atmospheric science or an equivalent field. The assessment must consider the information contained in the "Compendium of Greenhouse Gas Emissions Methodologies for the Natural Gas and Oil Industry 2021."[39] In order to meet the objectives of the climate change impact assessment the following steps must be followed as a minimum:

- Define the goal, scope and boundaries of the climate change impact assessment;
- Identify the GHG contributing sources and activities (GHG inventory);
- Decide on the GHG determination methodology to be used to calculate direct emissions, indirect emissions and emissions from the use of the gas produced;
- Collect the necessary calculation data;
- Calculate the emissions identified in the inventory per annum and over the life of the operations;
- Calculate the GHG emissions from the use of gas to be produced by the operation over the operational life;
- Identify sources of possible fugitive emissions (fugitive emission inventory);
- Determine the methodology to be used to determine potential fugitive emissions;

[38] It is acknowledged that carbon budgets for sectors are yet to be determined, however, consideration should be given to international best practice in this regard.
[39] Compendium of Greenhouse Gas Emissions Methodologies for the Natural Gas and Oil Industry 2021 prepared for the American Petroleum Institute which can be accessed at https://www.api.org/-/media/files/policy/esg/ghg/2021-api-ghg-compendium-110921.pdf.

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- Calculate the potential fugitive emissions;
- Consider the significance of the cumulative emissions against the South African carbon budget and the sector emissions targets;
- Discuss alternatives if relevant (for exploration and production activities alternatives may not be feasible);
- Identify the impacts of climate change on the project;
- Identify climate change adaption measures for the project; and
- Identify possible climate change mitigation measures.

2.12.3 Content of the climate change impact assessments report

The outcome of the climate change impact assessment must be documented in a report under the following minimum headings-

- Summary of findings;
- GHG inventory for direct, indirect and fugitive GHG emissions for all phases of the operation for the life of the operation;
- The calculation methodology to be used to identify the direct, indirect and fugitive GHG emission for all phases of the operation as well as for the product extracted;
- Emissions calculations for direct, indirect and fugitive GHG emission for all phases of the operation as well as for the product extracted over the life of the operation;
- Significance of the emissions calculated in relation to the country's national determined commitments and the sector targets for all phases of the operation as well as the product extracted over the life of the operation;
- The impact on any carbon sinks;
- Alternatives and any mitigation measures considered;
- Adaption measures to be implemented;
- Monitoring and auditing requirements;
- Mitigation measures to be included in the EMPr; and
- Climate change specialists' statement on the acceptability of the proposed project in relation to climate change impacts.

The climate change impact assessment report must be signed off by the specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology.

2.13 Section 5.7 – Air Quality impact assessment

The exploration and production of a petroleum resource utilising fracturing technology can impact on regional and local air quality through, among others, the increase of traffic related to supplying materials to and removing wastes from the operations, emissions from diesel-fired drilling equipment, leaking of gas from the drilling operations or related infrastructure, the well completion process, venting of gas to clear well heads, dust generation from the use of propellants, the handling of diesel and the storge and handling of waste products. Fracturing operations will also impact on worker's health and safety due to the increased levels of crystalline silica and VOCs on the site.

2.13.1 General

Due to the potential for the use of fracturing technology to increase ambient air pollution and to contribute to the deterioration of air quality on the site, it is necessary to undertake an air quality

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impact assessment to evaluate the possible impact of the use of the technology on the environment and worker's health and safety. The air quality impact assessment must be undertaken by a SACNASP registered professional, registered in the field of atmospheric science or an equivalent field. The information gather through the modelling and impact determination must be considered as input data for use in the climate change impact assessment.

South Africa currently does not have national minimum emission standards for well heads, as such the possible impacts on air quality must be considered by undertaking continuous ambient air quality monitoring and point source emission monitoring at frequencies to be determined by the specialist impact assessment and worker health and safety monitoring as required by the Occupational Health and Safety Act.

2.13.2 Content of the air quality impact assessment

The main objectives of the air quality impact assessment are to quantify the extent to which existing site and ambient pollution levels will change as a result of the use of fracturing technology, to determine the significance of these changes to identify any management and mitigation measures and to prepare an operational monitoring plan to ensure the protection of workers and the environment.

The outcomes of the air quality impact assessment must be considered against the results of the baseline air quality monitoring study. Should any elevated emissions be detected during operations, the impacts on the respiratory health of the communities surrounding the site will need to be determined, through methodologies which could include health screening. The air quality impact assessment must be based on the commitment to eliminate gas venting to situations related to emergency, safety and operation upset only, and flaring of gas should not be used as a long-term management strategy.

The following steps as a minimum must be undertaken in the air quality impact assessment:

- Identify the scope of the project and study area including the rational for the determination of the study area;
- Identify the regulatory requirements for identified key pollutants against which compliance must be assessed and health risk screened;
- Identify the local and regional meteorology (weather and climate);
- Identify the local and regional topographical features;
- Identify the methodologies and models to be used when undertaking the assessment;
- identify possible point sources of emission from the various activities that will be undertaken through the operations as well as any infrastructure and quantify the associated emissions through a review of relevant literature which must include the "Compendium of Greenhouse Gas Emissions Methodologies for the Natural Gas and Oil Industry 2021"[40] and "A Voluntary Standard for Global Gas Flaring and Venting Reduction 2004;"[41]
- Identify potential air quality sensitive receptors in the study area;
- Determine the atmospheric dispersion potential of the study area taking account of the local and regional metrology and topography;

[40] Compendium of Greenhouse Gas Emissions Methodologies for the Natural Gas and Oil Industry 2021 prepared for the American Petroleum Institute which can be accessed at https://www.api.org/-/media/files/policy/esg/ghg/2021-api-ghg-compendium-110921.pdf.

[41] A Voluntary Standard for Global Gas Flaring and Venting Reduction 2004 prepared for the World Bank which can be accessed at https://www.google.com/search?client=safari&rls=en&q=A-voluntary-standard-for-global-gas-flaring-and-venting-reduction&ie=UTF-8&oe=UTF-8.

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- Determine the quality of the receiving environment by considering the information obtained through the baseline monitoring;
- Compile a comprehensive emission inventory which must include operational phase activities (drilling, well pads etc.), mobile sources (truck traffic) and fugitive emissions (equipment leaks, dust etc.). Consider international literature to determine emissions where no emissions history is available in South Africa;
- Apply an atmospheric dispersion model to simulate impacts of the operations on ambient air pollutant concentrations;
- Consider cumulative impacts and the levels of acceptable change;
- Identify mitigation measures for inclusion in the environmental management programme;
- Determine compliance of criteria pollutants with the national ambient air quality standards, National Dust Control Regulations, 2013 and the standards contained in the Notice for the Listed Activities and Associated Minimum Emission Standards Identified in Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) where relevant, as well as international best practice for activities for which emission standards are not set in South Africa and occupation exposure with and without mitigation measures;
- Prepare an operational ambient air quality monitoring plan which must include as a minimum the following information:
    - Purpose of the plan;
    - Daily onsite weather conditions including temperature, wind direction and rainfall;
    - Sampling methodology to be used;
    - Laboratory to be used for analysis;
    - The location of air quality monitoring points;
    - The location of air quality monitoring station to allow for continuous ambient air quality monitoring;
    - The methodology to determine occupational exposure;
    - The monitoring parameters must as a minimum include: SO2, NOx, NO2, PM10, PM2.5, O3, C6H6, Pb, CO, CH4, VOCs, respirable crystalline silica and H2S if H2S is present in the gas;
    - Monitoring intervals for each parameter; and
    - The responsible person for the various tasks to be undertaken.

The air quality monitoring points must be identified on an annotated map and parameters and monitoring intervals included in an excel spread sheet. Both the map and the excel spread sheet must be included in the operational ambient air quality monitoring plan.

2.13.3 Content of the air quality impact assessment report

The outcome of the air quality impact assessment must be documented in a report under the following headings as a minimum-

- Summary of findings
- Study approach and methodologies used;
- Regional climatic conditions;
- Air quality impact assessment results;
- Significance rating of the identified impacts;
- Possible mitigation measures;
- Severity of impacts after mitigation;
- Cumulative impacts;
- Description of the assumptions and uncertainties or gaps in knowledge;

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- Air quality specialist's statement on the acceptability of the proposed project in relation to air quality;
- Operational ambient air quality monitoring plan; and
- Management and mitigation measures to be included in the EMPr.

When considering the content of the operational ambient air quality monitoring plan, the applicant must consider international best practices for additional parameters of concern as well as the most up to date monitoring methodologies. The air quality impact assessment must be signed off by the specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

2.14 Section 5.8 – Seismicity risk assessment

Although reports of fracturing causing felt earthquakes are extremely rare, in the oil and gas industry induced seismicity can occur. Induced seismicity is the increase of seismicity events which are larger in magnitude than what was observed historically. There is the potential that when fluids are injected into rock structures, the fluid may increase the pore pressure on a possibly active fault. This could cause a sudden slip that releases stored energy, generating seismicity and potentially an earthquake. Induced seismicity is most often associated with wastewater injection projects. Wastewater disposal wells typically operate for longer durations and inject much more fluid than is injected during the fracturing process, making them more likely to induce earthquakes. The draft NEMA Fracturing Regulations, which, once implemented, will manage the environmental impacts of fracturing technology on the environment, prohibits the disposal of fracturing fluids, process water or any other component of process water underground, including through the use of re-injection wells. Increased seismicity from wastewater injection is therefore not expected or possible.

Chapter 4 of the Strategic Environmental Assessment (SEA) which was undertaken between 2015-2017 to consider the opportunities and constraints with regard to shale gas development in the Karoo,[42] identified Southern Africa as a seismically quiet region by global standards as it is remote from the boundaries of tectonic plates.

2.14.1 General

Noting that few seismic events of notable impact have taken place in South Africa historically and further noting that no re-injection of waste into wells is be allowed, it is unlikely that the use of fracturing technology will induce seismic events larger in magnitude than what was observed historically. However, in order to ensure that risks are minimized a seismic risk impact assessment is to be undertaken.

2.14.2 Content of the seismic risk assessment

The seismic risk assessment must be undertaken by a SACNASP registered professional in the field of Geological Science or an equivalent field and the following steps as a minimum must be undertaken in the seismic risk assessment:

[42] Maps of known category 1, 2 and 3 heritage resources were provided in the Digital Addenda to the Chapter 15 of the SEA which can be accessed at https://seasgd.csir.co.za.

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- Identify the regional and local geology;
- Identify from the baseline information and historical data, the historical seismic activity in the study area and the geology of the study area;
- Analyze and compare the seismic activity during the 24-month baseline data capturing with that of historical data for the study area;
- Identify dykes and faults in the geology of the site;
- Identify stressed and proximal faults which must be avoided in the fracturing process;
- Identify the fracture behaviour of targeted formations;
- Identify the potential and significance of the increase in seismic activity due to the fracturing operations;
- Consider any mitigation measures that can be employed to reduce risks;
- Prepare an operational seismic monitoring plan which must include as a minimum the following information:
    - purpose of the plan;
    - monitoring equipment to be used;
    - the location of the monitoring equipment as well as the location of the continuous monitoring station for seismic activity;
    - the location including the coordinates of historical buildings, other built structures and stone walls to be monitored including the frequency of monitoring; and
    - the location of any other infrastructure which is to be monitored for example pipelines, tailings dams and bridges etc. as well as the frequency of monitoring.

The monitoring and observation points must be identified on an annotated map and parameters and frequencies included in an excel spread sheet. Both the map and the excel spread sheet must be included in the operational seismicity monitoring plan and the points included in the baseline monitoring plan must be included for ongoing monitoring through the fracturing and production operations. The Council for Geoscience must be engaged for any inputs that may be relevant and not covered in these requirements as well as the potential impact on identified buildings and structures.

2.14.3 Content of the seismic risk assessment report

The outcome of the seismic risk impact assessment must be documented in a report under the following headings as a minimum-

- Summary of findings;
- Regional and local geological conditions;
- Study approach and methodologies used;
- Findings of the assessment;
- Possible mitigation measures;
- Severity of impacts after mitigation;
- Description of the assumptions and uncertainties or gaps in knowledge;
- Geological specialists' statement on the acceptability of the proposed project in relation to seismic activity;
- The operational seismic monitoring plan; and
- Management and mitigation measures to be included in the EMPr.

The outcome of the seismic risk assessment must be documented in a seismic risk assessment report which is to be signed off by the specialist and included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational

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monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

2.15 Section 5.9 - Socio-economic impact assessment

Exploration and production operations for petroleum resources are generally located in rural areas which would generally be undeveloped areas with low population densities comprising unskilled or semiskilled labour. Areas targeted for exploration and shale gas development are likely to experience significant capital inflows leading to a major influx of activity into such areas which could provide development opportunities but could also disrupt the current social and economic fabric with negative social consequences. The negative impacts could include, among others, an increase in cost of living, an increase in crime, illness, shortage of housing, reduced tourism, increased traffic and traffic accidents, greater social inequality, unrest and conflict, as well as long term externality problems such as damages to roads, water provision and sewerage services, as well as long term risk posed by abandoned or decommissioned wells. It will be important that taxpayers are not burdened with potentially highly significant costs after abandonment of wells. Other externalities would include increased noise levels, social ills, land degradation, competition for and impact on water resources, visual impacts, etc.

2.15.1 General

Baseline monitoring was undertaken through the seismic activities which were undertaken during the first two years of exploration. To support the EA process for the fracturing and production phases, a socio-economic impact assessment must be undertaken to assess the potential impact of the project on the socio-economic environment, to forecast, monitor and control prospective social and economic impacts.

2.15.2 Content of a socio-economic impact assessment

The socio-economic impact assessment must be undertaken by suitably qualified professional in the field of psychology or an equivalent field. Socio-economic impacts can usually be divided into three broad categories which include, the physical intrusion of the project activities and the project-related infrastructure, the economic pull which is the area from which the project attracts job seekers or investors and indirect or induced impacts related to the project which could include increased rates and taxes etc. The following steps as a minimum must be undertaken in the socio-economic impact assessment:

- Identify the project scale;[43]
- Using the baseline as the foundation to determine the level of vulnerability in the social environment;
- Consider the impact on access to services including tourism services;
- Determine the potential influx and outflow of temporary workers;
- Identify if any relocation of individuals or families will be necessary;
- Identify if changes to racial and ethnic composition is expected and possible impacts of such changes if realized;
- Identify possible changes to land use patterns and the impacts of such change if realised;
- Identify possible changes to health and social wellbeing and the impact of such changes;

[43] Taken from the Department of Environmental Affairs and Tourism's Integrated environmental Management Information Series, 2005 – Socio-Economic Impact Assessment.

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- Identify changes to the quality of the living environment including access to services and the capacity of local government to deliver the required services;
- Identify any cultural impacts which could include the loss of local language, experience of being culturally marginalised etc;
- Identify impacts to the family unit and community which could include possible impacts on community cohesions, social tension and violence etc.;
- Institutional and legal impacts;
- Gender relations;
- Determine the significance of the impacts;
- Identify any mitigation measures to be implemented; and
- Identify the parameters from the baseline monitoring plan to be taken through to the operational monitoring plan as well as additional aspects which must be monitored.

2.15.3 Content of a socio-economic impact assessment report

The outcome of the socio-economic impact assessment must be documented in a report under the following headings as a minimum-

- Regional and local socio-economic conditions;
- Study approach and methodologies used;
- Summary of findings of the assessment;
- Possible mitigation measures;
- Severity of impacts after mitigation;
- Description of the assumptions and uncertainties or gaps in knowledge;
- A specialist statement on the acceptability of the proposed project in relation to seismic activity;
- The operational monitoring plan; and
- Management and mitigation measures to be included in the EMPr.

The socio-economic impact assessment must be signed off by the psychologist who compiled the report and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational monitoring requirements identified by the psychologist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

2.16 Section 5.10 - Heritage impact assessment

South Africa has yielded fossils of some of the earliest known life forms on earth, as well as some of the earliest known dinosaurs, dating back at least 200 million years. Small pockets of high coverage indicate that important resources of all types can occur anywhere in the landscape but river valleys and the undulating uplands tend to be more sensitive than the open plains for some categories of heritage, largely because of access to water.

Heritage resources are distributed in variable densities throughout the country, but because of a generally low survey coverage, the actual distribution of heritage resources is poorly known, specifically in rural areas. As such, the value of all heritage resources in South Africa, including archaeology, shipwrecks, battlefields, graves, and structures over 60 years, living heritage and the collection of oral histories, historical settlements, landscapes, geological sites, palaeontological sites and objects must be assessed before development can occur on any site, other than in urban areas.

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2.16.1 General

The South African Heritage Resources Agency and the Provincial Heritage Agencies (PHRAs) are the custodians of the country's archaeological and palaeontological resources and in that capacity have prepared two guidance documents which set the standard for the preparation of archaeological and palaeontological components of a heritage impact assessment. The first document is entitled "Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports". Part II of the document contains the Minimum Standards for the archaeological component of the impact assessment. The second document is entitled "Minimum Standards: Palaeontological Component of Heritage Impact Assessment reports". These documents can be found at https://sahris.sahra.org.za. The impact assessment on archaeological and paleontological resources must be undertaken by a registered archaeological and palaeontological specialist in line with these two Minimum Standards.

2.16.2 Content of the heritage impact assessment

The impacts on archaeological and palaeontological resources must be reported on in line with section 38(3) of the NHRA, section 41(3) of the KZNARI Act, the "Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports", Part II and the "Minimum Standards: Palaeontological Component of Heritage Impact Assessment Reports". Graves may not be moved without approval from the relevant Heritage Agency and all building over 60 years old must be assessed prior to alteration or demolition. The heritage impact assessment report must be completed and signed off by a heritage specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore exploration and production of a petroleum resource using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the base line monitoring to ensure that cumulative impacts can be monitored over time.

A "Chance find protocol for cultural heritage, artefacts and palaeontological resources" must be prepared and included as an appendix to the environmental management programme to be included as Chapter 7.

2.17 Section 5.11 Hydrology impact study (surface water)

2.17.1 General

The exploration and production of an onshore petroleum resource using fracturing technology can impact on water resources through the use of water and the potential to pollute both surface and groundwater. The draft NEMA Fracturing Regulations, has prohibited, in areas where the rainfall is under 400 mm per annum, the extraction of water except from deep saline aquifers for use in fracturing operations as well as the discharge of process water into a water resource, or onto land through irrigation without treatment to water quality limits as contemplated in Appendix 4 of the Regulations. Notwithstanding, there is a possibility for surface water and groundwater to be impacted by fracturing fluids as well as by waste related to fracturing activities. Therefore, it is dependent on the impact assessment to evaluate the threat of fracturing and petroleum production to the water resource environment.

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2.17.2 Content of the hydrology study

The possible impacts on surface water must be considered by undertaking a hydrology study and the possible impacts on groundwater by undertaking a hydrogeological study. These studies will rely on the baseline information collected through the initial seismic survey phase. The surface water study must be undertaken by a surface water specialist registered with SACNASP in the field of water resource science or an equivalent.

This chapter assesses the possible impact that exploration and production of onshore petroleum using fracturing technology can have on surface water and surface water quality and the following actions as a minimum must be undertaken:

- Identify the scope of the project (including associated infrastructure);
- Identify the study area and provide a motivation;
- Consider geographical setting which must include:
  - catchment description;
  - rainfall including rainfall intensity;
  - evaporation;
  - mean annual runoff;
  - peak flood flows at relevant locations within the study area;
  - topographical information and drainage patterns;
  - regional climatic conditions;
  - downstream surface water uses;
  - receiving water body for any potential pollution;
  - surface water resource quality objectives;
- Flood line determination must be conducted and the 1:50 and 1:100-year flood lines determined;
- Determine the proposed layout of the operations which must include the location of any possible pollutants for all phases of the operations;
- Identify the methodologies and models to be used when undertaking the assessment;
- Identify any watercourse alterations being considered;
- Identify the dirty footprint of the layout;
- Prepare an inventory of activities within the operations which can contribute to surface water pollution;
- Determine, through appropriate modelling, a water balance for the operations;
- Identify possible impacts to surface water from the operations;
- Quantify the impacts and the significance of the impacts;
- Identify possible mitigation measures that can be implemented and determine the impacts after mitigation;
- Determine the residual impacts after mitigation, through all phases of the operation;
- Consider the cumulative impacts on surface water resources through all phases of the operations;
- Prepare a storm water management plan, the content of which must include:
  - objectives of the storm water management plan;
  - delineation of the site into clean and dirty water areas;
  - identification of areas where structures or infrastructure affect surface hydrology;
  - preparation of a hydrological and hydraulic model;
  - preparation of a conceptual storm water management plan for the overall site and specific infrastructure and structures on the site including any stormwater management tanks required;
  - identify mitigation measures for inclusion in the EMPr;
- Prepare a surface water operational management and monitoring plan which must include as a minimum the following:

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- water quantity - the flow rate where relevant or depth and extent of the feature;
- the locations for surface water monitoring through all phases of the operations which must include the baseline monitoring points;
- surface water monitoring parameters required to be monitored through all phases of the operations which must include as a minimum the following - field pH, electrical conductivity, temperature, dissolved oxygen, total dissolved solids; organics - VOCs, SVOCs and PAHs, BTEX compounds, T, macro elements, trace elements, NORM; stable isotopes including but limited to methane δ13C, methane δ13D, water δ13C, DIC δ13C, ethane δ13C and ethane δ13D; radioactive isotopes - uranium, thorium, radium and strontium as well as radioactivity - gross alpha radioactivity; gross beta radioactivity as well as stable isotopes including but not limited to C, H, O and N;
- the intervals for the monitoring of each feature;
- groundwater fed surface water features which could be impacted by groundwater contamination; and
- ecological status – species found in the water body including an estimate of the species abundance. Consideration must be given to in-stream, riparian and floodplain habitats. Any species of conservation concern must be identified and discussed in relation to the threat status, the national and provincial priority status.

- Identify the roles and responsibilities for undertaking the various tasks identified in the monitoring plan.

2.17.3 Content of the hydrology study report

The outcome of the hydrology study must be documented in a report under the following headings as a minimum:

- Local and regional information;
- Sources of potential pollution;
- Significance rating of the identified impacts;
- Risk assessment for potential pollution, including significance before mitigation;
- Cumulative impacts;
- Possible mitigation measures;
- Severity of impacts after mitigation;
- Description of the assumptions and uncertainties or gaps in knowledge;
- Storm water management plan; and
- Management and mitigation measures to be included in the EMPr.

The hydrology study report must be signed off by the specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The report must include an annotated map identifying the features to be monitored and parameters and frequencies included in an excel spread sheet. Both the map and the excel spread sheet must be included in the operational surface water management and monitoring plan. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

The findings of the hydrology study impact assessment must contain –

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- A reasoned opinion, based on the findings of the impact assessment, regarding the acceptability or not, of the development related to the impact of the project on surface water and any conditions to be included in the environmental authorisation should the project be approved, if relevant; and
- A discussion on the application of the impact mitigation hierarchy and where areas of high surface water sensitivity cannot be avoided, the mitigation measures which must be implemented to mitigate the impacts of the exploration or production activities on surface water. These mitigation measures must be transferred by the EAP into an environmental management programme to be included in Chapter 7.

2.18 Section 5.12 – Hydrogeology study (groundwater)

2.18.1 General

Surface water is a scarce resource in the Karoo environment which places a high value and reliance on groundwater resources. The exploration and production of a petroleum resource using fracturing technology are undertaken at high pressure and can impact on groundwater if adequate protection measures are not in place. The possible impacts on groundwater must be considered by undertaking a hydrogeology study.

2.18.2 Content of the hydrogeology study

The ground water study must be undertaken by a ground water specialist registered with SACNASP in the field of water resource science or an equivalent field. This chapter is to assess the possible impact that fracturing and petroleum production can have on ground water quality and the following steps as a minimum must be followed:

- Identify the scope of the project (including the associated infrastructure) and study area;
- Identify the methodologies and models to be used when undertaking the site evaluation, impact assessment/evaluation and significance rating, these methodologies and models will include among others, desktop studies, hydrocensus, sampling and chemical analysis, geophysical survey, borehole drilling where necessary, recharge calculation, and groundwater modelling including a groundwater flow model and transport models;
- Identify and analyse previous groundwater studies undertaken in the study area, any available geological information such as published maps, satellite imagery, scientific papers and existing stratigraphic well or core information, where relevant;
- Determine the geographical setting by considering the following aspects:
  - topography and drainage;
  - climate;
- Determine the prevailing hydrogeological conditions by considering the following aspects:
  - local geology;
  - regional geology;
- Determine the groundwater setting by considering the following aspects;
  - unsaturated zone and saturated zone;
  - hydraulic conductivity;
  - dykes and faults as potential preferred pathways;
  - groundwater levels;
  - potential groundwater contaminants from the use of the proposed fracturing technology;
  - current groundwater availability and quality;
  - aquifer classification;
  - aquifer protection classification;
  - groundwater vulnerability;

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- the depth of the target formation;
- Using groundwater modelling or other impact determination methodologies, determine/evaluate/predict the following:
  - groundwater elevation and gradient;
  - groundwater flow in both a regional and site-specific context;
  - source pathway receptor description;
  - predict the possible impacts that the use of fracturing technology may have on the groundwater regime both on the site and the study area, including during development, operations, decommissioning and post closure;
  - determine the significance rating of identified impacts;
- Identify management and mitigation measures and the severity of impacts after the implementation of mitigation measures;
- Identify management and mitigation measures to be included in the EMPr;
- Prepare an operational ground water monitoring plan which must include as a minimum the following;
  - monitoring network layout (source, pathway, receptor and background including the monitoring regime identified for baseline monitoring);
  - groundwater quantity including the depth and extent;
  - the groundwater quality parameters to be monitored through the various phases which must include as a minimum the following - field pH, electrical conductivity, temperature, dissolved oxygen, total dissolved solids; organics - VOCs, SVOCs and PAHs, BTEX compounds, T, macro elements, trace elements, NORM; stable isotopes including but limited to methane δ13C, methane δ13D, water δ13C, DIC δ13C, ethane δ13C and ethane δ13D; radioactive isotopes - uranium, thorium, radium and strontium as well as radioactivity - gross alpha radioactivity; gross beta radioactivity as well as stable isotopes including but not limited to C, H, O and N; and
  - ground water monitoring frequency for each feature.

2.18.3 Content of the hydrogeology study report

The outcome of the hydrogeology study must be documented in a hydrogeology study report for the various phases of the operations (construction, operations, decommissioning and post-decommissioning) under the following minimum headings-

- Project and site information:
  - Project scope and study area;
  - Methodologies and models used;
  - Climate;
  - Topography and drainage;
  - Local and regional geology;
  - Ground water setting and groundwater flow;
  - Potential impacts of groundwater, including the probability, duration and severity;
  - Possible management and mitigation measures;
  - Severity of possible impacts after mitigation;
  - Groundwater specialist statement on the acceptability of the proposed project in relation to groundwater;
- Assessed impacts on groundwater quantity;
- Assessed impacts on ground quality;
- Description of the assumptions and uncertainties or gaps in knowledge;
- Groundwater specialist's statement on the acceptability of the proposed project in relation to surface water;

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- Mitigation measures to be included in the EMPr, during fracturing/production and post fracturing/production.

The hydrogeology impact assessment report must be signed off by the specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

The report must include an annotated map identifying the features to be monitored and parameters and frequencies included in an excel spread sheet. Both the map and the excel spread sheet must be included in the groundwater operational monitoring plan.

2.19 Section 5.13 – Traffic impact assessment

2.19.1 General

Large volumes of materials which will include among others sand, water and chemicals will be transported to the fracturing site. In addition, a large volume of waste materials will be transported from the site. These materials and waste will be transported by road which will result in increased traffic volumes in the Central Karoo which could increase the risks and led to a detrimental impact on environmental and scenic quality.

2.19.2 Content of the traffic impact assessment

The traffic impact assessment must be undertaken by a civil engineer registered with the South African Institution of Civil Engineering or an equivalent field. This chapter assesses the possible impact of increased traffic resulting from fracturing activities, importantly including the cumulative impacts that the activity will have on the environment through exploration and production operations. The baseline study that was undertaken through the first phase of exploration, being the seismic survey, would have identified the road network that could be impacted on through fracturing and production operations as well as the current traffic patterns, maintenance programmes and road conditions.

The findings of the scientific assessment revealed that there were a number of risks which would result from the increased traffic volumes in the Central Karoo due to fracturing and production operations. These risk would be associated with among others:

- Vehicular emissions leading to decreased air quality;
- Spills from trucks transporting hazardous substances and waste to and from sites where fracturing is undertaken;
- Road strikes of fauna and landscape fragmentation affecting biodiversity and ecological functioning;
- Loss of regional visual scenic resources, increased ambient noise, decreased tourism activities and altered ‘sense of place’; and
- An incremental increase in the construction, upgrading and maintenance of road infrastructure.

Using the baseline conditions as the foundation, this traffic impact assessment must consider the impact of the increased risks and cumulative risks that fracturing and production operations will have on the area. The study is to:

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- Identify the methodology to be used;
- Identify the guidelines or supporting documentation to be used;
- Establish the number of vehicle trips generated during the fracturing and production operations and decommissioning of the site;
- Determine the impacts including the cumulative impacts;
- Determine mitigation and/or management measures which could be implemented to reduce the effects of negative impacts. As part of the mitigation measures, the applicant is to consider the ability to utilise the existing freight rail infrastructure to reduce impacts;
- Identify any conditions or mitigation measures to be included in the EMPr;
- Identify the scope of the project (including the associated infrastructure) and study area; and
- Identify the methodologies and models to be used when undertaking the site evaluation, impact assessment/evaluation and significance.

2.19.3 Content of the traffic impact assessment report

The outcome of the traffic impact assessment must be documented in a specialist impact assessment report which must include as a minimum the following aspects-

- Summary of findings;
- Detail the applicable legislation, regulations or guidelines related to traffic impact assessment;
- Identify the road network that will be affected on a map;
- Describe the methodology used to assess the additional traffic impacts;
- Describe the scale of the increased traffic;
- Describe the impacts including cumulative impacts;
- Mitigation measures to be included in the EMPr, as well as the feasibility of utilising the existing freight rail infrastructure; and
- Monitoring and auditing requirements.

The traffic impact assessment report must be signed off by the specialist and must be included in the consolidated assessment report to be submitted as part of the environmental authorisation and water use license application processes for onshore petroleum exploration and production using fracturing technology. The operational monitoring requirements identified by the specialist must be included in the integrated operational monitoring plan required to be included in section 6.4 of the consolidated assessment report. The operational monitoring requirements must include the continued monitoring requirements of the baseline monitoring to ensure that cumulative impacts can be monitored over time.

2.20 Section 5.14 Radio Frequency Interference study

2.20.1 General

South Africa is home to the multinational 10 m Southern African Large Telescope (SALT) in Sutherland which, in 2017, was the largest optical telescope in the southern hemisphere and will host the international Square Kilometre Array (SKA) project, the first phase of which is under construction. These are multi-billion Rand investments and must be protected from increased levels of electromagnetic interference which can negatively impact on the observing environment.

The potential increase in interference resulting from activities associated with the onshore exploration and production of petroleum resources has been assessed, and buffers, referred to as “areas” have been identified to ensure there would be no detrimental impact on the SKA. The draft NEMA Fracturing Regulations has identified prohibitions and restrictions related to the Sutherland Central

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Astronomy Advantage Area, the Karoo Central Astronomy Advantage Area 3, the corridors containing the Square Kilometer Array radio astronomy stations and the area located outside of the Karoo Central Astronomy Advantage Area 3, but within the boundaries of the Karoo Central Astronomy Advantage Area 1. The boundaries of these protection areas have been uploaded to the environmental screening tool, and any applicant applying for an environmental authorisation for onshore petroleum exploration or production will be aware if their site is falling within any of these prohibited or restricted areas. Should the proposed site for exploration or production operations fall within the prohibited areas, the application will not be accepted by the competent authority. Should the site fall within the area located outside of the Karoo Central Astronomy Advantage Area 3, but within the boundaries of the Karoo Central Astronomy Advantage Area 1, the applicant must seek the advice of the Astronomy Management Authority to determine the assessment requirements. These assessment requirements will differ from project to project depending on the activities to be undertaken. The application forms to have the developments considered and the contact details of the Astronomy Management Advantage Area Authority can be accessed at https://ama.dst.gov.za/AGAact/ or on e-mail at mere.kgampe@dst.gov.za.

Where the exploration or production activities are to take place in the area as identified as being restricted, a letter of approval from the Astronomy Management Advantage Area Authority must be included in the consolidated assessment report to be submitted with the environmental authorisation and water use license application for onshore petroleum exploration and production using fracturing technology.

2.21 Chapter 6 – Plans, layouts and designs

This chapter must include the relevant plans, layouts and designs that are required to be submitted with the application for environmental authorisation, for a water use license and the exploration or production right required in terms of the MPRDA. The content of these plans, layouts and designs will be informed by the baseline monitoring outcomes, the outcomes of the environmental impact assessments undertaken and specific input from additional specialists. These plans, layouts and designs although consulted with the consolidated assessment report must be presented as separate outputs as they will be implemented and monitored throughout the exploration and production operations.

2.21.1 Section 6.1 – Integrated water and waste water management plan

The objective of the integrated water and waste water management plan is to compile a site specific, implementable, management plan addressing all the identified water use and waste water management related aspects (e.g. process water balances, storm water management, groundwater management, water re-use and reclamation, water conservation and demand management, waste minimization and recycling) to ensure water efficiency and water management. When preparing the integrated water and waste water management plan, it must be noted that the NEMA Fracturing Regulations has prohibited:

- In areas where rainfall is under 400mm per annum, the abstraction of water except from deep saline aquifers for use in the exploration or production operation other than for drinking, domestic use and the preparation of cement samples;
- The disposal of process water from the exploration or production operation without at least one reuse;
- The discharge or disposal of fracturing fluids, process water or any other component of process water–
    - into a water resource without treatment;

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- onto land through irrigation without treatment;
- to a government waste water treatment works; or
- underground, including through the use of re-injection wells;

- The storage of process water for reuse or disposal in pits, retention dams or pollution control dams.

In addition, the baseline monitoring undertaken through the first phase of exploration was to identify the waste water recycling and reuse options as well as treatment and disposal facilities available in the broader study area, including the volumes of waste water that could be recycled, treated or disposed of. The study was also to identify gaps in the recycling, treatment, and disposal options available and to make recommendations on how to manage the liquid and solid waste that would be generated from the fracturing and production phases.

Building on this information, the following information as a minimum, must be identified or modelled for the fracturing and production phases of the operations:

- Identify the water requirements for each activity that is to be undertaken through the fracturing and/or production processes that will require water. These activities could include domestic use, drilling or fracturing operations, cement mixing, equipment cleaning etc, expressed as a monthly figure;
- Identify the water supply to be used noting that a source external to the site will need to be identified;
- Identify the amount of waste water to be produced per activity expressed as a monthly figure;
- The expected classification of the waste water determined in line with the National Norms and Standards for the Assessment of Waste for Landfill Disposal;[44]
- Model the amount of storm water that will need to be managed on site, expressed as a monthly figure, and located on a map to identify the nature of the water i.e., clean or dirty;
- Locate the clean and dirty waste storage facilities, on a map indicating the volumes of water that can be stored in each container;
- Identify water recycling goals and the methodology to achieve the requirements of the NEMA Fracturing Regulations;
- Identify a system for adhering to the waste manifest requirements of the National Waste Classification and Management Regulations;
- Identify roles and responsibilities for implementing the water and waste water management plan; and
- The anticipated management of the waste water which must include recycling and reuse options, treatment options and disposal options, providing detail on the options to be used and providing a copy of the relevant permits or authorisations for the companies to accept the waste.

The water and waste water management plan must be prepared by a ground water or surface water specialist registered with SACNASP in the field of water resource science or an equivalent field and the plan must be signed off by the EAP and specialist. The information on volumes must be included on a spreadsheet and the locations of storage facilities on an annotated map of the site which must be appended to the plan.

2.21.2 Section 6.2 - Solid waste management plan

The objective of the solid waste management plan is to ensure that all solid wastes that will be generated on the site, will be identified, classified and responsibly reused, recycled, treated, managed

[44] The National Norms and Standards for the Assessment of Waste for Landfill Disposal prepared under the National Environmental Management: Waste Management Act, 2008 (Act No 59 of 2008) and published under Government Notice 635 in Government Gazette No. 36784 on 23 August 2013.

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or disposed of. When preparing the management plan, it must be noted that the NEMA Fracturing Regulations have prohibited:

- The disposal to landfill, of sludge with a moisture content of >40% or that liberates moisture under pressure in landfill conditions and which has not been stabilised by treatment; and
- The storage of drill cuttings, sludge and waste other than in above ground tanks or leakproof skips.

In addition, the baseline monitoring undertaken through the first phase of exploration was to identify the waste recycling and reuse options as well as treatment and disposal facilities available in the broader study area and the country, including the volumes of waste that could be recycled, treated or disposed of. The study was also to identify gaps in the recycling, treatment, and disposal options available and to make recommendations on how to manage the liquid and solid waste that would be generated from the fracturing and production phases.

Building on this information, the following information as a minimum, must be determined for the fracturing and production phases of the operations:

- An inventory of quantities of solid waste expected to be generated through all phases of the operations;
- The expected quantities of solid waste must be broken down per activity for example borehole drilling, fracturing, domestic waste generation, waste from maintaining the drilling machinery and vehicles etc. and tabulated in a spreadsheet;
- The expected classification of the wastes must be determined in line with the National Norms and Standards for the Assessment of Waste for Landfill Disposal;
- The expected moisture content of the wastes must be estimated;
- Onsite waste storage options and the locations of the waste storage;
- Identify a system for adhering to the waste manifest requirements of the National Waste Classification and Management Regulations;
- Identify roles and responsibilities for implementing the solid waste management plan; and
- The anticipated management of the waste which must include recycling and reuse options, treatment options and disposal options, providing detail on the options to be used and providing a copy of the relevant permits or authorisations for the companies to accept the waste.

The solid waste management plan must be prepared by a waste specialist who has as a minimum of 10 years' experience in the waste field and qualifications in either civil or process engineering or chemistry and the plan must be signed off by the EAP. The information on volumes must be included on a spreadsheet and the locations of storage facilities on an annotated map of the site which must be appended to the plan. As per the standard conditions of authorisation included as Appendix 3 of the NEMA Fracturing Regulations, the holder must ensure that the solid waste management plan is revised and resubmitted for approval by the competent authority within the first year of operations. The objective of the revision and resubmission is to revise the anticipated characteristics of the waste as well as the quantities with the known and measured/calculated waste characteristics and volumes.

2.21.3 Section 6.3 - Emergency and spill contingency plan

The activities related to fracturing and production of gas is undertaken with large quantities of water mixed with a number of chemicals and propellants at high pressure. In addition to the actual fracturing activities, large amounts of materials for the fracturing and production activities are transported to and from the site by truck which can produce spills and cause collisions and impact risks. In addition, the infrastructure related to the production of gas, for example, pipelines and compressor stations can increase exposure risks. Therefore, while occupational health and safety on site will be managed

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under the Occupation Health and Safety Act, 1993[45] and blow out prevention equipment is installed at all wells, all other risks associated with the activities that will be undertaken on the site must be identified and mitigation measures and emergency procedures put in place to ensure that risks to human health and the environment are anticipated and that adequate management measures are put in place to avoid emergency situations. These risks must be identified through the preparation of an emergency and spill risk assessment, and the outcome of the management measures must be contained in an Emergency and Spill Contingency Plan.

The assessment must be undertaken by a group of specialists that must include a process engineer or chemical engineer, a risk assessment specialist and the EAP. The risks, including the direct and indirect risks must be determined for each activity and then a combination of activities. The significance rating of the risks occurring as well as the extent of impact must be determined and mitigation measures identified to reduce the occurrence of the risk through proactive measures as well as management measures. The plan must be signed off by all specialists that contributed to its generation as well as the EAP.

2.21.4 Section 6.4 - Integrated operational monitoring plan

The objective of the integrated operational monitoring plan is to ensure that impacts through the operational phase do not exceed those as identified in the environmental impact assessments. The monitoring plan must take into account the locations and parameters monitored through the baseline monitoring phase and must continue to monitor these locations and parameters as part of the operational monitoring plan to identify any deterioration in environmental quality through the operational phase.

The integrated operational monitoring plan is to be prepared by the EAP in consultation with the relevant specialists who have prepared impact assessments and must consolidate the requirements for operational monitoring identified in each of the impact assessment documents. The roles and responsibilities for implementation of the integrated monitoring plan must be identified. The integrated operational monitoring plan must be signed off by the EAP as well as the relevant specialists who identified monitoring requirements in their impact assessments.

2.21.5 Section 6.5 - Well layout

The well layout must be prepared by a well engineer in collaboration with the EAP and a number of specialists through the impact assessments undertaken for specific themes, which would include agriculture, terrestrial and aquatic biodiversity, animal and plant species, heritage, hydrology and hydrogeology. The well layout will consider the location of the petroleum reserve as well as the environmental sensitivities identified for the site. The layout must be included on an annotated map, and must include as a minimum the following:

- Any topographical features of interest;
- The location of existing farm dwellings and adjacent landowners;
- The location of any areas to be cordoned off during the operations;
- The location including the coordinates of the well including any identified buffer;
- The location including the coordinates of the well pad including the identified buffer;
- Number of the well and/or well pad;
- Laydown, operational areas and hard paved areas;
- The location of access roads;

[45] The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).

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- The location of any infrastructure associated with the operation including any electricity power lines or substations;
- The site office including ablutions, sick bays etc.; and
- Location of all storage areas (materials, water, waste water, solid waste, sand, vehicles, drill equipment, chemicals, generators etc.)

The layout plan must be signed off by the well engineer, the EAP and the relevant specialists who's work contributed to the layout.

2.21.6 Section 6.6 - Well design

The well design must be prepared by a well engineer and must conform to the well design and construction standards as identified in Appendix 1 of the NEMA Fracturing Regulations. Once completed and before inclusion into the consolidated assessment report, the well design must be subjected to a well examination undertaken by an independent well engineer. The design submitted for inclusion in the consolidated assessment report must include the endorsement and signature of the independent well engineer.

2.22 Chapter 7 - Environmental Management Programme

An environmental management programme plays a vital role in the implementation of consistent and continued environmental management practices during the life of the exploration and production operations.

An environmental management programme must be provided under this heading which satisfies the requirements of Section 24N of NEMA and Appendix 4 of the EIA Regulations which regulate and prescribe the content of any environmental management programme and specify the type of supporting information that must accompany the submission of the report to the decision-making authorities. This environmental management programme must include the setting up of the fracturing operations for exploration as well as the fracturing operations or the setting up and undertaking of the production operations, which ever phase is relevant.

The inputs provided by the specialists undertaking the impact assessments must be collated into a consolidated environmental management programme by an environmental assessment practitioner and all specialists must sign off of the completed environmental management plan to demonstrate that all their mitigation measures have been correctly captured and that each specialist takes responsibility for the adequacy of the mitigation measures.

The implementation of the environmental management programme is not an optional requirement. The environmental management programme is legally binding through NEMA and the environmental authorisation. The applicant must ensure that the environmental management programme forms part of all project tenders and exploration and production contracts to allow for costs of the mitigation and management measures to be included in the consideration of the viability of the project.

2.23 Chapter 8 - Financial provisioning plans, reports and calculations

The Financial Provisioning Regulations are binding on applicants or holders who apply for or who are issued with an environmental authorisation for activity 20A of the Environmental Impact Assessment Regulations and a right in terms of sections 79 and/or 83 of the MPRDA for exploration or production operations. Therefore, the application for a right in terms of section 79 of the MPRDA must be

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accompanied by the completed "Rehabilitation Plan Template for Operations Mining Low-Risk Commodities" and the "Financial Provisioning Determination Spreadsheet and Master Rates" as contemplated in the proposed amendments to the Financial Provisioning Regulations, 2024. For activity 20A of the Environmental Impact Assessment Regulations and a right in terms of section 83 of the MPRDA, the application for the environmental authorisation or right must be accompanied by the "Annual Rehabilitation Plan for Operations", the "Final Rehabilitation, Decommissioning and Mine Closure Plan for Operations", and the "Environmental Risk Assessment Report" as contemplated in the proposed amendments to the Financial Provisioning Regulations, 2024.

2.24 Chapter 9 - Supporting documentation

Chapter 9 includes all supporting documentation related to the EAP and specialists, the public participation process and the specialist impact assessments.

2.24.1 Section 9.1 - Environmental assessment practitioner and specialist information

With respect to the EAP and specialists the following information is to be provided in the draft impact assessment report and final impact assessment report which verify and validate the information provided in this section:

- The applicant's company environmental policy;
- From the EAP and specialists who have undertaken the site sensitivity verification and will undertake the relevant specialist assessments:
  - A short profile of the EAP and the EAP's company, where relevant;
  - A short profile of every specialist and specialist's company;
  - An abbreviated CV of the EAP and every specialist, including a short profile of similar work undertaken and the relevant years of experience;
  - Declaration of independence of the EAP and specialists;
  - EAP and specialists' company B-BBEEE certification;
  - Power of attorney;
  - Copy of the professional registration for the EAP and every specialist;
  - A signed declaration of independence from the EAP and every specialist; and
  - A screening report for the preferred site.

2.24.2 Section 9.2 - Consultation documentation

With respect to the public participation process the following information is to be provided to support the section:

- Database of I&APs;
- Background information document if relevant;
- Copies of adverts/notices placed in the media and notice boards placed on site where relevant;
- Registration documentation;
- Attendance registers;
- Copies of presentations;
- Minutes of any meetings with authorities and I&APs including any recorded inputs if relevant;
- comments and responses report

2.24.3 Section 9.3 – Impact Assessments

This section must contain the impact assessments prepared and signed off by the relevant specialists. The impact assessments must contain a description of the assumptions and uncertainties or gaps in

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knowledge as well as a statement by the relevant specialist on the acceptability of the proposed project in relation to the theme considered.

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DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 6809 **7 November 2025**

DECLARATION OF AREAS SITUATED IN THE NORTHERN CAPE PROVINCE TO BE PART OF THE EXISTING NAMAQUA NATIONAL PARK IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT NO. 57 OF 2003)

I, Dion Travers George, Minister of Forestry, Fisheries and the Environment, hereby under section 20(1)(a)(ii) of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003), declare the areas listed in the Schedule hereto, as part of the existing Namaqua National Park.

DR DION TRAVERS GEORGE
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT

SCHEDULE

Title Deed No	Description of Property: farm, portion	Ownership	District	Extent (ha)
T2462/2020	Portion 3 of the Farm Zoutpan No. 471	WWF-SA	Namaqualand	3 239.2559
T40/2023	Portion 14 of the Farm Wolvepoort No. 459	SANParks	Namaqualand	930.2444
T203/2024	Remaining extent of portion 3 of the Farm Wolvepoort No. 459	SANParks	Namaqualand	1 063.8784
T203/2024	Remaining extent of Portion 4 of the Farm Wolvepoort No. 459	SANParks	Namaqualand	100.6810

DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 6810 **7 November 2025**

WORLD HERITAGE CONVENTION ACT, 1999 (ACT NO. 49 OF 1999)

NOTICE OF INTENTION TO PROCLAIM CERTAIN LAND SITUATED IN THE KWAZULU-NATAL AND WESTERN CAPE PROVINCES TO BE THE EMERGENCE OF MODERN HUMAN BEHAVIOUR: THE PLEISTOCENE OCCUPATION SITES OF SOUTH AFRICA AS A WORLD HERITAGE SITE AND TO DECLARE THE MANAGEMENT AUTHORITIES

I, Dion Travers George, Minister of Forestry, Fisheries and the Environment, hereby in terms of sections 1(xxiv)(a), 7 and 8 of the World Heritage Convention Act,1999 (Act No. 49 of 1999), give notice of my intention to proclaim certain land situated in the KwaZulu-Natal and Western Cape Provinces, as the Emergence of Modern Human Behaviour: The Pleistocene Occupation Sites of South Africa World Heritage Site, and to declare the Management Authorities, as set out in the Schedule hereto.

The Emergence of Modern Human Behaviour: The Pleistocene Occupation Sites of South Africa World Heritage Site is composed of the following components:

NO.	COMPONENT	PROPOSED MANAGEMENT AUTHORITY
1	Diepkloof Rock Shelter (Western Cape Province)	Member of Executive Council for Cultural Affairs and Sport in the Western Cape Province
2	Pinnacle Point Site Complex (Western Cape Province)	Member of Executive Council for Cultural Affairs and Sport in the Western Cape Province
3	Sibhudu Cave (KwaZulu-Natal Province)	Member of the Executive Council for Sport, Arts and Culture in KwaZulu-Natal Province

The Management Authorities shall exercise those powers and duties referred to in sections 13(1) and (2), and 15 of the World Heritage Convention Act, 1999 (Act No. 49 of 1999). In order for the Management Authorities to be able to perform their duties, I furthermore intend to declare that sections 21,22, 33,34, 35, and 42 of the World Heritage Convention Act, 1999 (Act No. 49 of 1999) and applicable sections of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) shall apply to the Management Authorities.

Members of the public are invited to submit written representations or objections to my notice of intention, within 30 (thirty) days from the date of publication of this notice in the Government *Gazette*, or newspapers, whichever date is the last date of publication, to any of the following addresses:

By post to: The Director-General: Department of Forestry, Fisheries and the Environment
Attention: Ms Thumeka Ntloko
Private Bag X 477
Pretoria

0001

By hand: Ground Floor (Reception), Environment House Building, 473 Steve Biko Street, Arcadia, Pretoria, 0083.

By e-mail: TNtloko@dffe.gov.za / whsmanagement@dffe.gov.za

Any inquiries in connection with this notice can be directed to Ms T Ntloko at: (012) 399 9531.

Comments received after the closing date may not be considered.



DR DION TRAVERS GEORGE
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT

SCHEDULE

ANNEXURURE 1

THE EMERGENCE OF MODERN HUMAN BEHAVIOUR: THE PLEISTOCENE OCCUPATION SITES OF SOUTH AFRICA (CONSISTING OF DIEPKLOOF ROCK SHELTER COMPONENT, PINNACLE POINT SITE COMPLEX AND SIBHUDU CAVE) AS A WORLD HERITAGE SITE

The Emergence of Modern Human Behaviour: The Pleistocene Occupation Sites of South Africa World Heritage Site is made up of the following components

Component of the serial property	Province	Coordinates of Central Point	Area of Core and Buffer Zone
Diepkloof Rock Shelter Component	Western Cape Province South Africa	32° 23' 11" S, 18° 27' 9" E	Core: 2.1 ha Buffer zone: 531 ha As described in Annexure 1(A)
Pinnacle Point Site Complex	Western Cape Province South Africa	34° 12' 27" S, 22° 05' 22" E	Core: 51 ha Buffer zone: 416 ha As described in Annexure 1(B)
Sibhudu Cave	KwaZulu-Natal Province South Africa	29° 31' 26" S, 31°05' 10" E	Core: 4.3 ha Buffer zone: 18.5 ha As described in Annexure 1(C)

Hereunder is a detailed description of these components:

ANNEXURE 1 (A)

NAME OF THE SITE:

Diepkloof Rock Shelter Component

PROVINCE:

Western Cape Province

EXACT LOCATION OF THE SITE ON MAP WITH GEOGRAPHICAL COORDINATE:

Location of the site:

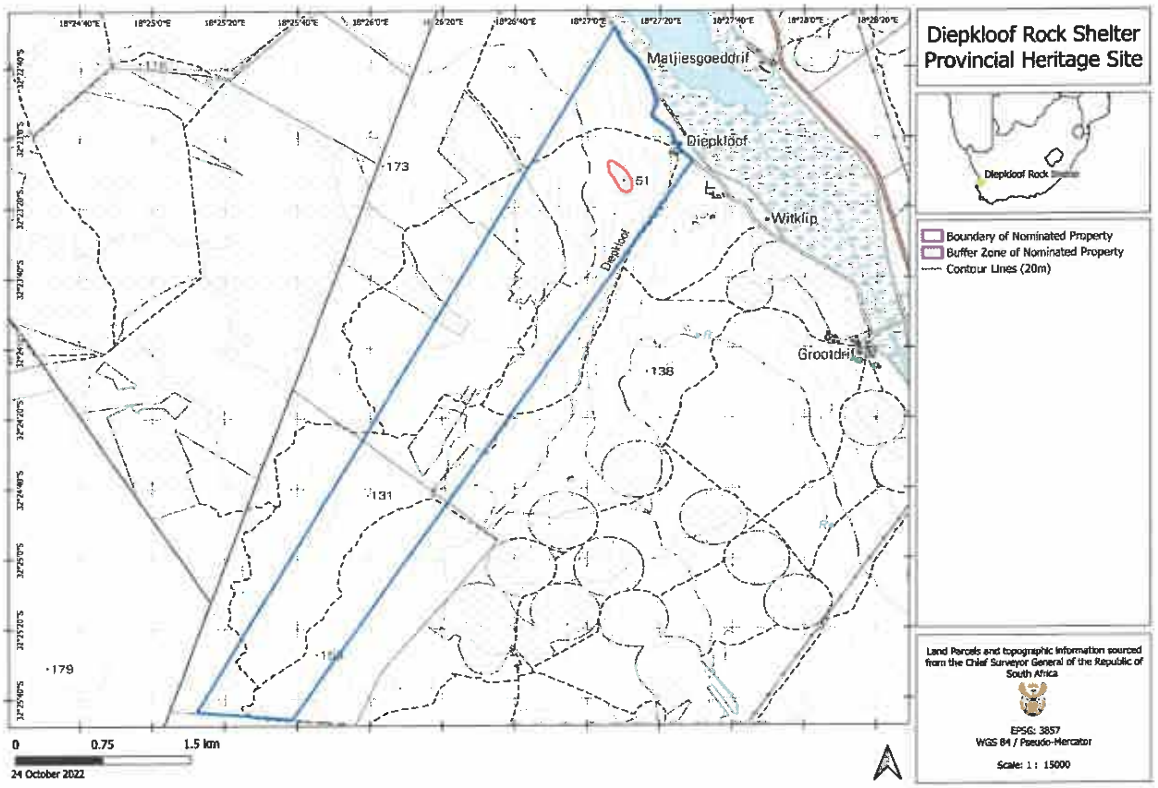
The site proposed is located at Portion 3 of the Farm Groote Drift No. 5, Piketberg.

Geographical Coordinates:
Centre of the World Heritage Site: 32° 23' 11" S, 18° 27' 9" E

The description of the boundaries:
The Core
All property above the 100m contour line on the hill known as Diepkloof on Portion 3 of the Farm Groote Drift 5, Piketberg.

The Buffer Zone
The buffer zone follows the cadastral boundaries of Portion 3 of Farm Groote Drift 5.

Map of the World Heritage Site


Diepkloof Rock Shelter
Provincial Heritage Site
Matjiesgoeddrif
Diepkloof
Witklip
Grootdrif
Diepkloof
173
51
138
131
179
Diepkloof Rock
Boundary of Nominated Property
Buffer Zone of Nominated Property
Contour Lines (20m)
Land Parcels and topographic information sourced from the Chief Surveyor General of the Republic of South Africa
EPSG: 3857
WGS 84 / Pseudo-Mercator
Scale: 1 : 15000
0
0.75
1.5 km
24 October 2022

ANNEXURE 1(B)

NAME OF THE SITE:

Pinnacle Point Site Complex

PROVINCE:

Western Cape Province

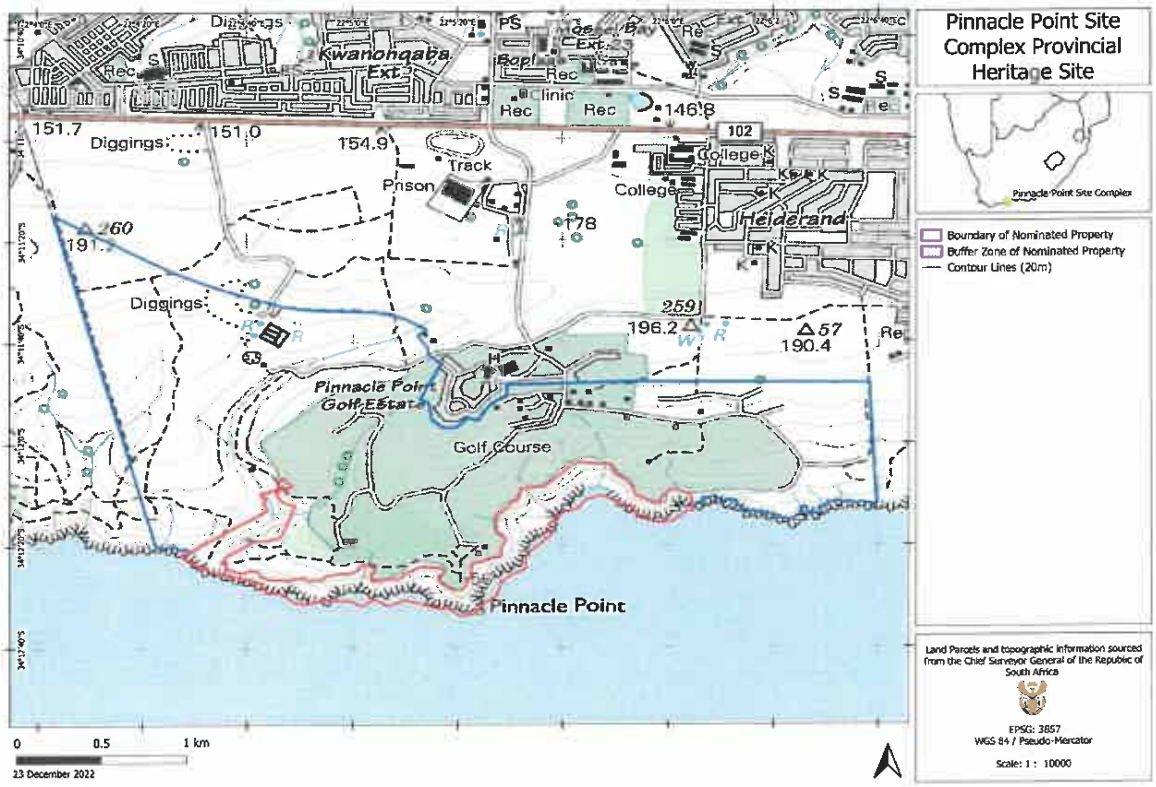
EXACT LOCATION OF THE SITE ON MAP WITH GEOGRAPHICAL COORDINATE:

Location of the site:

The site proposed is located at Pinnacle Point Estate, Erf 15391 (a portion of Erf 2001) Boplaas, Mossel Bay.

Geographical Coordinates:
Centre of the World Heritage Site: 34° 12' 27" S, 22° 05' 22" E

Map of the World Heritage Site



ANNEXURE 1(C)

NAME OF THE SITE:

Sibhudu Cave

PROVINCE:

KwaZulu-Natal Province

EXACT LOCATION OF THE SITE ON MAP WITH GEOGRAPHICAL COORDINATE:

Location of the site:

The site proposed is located at Portion 10 of Farm Sinembe No16902-FU, KwaDukuza Local Municipality, iLembe District Municipality, in KwaZulu-Natal, held by Deed of Transfer No. T3284/1988

Geographical Coordinates:
Centre of the World Heritage Site: 29° 31' 26" S, 31°05' 10" E

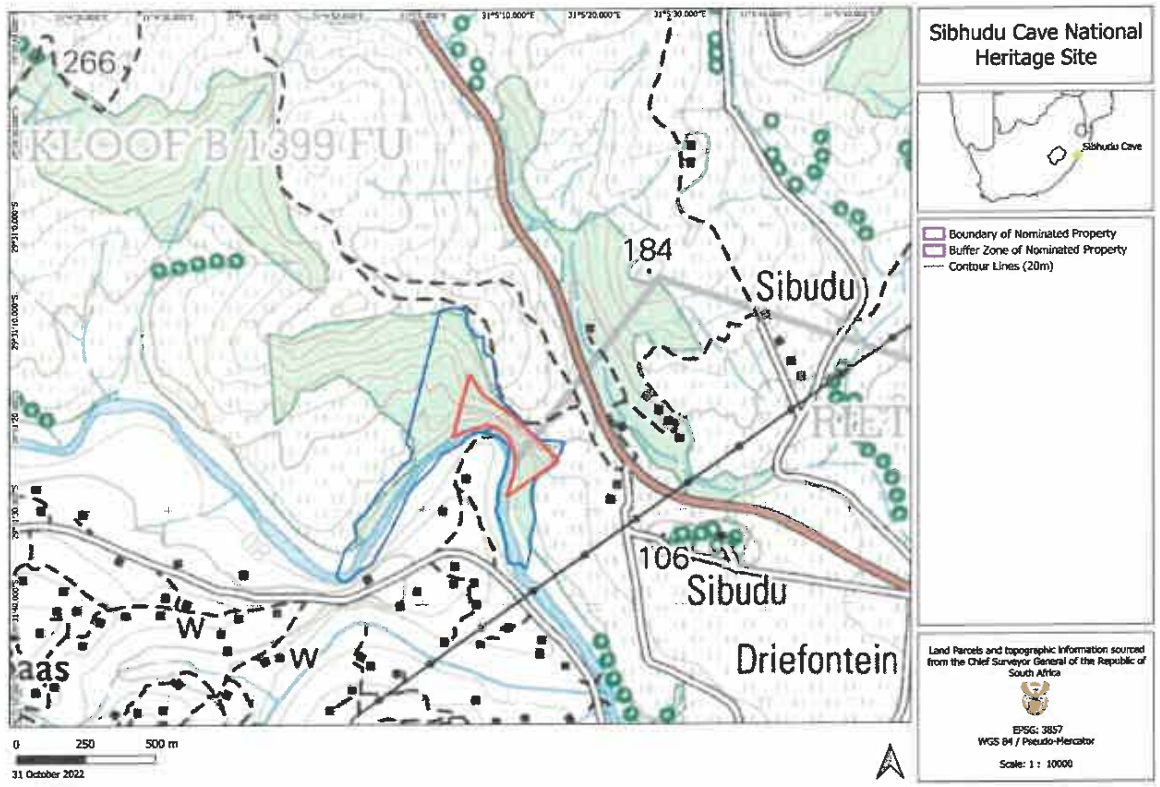
The description of the boundaries

The proposed site of portion 10 of the Farm Sinembe no 16902 – FU is bound by coordinates as outlined below:

Co-ordinates

Points	Latitude	Longitude
1	-29.52356820	31.08772868
2	-29.52236616	31.08637526
3	-29.52162512	31.08527291
4	-29.52103288	31.08484845
5	-29.52291109	31.08429992
6	-29.52274022	31.08465158
7	-29.52259663	31.08515359
8	-29.52254569	31.08542993
9	-29.52258137	31.08567686
10	-29.52273126	31.08593637
11	-29.52289070	31.08611437
12	-29.52310878	31.08624552
13	-29.52337098	31.08633739
14	-29.52367132	31.08634879
15	-29.52407393	31.08629062
16	-29.52466018	31.08603824

Map of the World Heritage Site



DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 6811 **7 November 2025**

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998
(ACT NO. 107 OF 1998)

CONSULTATION ON THE INTENTION TO PRESCRIBE MINIMUM INFORMATION REQUIREMENTS FOR BASELINE MONITORING FOR ONSHORE EXPLORATION OPERATIONS

I, Dion Travers George, Minister of Forestry, Fisheries and the Environment, hereby consult on the intention to prescribe Minimum Information Requirements for Baseline Monitoring for Onshore Exploration Operations, Revision 1, October 2025 in terms of section 24(5)(h) of the National Environmental Management Act, 1998 (Act No. 107 of 1998). These draft Minimum Information Requirements are published simultaneously with, and are intended to support, the proposed Regulations for the Exploration and Production of Onshore Petroleum Resources Requiring Fracturing Technology, 2025.

This Notice contains a revised version of the draft Minimum Requirements for the Submission of Applications for an Authorisation, Right, Permit or License for the Onshore Exploration of Oil or Gas Intending to Utilise Hydraulic Fracturing, Revision 0 May 2022 contained in Government Notice No. 2265 published on 8 July 2022 in Government *Gazette* No. 46688 for public comment and reflects the incorporation of amendments made based on the first call for public comment.

Members of the public are invited to submit written comments or input, within 30 days from the date of the publication of this notice in the Government *Gazette*, or a notification in a newspaper, whichever occurs last, to any of the following addresses:

By post to: Department of Forestry, Fisheries and the Environment
The Director-General
Attention: Mr Simon Moganetsi
Private Bag X447
PRETORIA
0001

By hand at: Reception, Environment House, 473 Steve Biko Road, Arcadia, Pretoria.
By e-mail: Smoganetsi@dffe.gov.za.
Any enquiries in connection with the notice can be directed to Mr Simon Moganetsi at 012 399 9309 or by mail at Smoganetsi@dffe.gov.za.
A hard copy of any notice or document associated with this Government *Gazette* can be requested from Ms M Masondo at email: mmasondo@dffe.gov.za or collected at the Department's physical address as indicated above. The documents can be downloaded from the Department's website at https://www.dffe.gov.za/projectprogrammes/environmental_management_instruments and the

Government Notice can be downloaded from the Department's website at https://www.dffe.gov.za/legislation/gazetted_notices.

Comments or input received after the closing date may be disregarded.

The Department of Forestry, Fisheries and the Environment complies with the Protection of Personal Information Act, 2013 (Act No. 4 of 2013). Comments received and responses thereto are collated into a comments and response report which will be made available to the public as part of the consultation process. If a commenting party has any objection to his or her name, or the name of the represented company/ organisation, being made publicly available in the comments and responses report, such objection should be highlighted in bold as part of the comments submitted in response to this Government Notice.



DR DION TRAVERS GEORGE
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT

SCHEDULE

1. The Department of Forestry, Fisheries and the Environment has, through an inter-governmental drafting process, developed the draft Minimum Information Requirements for Baseline Monitoring for Onshore Exploration Operations, Revision 1 October 2025 (MIRs for Baseline Monitoring) which supports the proposed Regulations for the Exploration and Production of Onshore Petroleum Resources Using Fracturing Technology.

2. The MIRs for Baseline Monitoring focusses on the onshore exploration of petroleum intending to utilise fracturing technology and has been developed with the following objectives, namely to-
   2.1. collect baseline monitoring data for the identified environmental themes;
   2.2. identify and consolidate the assessment and reporting requirements of all relevant decision-making authorities into one document;
   2.3. facilitate the combination of the information prepared in line with these MIRs for Baseline Monitoring into one consolidated assessment report and baseline monitoring plan to inform decision-making by all relevant decision-making authorities;
   2.4. facilitate consultation with stakeholders on the consolidated assessment report and baseline monitoring plan through one integrated public particiaption process;
   2.5. facilitate the submission of the consolidated assessment report, baseline monitoring plan and environmental management programme to all decision-making authorities for decision making.

3. The MIRs for Baseline Monitoring can be accessed at https://www.dffe.gov.za/projectprogrammes/environmental_management_instruments and the Government Gazette Notice can be downloaded from the Department's website at https://www.dffe.gov.za/legislation/gazetted_notices

forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

October 2025, Revision 1

Minimum Information Requirements for Baseline Monitoring for Onshore Exploration Operations

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Definitions

“animal” means a particular kind of living organism, one that can move voluntarily and can find and digest food and includes birds and insects;

“consolidated assessment report” means the report contemplated in regulation 8(2)(a) of the draft NEMA Fracturing Regulations;

“cumulative impact” means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities;

"designated agency” means the agency designated in terms of section 70 of the Mineral and Petroleum Resources Development Act, 2002;

“Environmental Impact Assessment Regulations” means the regulations published in terms of sections 24(5) and 44 of the Act;

“environmental permissions” means the relevant rights, permits, authorisations and licences that must be obtained by the developer prior to the exercising of an exploration right to which these minimum information requirements relate and include:

(a) an exploration right issued in terms of sections 80 of the Mineral and Petroleum Resources Development Act, 2002;
(b) a heritage permit issued in terms of Chapter 2 of the National Heritage Resources Act, 1999, or a written approval issued in terms of Chapters 8 and 9 of the Kwa-Zulu Natal Amafa and Research Institute Act 2018 (Act No. 5 of 2018) where relevant;
(c) an environmental authorisation issued for activity 21C of Listing Notice 1 of the Environmental Impact Assessment Regulations, 2014;
(d) a water use licence issued in terms of the National Water Act, 1998 (Act No. 36 of 1998); and
(e) approval from the Minister responsible for Mineral Resources of the plans, reports, templates, spreadsheet and the determination of financial provision as contemplated in the Financial Provisioning Regulations;

“exploration" means any activity which includes onshore 2-D and 3-D seismic investigations and which could include the drilling of exploration wells, with the intention of locating a petroleum reserve;

"exploration well" means a stratigraphic well drilled for the purpose of obtaining specific geological and geophysical information to prove, define and assess the existence and commerciality of a petroleum reserve;

“Financial Provisioning Regulations” means the Financial Provisioning Regulations published in terms of section 44(1)(aE), (aF), (aG), (aH) read with sections 24(5)(b)(ix), 24(5)(d), 24N, 24P, 24PA and 24R of the Act;

“flow back” means fracturing additives and other fluids that return to the surface after fracturing has been completed;

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“fracturing” means an intervention performed on a well to increase production by improving the flow of petroleum including coal bed methane from the drainage area into the well bore and includes re-fracturing;

"fracturing fluid" means the mixture of the base fluid and the fracturing additives used to stimulate the free flow of a petroleum reserve;

“**incidental activity**” includes all operations and activities reasonably necessary for undertaking an exploration and production activity;

“Minimum Information Requirements for Baseline Monitoring for Onshore Exploration Operations” means the minimum information requirements for the baseline monitoring that is to be undertaken prior to fracturing operations being undertaken in an onshore exploration operation published in terms of section 24(5)(h) of the Act;

“Minimum Information Requirements for the Exploration and Production of Onshore Petroleum Using Fracturing Technology” means the minimum information requirements for the impact assessment for onshore exploration and production using fracturing technology published in terms of section 24(5)(h) of the Act;

“petroleum” has the meaning assigned to it in the Mineral and Petroleum Resources Development Act, 2002;

“production operation” means any operation, activity or matter that relates to the onshore exploration, appraisal, development and production of petroleum;

“screening report” means the report prepared by the national web based environmental screening tool accessible at https://screening.environment.gov.za;

“national web based environmental screening tool” means the online spatial application contemplated in the Environmental Impact Assessment Regulations available at https://screening.environment.gov.za/screeningtool;

"seismic monitoring" means the monitoring of seismic activity using a network of calibrated seismological equipment in order to produce readings on magnitude, depth, location, error and time of each seismic event;

“site” means the area within which the exploration activity will be undertaken; and

“study area” means the site as well as the area beyond the site where the operations could impact the environment and which must be determined by the relevant specialist for each environmental theme with a focus on areas to be considered for fracturing and production operations.

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Abbreviations

2-D	two dimensional
3-D	three dimensional
CA	competent authority
CH_4	Methane
CO	Cobalt
CV	curriculum vitae
C_6H_6	Benzene
DA	designated agency
DMPR	Department of Mineral and Petroleum Resources
DWS	Department of Water and Sanitation
EAP	environmental assessment practitioner
EIA	environmental impact assessment
EIA Regulations	Environmental Impact Assessment Regulations
EMPr	environmental management programme
EWT	Endangered Wildlife Trust
H_2S	Hydrogen sulphide
HIA	heritage impact assessment
I&APs	interested and affected parties
MIR	Minimum Information Requirement
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NGO	non-governmental organisation
NHRA	National Heritage Resources Act, 1999 (Act No. 48 of 1999)
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides
NWA	National Water Act, 1998 (Act No. 36 of 1998)
O_3	Ozone
PAHs	Polycyclic aromatic hydrocarbons
PASA	Petroleum Agency SA
Pb	Lead
PM_{10}	Particulate matter includes particles less than 10 µm in diameter
$PM_{2.5}$	Particulate matter includes particles less than 2.5 µm in diameter
SAHRA	South African Heritage Resources Agency
SEA	strategic environmental assessment
SO_2	Sulfur dioxide
SVOCs	Semi-volatile organic compounds
VOCs	Volatile organic compounds
WGS84	a reference system used by the satellite navigation systems like GPS and used in various mapping applications

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i) Preamble

Petroleum exploration and production is a complex, capital intensive process which can have a significant impact on the environment should the necessary environmental precautionary and management measures not be in place. In line with the complexity of the process, several government authorities are involved with the management of the associated environmental impacts through the various licence, permit and authorisation requirements, jointly referred to as environmental permissions, of the respective decision-making departments.

Due to the number of environmental permissions required and the lengthy and complicated process to obtain such permissions, Cabinet, through the *National Development Plan* and Parliament, through the *Report of the High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change*, called for a coordinated and synchronised approach to the issuing of the various environmental permissions to avoid overlaps and unnecessary duplication which leads to time delays and excessive costs for developers. The issuing of environmental authorisations[1], water use licences[2], heritage permits[3] and exploration and production rights[4] were specifically identified as needing a coordinated effort.

The integration of environmental permissions is provided for in the National Water Act, 1998[5] (NWA), the National Environmental Management Act, 1998[6] (NEMA), the Mineral and Petroleum Resources Development Act, 2002[7] (MPRDA), the National Heritage Resources Act 1999 (NHRA)[8] and the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act No. 5 of 2018) (KZNARI Act). Section 22(4) of the NWA anticipates and promotes cooperative governance and arrangements with other organs of state to combine respective licencing requirements into a single licence requirement. In addition, section 41(5) of the NWA, requires the Minister responsible for water affairs to align and integrate the process for considering applications for water use licences with those of the environmental authorisations applied for in terms of the NEMA and licences, permits and rights for amongst others, exploration and production in terms of the MPRDA. NEMA similarly envisages an integrated process. In terms of section 24C(12), applications required under NEMA or a specific environmental management Act (SEMA) must be submitted simultaneously to all relevant departments after the acceptance of the application submitted in terms of the MPRDA by the Department of Mineral and Petroleum Resources (DMPR)/ designated agency. In this regard it should be noted that the NWA is a SEMA. In addition, section 50A(2)(d) of NEMA requires that the Ministers responsible for mineral resources, water affairs and the environment, agree to synchronise timeframes for consideration and issuing of authorisations in terms of their respective legislation.

Section 41(7) of the Environmental Impact Assessment Regulations, 2014 (EIA Regulations) indicates that where an environmental authorisation is required and an authorisation, permit or licence is

[1] Issued in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998).
[2] issued in terms of the National Water Act, 1998 (Act No. 36 of 1998).
[3] issued in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999).
[4] issued in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
[5] The National Water Act, 1998 (Act No. 36 of 1998).
[6] The National Environmental Management Act, 1998 (Act No. 107 of 1998).
[7] The Mineral and Petroleum Rescources Development Act, 2002 (Act No. 28 of 2002).
[8] National Heritage Resouces Act, 1999 (Act No. 25 of 1998).

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required in terms of a SEMA, the public participation processes may be combined on condition that all relevant authorities agree to such combination of processes.

The MPRDA similarly promotes coordination. Sections 79(4)(a) and 83(4)(a) promote the coordination of consultation requirements. Section 79 of the MPRDA requires that, if the designated agency accepted the MPRDA application for an exploration right the designated agency must, within 14 days of the receipt of the application notify the applicant in writing to consult in the prescribed manner with interested and affected parties on the application and to include result of the consultation in the NEMA Chapter 5 environmental reports, which were subjected to a 30 day public comment period. Integration is also anticipated under the NHRA. Section 38(8) of the NHRA and section 41(8) of the KZNARI Act provide for the heritage impact assessment required under section 38(2)(a) of the NHRA and section 41(1) of the KZNARI Act to be provided through the environmental authorisation (EA) application process in terms of the EIA Regulations,[9] where an EA is required.

Over and above Cabinet's request for an integrated authorisation process, when lifting the moratorium on the exploration of shale gas in August 2012, a stepwise approach was agreed to with only normal exploration being allowed as a first phase and fracturing being allowed only after a number of additional steps had been achieved.

In line with and in order to facilitate the stepwise authorisation approach envisaged, amendments were made to the EIA Regulations Listing Notices in June 2021, which split the authorisation process for exploration and production of petroleum resources into three distinct phases, which are:

- Exploration which anticipates the use of fracturing technology (seismic surveys);
- Exploration which includes the use of fracturing technology; and
- Production of petroleum resources which uses fracturing technology.

The three phased authorisation process is intended to facilitate the collection of environmental information at each stage of the process and to assess and consider the cumulative environmental impacts to promote environmental protection and informed decision-making.

To respond to Parliament's request for a more coordinated approach to considering environmental permissions, the relevant decision-making authorities have agreed to develop a series of Minimum Information Requirements (MIRs) to achieve the objectives indicated below related to onshore exploration and production of petroleum intending to and utilising fracturing technology:

The objectives of the MIRs are to:

- Identify and consolidate the assessment and reporting requirements of all decision-making authorities for all phases of onshore petroleum exploration and production into two minimum information requirements documents;
- Combine the information prepared for the exploration of petroleum anticipating fracturing into one consolidated assessment report, baseline monitoring plan and environmental management programme which conforms to the first MIR in the series;

[9] Environmental Impact Assessment Regulations, 2014 as amended.

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- Combine the information prepared for the phase of exploration utilising fracturing technology or for the production phase into a consolidated assessment report, operational monitoring plan and environmental management programme which conform to the second MIR in the series;
- Facilitate consultation with stakeholders on the consolidated assessment report, operational plan and programmes for each phase of exploration and production, through one integrated public participation process; and
- Facilitate the submission of the consolidated assessment reports, monitoring plans and programmes for each phase of exploration and production which incorporates the information required by all decision-making authorities to the relevant authorities for consideration and decision making where relevant.

ii) The Minimum Information Requirement series

The EIA Regulations include the requirement to apply MIR in instances where a Government Notice, gazetted by the Minister responsible for environmental affairs, provides for the application of such MIR. The respective provisions in the EIA Regulations which deal with the content requirements of an application for environmental authorisation, basic assessment report, specialist report, scoping report and environmental impact assessment report, include the ability of the Minister responsible for the environment to require compliance with a MIR relevant to the application as identified and gazetted by such Minister in a Government Notice.

In addition, the Water Use Licence Application and Appeals Regulations, 2017 (NWA Water Use Licence Regulations) and the draft *Regulations for the Use of Water for Exploration and Production of Onshore Naturally Occurring Hydrocarbons that Require Stimulation Including Hydraulic Fracturing and Underground Coal Gasification to Extract and any Activity Incidental Thereto that may Impact Detrimentally on the Water Resource, 2021* (NWA Regulations for Naturally Occurring Hydrocarbons), both refer to providing information in relation to a MIR.

There are two MIRs in this series. This document constitutes the first MIR and focuses on the pre-fracturing phase and guides the process required by each decision-making authority related to:

- The collection of baseline monitoring data for all required categories and parameters;
- The assessment of impacts related to the pre-fracturing phase prior to the use of fracturing technology; and
- The reporting requirements.

The second MIR is entitled "*The Minimum Information Requirement for the Exploration and Production of Onshore Petroleum using Fracturing Technology*". This MIR focuses on the exploration and production of onshore petroleum that require and utilise fracturing technology. The document guides the process required by each decision-making authority related to the-

- Identification of the environmental sensitivity of the site on which the exploration or production operations are proposed to take place;

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- Identification of expected impacts related to the exploration or production operations relative to the environmental sensitivity of the site and the baseline monitoring conditions;
- Identification of the specialist impact assessments and reports that will be required to assess and mitigate potential impacts including the prediction of cumulative impacts;
- Determination of risks, the likelihood, extent and severity of such impacts and risks occurring;
- Consideration of expected severity of impacts after mitigation and the acceptability of the residual impacts and risk;
- Proposed layout of the infrastructure and exploration or production wells in relation to the environmental sensitivity of the site and the principles of impact avoidance, management and mitigation; and
- Identification of ongoing monitoring, reporting and auditing requirements through the exploration or production operations.

The MIRs do not set out or explain the regulatory procedures (i.e., application forms and information required at application), but rather deal with the project specific details, the social, cultural, environmental and technical information as well as the baseline monitoring requirements which are to be consulted on and submitted in support of the applications for various required environmental permissions. For guidance on the regulatory steps and information required to submit applications to the decision-making authorities, the applicant must consult the various statutes or regulations and guidance documents.

Applicants must take note of the need to submit the applications simultaneously to the relevant decision-making authorities as required by section 24C(12) of NEMA after the application for the exploration right in terms of section 79 of the MPRDA or the application for a production right in terms of section 83 of the MPRDA, has been accepted by the DMPR, to allow for an integrated consultation process.

iii) Phasing of petroleum exploration and production operations

The exploration and production of onshore petroleum intending to, or utilising fracturing technology is a process that is realised through several phases taking place over a prolonged period of time. The initial phase of the process is reconnaissance which typically includes desktop studies of existing seismic and geological information and the undertaking of an aerial survey using a fixed aircraft, helicopter or drone technology to explore the earth's magnetic and gravity signals. This phase can include 2-D and 3-D seismic investigation but does not include the drilling of any stratigraphic wells. The reconnaissance phase is not considered in this MIR.

This MIR considers exploration which includes 2-D and 3-D seismic investigation and could include the drilling of exploration wells, but excludes the use of any fracturing technologies. The exploration phase extends over approximately 2 to 3 years but could be extended into the first renewal period if renewal is applied for.

The exploration phase used for the gathering of geophysical data utilises either the shot-point method and/or vibrioses trucks. In this phase of exploration, it is unlikely that any infrastructure incidental to the exploration activities will be needed. The exploration phase may include the drilling of vertical

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exploration wells of more than 1 000m deep and possibly horizontal boreholes may be drilled from the base of a vertical well extending up to 2 kms into geological layers. The geological samples from the target formations would be subject to a variety of tests to confirm whether a petroleum resource exists within the formation or not. Based on the information generated the areas of interest would be revised. If the target formation is found and a petroleum resource is detected, the project would continue into the well fracturing phase and depending on the commercial viability, into the production phase. If the target formation cannot be found or no petroleum resources is detected, the next phase of exploration which involves fracturing and testing would not proceed and the exploration wells would be decommissioned. It is during this period of the exploration that the baseline monitoring will be undertaken.

The second phase is intended to assess the existence and commercial viability of the petroleum reserve. This phase of exploration includes the continuation of 2-D and 3-D seismic investigation, the drilling of vertical and horizontal exploration wells, pressure testing, fracturing of the reserve through well fracturing and possibly, the flaring of gases. This phase has a duration of approximately three to five years after which the commercial viability of the reserve will be known and a decision will be taken to commence with production or not.

The third phase is the production phase in which gas will be extracted commercially. This phase will be undertaken until the reserve is depleted and a closure certificate for the production operation is applied for.

Decommissioning of wells is an ongoing activity which is undertaken throughout the exploration and production phases. The final phase of the exploration and production is the final rehabilitation, decommissioning, closure and post closure monitoring phase. The requirements of this phase are covered under the contents of the *financial provisioning spreadsheet and final closure plan template* in the case of exploration without fracturing, or the *final rehabilitation, decommissioning and mine closure plans for operations* and *the environmental risk assessment report for the determination of latent liability for operations* in the case of exploration utilising fracturing or production as required by the Financial Provisioning Regulations, 2015[10] as amended.

As identified in the preamble, in order to ensure that there is sufficient information available to support informed decision-making at each phase of the exploration and production operations, the exploration and production activities have been separated into three distinct phases, which are separately listed in terms of the EIA Regulations Listing Notice 1 and 2:

- The first phase of exploration is listed as activity 21C of Listing Notice 1, and is defined *as any activity including the operation of that activity associated with an onshore seismic survey which requires an exploration right in terms of section 79 of the MPRDA as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the exploration right, excluding any desktop study, any aerial survey and an activity which requires the use of fracturing technology;*

[10]Published under Government Notice 1147 published in Government *Gazette* No. 39425 on the 20 Novermber 2015.

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- The second phase of exploration involves fracturing which is listed as activity 20A of Listing Notice 2, and is defined as an *exploration operation which requires the use of fracturing technology as well as any other applicable activity as contained in this Listing Notice, in Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required for such fracturing*; and
- The third phase relates to production and is listed as activity 20 of Listing Notice 2 and is defined *as any activity including the operation of that activity which requires a production right in terms of section 83 of the MPRDA as well as any other applicable activity as contained in this Listing Notice, in Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required to exercise the production right.*

In terms of the NEMA Fracking Regulations and the NWA Regulations for Naturally Occurring Hydrocarbons, for phase one the Department of Water and Sanitation (DWS) will be required to grant concurrence for the approval of the baseline monitoring plan. For phases two and three a Water Use License is required as stimulation, which includes fracturing, has been identified as a controlled activity in terms of section 38(1) of the NWA[11].

The phasing of the operations, facilitating a step-wise authorisation procedure, has several advantages which include among others:

- Rationalising the ever-increasing amount of environmental data and reserve determination information being generated to inform the next phase of exploration or production which allows for informed decision-making;
- Facilitating public participation on the baseline monitoring plan before decision-making;
- The execution of the baseline monitoring plan for a minimum of 24 months prior to any fracturing operations being implemented, should all the necessary authorisations be granted;
- The approval of the integrated operational monitoring plans prior to implementation; and
- The ability to consider cumulative impacts in a more realistic manner as ongoing monitoring data collected through the operations can be assessed against the pre-fracturing baseline conditions.

iv) Introduction to minimum information requirements for baseline monitoring for onshore exploration operations

This MIR contains the prescribed assessment and report content for the technical documents required for environmental permissions relevant to the onshore exploration of petroleum intending to utilise fracturing technology. The assessment and report content for all relevant environmental permissions must comply with this MIR and failure to do so will result in the reports not being accepted by the relevant decision-making authority. The report requirements of this MIR meet, among others, the requirements of Appendix 1 of the EIA Regulations, the technical requirements of the NWA Water Use Licence Regulations, the requirements of section 38(3) of the National Heritage Resources Act 1999 (NHRA)[12] and section 41(3) of the KZNARI Act.

[11] Published under Government Notice 999 published in Government *Gazette* No. 39299 on the 16 October 2015.
[12] National Heritage Resouces Act, 1999 (Act No. 25 of 1999).

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The MIR has been developed through the findings of the Strategic Environmental Assessment of Shale Gas Development in the Central Karoo, June 2017[13]; internal literature reviews; the requirements of the EIA Regulations and NWA Water Use Licence Regulations; the knowledge of officials represented on the interdepartmental committee for the development of this MIR, the draft NEMA Fracturing Regulations, the MPRDA Regulations for Petroleum Exploration and Production of 3 June 2015, which were set aside by the Supreme Court of Appeal and stakeholders who contributed through the consultation process.

This MIR must be read with the draft NEMA Fracturing Regulations, the draft NWA Regulations for Naturally Occurring Hydrocarbons, section 38(1), (3) and (8) of the NHRA, sections 41(1), (3) and (8) of the KZNARI Act where relevant and the EIA Regulations.

The experience, understanding and capability of the environmental assessment practitioner (EAP) and specialists to follow the requirements and to reach the intended outcomes of the MIR are crucial and must be demonstrated in the section on qualifications and experience in undertaking similar work as identified in Chapter 1 of Part 1 of this MIR.

iv) Structure of the Minimum Information Requirement

In order to capture the required information and produce one combined assessment and baseline monitoring plan which complies with the assessment requirements of all decision-making authorities, the MIR has been drafted in two parts.

Part 1 deals with general requirements as well as baseline monitoring and reporting requirements.

Part 2 deals with the impact that will result from the activities to be undertaken on the site through the 2-D and 3-D seismic investigations which could include the drilling of exploration wells. These impacts and the severity thereof are to be determined by specialists through analytical methods where relevant. This section also deals with mitigation measures to be implemented through an environmental management programme.

[13] The Strategic Environmental Assessment of Shale Gas Development in the Central Karoo, June 2017 can be accessed at https://seasgd.csir.co.za.

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CONTENT OF THE CONSOLIDATED ASSESSMENT REPORT AND BASELINE MONITORING PLAN FOR EXPLORATION ANTICIPATING THE USE OF FRACTURING TECHNOLOGY

PART 1 – GENERAL REQUIREMENTS AND BASELINE MONITORING

1. Chapter 1

1.1 General project description, EAP and specialist details

This section of the draft combined assessment and baseline monitoring plan document is to be compiled by the EAP based on information provided by the applicant and specialists. This section provides the introductory information and the details of the applicant, the EAP and the specialists working on the project. This section is to include the supporting documentation, including the declarations of independence, the experience and academic qualification of the EAP, and specialists as well as copies of their professional registration, their CV and company profile where relevant. Once provided, this information must not be repeated in any of the other specialist or general reports. Information will therefore be available in the consolidated assessment report, to all who need it without the need for duplication. The consolidation of introductory information into one section is intended to provide a more efficient process for document preparation and review which saves document preparation and review time and facilitates cost savings.

When preparing this information, consideration must be given to the aims of the section and the documents provided should not contain unnecessary information. For example, the company profile and CVs should be concise and relevant to the project under consideration.

In terms of this section, the following information must be provided:

1.1.1 General location and contact information:

- The name of the project;
- A short description of the project, including the scope and anticipated duration of the operations;
- The location of the project,[14] including the farm names, relevant portion number or numbers and the relevant surveyor general's twenty-one-digit codes. The relevant catchment in which the project is to be undertaken, an annotated location map, the land use context surrounding the proposed project, 1:100-year flood line, major roads, towns, major topographical features, buildings and railroads where relevant; the proximity of the proposed activity, including any exploration wells or monitoring boreholes to a prohibited or restricted area as identified in the NEMA Fracturing Regulations and the NWA Regulations for Naturally Occurring Hydrocarbons;
- The name and contact details of the applicant. The contact details should include relevant telephone and cell phone numbers, the business street and postal address;

[14] The farm names and SG codes are available from the screening report produced by the screening tool.

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- The name and contact details for the appointed EAP, which must include business contact details as well as a personal cell phone number;
- The company details for the EAP including telephone numbers, and physical and postal address;
- The name and contact details of all the specialists who have contributed to the reports, assessments and plans related to the project. The contact details are to include a street address as well as a postal address for the specialist and where relevant the specialists company. The telephone and cell phone details for the specialist as well as the specialist's company must also be included;
- The years of experience of the EAP and specialist; and
- The professional registration status and details of the EAP and the relevant specialist.

1.1.2 Project information:

- Need and desirability of the project;[15]
- The legislative and policy context including any strategies or plans within which the project is located and the manner in which the project responds to this context;
- A description (scope) of the project, to be undertaken as well as any associated structures or infrastructure to be erected;
- The identified activity that will be triggered in relation to the EIA Regulations Listing Notices;[16]
- The water uses being applied for in terms of the NWA Water Use Licence Regulations, issued in terms of the NWA if relevant;
- Confirmation of engagement with the relevant heritage authority as required in terms of section 38(1) of the NHRA and section 41(1) of the KZNARI Act and the response of the relevant heritage authority as required in terms of section 38(2) of the NHRA and section 41(2) of the KZNARI Act;
- The right being applied for in terms of the MPRDA;
- Technology alternative considered and a motivation for the technology to be applied; and
- Licenses, authorisations or rights which exist for the land within the site.

1.1.3 Supporting information:

The following supporting information must be included under this heading:

- The applicant's company environmental policy;
- A short profile of the EAP and the EAP's company, where relevant;
- A short profile of the relevant specialists and specialists' company who provided input to the assessment and baseline monitoring report;
- An abbreviated CV of each EAP and specialist who provided input to the document identifying the expertise and qualifications of the EAP and specialist;
- Company BBBEEE certification;
- Power of attorney;

[15] This information must be provided in accordance with DFFE's *Guideline on Need and Desirability, 2017*
[16] For a mining activity the associated activities are incuded in the main mining activity and the associated activities are not to be seperatly identified.

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- A short profile of similar work undertaken by the EAP and each specialist;
- Copy of the professional registration for the EAP and each specialist; and
- A signed declaration of independence from the EAP and specialists.

1.2 Summary for decision-makers

A summary for decision-makers is to be provided in the consolidated assessment report. The consolidated assessment report must include a summary of the findings of each of the specialist impact assessments undertaken related to site sensitivity including the sensitivity to water resources and cultural heritage, expected environmental impact, possible mitigation measures and the overall outcome of the impact assessment as prepared by the EAP as well as from each specialist under the relevant sub-paragraphs, and how findings informed the baseline monitoring plan. This section must include a substantiated statement on the acceptability or not of the project related to the specific environmental theme from each specialist. In addition to the written summary, all the information must be overlaid onto a base map which is to be included in a hard copy in the report and also provided as a shape file.

The section must include a summary of the baseline monitoring that is to be implemented, providing the scope of the activities to be undertaken, the objectives of the plan, general timeframes and monitoring frequency, among others.

2. Chapter 2

2.1 Screening and specialist assessments

As of 4 October 2019, it is required that a screening report produced by the national web based environmental screening tool (screening tool) accompany all applications for environmental authorisation submitted to the competent authority, which would include an application for an exploration right in terms of section 79 of the MPRDA. The requirement for screening is to ensure that sites with high environmental sensitivity, including the location of water resources are identified and avoided where possible. In instances where the preferred site has high environmental sensitivity and considering an alternative site may not be possible, screening to reduce impacts as far as possible, is possible by avoiding the placement of infrastructure in areas identified as being sensitive. In this way, the screening assists in site selection and facilitates the implementation of the impact mitigation hierarchy and the location of infrastructure.

The screening report also identifies an initial list of specialist studies to be undertaken based on the known impacts of the activity. This list is to be finalised based on the outcome of the site sensitivity verification, which is to be undertaken as per the "site sensitivity verification and minimum report content requirement" as gazetted,[17] the pre-application meeting and site visit held with representatives of the DWS, and the engagement with the relevant Heritage Resources Agency (HRA). Once the environmental sensitivity of the site is confirmed or revised in relation to the sensitivity

[17] Published under Government Notice 320 in Government *Gazette* No. 43110 on 20 March 2020 and Government Notice No. 1150 in Government *Gazette* No. 43855 on 30 October 2020, as amended.

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rating provided by the screening tool for each environmental theme under consideration and the interactions with the DWS and the NHA or PHA, the list of specialist assessments/compliance statements to be undertaken should be confirmed through discussion with the relevant decision-making authority before embarking on the assessments. Where the site sensitivity verification has identified that a specific specialist impact assessment identified in the screening report is not necessary, the EAP or relevant specialist must motivate this to the relevant decision-making authority and include the motivation in the assessment report under the relevant heading, including the supporting evidence. Only specialist assessment or compliance statements for aspects as agreed to by the relevant decision-making authority are required to be undertaken.

The EIA Regulations require the screening report to be attached to the application for an environmental authorisation. This MIR, however, provides guidance that is relevant to the requirements of all decision-making authorities. Therefore, with regards to screening, the following information is to be included in the *consolidated assessment report*:

- A screening report which reflects the entire site under consideration drawn from the screening tool;[18]
- A site sensitivity verification report which meets the requirements of the "*site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed*" or the specific site sensitivity verification requirements as identified in the prescribed protocol for the specific environmental theme;[19]
- The outcome of the pre-application meeting and site visit held and undertaken with the representatives from DWS and the competent authority as relevant;
- The outcome of interactions with the NHA or PHA;
- A list of studies identified by the screening report which in the view of the EAP are not necessary as well as the motivation for not including them and the relevant evidence to support the motivation; and
- A list of specialist impact assessments to be undertaken which reflects the sensitivity of the site as confirmed by the site sensitivity verification and agreed to in the discussion with the decision-making authority which would include the DWS, the competent authority and the relevant heritage authority.

2.2 Public participation and report content

Providing the public with adequate opportunity to engage with the project and to provide inputs is a crucial component of any project. It is widely acknowledged that the exploration of petroleum as well as the use of fracturing technology are highly complex and controversial topics. It is therefore vital for the applicant to carefully consider the extent and methods to be used in the public participation process.

As indicated in the Preamble, one of the objectives of the introduction of MIRs is to combine the information prepared to apply for environmental permissions for projects which anticipates and then

[18] The national web based environmental screening tool is accessed at: https://screening.environment.gov.za/screeningtool.
[19] Published in Government Notice No. 320 published in Government *Gazette* No. 43110 on 20 March 2020.

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utilises a fracturing technology into one consolidated assessment document to, among others, allow for one integrated public participation process. This will provide for an efficient and cost-effective public participation process and reduce stakeholder fatigue.

When communicating information on complex or controversial projects, applicants should consider extending their efforts beyond the use of company stakeholder databases, commercial media, email communication, providing information on websites, site notices and single language background information documents. The approaches to stakeholder communication should be context specific to adequately inform stakeholders of the proposed project, and specific attention must be placed on reaching stakeholders in rural areas, which would include communities that may be affected and farmers, as petroleum exploration and production activities could be located in remote areas.

The applicant's approach to public participation (to disseminate information and register stakeholders) through more accessible means could include among others:

- Community and commercial radio stations;
- Notifying local ward councillors and traditional leaders;
- Notifying national and local non-governmental organisations, community-based organisations, and farmers associations located within the study area;
- Providing background information;
- Placing these background information documents in strategic places frequented by stakeholders which could include community halls, churches, taverns, and notice boards in malls/shopping centres;
- Affixing notice boards on the boundary fence of the site;
- Physically or in the form of registered delivery, inform adjoining and adjacent landowners of the project; and
- Using local and community news media.

Registration should then take place using accessible means which could include:

- Social media apps for example Facebook and WhatsApp;
- Email;
- Prepaid SMS; and
- Dedicated information desks set up at malls, filling stations, farmers cooperations or shopping complexes in the affected community.

When registering stakeholders, the applicant must consider the protection of privacy of the stakeholders. No personal details may be used for purposes other than the project under consideration in terms of the Protection of Personal Information Act, 2013.[20] Once interested and affected parties have registered, innovative ways of distributing further information about the project which must be subjected to a public participation process must be considered which could include among others;

[20] The Protection of Personal Information Act, 2013 (Act No. 4 of 2013).

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- Free download SMS;
- Providing access to pre-paid or free download apps;
- Email;
- Locating documents in libraries, municipal offices and offices of community-based organisations or non-governmental organisations; and
- At the offices of the relevant national and provincial Departments or a municipal office.

In person meetings with affected community members could be held. Such meetings should be organised at accessible venues such as community halls or municipal offices, also catering for people with disabilities. The EAP must provide accessible information to allow stakeholders who have no experience with fracturing technologies and the impacts thereof to follow the discussions and for knowledge to be transferred.

Virtual meetings can be an effective means of communication for a selected audience who have access to internet but virtual meetings cannot be the only method of stakeholder consultation. The timing of meetings is important. Stakeholders must be able to conveniently attend meetings, so planning meetings outside of work time is suggested.

Consideration should be given to the appropriate use of language. Background information documents should include, but not be limited to, versions in the predominant language of the area. Technical documents should include an executive summary in the predominant language of the area, and slide presentations should also be translated. Allowing for interpreters at public meetings is important to allow stakeholders to express themselves without a language barrier. Where appropriate, recorded verbal inputs from illiterate stakeholders must be catered for.

The preparation for the public participation process can begin at any time and the consultation process can proceed as soon as a draft consolidated assessment report and the baseline monitoring plan has been prepared. The outcome of the public participation process is to be detailed in a public participation report which must be included in the *consolidated assessment report*. The report must, as a minimum, include the following information:

- Objectives of the public participation process;
- Identified areas of the project impact, including the rationale for their inclusion;
- Identify the assumptions made and gaps in knowledge;
- An outline of the public participation process followed, indicating what actions were undertaken, the venue, dates and times of interactions;
- The audience reached in relation to the identified area of the project impact;
- The participants at any meeting, including attendance registers;
- Minutes of meeting or interactions including recorded inputs;
- Objectives and outcomes of any information sessions held where relevant;
- Consultation undertaken with the local municipality, the site owners and site occupiers as well as adjacent site owners or occupiers;
- Which documents were subjected to public participation and how were the documents distributed and located;
- How persons without internet access and transport were accommodated;

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- How issues of language were considered;
- Copies or photographs of all correspondence, documents, notices etc. distributed or erected;
- Copies of all supporting documentation and stakeholder databases; and
- A summary of the issues raised by interested and affected parties and an indication of the manner in which the issues were incorporated or reasons for not including them, in the form of a comments and responses document.

3. Chapter 3 – Preparation and content of a Baseline Monitoring Plan

Although exploration without fracturing is not anticipated to have significant environmental impacts, an outcome of this exploration phase could be the further investigation of the deposit by means of fracturing technology. The exploration phase considered under this MIR must therefore anticipate the use of fracturing technology and facilitate baseline monitoring.

Baseline monitoring involves determining the reference conditions of key environmental attributes against which changes to the reference condition of these attributes, can be measured over time. It is important to undertake baseline monitoring where projects have various phases and the impacts will increase over time due to the incremental expansion of the wells, structures and infrastructure and the changing nature of the activities. An assessment of monitoring results during the fracturing and production phases against the baseline conditions will provide an understanding of the cumulative impacts of the operations and allow for the ongoing determination of the limits of acceptable change, i.e., the acceptability of impacts at the various phases. At each phase the impacts must remain acceptable with or without mitigation. South Africa is in a fortunate position that baseline monitoring will be able to be undertaken prior to any fracturing commencing.

The step wise authorisation process for petroleum exploration and production utilising fracturing allows for the baseline monitoring plan to be developed, consulted on and approved as part of the assessment processes for exploration. This step wise approach also allows for the baseline monitoring plan to be implemented and for data to be collected for 24 months prior to the consideration of the EA application for activities involving fracturing.

The site is the area within which the exploration activities will take place, however, for baseline monitoring to be effective, it must be conducted in the wider area that could be influenced by the exploration or production activities (e.g., migration of groundwater extends beyond the boundaries of the site). This wider area of influence is referred to as the study area and must be determined by the specialists for the various environmental themes.

The baseline monitoring plan must be prepared by an independent team of appropriately qualified and registered specialists,[21] which will include but not be limited to specialists for the following themes: surface water and aquatic biodiversity; groundwater; air quality; cultural and paleontological heritage; terrestrial biodiversity and seismicity. Socio economic factors, tourism, light and noise are also themes that need monitoring but impacts are expected to be marginal during the first phase of exploration. All themes must be monitored for a reasonable period to be determined by the relevant

[21] Where required, specialists must be registered with the relevant professional body related to their area of expertise.

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specialists and identified in the baseline monitoring plan. The plan must detail the nature of monitoring to be undertaken and the methods for data collection. The baseline monitoring plan which includes the monitoring requirements and reporting content for each theme must be signed off by all relevant specialists and the EAP and must accompany the *consolidated assessment report.* Baseline monitoring requirements are required for the following themes:

3.1 Surface water and aquatic biodiversity

Exploration operations which utilise fracturing technology can impact on surface water and aquatic biodiversity through the abstraction of water or the release of polluted water into the natural water system. Some surface water resources can be associated with cultural practices. The pre-fracturing baseline on the quality of surface water and aquatic biodiversity must be determined for the study area that will be impacted, by providing the general overview information and identifying the monitoring plan which must include monitoring methodologies, parameters, monitoring intervals and monitoring locations among others for this theme.

3.1.1 General

General information to be provided on the aquatic environment is listed below. This general information is only to be included once to avoid duplication, and is more appropriately placed in the impact assessment chapter. However, the information is included here to give an overall idea of the level of information required under the surface water and aquatic biodiversity theme. The following general information is required:

- General overview of the aquatic environment within the study area;
- The regional daily precipitation and evaporation;
- The local daily precipitation and evaporation;
- Mean annual run-off;
- Regional water use, accessibility, volumes and stresses in the study area;
- The location of surface water features within the study area or where continuity of a surface water feature is identified, the study area. Features with GPS coordinates as appropriate (i.e., a centre point for a pan or linear points along a river) are to be located on a surface water annotated map;
- Resource class and river health, receiving water quality objectives and reserves as determined by the DWS;
- A description of the ecological importance and sensitivity of the surface water feature, including the ecosystem processes in operation on the site and the study area for example movement of surface and subsurface water, recharge, discharge, sediment transportation etc.; and
- A description of the vegetation and animals within the study area and its reliance on water availability.

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3.1.2 Plan for determining the pre-fracturing surface water and aquatic biodiversity baseline

Having identified, located and mapped the surface water features, the monitoring plan to determine the pre-fracturing quality of the features is to be prepared. The objective of the monitoring plan for surface water is to ensure that the pre-fracturing status of all the relevant surface water features are determined within the study area or where there are interlinked features to the area of influence in relation to water quality, quantity, recharge rates and the ecological status of each feature. As such the surface water baseline monitoring plan must include the following:

- Purpose of the plan;
- The specific surface water features to be monitored;
- Water quality - the parameters of the surface water feature to be monitored to determine the water quality – including but not limited to: hydrochemistry parameters - field pH, electrical conductivity, temperature, dissolved oxygen, total dissolved solids; organics - VOCs, SVOCs and PAHs; radioactive isotopes - uranium, thorium, radium and strontium as well as radioactivity;
- Water quantity - the flow rate where relevant or depth and extent of the feature;
- Groundwater fed surface water features which could be impacted by groundwater contamination;
- Information relating to the sub-surface connectivity of activities to surface water resources and water supply infrastructure;
- Ecological status – species found in the water body including an estimate of the species abundance. Consideration must be given to in-stream, riparian and floodplain habitats. Any species of conservation concern must be identified and discussed in relation to the threat status, the national and provincial priority status; and
- The intervals for the monitoring of each feature.

The features to be monitored must be identified on a surface water annotated map and parameters and frequencies included in an excel spread sheet. Both the map and the excel spreadsheet must be included in the surface water baseline monitoring plan. Surface water must be monitored for a period of not less than 24 months.

All monitoring results must be submitted to the DWS as well as the designated agency which is Petroleum Agency SA (PASA). The monitoring results must at least include a detailed description of the sampling and testing conducted, including duplicate samples, the chain of custody of the samples and the quality control of the testing.

3.2 Groundwater

The primary issues of concern with respect to petroleum developments is the risk of contamination of groundwater resources and the abstraction of groundwater for drilling and fracturing activities. The risk of contamination is associated with the potential hydraulic connectivity between deep and shallow formations, as well as contamination of groundwater from flowback and produced water. This contamination can result from spills, leaks and uncontrolled waste water and the accumulation of toxic or radioactive contaminants in soils and stream sediments from spill or unmanaged waste water.

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An additional risk relates to the over-exploitation of water resources to supply drilling and fracturing operations.

The groundwater baseline information must be provided for a study area which must include general information on groundwater as well as specific information on the intended monitoring to be undertaken as part of the hydro-census, including the intended monitoring locations, methodologies and intervals.

3.2.1 General

Much of the general information regarding groundwater will have been included under the impact assessment for groundwater and should not be repeated here. The general information under this heading should focus on more detailed information for specific boreholes to be used for baseline monitoring.

The general section related to the baseline monitoring of groundwater must contain the following information:

- Current monitoring regime in the study area, including monitoring points, monitoring parameters and frequency; and
- Current water uses in the study area, including the quality and quantities of water used, and the purpose of such uses.

3.2.2 Plan for determining the pre-fracturing groundwater status

The objective of the monitoring plan for groundwater is to ensure that the pre-drilling and fracturing status in terms of quantity and quality of groundwater is identified. This baseline will facilitate an understanding of any possible impact on groundwater from fracturing should this activity proceed. The groundwater baseline monitoring will rely on a hydro-census which is to be undertaken in the affected area. The first part of the hydro-census will rely on desktop information and site inspection to identify the existing boreholes in the affected area and to determine their current use and condition. The following information is required at this stage:

- Purpose of the plan;
- The location of all boreholes including the coordinates in WGS84 of each borehole identified within the affected area;
- The use and frequency of use of the borehole;
- The depth of the borehole;
- The water quality;
- The current condition of the borehole; and
- The recorded yield and recharge rate of the borehole.

These boreholes must be identified on a baseline monitoring geohydrological map and must include coordinates as well as the motivation for choosing the specific borehole. Once the general locational and use information is determined, the baseline monitoring plan for groundwater must be prepared and must include as a minimum the following information:

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- The boreholes to be monitored to determine the groundwater baseline;
- The parameters for which each borehole is to be monitored including a short motivation for the choice. The following parameters must be monitored as a minimum: hydrochemistry parameters - field pH, electrical conductivity, temperature, dissolved oxygen, total dissolved solids; organics - VOCs, SVOCs and PAHs, radioactive isotopes - uranium, thorium, radium and strontium as well as radioactivity; and
- The planned monitoring frequencies for each parameter per borehole including a motivation for the frequency.

The boreholes to be monitored must be identified on a groundwater annotated map including the coordinates, parameters to be measured and frequencies for monitoring must be included in an excel spread sheet and the locations provided as a shapefile. Both the map and the excel spread sheet must be included in the groundwater baseline monitoring plan. Groundwater must be monitored for a period not less than 24 months. In the case where there is a lack of boreholes, or boreholes that are too shallow to provide any real value, additional deep boreholes are to be proposed to be drilled in the plan, to allow for the collection of information on deep and shallow aquifers pre-fracturing,

Groundwater aspects must be recorded and reported according to the department responsible for water affairs “Standard Descriptors for Geosites”.

3.3 Air quality

Local air quality can be impacted on by exploration activities such as the movement of heavy vehicles, the flaring of gas, gas leaks, diesel fumes and the evaporation of hydrocarbons as examples. It is therefore important to determine the pre-fracturing local air quality. The air quality baseline monitoring must be undertaken within the study area to determine the current ambient air quality of the area prior to any fracturing activities. The study must include general information on existing monitoring stations within the study area, an inventory of possible air pollutants and GHG emissions in the areas as well as specific information on the intended monitoring to be undertaken to determine the baseline ambient air quality.

Generally, air quality monitoring stations are located in areas where there is development or industrial activity. It is unlikely that there would be an air quality monitoring station within the areas where exploration for onshore petroleum would be undertaken. It is also unlikely that an emissions inventory would have been compiled for the area. It will therefore be anticipated that temporary air quality monitoring stations will need to be set up to undertake the baseline emissions monitoring.

The general respiratory health of the resident population will need to be determined for the pre-fracturing conditions. The methodology for determining the pre-fracturing general respiratory health of the population will need to be provided by a medical expert and confirmed through a peer review.

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3.3.1 General

The general section related to the baseline monitoring of ambient air quality must contain the following information:

- Air quality monitoring stations located within the study area, including their monitoring parameters;
- An inventory of possible air pollutants in the area including any existing GHG emissions that could impact on local air quality, for example agricultural activities and industries; and
- General respiratory health of the population within the study area.

3.3.2 Plan for determining the pre-fracturing ambient air quality

The objective of the monitoring plan for ambient air quality is to ensure that the pre-fracturing status of ambient air quality is identified. This baseline will facilitate an understanding of any possible impact on air quality from fracturing should this activity proceed. The ambient air quality baseline monitoring will rely on the monitoring of current point sources, the ambient air quality for the study area and determining the general respiratory health of the population within the study area. The baseline air quality monitoring plan must identify the sampling methodology for each parameter and the accredited laboratories to be used for the analysis of samples. When considering the content of the baseline monitoring plan, the applicant must consider international best practices for additional parameters of concern as well as the most up to date monitoring methodologies.

The following information is required as a minimum:

- Purpose of the plan;
- Daily onsite weather conditions including wind direction;
- Sampling methodology to be used including the methodology to be used for determining the pre-fracturing respiratory health of the population;
- Laboratory to be used for analysis;
- An inventory of possible air pollutants and GHG emission in the areas;
- The location of air quality monitoring points;
- The location of air quality monitoring stations;
- The monitoring parameters must as a minimum include: SO_2, NO_x, NO_2, PM_{10}, $PM_{2.5}$, O_3, C_6H_6, Pb, CO, H_2S, CH_4, VOCs; and
- Monitoring intervals.

The air quality monitoring points must be identified on an annotated map and parameters and monitoring frequencies included in an excel spread sheet. Both the map and the excel spread sheet must be included in the ambient air quality baseline monitoring plan. Air quality baseline monitoring must cover all four seasons, and must be undertaken for a period not less than 24 months. A specific section of the air quality report is to be dedicated to a discussion on the methodology to be applied to determining the pre-fracturing general respiratory health of the population and the monitoring to be undertaken throughout the 24-month baseline monitoring period.

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3.4 Seismicity

The injection of fluids into the earth at high pressures can cause rocks to fracture and/or faults to slip and may cause a regional increase in seismic events (i.e., induced seismic activities over and above the extent of natural seismic activities). It is the purpose of this investigation to consider the potential risk posed by natural and induced seismicity in the study area, especially as many of the buildings in rural areas where exploration takes place will be home to heritage buildings or stone walled sites, which could be vulnerable to shaking due to their age or building material.

During the exploration phase, historical seismic data is to be reviewed and continuous baseline monitoring is required to be undertaken to determine the current seismicity in the area and to identify any aspects which may be impacted on by an increase in seismic activity which could potentially be caused by fracturing for example dams supplying towns and farms, infrastructure such as pipelines as well as the built environments must be monitored to consider the possible impact of increased seismicity, including buildings, monuments stone walled sites and other structures which may be at risk of cracking or become unstable.

The Strategic Environmental Assessment (SEA) which was undertaken between 2015-2017 to consider the opportunities and constraints with regard to shale gas development in the Karoo in Chapter 15[22] identified and mapped dwellings and structures that could be impacted on by seismic activity within the Karoo area. The SEA information and maps could form the base of the further study to be undertaken should the Karoo be the area of investigation and is available at http//seasgd.csir.co.za.

3.4.1 General

The general section related to the baseline monitoring of seismicity and possible features and structures that could potentially be impacted by induced seismicity, must contain the following information, mapped where relevant, related to the study area:

- Information from existing geological maps;
- Seismic reflection and refraction data, where available;
- Stress data from proximal boreholes where available;
- Current seismicity monitoring locations;
- Historical seismic activity in the area based on available information;
- A requirement to undertake continuous seismic monitoring on the exploration site;
- A general discussion about the historic buildings, other built structures and stone walls;
- The location including the coordinates of historical buildings, other built structures and stone walls;
- A discussion on the structural integrity of the buildings, stone walls and structures, etc.;
- The location of any other infrastructure which could be impacted on by an increase in seismic activity for example pipelines, tailings dams and bridges; and

[22] Maps of known category 1, 2 and 3 heritage resources were provided in the Digital Addenda to the Chapter 15 of the SEA.

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- A discussion on the structural integrity of infrastructure including pipelines, tailings dams and bridges.

3.4.2 Plan for determining the pre-fracturing seismicity

The objective of the baseline monitoring plan for seismic activity is to ensure that the pre-fracturing seismicity for the study area is known, through the review of historical seismic activity in the area, the results of seismic activity based on continuous seismic monitoring for the twenty four months base line monitoring period, as well as the structural integrity of buildings, built structures and stone walls. This baseline will facilitate an understanding of any possible change in seismic activity and any impact on buildings built structures and stone walls within the study area that could occur as a result of such a change. As a minimum the baseline monitoring plan must identify the locations for monitoring or observation and the monitoring methods for each location. The following information is required as a minimum:

- Purpose of the plan;
- The locations for monitoring or observation;
- The necessary monitoring equipment; and
- The monitoring parameters and methods.

The monitoring and observation points must be identified on an annotated map and parameters and frequencies included in an excel spread sheet. Both the map and the excel spread sheet must be included in the seismicity baseline monitoring plan. The Council for Geoscience must be engaged for any inputs that may be relevant and not covered in these requirements as well as the potential impact on identified buildings and structures.

3.5 Cultural Heritage and paleontological resources

Heritage resources are distributed in variable densities throughout the country. In undeveloped area where exploration and fracturing activities would potentially take place the survey coverage is generally low, and the actual distribution of resources is poorly known. Fracturing and other petroleum related activities could uncover buried artefacts or fossils, could lead to a loss of medicinal plants associated with rituals or cultural practises and could affect heritage resources to varying degrees.

The heritage baseline study overlaps to some degree with the seismicity baseline study in relation to the built environment as the data gathered on structures that may potentially be impacted by any increase in seismic activity, are relevant to this theme. In addition, although some proactive work can be undertaken to identify areas in which it would be anticipated to find heritage, cultural[23] or paleontological resources, the actual unearthing of these resources would occur in most cases once the exploration or production operations are being implemented.

[23] Cultural resources include medicinal plants used for cultural or ritual practices.

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As indicated under the seismicity theme, Chapter 15 of the SEA on Shale Gas Development in the Karoo contained a specialist study on the impacts of shale gas exploration on heritage resources in the Karoo. This information could assist as a point of departure for the heritage baseline monitoring plan should the potential site overlap with that of the SEA. The SEA specialist study and supporting maps are available at http//seasgd.csir.co.za.

3.5.1 General

The general section of the heritage baseline monitoring plan must identify the possibility of finding or unearthing of heritage, cultural or paleontological resources or damaging medicinal plants associated with rituals based on: desktop studies, professional knowledge, discussion with the provincial/national Heritage Resources Agencies and local municipalities. Where relevant, interviews with local residents should be held, to gather information. The aspects of heritage architecture are dealt with under the seismicity baseline monitoring requirements.

3.5.2 Plan for determining the pre-fracturing status of cultural heritage and paleontological resources

The objective of the baseline monitoring plan for heritage resources is to identify any areas in which heritage, cultural or palaeontological resources may be found. The baseline monitoring must be undertaken within the study area. The plan must provide a methodology and areas for further investigation prior to exploration activities being undertaken. The following information is required as a minimum:

- Purpose of the plan;
- The identification and mapping of the locations of known heritage, cultural or paleontological resources within the study area;
- Areas for further investigation through the implementation phase of the exploration operations;
- Condition of the heritage, cultural or paleontological resources and assessment of the significance of such resources; and
- The investigation methodology to be used when undertaking the additional site work including the scoping of residence where relevant and the methodology for recording the findings.

The location of current heritage and archaeological resources as well as the areas/sites for further investigation must be mapped on an annotated heritage map which must include coordinates. The parameters and frequencies for monitoring must be included in an excel spread sheet. Both the map and the excel spread sheet must be included in the cultural heritage and paleontological resources baseline monitoring plan. The baseline monitoring must be undertaken for a period not less than 24 months.

3.6 Terrestrial Biodiversity and species

The terrestrial biodiversity and species baseline information must be provided for the study area identified by the terrestrial biodiversity and species specialists. The study must include information on

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terrestrial biodiversity and species including vegetation, habitats, groundwater dependant ecosystems as well as plant and animal species.

3.6.1 General

The general section of the terrestrial biodiversity and species baseline monitoring plan must describe the current biodiversity features as well as aspects which influence the terrestrial biodiversity and species within the study area. The following information must be included as a minimum:

- Biomes and vegetation types including fine-scale vegetation types and groundwater dependant ecosystems where relevant;
- A desktop analysis of biodiversity, plant and animal species expected to be found within the study area, including a list of species and their conservation status;
- A desktop analysis of the existing habitats which could be of importance to plant or animal species e.g., breeding habitat, foraging habitat, movement corridors;
- Any areas of anomaly which would be of specific importance to biodiversity both plants and animals (e.g., rocky outcrop);
- Any habitats which provide movement corridors;
- Any expected species migration routes; and
- A desktop analysis of biodiversity, plant or animal species, expected to be found within the affected area, including a list of expected species, their conservation status and level of endemism.

The features and expected species locations identified must be mapped on an annotated terrestrial biodiversity map and the corresponding shapefile provided.

3.6.2 Plan for determining the pre-fracturing status of terrestrial biodiversity

The objective of the baseline monitoring for terrestrial biodiversity is to identify the abundance and diversity of animal and plant species in the affected area and to identify any specific features or areas which should be avoided during any subsequent phase of exploration and production due to its terrestrial biodiversity sensitivity or resource properties. The baseline monitoring plan for terrestrial biodiversity must identify the species and habitats to be monitored. The plan must propose monitoring frequency and methodologies to be used to determine any possible impact on abundance and diversity of plant and animal species as well as the current vegetation and habitat status in the study area. The following information is required as a minimum:

- Purpose of the plan;
- The priority plant and animal species to be identified (confirmed presence or absence) including species of conservation concern, keystone species and indicator species;
- The methodology to be used to identify or confirm the presence of the priority plant and animal species;
- The habitats and vegetation types to be monitored;
- The methodology for monitoring each species and their habitats e.g., presence, distribution, abundance, habitat condition/degree of modification;

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- The location for monitoring; and
- The monitoring frequency and duration per species and vegetation type.

The monitoring and observation points must be identified on an annotated map and parameters and frequencies included in an excel spread sheet. Both the map and the excel spread sheet must be included in the biodiversity baseline monitoring plan. The baseline monitoring must be undertaken for a period not less than 24 months.

3.7 Waste

The management of waste and waste water has been identified as one of the main issues confronting the use of fracturing technology. Baseline information on waste management facilities available in the study area must be gathered to determine the ability of these facilities to deal with the waste that would be generated from well drilling and fracturing activities.

It must be noted that the draft NEMA Fracturing Regulations, prohibits, among others, the discharge or disposal of fracturing fluids, process water or any other component of process water into a water resource, a government waste water treatment works or underground disposal including the use of re-injection wells. The Regulations also prohibit the disposal of sludge to landfill with a water content of >40% or that liberates moisture under pressure in landfill conditions and which has not been stabilised by treatment.

3.7.1 General

The general section of the waste baseline information must describe the current waste water and waste treatment, recycling and waste disposal facilities available in the broader study area. The following information must be included as a minimum:

- Waste water and waste treatment facilities including the types and volumes of waste water and waste that the facility is permitted to treat;
- Waste water and waste recycling facilities and the types and volumes of waste water and waste which the facility has been permitted to recycle; and
- Waste disposal facilities including the types and volumes of waste for which the facility has been permitted;
- Desktop analysis of the possibilities available in the study area or the broader area to treat, dispose of or recycle the waste which will be generated from the exploration, fracturing and production operations. The analysis is to identify any treatment, disposal or recycling facility gaps and make recommendations as to the interventions required to ensure the safe management of all wastes to be generated through the exploration, fracturing and production operations.

3.7.2 Report on waste management options

The objective of the baseline monitoring for waste is to determine the availability of waste water and waste treatment, recycling and disposal facilities within the study area. Gaps in treatment facilities and waste water and waste management options will be identified for consideration in the

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environmental impact assessment process for exploration, fracturing and production. A report on the findings of the investigation must be prepared which identifies and discusses as a minimum the following:

- the locations of suitable facilities for sound waste management, including disposal sites, treatment and recycling facilities. These facilities must be located on an annotated waste management map;
- a discussion on the disposal, treatment and recycling facilities including the facilities capacities, the types of waste or waste water for which the facilities are licenced, the current conditions including the licencing status and the ability of the facility to receive the waste from the exploration, fracturing or production operations;
- any waste water and waste treatment, recycling and disposal gaps identified; and
- recommendations for waste and waste water treatment, recycling or disposal options to be used for the recycling, treatment or disposal of the anticipated waste to be generated from the fracturing and production operations.

3.8 Traffic study

The traffic study must be undertaken on all national and provincial routes which provide access to the site as well as any secondary roads. The study must be undertaken for a period of at least six months and must consider a twenty-four-hour period for seven days of the week. The study must consider the route from the main departure points to the proposed study area. There must also be a consideration of rail infrastructure, the suitability of the infrastructure to transport materials and wastes to and from the site and the rail schedules to the nearest rail siding in the proposed study area.

3.8.1 General

The general section of the traffic baseline monitoring plan must describe the current traffic situation along the national, provincial and secondary roads to allow for the understanding of the current flow of traffic, peak traffic times and traffic risk, etc. and the possibility of utilising and upgrading the current rail infrastructure, noting that traffic impacts have been identified as a major concern by residents in the area due to increased traffic volumes, spills, noise, accidents and a general degradation of the sense of place of the Karoo.

3.8.2 Traffic Management Report

The following information must be included as a minimum on an annotated map:

- National, provincial and secondary roads;
- Weighbridges;
- Low bridges, or narrow road sections;
- Toll points;
- High traffic accident zones/spots;
- Areas which would be regarded as being sensitive to environmental pollution in the case of a spill, for example rivers, streams wetlands etc.

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- Tourist venues;
- Scenic features;
- Settlements and towns that could be affected by an increase in traffic volumes; and
- Truck stops and filling stations.

A report which is to identify and discuss as a minimum:

- Current condition of the roads;
- Road upgrade and/or maintenance frequency;
- The number of vehicles utilising the national, provincial and secondary roads within the study area;
- The peak times;
- Types of vehicles;
- Common loads transported;
- High accident zones and the reasons for these zones;
- Accident rate as well as the times of accidents;
- Existing rail transport and the possibility of upgrading and utilising rail infrastructure; and
- The number of hazardous trucks utilising the route and the preferred travel times.

A report on the rail opportunities to the site, and its implications on the above-mentions aspects.

3.9 Socio-economic resources

Exploration activities would most likely be undertaken in rural areas which would generally be un-developed areas and have low population densities. A major influx of construction and exploration activity into such areas could provide development opportunities but could also disrupt the current social and economic fabric which could have negative social consequences. The negative impacts could include, among others, the change of economic activity, an increase in cost of living, deterioration in services, increases in crime, illness, shortage of housing, reduced tourism, increased traffic and traffic accidents, greater social inequality, unrest and conflict.

In order to be able to assess the possible impact of exploration, fracturing and production activities on the social fabric on a small rural agricultural community, baseline monitoring considering the pre-exploration, fracturing and production environment must be undertaken. The baseline monitoring will take the form of statistics gathering rather than specific monitoring.

3.9.1 General

The general section of the socio-economic baseline monitoring plan must determine the current socio-economic situation on the site and the study area. This baseline monitoring results will be used in the environmental impact assessment for the following phases of exploration, fracturing and production to determine possible changes in the baseline and to determine the acceptability of these changes.

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3.9.2 Socio-economic Report

The socio-economic report must be comprehensive and provide an overall impression of the socio-economic fabric of the area which must address, with data and evidence, the following aspects as a minimum:

- Local and regional demographics;
- Employment and unemployment figures, types of employment available and average remuneration;
- Economic activities and the contribution of the activity to the economics of the area;
- Availability of schools and secondary educational institutions, numbers of scholars and teacher student ratio;
- Religious and cultural services available in the area;
- General health of the community, number of hospitals or medical centres including beds available, admittance numbers, number of doctors including their areas of specialisation and costs of medical services;
- Vulnerable socio-economic groupings;
- Geographical areas that are vulnerable to socio-economic change;
- Cost of living in the municipality and region including the cost of food, rates and taxes, electricity etc. housing prices, rentals;
- Housing stock, including caravan parks, hotel accommodation, bed and breakfast facilities, guest houses including prices, available beds and general annual occupancy rates;
- Availability and costs of office and commercial rental space, as well as occupancy rates;
- The security situation including the number of police stations servicing the municipal area and the region, the number of crimes reported, the nature of the crimes, response times and resolution statistics;
- Levels of municipal services provided, including, roads construction and maintenance, waste and waste water treatment and disposal performance, water allocation and access to electricity;
- Disaster management services, including ambulance availability and response times, availability of firefighting services, flood control and evacuation potential; and
- Tourist facilities and attractions in the area, including numbers of tourists visiting and areas of special attraction.

3.10 Noise and light

As previously noted, exploration activities would most likely be undertaken in rural areas which would generally have low noise and light levels which contributes to the areas' sense of place. The increase of vehicular traffic and development activity in the area will increase the both local noise and light levels. In order to assess the increase in noise and light from the activities related to exploration or production, the baseline noise and light levels must be determined.

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3.10.1 General

The baseline noise and light monitoring will need to be undertaken for a sufficient period to monitor the noise and light levels through various situations, the time period will be determined by the noise specialist based on his/her professional experience as well as general good practice. It must be noted that the draft NEMA Fracturing Regulations prohibit the consideration of exploration, fracturing and production activities within the Karoo Central Astronomy Advantage Area 3 as identified in the Regulations on the Protection of the Karoo Central Astronomy Advantage Areas in Terms of the Astronomy Geographic Advantage Act, 2007, as published in Government Notice 1411 in Government *Gazette* No. 41321 of 15 December 2017, and restricts these activities in Area 2 and 1. The consideration of exploration, fracturing and production activities are also prohibited in the Sutherland Central Astronomy Advantage Area identified in figure 1 of Government Notice No. 199 published in Government *Gazette* No. 37434 on 12 March 2014.

3.10.2 Plan for determining the pre-fracturing status of noise and light report

The objective of the baseline monitoring for noise and light is to determine the current ambient noise and light levels which occur in the local area through a number of different situations. In the case of noise, night time and daytime levels and weekdays and weekends levels must be considered, and in the case of light, full moon or new moon situations must be considered. In addition, any topographical features which could influence the passage of noise or light must be considered and reported on with an explanation as to how these features could affect the transmission of noise and light. Meteorological effects which could affect noise and light levels such as temperature inversions must also be discussed. A plan for the monitoring of these aspects is to be drawn up for the study area which must include the following aspects as a minimum information:

- Purpose of the plan;
- Major noise and light emitters in the area, including the location of these emitters on an annotated plan;
- Possible receptors of noise and light, for example, houses, schools, nursing homes, hospitals, places of worship etc. These receptors must be located on an annotated plan;
- Topographical features which could influence the transmission of noise and light located on an annotated plan;
- The methodology for monitoring, including the monitoring equipment to be utilised; and
- Monitoring points, the duration and time intervals of such monitoring. The monitoring points are to be identified on an annotated plan and the duration and time intervals captured into an excel spreadsheet.

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PART 2 – ENVIRONMENTAL IMPACT ASSESSMENT

1. Chapter 1

1.1 Agriculture

Exploration for petroleum generally takes place in undeveloped areas which would have an agricultural zoning. A major concern from an agricultural perspective with any development is the possible loss of high potential agricultural land and the curtailment of agricultural activities.

Agriculture was not a theme specifically identified for baseline monitoring as the current status will be considered under the general section of this heading and through exploration no monitoring of agricultural land will be required, if agricultural land is to be lost, that loss is regarded as an impact and will be identified under this heading.

1.1.1 General

The aspects to be covered under this heading relate to the current status of the agricultural land which has been included in the "protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources" and therefore are not repeated.

1.1.2 Content of the agricultural agro-ecosystem impact assessment report

The impacts on agricultural land must be assessed and reported on in line with the "protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources".

The findings of the agricultural agro-ecosystem impact assessment must contain –

- A reasoned opinion, based on the findings of the impact assessment, regarding the acceptability or not, of the development related to agricultural land and any conditions to be included in the environmental authorisation should the project be approved, if relevant; and
- A discussion on the application of the impact mitigation hierarchy and where areas of high agricultural potential cannot be avoided, the mitigation measures which must be implemented to mitigate the impacts of the exploration activities on agriculture. These mitigation measures must be transferred by the EAP into a draft environmental management programme to be included at the end of Part 2.

1.2 Surface water and aquatic biodiversity

The geographical characteristics such as topography, soils, and land use as well as the surface geohydrology, affects the development and character of surface water systems such as rivers, springs, pans and wetlands. By altering these geographical characteristics through the 2-D and 3-D seismic surveys and the drilling of exploration wells associated with the exploration of petroleum reserves, impacts on surface water resources can occur. This disturbance arises from physical disturbance of

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watercourses during exploration activities as a result of traversing numerous watercourses. Compaction and surface disturbance both within watercourses and their catchments could potentially affect infiltration rates and increase runoff rates across disturbed compacted surfaces. The movement of heavy vehicles over large areas could also disturb aquatic biodiversity for example frogs, dragonflies, etc.

In order to understand these impacts a surface water and aquatic biodiversity impact assessment must be undertaken to determine any changes in the character of surface water features, variabilities in water quality, water flow or aquatic biodiversity resulting from the seismic survey activities.

The surface water and aquatic biodiversity impact assessment must consider the site and the study area where continuity of features is identified, for example rivers or interlinked wetlands and pans. The surface water and aquatic biodiversity impact assessment must include general information on the aquatic environment, weather and precipitation.

The following aspects must be included in the surface water impact assessment report as a minimum:

1.2.1 General

The aspects to be covered under this heading related to the aquatic biodiversity have been included in the "Biodiversity protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity" and therefore are not repeated.

The general section related to the surface water must contain the following information:

- Purpose of the assessment;
- General overview of the surface water attributes within the study area;
- The regional daily precipitation and evaporation;
- The local daily precipitation and evaporation;
- Water availability and accessibility within the study area;
- Mean annual runoff;
- Regional water uses and accessibility and stresses;
- The location of surface water features within the study area or where continuity of a surface water feature is identified, in the study area. The feature with GPS coordinates as appropriate (i.e., a centre point for a pan or linear points along a river) is to be located on a surface water annotated map;
- The resource class and river health receiving water quality objectives and reserves as determined by the DWS;
- A description of the ecological importance and sensitivity of the surface water feature including the ecosystem processes in operation in the study area, for example movement of surface and subsurface water, recharge, discharge, sediment transportation etc.;
- Wetland classification should wetlands occur in the study area;
- Wetland delineations taken from a wetland study;
- A description of the vegetation within the study area and its reliance on water availability; and

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- Water users in the study area.

1.2.2 Content of the surface water and aquatic biodiversity impact assessment report

The impacts on aquatic biodiversity must be assessed and reported on in line with the "Biodiversity protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity".

In addition, the impact assessment report for surface water must contain among others the following:

- Potential pollution sources;
- Potential polluting activities;
- Potential disturbances to surface water features (this task could include the modelling of surface water changes);
- The report on the impacts on animal species prepared in line with the "Protocol for the specialist assessment and minimum report content requirements for environmental impacts on animal species";
- The report on the impacts on plant species prepared in line with the "Protocol for the specialist assessment and minimum report content requirements for environmental impacts on plant species";
- The report on the impacts on aquatic biodiversity prepared in line with the "Biodiversity protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity"; and
- The findings of the surface water and aquatic biodiversity impact assessment which must contain a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to the surface water and aquatic biodiversity and any conditions to be included in the environmental authorisation should the project be approved, if relevant;
- The mitigation measures which must be implemented to avoid, manage or mitigate the impacts from the exploration activities on surface water and aquatic biodiversity; and
- The mitigation measures must be transferred by the EAP into a draft environmental management programme to be included at the end of Part 2.

1.3 Groundwater

The groundwater information must be provided for the site and must include general information on groundwater as well as specific information on the expected impacts on groundwater from the 2-D and 3-D seismic investigation and exploration well drilling to be undertaken. Although the activities of the seismic survey are not expected to have a major impact on the groundwater situation within the study area, the impacts of potential pollution to groundwater and the drilling of exploration wells, if this is an activity that will be undertaken through the exploration operations must be determined.

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1.3.1 General

The general section related to groundwater impacts from the seismic investigation and the exploration well drilling must contain the following information:

- Purpose of the assessment;
- General overview of the geological information;
- Aquafer classification;
- General overview of the regional groundwater aquatic environment;
- Discussion on the frequency and intensity of precipitation, temperature, humidity, evaporation and aquifer recharge within the affected area;
- Groundwater model; and
- The regional reliance on groundwater with specific focus on the study area.

1.3.2 Content of the groundwater impact assessment report

The impact assessment report must contain among others the following:

- The purpose of the impact assessment;
- Potential pollution sources;
- Potential polluting activities;
- Potential for the drilling of exploration wells and the impact that this could have within the study area;
- Potential disturbances to groundwater features where relevant;
- The extent to which the impacts may cause irreplaceable loss of resources;
- The degree to which the identified impacts can be avoided, managed or mitigated;
- The findings of the groundwater impact assessment which must contain a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to groundwater and any conditions to be included in the environmental authorisation should the project be approved, if relevant;
- The measures which must be implemented to mitigate the impacts from the exploration activities on groundwater; and
- These mitigation measures must be transferred by the EAP into a draft environmental management programme to be included at the end of Part 2.

1.4 Air quality

Local air quality can be impacted on by activities related to exploration of petroleum such as the movement of heavy vehicles and diesel fumes. It is therefore important to identify potential impacts on the local air quality, to assess the significance of these impacts, and to determine if avoidance, management or mitigation of these impacts is possible. The study must include information on the general ambient air quality in the area as well as factors which affect ambient air quality within the study area.

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1.4.1 General

The general section related to air quality impacts from the seismic activity must contain the following information:

- General overview of the ambient air quality in the study area;
- Discussion on the weather patterns in the area including wind direction and velocity, temperature, cloudiness, frequency and intensity of precipitation, and humidity among others; and
- Current agricultural, industrial or mining operations which could result in air pollution including their locations.

1.4.2 Content of the air quality impact assessment report

The impact assessment report must contain among others the following:

- Potential pollution sources;
- Potential polluting activities;
- Potential changes to ambient air quality;
- The extent to which the impacts may cause harm to the environment or human health;
- The degree to which the identified impacts can be avoided, managed or mitigated;
- The findings of the air quality impact assessment which must contain a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to air quality and any conditions to be included in the environmental authorisation should the project be approved, if relevant;
- The measures which must be implemented to mitigate the impacts from the exploration activities on air quality; and
- These mitigation measures must be transferred by the EAP into a draft environmental management programme to be included at the end of Part 2.

1.5 Seismicity

The impact of seismicity from the exploration activity is expected to be low, however, any impact from increased seismic activity on heritage buildings must be determined.

1.5.1 General

The general section related to impacts from the seismic activity must contain the following information:

- General overview of the geomorphology and geology;
- The historical and current available seismic data;
- Seismic reflection and refraction data;
- Desktop studies of existing geological maps;

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- Desktop studies of existing regional probabilistic seismic hazard assessments for the area;
- Any identified stressed faults or fault scarps;
- Stress data from proximal boreholes where available; and
- Geophysical data such as gravity.

1.5.2 Content of the seismic impact assessment report

The impact assessment report must contain among others the following:

- Purpose of the assessment which will be to consider the possible impact on heritage buildings or structures;
- Potential activities which could increase seismicity in the study area through the exploration operations which could impact on heritage buildings or structures;
- Potential changes to the current seismic environment from the exploration operations including the extent of these changes;
- The extent to which the change in seismicity may increase risks to heritage buildings or structures;
- The degree to which the identified impacts can be avoided, managed or mitigated;
- The findings of the seismicity impact assessment which must contain a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the exploration related to the additional risks to heritage buildings or structures as well as any conditions to be included in the environmental authorisation, should the project be approved, if relevant;
- Any monitoring that must be undertaken through the exploration operations;
- The measures to be implemented to mitigate the impacts from the exploration operations related to seismicity; and
- These mitigation measures must be transferred by the EAP into a draft environmental management programme to be included at the end of Part 2.

1.6 Cultural heritage and paleontological resources

Heritage resources are distributed in variable densities throughout the country, but because of a generally low survey coverage, the actual distribution of resources is poorly known, specifically in rural areas. Small pockets of high coverage indicate that important heritage resources of all types can occur anywhere in the landscape but river valleys and the undulating uplands tend to be more sensitive than the open plains for some categories of heritage, largely because of access to water. Although it will not be possible to choose the area to be explored and/or developed based on heritage resources, micro-siting of the infrastructure and the implementation of management and mitigation measures during all phases of exploration and production will help to reduce the significance of the impacts that would be experienced.

1.6.1 General

The general section related to impacts on cultural heritage and paleontological resources must contain the following information:

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- Areas in which cultural and paleontological resources are likely to be found within the study area based on past activities or specific locations;
- The identification of locations of known artefacts, rock paintings, graves, fossils, conservation buildings, monuments, etc. within the study area; and
- Activities which could impact on cultural and palaeontological resources in the study area.

1.6.2 Content of the cultural and palaeontological resources impact assessment report

The impact assessment report must comply with section 38(3) of the NHRA and must as a minimum contain among others the following:

- Purpose of the assessment;
- The identification of a search methodology for cultural heritage and palaeontological resources;
- Findings of a field study to possible areas in which cultural and palaeontological resources could be found and the significance of these resources;
- Possible areas in which heritage resources could be found and the significance of these resources;
- A “chance find protocol for cultural heritage artefacts and palaeontological resources” must be prepared and included as an appendix to the environmental management programme to be included at the end of Part 2.
- The findings of the seismicity impact assessment must contain a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the exploration related to the possible increased seismicity and any conditions to be included in the environmental authorisation should the project be approved, if relevant;
- Any monitoring that must be undertaken through the exploration operations;
- The measures which must be implemented to protect any cultural heritage artefacts and paleontological resources should these be identified; and
- These mitigation measures must be transferred by the EAP into a draft environmental management programme to be included at the end of Part 2.

The findings of the cultural and palaeontological resources impact assessment must contain a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the activities related to exploration on cultural and palaeontolgoical resouces as well as any conditions to be included in the environmental authorisation should the project be approved, if relevant, and the mitigation measures which must be implemented to mitigate the impacts from the exploration activities on cultural and palaeontolgoical resouces.

1.7 Terrestrial biodiversity and species

The seismic activities related to 2-D and 3-D investigations can impact on flora and fauna through disturbance, displacement, compaction and spillages, among others. The impact on flora and fauna from seismic activities must be determined.

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1.7.1 General

The aspects to be covered under this heading related to the current status of terrestrial biodiversity and species have been included in three protocols listed in paragraph 1.7.2 below and are therefore not repeated here.

1.7.2 Content of the biodiversity and species impact assessment report

The impacts on biodiversity and species must be assessed and reported on in line with the following protocols:

- The "Biodiversity protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity";
- The "Protocol for the specialist assessment and minimum report content requirements for environmental impacts on plant species"; and
- The "Protocol for the specialist assessment and minimum report content requirements for environmental impacts on animal species".

The findings of the terrestrial biodiversity plan and animal species impact assessment must contain a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to terrestrial biodiversity, animals and plants species as well as any conditions to be included in the environmental authorisation should the project be approved, if relevant, and the mitigation measures which must be implemented to mitigate the impacts from the exploration activities on terrestrial biodiversity, animals and plant species. These mitigation measures must be transferred by the EAP into a draft environmental management programme to be included at the end of Part 2.

1.8 Waste Management

The waste generated from the 2-D and 3-D seismic investigation would not be expected to be excessive, however proper waste management must be undertaken throughout the exploration operations and the impacts of waste on the environment from the seismic investigation must be determined.

1.8.1 General

An assessment of waste to be produced by the exploration operations must be conducted. This assessment must include the possible generation of solid waste, hazardous waste, oil and lubricant waste, construction and demolition waste and sewage etc. Opportunities for avoiding, reducing, reusing and recycling of waste materials must be identified.

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1.8.2 Content of the waste impact assessment report

The assessment must determine where the siting of temporary waste facilities will have the least environmental impacts and determine the most suitable waste storage methods, locate the final disposal facilities (licensed landfills) and identify the service providers for the disposal of waste.

The waste management assessment must make special mention of hazardous waste handling, storage and disposal (including oil and lubricant waste), and must propose mitigations for avoidance of the pollution of ground or surface water. In addition, the waste management specialist assessment must determine the emergency procedures to be followed in the event of a hazardous waste spill.

The waste management specialist assessment must make specific mention of the handling, treatment and disposal of sewage, such that this is done in the most environmentally friendly manner taking particular note of surface and groundwater resources, odour nuisance, and accessibility.

The findings of the waste impact assessment which must contain a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to waste management as well as any conditions to be included in the environmental authorisation should the project be approved, if relevant, and the mitigation measures which must be implemented to manage and mitigate the impacts of waste on the study area. These management and mitigation measures must be transferred by the EAP into a draft environmental management programme to be included at the end of Part 2.

2. Chapter 2

2.1 Environmental management programme

An environmental management programme plays a vital role in the implementation of consistent and continued environmental management practices during the life of the exploration and production operations.

A draft environmental management programme must be provided under this heading which satisfies the requirements of section 24N of NEMA and Appendix 4 of the EIA Regulations, which regulate and prescribe the content of any environmental management programme and specify the type of supporting information that must accompany the submission of the report to the authorities. This draft environmental management programme must include the setting up of the seismic survey as well as the execution of the seismic survey.

The implementation of the environmental management programme is not an optional requirement. The environmental management programme is legally binding through NEMA and the environmental authorisation. The applicant must ensure that the environmental management programme forms part of all project tenders and exploration contracts to allow for costs of the mitigation and management measures to be included in the consideration of the viability of the project.

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DEPARTMENT OF HEALTH

NO. 6812 **7 November 2025**

health
Department:
Health
REPUBLIC OF SOUTH AFRICA

2030 NDP

Inquiries: Dr N Mpanza
Tel: 012 398 8209
Email address: sepupdates@health.gov.za
Ntobeko.mpanza@health.gov.za
Director-General: National Department of Health

To: Healthcare Stakeholders

CONCERN OVER RISING BID PRICES RELATIVE TO SINGLE EXIT PRICE (SEP)

Dear all,

The National Department of Health has become aware of a concerning pattern in recent pharmaceutical tender processes specifically observed that the prices offered by certain suppliers to the State through the public sector tender process are in some instances higher than the published Single Exit Prices (SEPs) for the same medicines available in the private sector.

This pricing behavior does not align with the legislative intent underpinning Section 22G (3) (a) of the Medicines and Related Substances Act 101 of 1965 (Medicines Act 101 of 1965), which exempts the State from the SEP framework. Furthermore Section 217(1) of the Constitution provides that "When an organ of state in the national, provincial or local sphere of government, or any other institution identified in national legislation, contracts for goods or services, it must do so in accordance with a system which is fair, equitable, transparent, competitive and cost-effective".

The longstanding rationale for this exemption has been to enable the State to procure medicines at significantly lower prices compared to those in the private sector, due to demand, the predictability, relatively higher volumes, and certainty of uptake it offers to manufacturers. Historically, this approach has ensured enhanced access to essential medicines for the public sector, in keeping with the principles of equity and affordability.

This reversal of expectations where the public sector, despite offering volume, stability, and predictable procurement, is now being charged prices exceeding those in the private sector, is matter of concern. Of particular concern are instances where suppliers with limited or no competition in specific therapeutic areas appear to be leveraging their market position in a manner that may be perceived as uncompetitive, unethical, and misaligned with the objective of ensuring equitable access to affordable healthcare.

Such practices not only undermine the integrity of the pricing and tender systems but also create significant barriers to access affordable medicines, especially for vulnerable populations reliant on the public health sector. Considering the above, the Department of Health hereby directs that all tender prices submitted by pharmaceutical suppliers to the State must strictly comply with the legislated SEP as published in terms of Section 22G of the Medicines Act, 101 of 1965. This directive has immediate effect and any tender submissions reflecting prices above the applicable SEP may result in disqualification from current and future tenders and may trigger enforcement measures under the Public Finance Management Act (PFMA), the Medicines Act 101 of 1965, and any other applicable legal or regulatory framework. Moreover, any deliberate misrepresentation of pricing information such as tendering above SEP or withholding information shall be considered a material violation. The Department of Health and the Pricing Committee (PC) are jointly reviewing these developments and reserves the right to engage relevant stakeholders, including the Competition Commission (CC) and other regulatory authorities, as necessary to safeguard public health interest.

We urge all industry players to critically reflect on their pricing practices and uphold the spirit of fairness, transparency, equity, cost effectiveness and accountability that underpin the South African Health System. The Department remains committed to constructive engagement with the industry and values collaboration to achieve shared public health goals.

Your cooperation in addressing this matter in alignment with national policy objectives and in the interest of safeguarding equitable access to healthcare is anticipated and appreciated.

DR SSS BUTHELEZI

DIRECTOR-GENERAL: HEALTH

DATE: 17/07/2025

DEPARTMENT OF INTERNATIONAL RELATIONS AND COOPERATIONS

NO. 6813 **7 November 2025**

AGREEMENT

BETWEEN

THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

AND

THE INTERNATIONAL INSTITUTE FOR DEMOCRACY AND ELECTORAL ASSISTANCE

REGARDING THE ESTABLISHMENT OF THE IDEA

REGIONAL OFFICE IN SOUTH AFRICA

PREAMBLE

The Government of the Republic of South Africa and the International Institute for democracy and Electoral Assistance ("IDEA") (hereafter referred to in the singular as a "Party" and in the plural as the "Parties");

NOTING that IDEA was established at a Founding Conference in Stockholm on 27 February 1995 by Agreement between the following countries: Australia, Barbados, Belgium, Chile, Costa Rica, Denmark, Finland, Norway, Portugal, South Africa, Spain and Sweden;

RECOGNISING that IDEA has been established in order to nurture and support sustainable democracy worldwide;

RECALLING the decision of IDEA's Council in June 2003 to establish regional offices for Africa and Asia in order to provide a base of IDEA's operations in each continent and to assist liaison with IDEA Member States;

DESIRING to establish IDEA's regional office for Africa and the Middle East in South Africa;

CONSIDERING that it is desirable to conclude an agreement to regulate certain matters relating to the establishment of the IDEA regional office for Africa and the Middle East,

HEREBY AGREE, as follows:

ARTICLE 1
Definitions

Section 1

In this Agreement the expression—

(a) *"appropriate Republic of South Africa authorities"* means such national or other authorities in the Republic of South Africa as may be responsible in the context and in accordance with the laws and customs applicable in the Republic of South Africa;

(b) *"archives of IDEA"* includes all records, correspondence, documents, manuscripts, computer records, still and motion pictures, films and sound recordings, belonging to or held by IDEA in the Republic of South Africa in furtherance of its constitutional functions;

(c) "Country" means the Republic of South Africa;

(d) "Government" means the Government of the Republic of South Africa;

(e) "Secretary-General" means the Secretary-General of IDEA;

(f) *"Regional Head of IDEA"* means the Regional Director for Africa and the Middle East of International IDEA based in Pretoria, Republic of South Africa;

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(g) *"IDEA Office"* means the Regional Offices of the International Institute for Democracy and Electoral Assistance in the Republic of South Africa;

(h) *"member of the family"* means —
(i) the spouse;
(ii) any unmarried child under the age of 21 years;
(iii) any unmarried child between the ages of 21 and 23 years who is undertaking' full-time studies at an education institution; and
(iv) any other unmarried child or other family member officially recognised as a dependent member of the family by IDEA, and who is issued with a diplomatic and official passport.

(i) *"officials of IDEA"* means the professional staff assigned to IDEA in the Republic of South Africa, with the exception of those locally recruited staff who are not professional staff;

(j) *"property and assets of IDEA"* means all property, including funds, income and other assets, belonging to IDEA or held or administered by IDEA in furtherance of its constitutional functions;

(k) *"premises of IDEA"* means the office premises IDEA utilises for its official functions in the Republic of South Africa; and

(l) *"telecommunications"* means an emission, transmission or reception of written or verbal information, images, sound or information of any nature by wire, radio, satellite, optical fibre or any other electronic or electromagnetic means;

ARTICLE 2
Establishment of Offices

Section 2

(1) The Government agrees to the establishment of an IDEA Office in the Country in order to perform its functions within its mandate, including but not limited to—

(a) promoting and advancing sustainable democracy in the region;
(b) improving and consolidating democratic electoral processes in the region; broadening the understanding and promoting the implementation and dissemination of the norms, rules and guidelines that apply to multi-party pluralism and democratic processes;
(c) strengthening and supporting national and regional capacity to develop the full range of democratic instruments;
(d) providing a meeting-place for exchanges between all those involved in electoral processes in the context of democratic institution-building;
(e) increasing knowledge and enhancing learning about democratic electorals processes; and
(f) promoting transparency and accountability, professionalism and efficiency in the electoral process in the context of democratic development.

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(2) To achieve the goals the IDEA Office expects to engage in activities, such as the following:

(a) Developing networks in the region (e.g. African Union, Pan-African Parliament, AAEA, SADC, ECOWAS and IGAD) in the sphere of electoral processes;
establishing and maintaining information services;
(b) providing advice, guidance and support on the role of government and opposition, political parties, electoral commissions, an independent judiciary, the media and other aspects of the electoral process in a pluralistic democratic context;
(c) encouraging research and the dissemination and application of research findings within IDEA's sphere of competence;
(d) organizing and facilitating seminars, workshops and training on free and fair elections in the context of pluralistic democratic systems; and
(e) engaging in other activities related to elections and democracy as the need arises.

ARTICLE 3
Juridical personality

Section 3

The Government recognises the juridical personality of the IDEA Office and in particular its capacity to—

(a) to contract;
(b) to acquire and dispose of immovable and movable property: arid
(c) to institute juridical proceedings.

Section 4

The IDEA Office shall enjoy in furtherance of its official functions, and subject to the provisions of this Agreement, treatment not less than favourable than that accorded to Organisations of the United Nations. IDEA shall have the right to display and make use at all time of the emblem of IDEA.

ARTICLE 4
Inviolability of premises

Section 5

(a) The premises of the IDEA Office shall be inviolable. The property and assets of the IDEA Office, wherever located and by whomsoever held, shall enjoy immunity from every form of legal process, except insofar as in any particular case immunity shall have expressly been waived by the Secretary-General or the Regional Head of IDEA. Waiver of immunity from legal process shall not be held to imply waiver of immunity in respect of any measure of execution, for which a separate waiver shall be necessary.

(b) No official of the Country or person exercising any public authority within the Country shall enter the premises to perform any duties therein except with the consent of and under conditions approved by the Regional Head of IDEA. The Regional Head of IDEA's consent to such entry shall be presumed in the event of fire or other analogous emergency requiring urgent action.

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(c) The premises shall not be used in any manner incompatible with the mandate of IDEA.

Section 6

The archives belonging to, or held by IDEA, shall be inviolable.

Section 7

With respect to all official activities, the IDEA Office, its assets, income and property shall be exempt from all forms of direct taxation, however, IDEA shall not claim exemption from taxes which are no more than charges for public utility services.

Section 8

The IDEA Office shall be exempt from customs duties, prohibitions and restrictions on goods imported or exported for its official purposes, including publications. It is understood, however, that articles imported under such exemptions will not be sold in the Country except under conditions agreed to with the Government.

Section 9

While the IDEA Office will not, as a general rule, claim exemption from excise duties and from taxes on the purchase or sale of movable and immovable property forming part of the property and assets of IDEA, which form part of the price to be paid, nevertheless when the IDEA Office makes important purchases of such property for official use, on which such duties and taxes have been charged or are chargeable, the Government will, whenever possible, make appropriate administrative arrangements for the remission or return of the amount of duty or tax.

ARTICLE 5
Financial transactions

Section 10

Without being restricted by financial controls, regulations or moratoria of any kind, IDEA may, in order to carry out its activities—

(a) hold funds and currency of any kind and operate accounts in any currency; and

(b) freely transfer its funds and currency to and from the Country, and convert any currency held by it into any other currency,

R.O

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ARTICLE 6
Communications

Section 11

IDEA shall enjoy, for its official communications, treatment not less favourable than that accorded by the Country to any other Government, including the latter's diplomatic mission, in the matter of priorities, rates and taxes on mail, cables, telegrams, radiograms, telephotos, telephone and other communications, and press rates for information to the press and radio.

Section 12

(1) No censorship shall be applied to the official correspondence and other official communications of IDEA.

(2) IDEA shall have the right to use codes and to dispatch and receive correspondence by courier or in sealed bags, which shall have the same immunities and privileges as diplomatic couriers and bags.

(3) Nothing in this section shall be construed to preclude the adoption of appropriate security precautions to be determined by agreement between the Government and IDEA.

ARTICLE 7
Officials of IDEA

Section 13

The Government shall accord to—

(a) The Regional Head of IDEA, the same privileges and immunities, exemptions and facilities as accorded to officials of comparable ranks forming part of diplomatic missions.

(b) Officials of IDEA who are not nationals or permanent residents of the country, the following privileges and immunities:
   (i) Immunity from legal process in respect of words spoken or written and all acts performed by them in their official capacity;
   (ii) exemption from taxation on the salaries and emoluments paid to them by IDEA;
   (iii) immunity, together with members of their family, from immigration restrictions and alien registration;
   (iv) the same privileges in respect of exchange facilities as are accorded to the officials of comparative ranks forming part of diplomatic missions to the Government;
   (v) together with members of their families, the same repatriation facilities in time of international crisis as diplomatic envoys;
   (vi) the right to import free of duty their furniture and effects at the time of first taking up their post in the Country.

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(c) Officials of IDEA who are nationals or permanent residents of the Country immunity from legal process in respect of words spoken or written and all acts performed by them in their official capacity.

Section 14

Privileges and immunities are granted to officials in the interests of IDEA only and not for the personal benefit of the individuals themselves. The Secretary-General or the Regional Head of IDEA shall have the right and the duty to waive the immunity of any official in any case where, in his or her opinion, the immunity would impede the course of justice and can be waived without prejudice to the interests of IDEA.

Section 15

IDEA shall co-operate at all times with the appropriate authorities of the Government to facilitate the proper administration of justice, secure the observance of police regulations and prevent the occurrence of any abuses in connection with the privileges, immunities and facilities mentioned in this Article.

Section 16

The IDEA Office shall inform the Government in a timely manner of the names, ranks and designations of its officials.

ARTICLE 8
Representatives of Members

Section 17

Representatives of Members of IDEA, who are not nationals of the Country, at meetings convened by IDEA in the Country shall, while exercising their functions and during their journeys to and from the place of meeting, enjoy the privileges and immunities as set out below:

(a) immunity from personal arrest or detention and from seizure of their personal baggage and, in respect of words spoken or written and all acts done by them in their capacity as representatives, immunity from legal process of every kind;
(b) inviolability of papers and documents;
(c) the right to use codes and to receive papers or correspondence by courier or in sealed bags;
(d) exemption in respect of themselves and members of their family, from immigration restrictions and alien registrations;
(e) the same facilities in respect of currency or exchange restrictions as are accorded to officials of comparable rank of diplomatic missions; and
(f) the same immunities in respect of their personal baggage as are accorded to diplomatic envoys.

12.3

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Section 18

Privileges and immunities are accorded to the representatives not for the personal benefit of the individuals themselves, but in order to safeguard the independent exercise of their functions in connection with IDEA. Consequently a Member of IDEA not only has the right, but is under a duty to waive the immunity of its representative in any case where in the opinion of the Member of IDEA the immunity would impede the course of justice, and it can be waived without prejudice to the purpose for which the immunity is accorded.

ARTICLE 9
Experts or visiting IDEA Staff on Missions for IDEA

Section **19**

Experts or visiting IDEA staff, other than officials or the Secretary-General, performing missions for IDEA, shall be accorded the privileges and immunities as set out below:

(a) Immunity from arrest or detention and from seizure of their personal baggage;
(b) in respect of words spoken or written and acts done by them in the course of the performance of their mission, immunity from legal process of every kind. This immunity from legal process shall continue to be accorded notwithstanding that the persons concerned are no longer employed on missions for IDEA;
(c) inviolability of papers and documents;
(d) for the purpose of their communications with IDEA the right to use codes and to receive papers or correspondence by courier or in sealed bags;
(e) the same facilities in respect of currency or exchange restrictions as are accorded to representatives of foreign governments on temporary official missions; and
(f) the same immunities and facilities in respect of their personal baggage as are accorded to diplomatic envoys.

Section 20

Privileges and immunities are granted to visiting IDEA staff and to experts in the interests of IDEA and not for the personal benefit of the individuals themselves. The Secretary-General or the Regional Head of IDEA, as the case may be, shall have the right and the duty to waive the immunity of any visiting IDEA staff or expert in any case where, in his or her opinion, the immunity would impede the course of justice and it can be waived without prejudice to the interests of IDEA.

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ARTICLE 10
Visas

Section 21

Applications for visas, where required, from officials of IDEA, representatives of Members of IDEA or visiting IDEA staff, shall be dealt with as speedily as possible.

ARTICLE 11
Amendments

Section 22

This Agreement may be amended by written agreement between the Parties hereto. Each Party shall give full consideration to any proposal advanced by the other Party under this Section.

ARTICLE 12
Settlement of disputes

Section 23

Any dispute between the Parties arising out of or relating to this Agreement that cannot be settled by negotiation or other agreed mode of settlement shall be submitted to arbitration at the request of either Party. For the purposes of the implementation of this Section—

(a) each Party shall appoint one arbitrator and advise the other Party of the name of its arbitrator. Should the arbitrators fail to agree they shall immediately appoint an umpire. In the event that within thirty (30) days of the request for arbitration either Party has not appointed an arbitrator, or that the arbitrators appointed fail to agree on the appointment of an umpire, either Party may request the President of the International Court of Justice to appoint an arbitrator or an umpire, as the case may be;

(b) a majority vote of the arbitrators shall be sufficient to reach a decision, including decisions on procedural matters, which shall be final and binding; and

(c) the expenses of arbitration shall be borne by the Parties as laid down in the arbitral award.

12.3

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ARTICLE 13
Entry into Force, Duration and Termination

Section 24

(a) This Agreement shall enter into force on the date on which the parties have notified each other in writing of their compliance with the relevant internal procedures necessary for the entry into force of this Agreement. The date of entry into force shall be the date of the last notification.

(b) This Agreement shall remain in force unless terminated by either Party by written notice to the other and shall terminate six (6) months after receipt of such notice. Notwithstanding any such notice of termination, this Agreement shall remain in force until complete fulfilment or termination of all obligations entered into by virtue of this Agreement.

(c) The obligations assumed by the Government shall survive the termination of this Agreement under the foregoing sub-Section (b), to the extent necessary to permit orderly withdrawal of the property, funds and assets of IDEA and officials of IDEA by virtue of this Agreement.

IN WITNESS WHEREOF the undersigned, being duly appointed representatives of the Parties, respectively, have on behalf of the Parties signed this Agreement in duplicate in the English language,

DONE at Pretoria on this 24th day of June 2025

FOR THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

DONE at Pretoria on this 20th day of June 2025

FOR THE INTERNATIONAL INSTITUTE FOR DEMOCRACY AND ELECTORAL ASSISTANCE

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RESTRICTED

MINISTRY

BRANCH: GLOBAL GOVERNANCE AND CONTINENTAL AGENDA

File	10/16/23/IDEA
Date	8 September 2025
Type	Submission
Status	For Approval

25/0968

SUBJECT: Minister's Minute in terms of section 7(2) of the Diplomatic Immunities and Privileges Act (Act No. 37 of 2001), recognising the immunities and privileges of the International Institute for Democracy and Electoral Assistance ("IDEA") and its representatives

1. PURPOSE

1.1 To request the Minister to consider signing the Minister's Minute in terms of section 7(2) of the Diplomatic Immunities and Privileges Act (Act No. 37 of 2001) and pursuant to section 4(2) of that Act, recognising the immunities and privileges of the International Institute for Democracy and Electoral Assistance ("IDEA") and its representatives.

2. SUMMARY

2.1 South Africa and IDEA signed a Host Country regarding the establishment of the Institute's regional office in South Africa, on the margins of a High-Level Dialogue hosted at DIRCO under the theme *"Re-imagining Democracy in Africa: Comparative Experiences from the Global South".* A signed copy of the Host Country agreement is appended as **Annexure B**. The Announcements, Tabling, and Committee Reports related to the Host Country Agreement are appended as **Annexure C**.

2.2 Part of the responsibilities of the Office of the Chief Director: Human Rights and Humanitarian Affairs is to manage and cooperate with democracy fora such as IDEA, to advocate for and share best practices on deepening democracy. Therefore, the signing of the Host Country Agreement and related functions has been managed by officials within the said Chief Directorate.

2.3 In order to confer immunities and privileges to the staff and premises of IDEA, in accordance with South Africa's domestic law, the Minister of International Relations and Cooperation must, in terms of section 7(2) of the Diplomatic Immunities and Privileges Act, 2001, by Notice in the Government Gazette, recognise the immunities and privileges. In order to do so, it is necessary for the Minister to sign the attached Minister's minute.

3. RECOMMENDATION(s)

3.1 It is recommended that the Minister consider and sign the Minister's minute.

Annexes for Signature:

A. Minister's minute.

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RESTRICTED

SUBJECT: Minister's Minute in terms of section 7(2) of the Diplomatic Immunities and Privileges Act (Act No. 37 of 2001), recognising the immunities and privileges of the International Institute for Democracy and Electoral Assistance ("IDEA") and its representatives

RECOMMENDATION(s)
It is recommended that the Minister consider and sign the Minister's minute

Minister 01 / 09 2025 Date

Approved	Not Approved	Approved as amended

2025 -09- 15

Copy to:	Deputy Minister Botes	Deputy Minister Moraka

Director-General 15 / 09 2025 Date

Recommended	Not Recommended	Recommended as amended

DIRCO
OFFICE OF THE
Office of the Director-General
15 -09- 2025
DIRECTOR GENERAL
REPUBLIC OF SOUTH AFRICA

MIN/08/80

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RESTRICTED

SUBJECT: Minister's Minute in terms of section 7(2) of the Diplomatic Immunities and Privileges Act (Act No. 37 of 2001), recognising the immunities and privileges of the International Institute for Democracy and Electoral Assistance ("IDEA") and its representatives

RECOMMENDATION(s)
It is recommended that the Minister consider and sign the Minister's minute

Recommended	Not Recommended	Recommended as amended
✓		

Deputy Director-General — Date: 12/9/2025

GG &CA
Office of the Deputy Director-General
International Relations and Cooperation
Republic of South Africa
Part No: 35104663

Recommended	Not Recommended	Recommended as amended
✓		

Acting Chief Director — Date: 10/09/2025

Office of the Chief Director
Part No:

OFFICIAL	DATE / STAMP	SIGNATURE
Ms N Malefane, malefanen, X10002 DIRECTOR	10/09/2025	

Drafter: S Govender User: Govenders3 Ext: 10927

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RESTRICTED

SUBJECT: Minister's Minute in terms of section 7(2) of the Diplomatic Immunities and Privileges Act (Act No. 37 of 2001), recognising the immunities and privileges of the International Institute for Democracy and Electoral Assistance ("IDEA") and its representatives

RECOMMENDATION(s)
It is recommended that the Minister consider and sign the Minister's minute

4. DISCUSSION

4.1 The Government of South Africa (through the Minister of DIRCO) and International Institute for Democracy and Electoral Assistance ("IDEA") signed a Host Country agreement regarding the establishment of the Institute's regional office in South Africa, on the margins of a meeting hosted at DIRCO. In order to carry out their functions effectively, immunities and privileges should be conferred to the staff and premises of IDEA.

4.2 IDEA is an intergovernmental organisation that promotes and advances sustainable democracy on globally and strengthens national and regional capacities to develop a full range of democratic instruments. Given South Africa's notable commitment to democracy and human rights and its established track record of supporting democratic institutions and governance on the continent and globally, the strengthening of this partnership between the Government of South Africa and IDEA would be of strategic importance and value and would create pathways for joint opportunities focusing on ameliorating democracy globally. Also, South Africa will assume the Chairship of the IDEA Council of Member States in 2027. Therefore, the regional office would enhance South Africa's position to provide strategic direction and influence IDEA's work with South African foreign policy priorities.

4.3 The South African Treaty Section in the Office of the Chief State Law Adviser (IL) is responsible for the publication of the Minister's Minute in terms of section 7(2) of the Diplomatic Immunities and Privileges Act, 2001 (Act No. 37 of 2001). The Business Unit engaged the Treaty Section to request that the immunities and privileges and Ministers' Minute be published in the Government Gazette.

4.4 In order to confer immunities and privileges to the staff and premises of IDEA, in accordance with South Africa's domestic law, the Minister of International Relations and Cooperation must, in terms of section 7(2) of the Diplomatic Immunities and Privileges Act, 2001, by Notice in the Government Gazette, recognise the immunities and privileges. In order to do so, it is necessary for the Minister to sign the attached Minister's minute

5. FINANCIAL/LEGAL IMPLICATIONS

5.1 Financial: None.

5.2 Legal: Publication of the Notice in the Government Gazette will confer immunities and privileges as provided for in the Notice on IDEA and its members.

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AGREEMENT

BETWEEN

THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

AND

THE INTERNATIONAL INSTITUTE FOR DEMOCRACY AND ELECTORAL ASSISTANCE

REGARDING THE ESTABLISHMENT OF THE IDEA REGIONAL OFFICE IN SOUTH AFRICA

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PREAMBLE

The Government of the Republic of South Africa and the International Institute for democracy and Electoral Assistance ("IDEA") (hereafter referred to in the singular as a "Party" and in the plural as the "Parties");

NOTING that IDEA was established at a Founding Conference in Stockholm on 27 February 1995 by Agreement between the following countries: Australia, Barbados, Belgium, Chile, Costa Rica, Denmark, Finland, Norway, Portugal, South Africa, Spain and Sweden;

RECOGNISING that IDEA has been established in order to nurture and support sustainable democracy worldwide;

RECALLING the decision of IDEA's Council in June 2003 to establish regional offices for Africa and Asia in order to provide a base of IDEA's operations in each continent and to assist liaison with IDEA Member States;

DESIRING to establish IDEA's regional office for Africa and the Middle East in South Africa;

CONSIDERING that it is desirable to conclude an agreement to regulate certain matters relating to the establishment of the IDEA regional office for Africa and the Middle East,

HEREBY AGREE, as follows:

ARTICLE 1
Definitions

Section 1

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(a) *"appropriate Republic of South Africa authorities"* means such national or other authorities in the Republic of South Africa as may be responsible in the context and in accordance with the laws and customs applicable in the Republic of South Africa;

(b) *"archives of IDEA"* includes all records, correspondence, documents, manuscripts, computer records, still and motion pictures, films and sound recordings, belonging to or held by IDEA in the Republic of South Africa in furtherance of its constitutional functions;

(c) "Country" means the Republic of South Africa;

(d) "Government" means the Government of the Republic of South Africa;

(e) "Secretary-General" means the Secretary-General of IDEA;

(f) *"Regional Head of IDEA"* means the Regional Director for Africa and the Middle East of International IDEA based in Pretoria, Republic of South Africa;

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(g) *"IDEA Office"* means the Regional Offices of the International Institute for Democracy and Electoral Assistance in the Republic of South Africa;

(h) *"member of the family"* means —
(i) the spouse;
(ii) any unmarried child under the age of 21 years;
(iii) any unmarried child between the ages of 21 and 23 years who is undertaking' full-time studies at an education institution; and
(iv) any other unmarried child or other family member officially recognised as e dependent member of the family by IDEA, and who is issued with a diplomatic and official passport.

(i) *"officials of IDEA"* means the professional staff assigned to IDEA in the Republic of South Africa, with the exception of those locally recruited staff who are not professional staff;

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ARTICLE 2
Establishment of Offices

Section 2

(1) The Government agrees to the establishment of an IDEA Office in the Country in order to perform its functions within its mandate, including but not limited to—

(a) promoting and advancing sustainable democracy in the region;
(b) improving and consolidating democratic electoral processes in the region; broadening the understanding and promoting the implementation and dissemination of the norms, rules and guidelines that apply to multi-party pluralism and democratic processes;
(c) strengthening and supporting national and regional capacity to develop the full range of democratic instruments;
(d) providing a meeting-place for exchanges between all those involved in electoral processes in the context of democratic institution-building;
(e) increasing knowledge and enhancing learning about democratic electorals processes; and
(f) promoting transparency and accountability, professionalism and efficiency in the electoral process in the context of democratic development.

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(2) To achieve the goals the IDEA Office expects to engage in activities, such as the following:

(a) Developing networks in the region (e.g. African Union, Pan-African Parliament, AAEA, SADC, ECOWAS and IGAD) in the sphere of electoral processes;
establishing and maintaining information services;
(b) providing advice, guidance and support on the role of government and opposition, political parties, electoral commissions, an independent judiciary, the media and other aspects of the electoral process in a pluralistic democratic context;
(c) encouraging research and the dissemination and application of research findings within IDEA's sphere of competence;
(d) organizing and facilitating seminars, workshops and training on free and fair elections in the context of pluralistic democratic systems; and
(e) engaging in other activities related to elections and democracy as the need arises.

ARTICLE 3
Juridical personality

Section 3

The Government recognises the juridical personality of the IDEA Office and in particular its capacity to—

(a) to contract;
(b) to acquire and dispose of immovable and movable property: arid
(c) to institute juridical proceedings.

Section 4

The IDEA Office shall enjoy in furtherance of its official functions, and subject to the provisions of this Agreement, treatment not less than favourable than that accorded to Organisations of the United Nations. IDEA shall have the right to display and make use at all time of the emblem of IDEA.

ARTICLE 4
Inviolability of premises

Section 5

(a) The premises of the IDEA Office shall be inviolable. The property and assets of the IDEA Office, wherever located and by whomsoever held, shall enjoy immunity from every form of legal process, except insofar as in any particular case immunity shall have expressly been waived by the Secretary-General or the Regional Head of IDEA. Waiver of immunity from legal process shall not be held to imply waiver of immunity in respect of any measure of execution, for which a separate waiver shall be necessary.

(b) No official of the Country or person exercising any public authority within the Country shall enter the premises to perform any duties therein except with the consent of and under conditions approved by the Regional Head of IDEA. The Regional Head of IDEA's consent to such entry shall be presumed in the event of fire or other analogous emergency requiring urgent action.

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(c) The premises shall not be used in any manner incompatible with the mandate of IDEA.

Section 6

The archives belonging to, or held by IDEA, shall be inviolable.

Section 7

With respect to all official activities, the IDEA Office, its assets, income and property shall be exempt from all forms of direct taxation, however, IDEA shall not claim exemption from taxes which are no more than charges for public utility services.

Section 8

The IDEA Office shall be exempt from customs duties, prohibitions and restrictions on goods imported or exported for its official purposes, including publications. It is understood, however, that articles imported under such exemptions will not be sold in the Country except under conditions agreed to with the Government.

Section 9

While the IDEA Office will not, as a general rule, claim exemption from excise duties and from taxes on the purchase or sale of movable and immovable property forming part of the property and assets of IDEA, which form part of the price to be paid, nevertheless when the IDEA Office makes important purchases of such property for official use, on which such duties and taxes have been charged or are chargeable, the Government will, whenever possible, make appropriate administrative arrangements for the remission or return of the amount of duty or tax.

ARTICLE 5
Financial transactions

Section 10

Without being restricted by financial controls, regulations or moratoria of any kind, IDEA may, in order to carry out its activities—

(a) hold funds and currency of any kind and operate accounts in any currency; and

(b) freely transfer its funds and currency to and from the Country, and convert any currency held by it into any other currency,

R.O

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ARTICLE 6
Communications

Section 11

IDEA shall enjoy, for its official communications, treatment not less favourable than that accorded by the Country to any other Government, including the latter's diplomatic mission, in the matter of priorities, rates and taxes on mail, cables, telegrams, radiograms, telephotos, telephone and other communications, and press rates for information to the press and radio.

Section 12

(1) No censorship shall be applied to the official correspondence and other official communications of IDEA.

(2) IDEA shall have the right to use codes and to dispatch and receive correspondence by courier or in sealed bags, which shall have the same immunities and privileges as diplomatic couriers and bags.

(3) Nothing in this section shall be construed to preclude the adoption of appropriate security precautions to be determined by agreement between the Government and IDEA.

ARTICLE 7
Officials of IDEA

Section 13

The Government shall accord to—

(a) The Regional Head of IDEA, the same privileges and immunities, exemptions and facilities as accorded to officials of comparable ranks forming part of diplomatic missions.

(b) Officials of IDEA who are not nationals or permanent residents of the country, the following privileges and immunities:
   (i) Immunity from legal process in respect of words spoken or written and all acts performed by them in their official capacity;
   (ii) exemption from taxation on the salaries and emoluments paid to them by IDEA;
   (iii) immunity, together with members of their family, from immigration restrictions and alien registration;
   (iv) the same privileges in respect of exchange facilities as are accorded to the officials of comparative ranks forming part of diplomatic missions to the Government;
   (v) together with members of their families, the same repatriation facilities in time of international crisis as diplomatic envoys;
   (vi) the right to import free of duty their furniture and effects at the time of first taking up their post in the Country.

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(c) Officials of IDEA who are nationals or permanent residents of the Country immunity from legal process in respect of words spoken or written and all acts performed by them in their official capacity.

Section 14

Privileges and immunities are granted to officials in the interests of IDEA only and not for the personal benefit of the individuals themselves. The Secretary-General or the Regional Head of IDEA shall have the right and the duty to waive the immunity of any official in any case where, in his or her opinion, the immunity would impede the course of justice and can be waived without prejudice to the interests of IDEA.

Section 15

IDEA shall co-operate at all times with the appropriate authorities of the Government to facilitate the proper administration of justice, secure the observance of police regulations and prevent the occurrence of any abuses in connection with the privileges, immunities and facilities mentioned in this Article.

Section 16

The IDEA Office shall inform the Government in a timely manner of the names, ranks and designations of its officials.

ARTICLE 8
Representatives of Members

Section 17

Representatives of Members of IDEA, who are not nationals of the Country, at meetings convened by IDEA in the Country shall, while exercising their functions and during their journeys to and from the place of meeting, enjoy the privileges and immunities as set out below:

(a) immunity from personal arrest or detention and from seizure of their personal baggage and, in respect of words spoken or written and all acts done by them in their capacity as representatives, immunity from legal process of every kind;
(b) inviolability of papers and documents;
(c) the right to use codes and to receive papers or correspondence by courier or in sealed bags;
(d) exemption in respect of themselves and members of their family, from immigration restrictions and alien registrations;
(e) the same facilities in respect of currency or exchange restrictions as are accorded to officials of comparable rank of diplomatic missions; and
(f) the same immunities in respect of their personal baggage as are accorded to diplomatic envoys.

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Section 18

Privileges and immunities are accorded to the representatives not for the personal benefit of the individuals themselves, but in order to safeguard the independent exercise of their functions in connection with IDEA. Consequently a Member of IDEA not only has the right, but is under a duty to waive the immunity of its representative in any case where in the opinion of the Member of IDEA the immunity would impede the course of justice, and it can be waived without prejudice to the purpose for which the immunity is accorded.

ARTICLE 9
Experts or visiting IDEA Staff on Missions for IDEA

Section **19**

Experts or visiting IDEA staff, other than officials or the Secretary-General, performing missions for IDEA. shall be accorded the privileges and immunities as set out below:

(a) Immunity from arrest or detention and from seizure of their personal baggage;
(b) in respect of words spoken or written and acts done by them in the course of the performance of their mission, immunity from legal process of every kind. This immunity from legal process shall continue to be accorded notwithstanding that the persons concerned are no longer employed on missions for IDEA;
(c) inviolability of papers and documents;
(d) for the purpose of their communications with IDEA the right to use codes and to receive papers or correspondence by courier or in sealed bags;
(e) the same facilities in respect of currency or exchange restrictions as are accorded to representatives of foreign governments on temporary official missions; and
(f) the same immunities and facilities in respect of their personal baggage as are accorded to diplomatic envoys.

Section 20

Privileges and immunities are granted to visiting IDEA staff and to experts in the interests of IDEA and not for the personal benefit of the individuals themselves. The Secretary-General or the Regional Head of IDEA, as the case may be, shall have the right and the duty to waive the immunity of any visiting IDEA staff or expert in any case where, in his or her opinion, the immunity would impede the course of justice and it can be waived without prejudice to the interests of IDEA.

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ARTICLE 10
Visas

Section 21

Applications for visas, where required, from officials of IDEA, representatives of Members of IDEA or visiting IDEA staff, shall be dealt with as speedily as possible.

ARTICLE 11
Amendments

Section 22

This Agreement may be amended by written agreement between the Parties hereto. Each Party shall give full consideration to any proposal advanced by the other Party under this Section.

ARTICLE 12
Settlement of disputes

Section 23

Any dispute between the Parties arising out of or relating to this Agreement that cannot be settled by negotiation or other agreed mode of settlement shall be submitted to arbitration at the request of either Party. For the purposes of the implementation of this Section—

(a) each Party shall appoint one arbitrator and advise the other Party of the name of its arbitrator. Should the arbitrators fail to agree they shall immediately appoint an umpire. In the event that within thirty (30) days of the request for arbitration either Party has not appointed an arbitrator, or that the arbitrators appointed fail to agree on the appointment of an umpire, either Party may request the President of the International Court of Justice to appoint an arbitrator or an umpire, as the case may be;

(b) a majority vote of the arbitrators shall be sufficient to reach a decision, including decisions on procedural matters, which shall be final and binding; and

(c) the expenses of arbitration shall be borne by the Parties as laid down in the arbitral award.

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ARTICLE 13
Entry into Force, Duration and Termination

Section 24

(a) This Agreement shall enter into force on the date on which the parties have notified each other in writing of their compliance with the relevant internal procedures necessary for the entry into force of this Agreement. The date of entry into force shall be the date of the last notification.

(b) This Agreement shall remain in force unless terminated by either Party by written notice to the other and shall terminate six (6) months after receipt of such notice. Notwithstanding any such notice of termination, this Agreement shall remain in force until complete fulfilment or termination of all obligations entered into by virtue of this Agreement.

(c) The obligations assumed by the Government shall survive the termination of this Agreement under the foregoing sub-Section (b), to the extent necessary to permit orderly withdrawal of the property, funds and assets of IDEA and officials of IDEA by virtue of this Agreement.

IN WITNESS WHEREOF the undersigned, being duly appointed representatives of the Parties, respectively, have on behalf of the Parties signed this Agreement in duplicate in the English language,

DONE at Pretoria on this 24th day of June 2025

FOR THE GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA

DONE at Pretoria on this 24th day of June 2025

FOR THE INTERNATIONAL INSTITUTE FOR DEMOCRACY AND ELECTORAL ASSISTANCE

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MINISTER'S MINUTE

In accordance with the powers vested in me by section 6(2) of the Diplomatic Immunities and Privileges Act, 2001 (Act No. 37 of 2001), I hereby recognise the International Institute for Democracy and Electoral Assistance to be hosted in Pretoria, South Africa for the purposes of granting the immunities and privileges provided for in section 6(1)(a) of the said Act, as set out in the attached Notice.

Mr RONALD OZZY LAMOLA

Minister of International Relations and Cooperation

Date: 01/10/2025

NOTICE

It is hereby published for general information that the Minister of International Relations and Cooperation, in terms of section 6(2) of the Diplomatic Immunities and Privileges Act, 2001 (Act 37 of 2001) has recognised the International Institute for Democracy and Electoral Assistance to be hosted in Pretoria, South Africa. In accordance with section 6(1)(a) of the said Act, the immunities and privileges to be accorded to the staff and premises of the International Institute for Democracy and Electoral Assistance as provided for in the 1946 Convention on the Privileges and Immunities of the United Nations and the 1947 Convention on the Privileges and Immunities of Specialised Agencies, as may be applicable and for their effective functioning.

SOUTH AFRICAN REVENUE SERVICE

NO. 6814 **7 November 2025**

PUBLICATION OF EXPLANATORY SUMMARY OF THE TAX ADMINISTRATION LAWS AMENDMENT BILL, 2025

Notice is hereby given in terms of Rule 276(1)*(b)* of the Rules of the National Assembly that the Minister of Finance intends to introduce the Tax Administration Laws Amendment Bill, 2025, in the National Assembly in the near future. The explanatory summary of the Bill is hereby published in accordance with Rule 276(1)*(c)* of the Rules of the National Assembly.

The Bill provides for the amendment of the—

- Income Tax Act, 1962, so as to amend a definition; to provide for an allowance made by the Commissioner to be subject to objection and appeal; to make a technical correction; to insert a cross-reference to a relevant section; to clarify the meaning of a certificate required for purposes of deductions of donations made to certain organisations and to make technical corrections;

- Customs and Excise Act, 1964, so as to provide for the Commissioner to delegate a function to be performed by an officer or other person under his control or direction, to a person in the service of another organ of state or institution with whom an agreement has been concluded in terms of the Act, or to designate such person as a customs officer for a specific purpose; to enable a simplified regime for the entry of goods imported or exported for purposes of express delivery on a door-to-door basis in accordance with simplified customs procedures as determined by the Commissioner by rule as well as for the determination of the upper limit on the value of such goods that may be entered in accordance with simplified procedures; to enable the Commissioner to prescribe the timeframe for adjustment of a bill of entry in a manner other than by the submission of a voucher of correction; to enable the transfer, under rebate of customs duties, of waste or scrap remaining after the manufacturing from any goods entered under of any item specified in Schedule No. 3 to the Act to another person registered under another item of Schedule No. 3 for use subject to compliance with such item; to insert a Chapter providing for voluntary disclosure relief for customs and excise; and to make technical corrections;

- Value-Added Tax Act, 1991, so as to insert definitions relating to the implementation of a voluntary e-reporting system; to make technical corrections; to extend the regulatory powers of the Minister to make regulations prescribing the requirements for participation by a vendor in a voluntary e-reporting system;

- Tax Administration Act, 2011, so as to make a textual correction; to extend a provision to enable SARS to confirm whether the physical address of an applicant exists and the premises is suitable for conducting the activities reflected in the application; to make a consequential amendment; to clarify that a taxpayer can apply for the suspension of a tax debt pending the outcome of a request for a reduced assessment, in certain circumstances; to correct a cross-reference; to clarify the scope of *bona fide* inadvertent error by explicitly linking it with a substantial understatement; to make a consequential amendment to exclude matters that fall within the new Chapter for voluntary disclosure relief in the Customs and Excise Act, from the voluntary disclosure programme under the Act; to make technical corrections;
- Global Minimum Tax Administration Act, 2024, so as to insert a registration requirement; to make a technical correction,

and to provide for matters connected therewith.

DEPARTMENT OF TRADE, INDUSTRY AND COMPETITION

NO. 6815 **7 November 2025**

Companies and Intellectual Property Commission
a member of the dtic group

NOTICE TO CUSTOMERS

NOTICE NUMBER 49 OF 2025

CHANGE OF DIRECTOR'S CONTACT DETAILS

The Companies and Intellectual Property Commission (CIPC) has implemented a new system that will allow directors to update and authorise their contact information as and when the need arises. A verification link will be sent to the director concerned. The director should use this link to **approve** the change if it is legitimate and known to them or **reject** the application if it is not legitimate.

Please take note of the following outcomes that will take place within the **24-hour verification period**:

- **Approved changes:** If the director approves the update, the new contact details will be updated in the CIPC records within 24 hours.
- **Rejected changes:** If the director rejects the update, it will not be processed, even if another party approved of it. Rejections must be submitted within the 24-hour timeframe.
- **No response:** If no action is taken within 24 hours, the request will automatically lapse, and no changes will occur.

Directors are encouraged to **respond promptly** to any verification emails from the CIPC. Rest assured, these emails are legitimate communications from the Commission, not phishing scams. This process aims to protect directors from unauthorised changes to their contact details.

Yours sincerely

Adv Rory Voller
CIPC Commissioner

Signed by Rory Voller, RVoller@cipc.co.za
24/10/2025 11:21:34(UTC+02:00)

the dtic Campus (Block F - Entfutfukweni), 77 Meintjies Street, Sunnyside, Pretoria I P O Box 429, Pretoria, 0001
Call Centre: 086 100 2472
Website: www.cipc.co.za

GENERAL NOTICES • ALGEMENE KENNISGEWINGS

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NOTICE 3575 OF 2025

land reform & rural development
Department:
Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

Private Bag X833, PRETORIA, 0001; 600 Lillian Ngoyi Street, PRETORIA, 0002
Tel: 012 – 312 8911; E-mail: queries@dlrrd.gov.za; Website: www.dlrrd.gov.za

Form 2

(Regulation 2(1))

DEPARTMENT OF LAND REFORM AND RURAL DEVELOPMENT

UPGRADING OF LAND TENURE RIGHTS ACT, 1991 (ACT NO. 112 OF 1991): SECTION 2

Notice of an application for conversion of a land tenure right by the Minister

I, Terries Ndove, Deputy Director General of Land Redistribution and Tenure Reform Branch, received an application for the conversion of a land tenure right described below.

Interested persons are hereby informed of the application for the conversion of the land tenure right.

Any person interested in the application may object to such application within a period of (30) thirty days from the publication of this notice. An objection to the application must be lodged at the address below.

1. The name, surname, identity number and residential address of the applicant:
(Chiloane Johnson Lemios, Identity Number:
(Erf 9031, Tokoza, Gauteng Province)

2. The nature of the land tenure right:

LeaseHold

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NO	Name & Surname	Erf Number	Title Number	Identity Number
1.	Johnson Lemios Chiloane Konketso Flora Motopela	Erf 9031, Tokoza.	TL 31605/1987	560512****089 540617****080
2.	Bezile Sigodwana	Erf 13514, Tokoza Ext 5.	TL 28611/1995	400602****083
3.	Constance Nocwaka Benya	Erf 225, Mabuya Park.	TL 48942/1999	490524****082
4.	Elizabeth Motaung	Erf 521, Moseleke East, Katlehong.	TL 71042/1997	420427****089
5.	Martha Meisi Sibanyoni	Erf 171 Mngadi Sec, Katlehong.	TL86484/2002	570902****082
6.	Mokhesi Lydia Magauta	Erf 3415 Likole Ext 2, Katlehong.	TL60775/1997	601117****084
7.	Masesi Jeanette Malapane	Erf 444 Ramakonopi Katlehong.	TL1691/2019	551002****084
8.	Phindana Prop 163 PTY Ltd	Erf 1618 Othandweni Ext 1	TL26907/2005	200300084607
9.	Thwalima Aifheli David Thwalima Matshidiso Legina	Erf 11025 Dobsonville Ext 2 SOWETO.	TL29274/1990	581011****081 640609****088
10.	Mogale City Local Municipality	Erf 1626 Munsieville.	T19243/2007	N/A
11.	Ratius Buthelezi Pumla Mpinana Buthelezi	Erf 1849 Senaoane SOWETO.	TL9416/1991	601216****087 610822****081

12.	Stephen Legoa Tsotetsi Letta Felana Tsotetsi	Erf 131 SALI Katlehong	TL4053/1988	580701****081 620406****081
13.	Nomathemba Gretta Radebe	Erf 2567 Katlehong South	TL41943/1997	520922****089
14.	Mpo Charles Ngwenya Eunice Zodwa Ngwenya	Erf 1539 Vosloorus	T16164/2007	650824****087 651011****088
15.	Collen Masomeni Dhlamini	Erf 9362 VosloorusExt 20	TL58840/1996	630424****086
16.	Leah Miriam Dladla	Erf 925 Vosloorus	T763751/1999	330826****083
17.	Patrick Majahonke Nkosi Ntombikayise Paulina Tshabalala	Erf 20916 Vosloorus Ext 28	TL41313/1996	690523****087 731015****084
18.	Petrus Mfihlwa Dhladla	Erf 1314 Wattville	TL26632/1989	1957/02/26
19.	Tombo Elizabeth Tshabalala	Erf 2711 Katlehong South.	TL52893/1997	360804****080
20.	Luvhengo Freddy Ramuthivhedi Disebo Christinah Ramuthivhedi	Erf 2943 Katlehong South.	TL49945/1997	491230****086 660212****082
21.	Khanyane Abram Ramasia Tsene Emily Ramasia	Erf 590, A.P Khumalo, Katlehong	TL62985/2003	320124****087 340902****081
22.	Sarah Makam	Erf 1695 Katlehong South	TL49820/1997	600207****085

23.	Richard Sibiya	Erf 79 Zonkizizwe Katlehong	TL81030/2000	560408****086
24.	Puleng Esther Makanye	Erf 6940 Zonkizizwe Ext 2 Katlehong.	TL32106/2002	660502****086
25.	Andrew Molubi	Erf 10866 Vosloorus Ext 14	TL13605/1990	490321****086
26.	Mokaba Family Trust	Erf 1807 Vosloorus Ext 2	TL76116/2001	IT5079/2000
27.	Lindeni Winfred Cindi	Erf 13055 Daveyton	TL66812/1997	341209****086
28.	James Sipho Nondabula	Erf 487 Ramakonopi, Katlehong.	TL11124/1986	450707****086
29.	Josiah Qhichie Mosala	Erf 1417 Wattville	TL86556/2002	640521****086
30.	Itumeleng Allwin Moroke Lebohang Betty Pheta	Erf 448, Monise Katlehong	TL35952/2008	770417****081 820727****085
31.	Phindana Prop 163 Pty Ltd	Erf 21569 Tsakane Ext 11	T42349/2003	200300084607
32.	Ezekiel Malindi Sibongile Joyce Malindi	Erf 402 Protea Glen SOWETO	TL 16909/1991	450810****088 510627****084
33.	Rollie Paul Dikgale Voti Millicent Dikgale	Erf 4858 Chiawelo Ext 2 SOWETO	TL24911/1989	410114****086 420228****088

34.	Nombulelo Vivian Boqo	Erf 2423 Kagiso	TL48052/1995	480131****085
36.	Shadrack Zaba Ndlovu	Erf 1075 Zonkizizwe	TL2875/2008	750202****085
37.	Bennet Solly Mhlanga	Erf 1058 Zonkizizwe	TL50201/2007	610125****089

Erf Number 9031, Tokoza, City of Ekurhuleni Metropolitan Municipality
Gauteng Province

4. The description of the property:

House

5. The capacity in which the land tenure right is being held or could have been held by the applicant:

Owner

6. If the application is made on behalf of more than one-person, personal particulars of such other persons:

(Konketso Flora Chiloane: Identity Number:

7. Address at which objection can be lodged:

(Physical address): Department of Land Reform and Rural Development
600, Lilian Ngoyi, Berea Park
Pretoria
0001
(Email address): queen.filani@dlrrd.gov.za

MR. TERRIES NDOVE
DEPUTY DIRECTOR GENERAL: LAND REDISTRIBUTION AND TENURE REFORM
DATE: 20/5/10/23

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NOTICE 3582 OF 2025

NOTICE OF INTENTION TO AMEND THE GAZETTE NOTICE IN TERMS OF SECTION 11A (2) OF THE RESTITUTION OF LAND RIGHTS ACT, No. 22 OF 1994 (AS AMENDED).

WHEREAS a land claim was lodged for the Prins family which claim was published in terms of Section 11(1) of the Restitution Act, No.22 of 1994 (as amended), hereinafter referred to as "the Act".

and

WHEREAS during further investigation of the land claim in so far as it relates to the properties referred to below, the Regional Land Claims Commissioner, has no reason to believe that the criteria set out in Section 11(1)(b) of the Act, has not been met.

NOW THEREFORE NOTICE is hereby given in terms of Section 11A(2) of the Act that at the expiry of 90 days from the date of the publication of this notice in the Government Gazette, the notice of the claim previously published in terms of section 11(1) of the Act in Gazette No.48187, under Notice 1662 of 2023, dated March 2023, to the extent that it relates to the properties listed below, will be withdrawn unless cause to the contrary is shown to the satisfaction of the Regional Land Claims Commissioner.

The details of the Gazette No.48187, under Notice 1662 of 2023, dated 10 March 2023, relevant for this notice include the following:

Project Name	:	Prins Family Claim
Number of Claims	:	2
Properties	:	Portion 69, 73, 119, 131, 133 and the Remainder (RE/60) of the Farm Warmwater No. 60, Calitzdorp, Portion 125 of Farm No 34, Oudtshoorn, Remainder (RE/155) of Farm No.155, Oudtshoorn, Portion 27, 31 & 33 of Farm No. 150, Oudtshoorn and Portion 95 of Farm No.78, Calitzdorp
The claimant	:	Mr. Arend Joseph (duly appointed family representative)
Dispossessed Person	:	Thomas and Nicolaas Prins
Date submitted	:	12 June 1998 & 27 November 1998
Reference Number	:	KRK6/2/3/A/29/179/0/543 (P543) & KRK6/2/3/A/179/0/569 (P569)

The reasons the Regional Land Claims Commissioner believes that the criteria in section 11(1) of the Act may not have been met, is that;

(a) The claimed land does not extend to include Portion 125 of Farm No.34, Oudtshoorn, Remainder (RE/155) of Farm No.155, Oudtshoorn, Portion 27, 31 & 33 of Farm No.150, Oudtshoorn and Portion 95 of Farm No.78, Calitzdorp; and
(b) The ascendants of the claimants did not have rights in land (as defined in the Act) on the properties listed above; and
(c) The land claim affects Portion 69, 73, 119, 131, 133 and the Remainder (RE/60) of the Farm Warmwater No.60, Calitzdorp.

Any party who may have an interest in the above-mentioned land claim is hereby invited to make representations, within 90 days from the publication of this notice, as to why the claim should not be withdrawn in terms of section 11A (3) of the Act.

The representations must be forwarded to the Regional Land Claims Commissioner.

Mr. L.H. Maphutha
Regional Land Claims Commissioner
Private Bag X9163
CAPE TOWN
8000
Tel: 021 – 486 7400
Fax: 021 – 424 5146

DEPARTMENT OF EMPLOYMENT AND LABOUR

NOTICE 3583 OF 2025

NATIONAL ECONOMIC DEVELOPMENT AND LABOUR COUNCIL (NEDLAC) BILL, 2025

I, Nomakhosazana Meth, Minister of Employment and Labour, hereby, in terms of section 59(1)(a) and 59(1)(b) of the Constitution of the Republic of South Africa, 1996, and section 14 of the Interpretation Act, 1957 (Act No. 33 of 1957), publish this Notice in the Government Gazette inviting public comments on the draft National Economic Development and Labour Council (NEDLAC) Bill, 2025, which seeks to repeal the Nedlac Act, 1994 (Act No. 35 of 1994). Members of the public are encouraged to submit their inputs on the draft NEDLAC Bill, 2025, within twenty-one (21) days from the date of publication of this Notice in the Government Gazette.

Comments should be addressed to:
The Department of Employment and Labour
Private Bag X117
PRETORIA, 0001

Or email to: Kopano.Kgathlanye@labour.gov.za / Hlukani.Mabunda@labour.gov.za

Please note: Comments submitted after the twenty-one (21) day period from the date of publication of this Notice will not be considered.

.....

NOMAKHOSAZANA METH, MP

DATE: 29/10/2025

REPUBLIC OF SOUTH AFRICA

NATIONAL ECONOMIC, DEVELOPMENT AND LABOUR COUNCIL BILL, 2025

(As introduced in the National Assembly (proposed section 76); explanatory summary of Bill published in Government Gazette No. of)
(The English text is the official text of the Bill)

[MINISTER OF EMPLOYMENT AND LABOUR]

[B—2024]

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BILL

To provide for the continued existence of the National Economic, Development and Labour Council; to determine the criteria for the admission of social partners as parties to NEDLAC; to provide for the functions of NEDLAC; to provide for its principal structures; to provide for the manner in which it is to be governed; to provide for matters connected therewith; and to provide for the repeal of the National Economic, Development and Labour Council Act, 1994 (Act No. 35 of 1994).

BE IT THEREFORE ENACTED by the Parliament of the Republic of South Africa, as follows:—

PREAMBLE

ACKNOWLEDGING the establishment of the National Economic, Development and Labour Council in terms of the National Economic, Development and Labour Council Act, 1994 (Act No. 35 of 1994);

NOTING that the purpose of the National Economic, Development and Labour Council is to promote the goals of economic growth, employment, social inclusion and social equity;

AND WHEREAS the National Economic, Development and Labour Council as established continues to exist.

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ARRANGEMENT OF SECTIONS

1. Definitions

2. Continued existence of National Economic, Development and Labour Council

3. Objects of NEDLAC

4. Functions of NEDLAC

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Definitions

1. In this Act, unless the context otherwise indicates—

"**committee**" includes any committee that NEDLAC is required to establish in terms of any legislation and any other committee or forum that is established in terms of the constitution;

"constitution" means the constitution of NEDLAC as provided for in section 7;

"**executive committee**" means the committee referred to in section 9;

"**Labour Relations Act**" means the Labour Relations Act, 1995 (Act No. 66 of 1995);

"Member" means a Member of the executive committee;

"**Minister**" means the Minister of Employment and Labour;

"NEDLAC" means the National Economic, Development and Labour Council established by section 2 of the NEDLAC Act, 1994;

"NEDLAC Act, 1994" means the National Economic, Development and Labour Council Act, 1994 (Act No. 35 of 1994);

"**NEDLAC Lekgotla**" means the forum of representatives of organised business, organised labour, organised civil society and the State referred to in section 8;

"**organised business**" means the business and employer organisations that are admitted to NEDLAC in accordance with this Act;

"**organised civil society**" means associations of non-governmental organisations that are admitted to NEDLAC in accordance with this Act;

"**organised labour**" means the federations of trade unions that are admitted to NEDLAC in accordance with this Act;

"**party to NEDLAC**" means the State and those organisations that constitute organised business, organised civil society and organised labour;

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"**prescribed**" means prescribed by regulation;

"**Schedule**" means the Schedule to this Act;

"**socio-economic policy**" includes financial, fiscal and monetary policy, socio-economic programmes, trade and industrial policy, and all aspects of labour market policy, including training and human resource development;

"**this Act**" includes the regulations made in terms of section 13; and

Continued existence of National Economic, Development and Labour Council

2. (1) NEDLAC as established by section 2 of the NEDLAC Act, 1994 continues to exist as a juristic person notwithstanding the repeal of that Act by section 15 of this Act.

(2) NEDLAC is a juristic person—

(a) constituted by organised business, organised labour, organised civil society and the State; and

(b) governed in accordance with the constitution by an executive committee and such other committees as may be established in terms thereof.

Objects of NEDLAC

3. The objects of NEDLAC are—

(a) to strive to promote the goals of economic growth, employment, social inclusion and social equity;

(b) to seek to reach consensus among the parties to NEDLAC on socio-economic policy; and

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(c) to engage with the national legislative and executive organs of state to promote the achievement of the goals contemplated in paragraph *(a)*.

Functions of NEDLAC

4. (1) The functions of NEDLAC are—

(a) to give effect to its objects contemplated in section 3;

(b) to conclude agreements on socio-economic policy;

(c) subject to subsection (2), to consider and report on all proposed—

(i) labour market policy before the issuing of that policy by the Minister or any other minister responsible for the policy;

(ii) labour market related legislation before it is introduced in Parliament;

(iii) labour market related subordinate legislation before it is promulgated by the Minister or any other minister responsible for that legislation;

(d) to prepare and issue codes of good practice in terms of section 203(1) of the Labour Relations Act;

(e) to consider and report on any other socio-economic policy or legislation identified by the executive committee; and

(f) to exercise oversight over the implementation of any—

(i) agreement concluded in terms of paragraph *(b)*;

(ii) socio-economic policies and legislation that have been considered in terms of paragraphs *(c)* and *(e)*.

(2) The functions contemplated in subsection (1)*(c)* and *(e)*—

(a) apply only to significant changes in policy and legislation that is not technical;

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(b) do not apply to policies and legislation that have been considered by other tripartite institutions

Reports on socio-economic policy or legislation

5. (1) NEDLAC may table a report on—

(a) any proposed socio-economic policy or legislation to be considered in Parliament; or

(b) any proposed socio-economic policy, regulation or code to the Minister or any other minister responsible for the policy, regulation, or code.

(2) A committee of Parliament that is considering any proposed legislation or policy in respect of which NEDLAC has tabled a report in terms of subsection (1)*(a)* must consider the report in its deliberations on the legislation or policy.

(3) The Minister or any other minister responsible for any proposed socio-economic policy or subordinate legislation must consider the report referred to in subsection (1)*(b)* before finalising the policy or subordinate legislation.

Parties to NEDLAC

6. (1) The parties to NEDLAC are the State and those parties admitted to NEDLAC in terms of this Act and the constitution.

(2) A federation of trade unions may only be admitted as a party to NEDLAC and remain a party if it or together with another federation meets the criteria set for organised labour in the Schedule.

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(3) An employer or business organisation may only be admitted as a party to NEDLAC and remain a party if it or together with another federation or business organisation meets the criteria set for organised business in the Schedule.

(4) A federation of non-governmental organisations may only be admitted as a party to NEDLAC if it—

(a) meets the criteria set for organised civil society in the Schedule; and

(b) is appointed by the Minister in the Presidency on the recommendation of the executive committee and in accordance with a prescribed process.

(5) A federation of non-governmental organisations may be removed by the Minister in the Presidency on the recommendation of the executive committee and in accordance with a prescribed process.

Constitution

7. Subject to this Act, the constitution—

(a) must provide for—

(i) the process of admission and removal of a federation of trade unions; and an employer or business organisation as parties to NEDLAC;

(ii) the periodic review of the standing of labour, employer, business and civil society organisations that are parties to NEDLAC;

(iii) the manner in which the parties may appoint their representatives and alternates to the NEDLAC Lekgotla, executive committee, chambers and other committees and the manner in which they may be removed;

(iv) the establishment, composition, powers and functioning of chambers and committees of NEDLAC;

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(v) the convening of, quorum for, and conduct of meetings of the NEDLAC Lekgotla, executive committee, chambers and committees;

(vi) the convening of, the agenda for, and the criteria for the participation of the State, organised business, organised labour, organised civil society and other interested parties, in a NEDLAC Annual Summit;

(vii) the manner in which decisions or agreements are reached and how they are recorded;

(viii) a conciliation and arbitration procedure for dealing with disputes arising from the admission and removal of parties to NEDLAC; and

(ix) the amendment of the constitution.

(b) may provide for—

(i) the terms on which organisations not party to NEDLAC may participate in its deliberations to promote inclusivity and enhance those deliberations;

(ii) the making of protocols; and

(iii) any other matter necessary for or incidental to the performance of its functions.

NEDLAC Lekgotla

8. (1) The NEDLAC lekgotla consists of representatives appointed by organised business, organised labour, organised civil society and the State.

(2) The functions of the NEDLAC Lekgotla include to—

(a) review the functioning of NEDLAC to achieve its objects;

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(b) review the performance of NEDLAC; and

(c) consider and respond to reports from the State on major socio-economic issues.

(3) The NEDLAC Lekgotla must meet at least once a year and at any other time as may be determined by the executive committee.

Executive committee

9. (1) *(a)* The executive committee is the accounting authority of NEDLAC for the purposes of section 49(2)*(a)* of the Public Finance Management Act, 1999 (Act No.1 of 1999); and

(b) the executive committee is subject to the provisions of the Public Finance Management Act.

(2) The executive committee consists of representatives of—

(a) organised business;

(b) organised labour;

(c) organised civil society; and

(d) the State.

(3) The constitution must provide for–

(a) the number of representatives contemplated in subsection (2) provided that the voting power of each constituency is equal;

(b) the appointment of alternates; and

(c) their periods of office.

(4) Subject to section 10, the Minister must appoint the Members and their alternates from nominations received from the constituencies that they

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represent.

Disqualification of membership

10. The Minister may not appoint a person to the executive committee who–

(a) is not a South African citizen;

(b) is disqualified to act as a director of a company incorporated in terms of the Companies Act, 2008 (Act No. 71 of 2008);

(c) has been found, in any civil or criminal proceedings by a court of law, whether in the Republic or elsewhere, to have acted fraudulently, dishonestly, unprofessionally, dishonourably or in breach of a fiduciary duty, or of any other offence for which such person has been sentenced to direct imprisonment without the option of a fine;

(d) has had his or her membership of a board, trust or any other authority terminated for a reason related to conduct or capacity;

(e) has been declared by a court of law to be of an unsound mind; or

(f) is an unrehabilitated insolvent.

Vacancy and removal of Members

11. (1) A Member must vacate office if–

(a) in the case of a Member representing the State, the Member is removed by the Minister;

(b) in the case of organised labour, organised business or organised civil

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society, the Member is removed by the Minister–

(i) for serious misconduct, permanent incapacity; or

(ii) being absent from three meetings without just cause or prior permission of the executive committee;

(c) the Minister is notified by the executive committee that the Member ceases to represent the constituency by whom he or she was nominated; or

(d) the Member resigns.

(2) If an office held by a Member representing organised labour, organised business or organised civil society is vacated before six months of the expiry of the Member's term of office–

(a) the constituency concerned must recommend a Member in accordance with the constitution to fill the vacancy for the unexpired portion of that term of office; and

(b) subject to section 10, the Minister must appoint that Member.

Powers and duties of executive committee

12. (1) The powers of the executive committee are—

(a) to give effect to the objects of NEDLAC contemplated in section 3 and to perform its functions contemplated in section 4;

(b) to agree to the constitution and to amend it from time to time subject to the provisions of this Act;

(c) to convene the NEDLAC Lekgotla;

(d) to establish committees to assist the executive committee in the exercise of its powers and the performance of its functions and to delegate or assign

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such powers and functions as it deems appropriate to those committees;

(e) to conduct enquiries in the performance of its functions and the exercise of its powers;

(f) generally, but subject to this Act, to exercise those powers and perform those functions as are necessary to realise the objects of NEDLAC.

(2) The duties of the executive committee are to—

(a) develop protocols and rules to—

(i) guide the processes and procedures in the conduct of its functions;

(ii) guide the processes and procedures in NEDLACs relationships with the legislative and executive organs of state and constitutional institutions;

(iii) guide the conduct of NEDLACs relations with other institutions engaged in the formulation or implementation of aspects of socio-economic policy;

(c) develop codes of conduct to regulate the conduct of parties to NEDLAC and their representatives; and

(d) appoint a secretariat on such terms and conditions as it may determine.

Regulations

13. (1) The Minister must make regulations prescribing—

(a) the process for the admission and removal of a federation of non-governmental organisations as a party to NEDLAC as prescribed in section 6(4) and (5);

(b) the membership threshold of—

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(i) federations of trade unions as specified in the Schedule;

(ii) employers and businesses that belong to the constituent employer or business organisations of the association as specified in the Schedule.

(3) The Minister may only make regulations contemplated in sub-section (1) after—

(a) consultation with the executive committee;

(b) publishing a notice of the proposed regulations in the *Gazette* inviting submissions from interested parties; and

(c) considering those submissions.

Offences

14. (1) Any person who, except when required to do so before a court of law or required or permitted under any law, discloses any confidential information in regard to the financial or business affairs of any person, business or firm, or the State, acquired in the exercise of their powers or the performance of their duties under this Act, the constitution, its chambers or committees is guilty of an offence.

(2) Any person who is convicted of an offence in terms of subsection (1) is liable to a fine not exceeding the amount of a fine prescribed in section 201(3) of the Labour Relations Act.

Repeal and transitional provisions

15. (1) The National Economic, Development and Labour Council Act,

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1994 (Act No. 35 of 1994) is hereby repealed.

(2) The founding parties and the parties admitted to NEDLAC under the NEDLAC Act, 1994 are deemed to be the parties to NEDLAC and remain so, subject to subsections (3) and (4), until changed in terms of the constitution.

(3) Those parties to NEDLAC under the NEDLAC Act, 1994 that do not comply with the requirements in section 6 and the Schedule must within 12 months of this Act coming into operation, or such longer period that the Minister may on good grounds condone, comply with those requirements, failing which, their deemed status as parties to NEDLAC terminates.

(4) Those parties to NEDLAC under the NEDLAC Act, 1994 that constitute organised civil society that comply with subsection (3) remain parties to NEDLAC until the Minister in the Presidency has appointed the federation of non-governmental organisations in terms of section 6(4).

(5) The members appointed under the NEDLAC Act, 1994 constitute the representatives of the parties to NEDLAC under this Act and the constitution and remain so, subject to subsections (3) and (4), until changed in terms of the constitution.

(6) The executive council under the NEDLAC Act, 1994 has the power to approve the initial constitution under this Act.

Short title and commencement

16. (1) This Act is called the National Economic, Development and Labour Council Act, 2024, and takes effect on a date fixed by the President by proclamation in the *Gazette*.

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(2) Different dates may be fixed in respect of different provisions of this Act.

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SCHEDULE

CRITERIA TO BECOME OR REMAIN PARTIES TO NEDLAC

Organised labour

The following criteria apply to federations of trade unions, whether individually or jointly, to become, or remain as, parties to NEDLAC:

1. It must comply with section 107 of the Labour Relations Act;
2. it must be constituted democratically; and
3. its affiliates must have a membership duly certified by the Registrar of Trade Unions that is in excess of the prescribed membership threshold.

Organised business

The following criteria apply to associations of employer or business organisations to become, or remain as, parties to NEDLAC:

1. It must be registered as a federation of employer organisations that complies with section 107 of the Labour Relations Act or as a non-profit company in terms of the Companies Act, 2008 (Act No. 71 of 2008);
2. it must be constituted democratically; and
3. the employers or businesses that belong to the constituent employer or business organisations of the association must be in excess of the prescribed membership threshold.

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Organised civil society

The following criteria apply to a federation of non-governmental organisations to become, or remain as, parties to NEDLAC:

1. It must be registered as a nonprofit organisation in terms of section 13(2)*(b)* of the Nonprofit Organisations Act, 1997 (Act No. 71 of 1997) or as a non-profit company in terms of the Companies Act, 2008 (Act No. 71 of 2008);
2. it must be constituted democratically; and
3. it must be the most representative federation of non-governmental organisations in the Republic representing civil society interests relating to socio-economic issues.

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DEPARTMENT OF HEALTH

NOTICE 3584 OF 2025

PROPOSED LEVIES ON MEDICAL SCHEMES ISSUED IN TERMS OF SECTION 3(a) OF THE COUNCIL FOR MEDICAL SCHEMES LEVIES ACT (ACT 58 OF 2000)

The Council for Medical Schemes referred to in Section 1 of the Council for Medical Schemes Levies Act, 2000 (Act No. 58 of 2000), hereby proposes the levies on medical schemes, as set out in this Notice. The proposed levies are due to be imposed for the purpose of meeting the general regulatory and administrative costs of the Council for Medical Schemes and the function performed by the Registrar of Medical Schemes. The quantum of the levy has been determined on the basis of the Council's budget and is also based on the number of principal members of medical schemes. The full budget can be viewed on the Council website www.medicalschemes.co.za.

Representation on the proposed levies may be made to the Council not later than **08 December 2025**. Such representation must be forwarded to the Registrar of Medical Schemes, and marked for the attention of Dr. Musa Gumede by post to: Private Bag X34, Hatfield, 0028, via email: v.letswalo@medicalschemes.co.za

By order of the Council for Medical Schemes

Dr. T. Mabeba

Chairperson: Council for Medical Schemes

30 October 2025

SCHEDULE

Definitions

1. In this notice, unless the context indicates otherwise –

   i. "Council" means the Council for Medical Schemes referred to in the Act;

   ii. "Levy year" means the period from 01 April 2026 to 31 March 2027 and, subject to the provision of this Notice and any amendments, substitution or repeal thereof, such corresponding period in succeeding year in respect of which levies are imposed;

   iii. "Registrar" means the Registrar of Medical Schemes, appointed in terms of Section 18 of the Medical Schemes Levies Act, 1998 (Act No. 131 of 1998);

   iv. "The Act" means the Council for Medical Schemes Levies Act, 2000 (Act No. 58 of 2000).

Proposed Levies

2. In respect of a medical scheme registered in terms of section 20 of the Medical Schemes Act, 1998 (Act No. 131 of 1998), the proposed levy for the 2026/27 levy year shall be set at an amount of **R54.66** per principal member per year, which shall be paid in two equal installments, the first of which shall be paid not later than 30 April of the levy year, and the second of which shall be paid not later than 30 June of the levy year.

3. In respect of the levy year, the calculation of the levy is based on the number of principal members referred to in item 2 shall correspond with the latest statistics furnished to the Registrar in terms of or by virtue of the Medical Schemes Act, 1998 (Act No. 131 of 1998) or with the latest certified number of principal members sent to the Registrar by the medical scheme. If a transfer of principal members is in process and not finalized on 31 December 2025, the transferor must pay the levy in respect of the principal members to be transferred.

Payment/Interest on overdue of Levies

4. On amounts of overdue levies, interest will be charged at a rate applicable to a debt owing to the state, as determined by the Minister of Finance in terms of section 80(1) (b) of the Public Finance Management Act.

5. The levies (once finally imposed) and interest (if any) referred to in this Notice shall be paid by a medical scheme directly in the bank account of the Council, the details of which are:

Bank	:	ABSA
Account Holder	:	Council for Medical Schemes
Branch Name	:	ABSA Corporate Branch (Pretoria)
Branch Code	:	517 245
Account Number	:	405 116 3394

6. A deposit advice slip issued by the aforementioned Bank in respect of a deposit contemplated in item 5, received by the Council for Medical Schemes, and bearing the name or the account number (MS number) of the relevant medical scheme, shall serve as *prima facie* proof of payment of a levy.

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

NOTICE 3585 OF 2025

PURSUANT TO SECTIONS 34 (2) AND (5) OF THE ELECTRONIC COMMUNICATIONS ACT, 2005, (ACT NO. 36 OF 2005)

HEREBY ISSUES A NOTICE REGARDING THE SECOND DRAFT NATIONAL RADIO FREQUENCY PLAN 2025 FOR PUBLIC CONSULTATION.

1. On 4 April 2025, the Independent Communications Authority of South Africa ("the Authority"), in terms of section 34 (2) and (5) of the Electronic Communications Act (Act No. 36 of 2005) ("the ECA"), as amended, invited written representations to the "**Draft National Radio Frequency Plan 2025**" published in Government Notice No. 3109 (Gazette No. 52449).

2. The Authority, in terms of section 34 of the ECA, must update and amend the National Radio Frequency Plan 2021 published in Government Gazette Number 46088 (Notice 911 of 2022), to align with:

2.1 The Final Acts of WRC-23, and the 2024 Edition of the ITU Radio Regulations, which is the international treaty governing the global use of radio frequencies and satellite orbits.

2.2 The African Telecommunications Union Spectrum Assignment Plan (AfriSAP), edition July 2025, and Southern African Development Communities (SADC) Radio Frequency Allocation Plan 8.3 kHz – 3000 GHz edition 2024, to ensure regional and sub-regional harmonisation.

3. After having considered the written representations received, the Authority hereby publishes the Second Draft National Radio Frequency Plan for written comments/representations. Interested persons can submit their written representations, including an electronic version of the representation in Microsoft Word, to the Authority by no later than 17h00 on Thursday 11 December 2025.

4. Persons submitting written representations can indicate whether they require an opportunity to make oral representations during the public hearings to be held by the Authority.

5. The public hearings have been scheduled as follows:
Date: 15 to 16 January 2026.
Venue:
Kgotla,

Dr Ivy Matsepe-Casaburri House,
350 Witch-Hazel Avenue,
Eco Point Office Park Eco Park,
Centurion,
Pretoria,
South Africa.

6. We encourage in-person attendance at the public hearings. However, we are also committed to ensuring broad participation, and a Virtual Platform may be created to accommodate those Stakeholders who for some practical reasons are unable to participate and contribute to the process in person. Please submit a request to receive the virtual access details.

7. Written representations or enquiries may be directed to:
350 Witch-Hazel Avenue, Eco Point Office Park Eco Park,
Centurion
South Africa Private Bag X10,
Highveld Park 0169
Centurion,
Pretoria

8. Attention:
Mr Davis Kgosimolao Moshweunyane
Email: dmoshweunyane@icasa.org.za

and

Mr Manyaapelo Richard Makgotlho
e-mail: rmakgotlho@icasa.org.za

9. All written representations submitted to the Authority pursuant to this notice shall be made available for inspection by interested persons from 12 December 2025 at the ICASA Library or and copies of such representations and documents will be obtainable on payment of a fee.

10. The Second draft National Radio Frequency Plan and representations will be uploaded on the Authority's website by 15 December 2025.

11. Where persons making representations require that their representation or part thereof be treated as confidential, then an application in terms of section 4D of the ICASA Act, 2000 (Act No. 13 of 2000) must be lodged with the Authority. Such an application must be submitted simultaneously with the representation on the Second draft National Radio Frequency Plan. All confidential material must be pasted onto a separate annexure which is clearly marked as "Confidential". If, however, the request for confidentiality is not granted, the person making the request will be allowed to withdraw the representation or document in question. The guidelines for confidentiality request are contained in GG Number 41839 (Notice 849 of 2018).



MR MOTHIBI RAMUSI

CHAIRPERSON

NOTE:

The draft National Radio Frequency Plan takes into consideration resolutions taken by the World Radiocommunication Conference of 2023 (WRC-23). Colour coding has been used in this document for ease of referencing.

1. Green: This signifies the new resolution taken by WRC-23 and proposed changes to the National Radio Frequency Plan 2021.

2. Yellow: This signifies the review and proposed amendments made in relation to further consideration of new resolution taken by WRC-23, proposed changes to the National Radio Frequency Plan 2021, Typical Applications, References, Descriptions and Explanatory Notes.

3. Strike Through (e.g., ~~XXX~~): This signifies text that is to be deleted from the National Radio Frequency Plan 2021.

SECOND NATIONAL RADIO FREQUENCY PLAN 2025 FOR PUBLIC CONSULTATION (NRFP-25)

8.3 kHz – 3000 GHz

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

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1 TERMS, DEFINITIONS AND ACRONYMS

1.1 Terms and definitions

accepted interference[1]*:*	*Interference* at a higher level than that defined as *permissible interference* and which has been agreed upon between two or more *administrations* without prejudice to other *administrations*.
active satellite:	A *satellite* carrying a *station* intended to transmit or retransmit *radiocommunication* signals.
active sensor:	A measuring instrument in the *earth exploration-satellite service* or in the *space research service* by means of which information is obtained by transmission and reception of *radio waves*.
adaptive system:	A *radiocommunication* system which varies its radio characteristics according to channel quality.
administration	Any governmental department or service responsible for discharging the obligations undertaken in the Constitution of the International Telecommunication Union, in the Convention of the International Telecommunication Union and in the Administrative Regulations (CS 1002).
aeronautical earth station:	An *earth station* in the *fixed-satellite service*, or, in some cases, in the *aeronautical mobile-satellite service*, located at a specified fixed point on land to provide a *feeder link* for the *aeronautical mobile-satellite service*.
[2]*aeronautical mobile (OR)** service:*	An *aeronautical mobile service* intended for communications, including those relating to flight coordination, primarily outside national or international civil air routes.
[3]*aeronautical mobile (R)* service:*	An *aeronautical mobile service* reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes
aeronautical mobile service:	A *mobile service* between *aeronautical stations* and *aircraft stations*, or between *aircraft stations*, in which *survival craft stations* may participate; *emergency position-indicating radiobeacon stations* may also participate in this service on designated distress and emergency frequencies.
*aeronautical mobile-satellite (OR)** service:*	An *aeronautical mobile-satellite service* intended for communications, including those relating to flight coordination, primarily outside national and international civil air routes.
aeronautical mobile-satellite (R) service:*	An *aeronautical mobile-satellite service* reserved for communications relating to safety and regularity of flights, primarily along national or international civil air routes.
aeronautical mobile-satellite service:	A *mobile-satellite service* in which *mobile earth stations* are located on board aircraft; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.
aeronautical radionavigation service:	A *radionavigation service* intended for the benefit and for the safe operation of aircraft.
aeronautical radionavigation-satellite service:	A *radionavigation-satellite service* in which *earth stations* are located on board aircraft.

[1] The terms "permissible interference" and "accepted interference" are used in the coordination of frequency assignments between *administrations*

[2] *(R): route.
**(OR): off-route.

[3]

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aeronautical station:	A *land station* in the *aeronautical mobile service*. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.
aircraft earth station:	A *mobile earth station* in the *aeronautical mobile-satellite service* located on board an aircraft.
aircraft station:	A *mobile station* in the *aeronautical mobile service*, other than a *survival craft station*, located on board an aircraft.
allocation (of a frequency band):	Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space *radiocommunication services* or the *radio astronomy service* under specified conditions. This term shall also be applied to the frequency band concerned.
allotment (of a radio frequency or radio frequency channel):	Entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more *administrations* for a terrestrial or space *radiocommunication service* in one or more identified countries or geographical areas and under specified conditions.
altitude of the apogee or *of the perigee:*	The altitude of the apogee or perigee above a specified reference surface serving to represent the surface of the Earth.
amateur service:	A *radiocommunication service* for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.
amateur station:	A *station* in the *amateur service*.
amateur-satellite service:	A *radiocommunication service* using *space stations* on earth *satellites* for the same purposes as those of the *amateur service*.
assigned frequency band:	The frequency band within which the *emission* of a *station* is authorized; the width of the band equals the *necessary bandwidth* plus twice the absolute value of the *frequency tolerance*. Where *space stations* are concerned, the assigned frequency band includes twice the maximum Doppler shift that may occur in relation to any point of the Earth's surface.
assigned frequency:	The centre of the frequency band assigned to a *station*.
assignment (of a radio frequency or radio frequency channel):	Authorization given by an *administration* for a radio *station* to use a radio frequency or radio frequency channel under specified conditions.
base earth station:	An *earth station* in the *fixed-satellite service* or, in some cases, in the *land mobile-satellite service,* located at a specified fixed point or within a specified area on land to provide a *feeder link* for the *land mobile-satellite service*.
base station:	A *land station* in the *land mobile service*.
broadcasting service:	A *radiocommunication service* in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, *television* transmissions or other types of transmission (CS).
broadcasting station:	A *station* in the *broadcasting service*.
broadcasting-satellite service:	A *radiocommunication service* in which signals transmitted or retransmitted by *space stations* are intended for direct reception by the general public. In the broadcasting-satellite service, the term "direct reception" shall encompass both *individual reception* and *community reception*.
carrier power (of a radio transmitter):	The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle taken under the condition of no modulation.

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characteristic frequency:	A frequency which can be easily identified and measured in a given *emission*. A carrier frequency may, for example, be designated as the characteristic frequency.
class of emission:	The set of characteristics of an *emission*, designated by standard symbols, e.g. type of modulation of the main carrier, modulating signal, type of information to be transmitted, and also, if appropriate, any additional signal characteristics.
coast earth station:	An *earth station* in the *fixed-satellite service* or, in some cases, in the *maritime mobile-satellite service*, located at a specified fixed point on land to provide a *feeder link* for the *maritime mobile-satellite service*.
coast station:	A *land station* in the *maritime mobile service*.
community reception (in the broadcasting-satellite service):	The reception of *emissions* from a *space station* in the *broadcasting-satellite service* by receiving equipment, which in some cases may be complex and have antennas larger than those used for *individual reception*, and intended for use: – by a group of the general public at one location; or – through a distribution system covering a limited area.
coordinated universal time (UTC):	Time scale, based on the second (SI), as described in Resolution **655 (WRC-15)**. (WRC-15)
coordination area:	When determining the need for coordination, the area surrounding an *earth station* sharing the same frequency band with *terrestrial stations*, or surrounding a transmitting *earth station* sharing the same bi-directionally allocated frequency band with receiving *earth stations*, beyond which the level of *permissible interference* will not be exceeded and coordination is therefore not required. (WRC-2000)
coordination contour:	The line enclosing the *coordination area*.
coordination distance:	When determining the need for coordination, the distance on a given azimuth from an *earth station* sharing the same frequency band with *terrestrial stations*, or from a transmitting *earth station* sharing the same bi-directionally allocated frequency band with receiving *earth stations*, beyond which the level of *permissible interference* will not be exceeded and coordination is therefore not required. (WRC-2000)
deep space:	Space at distances from the Earth equal to, or greater than, 2×10^6 km.
duplex operation:	Operating method in which transmission is possible simultaneously in both directions of a *telecommunication* channel[4].
earth exploration-satellite service:	A *radiocommunication service* between *earth stations* and one or more *space stations*, which may include links between *space stations*, in which: – information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from *active sensors* or *passive sensors* on Earth *satellites*; – similar information is collected from airborne or Earth-based platforms; – such information may be distributed to *earth stations* within the system concerned; – platform interrogation may be included. This service may also include *feeder links* necessary for its operation.

[4] In general, *duplex operation* require two frequencies in *radiocommunication*

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earth station:	A *station* located either on the Earth's surface or within the major portion of the Earth's atmosphere and intended for communication: – with one or more *space stations*; or – with one or more *stations* of the same kind by means of one or more *reflecting satellites* or other objects in space.
effective antenna gain contour (of a steerable satellite beam):	An envelope of antenna gain contours resulting from moving the boresight of a *steerable satellite beam* along the limits of the *effective boresight area*.
effective boresight area (of a steerable satellite beam):	An area on the surface of the Earth within which the boresight of a *steerable satellite beam* is intended to be pointed. There may be more than one unconnected effective boresight area to which a single *steerable satellite beam* is intended to be pointed.
effective monopole radiated power (e.m.r.p.) (in a given direction)*:*	The product of the power supplied to the antenna and its *gain relative to a short vertical antenna* in a given direction.
effective radiated power (e.r.p.) (in a given direction)*:*	The product of the power supplied to the antenna and its *gain relative to a half-wave dipole* in a given direction.
emergency position-indicating radiobeacon station:	A *station* in the *mobile service* the *emissions* of which are intended to facilitate search and rescue operations.
emission:	*Radiation* produced, or the production of *radiation*, by a radio transmitting *station*. For example, the energy radiated by the local oscillator of a radio receiver would not be an emission but a *radiation*.
equivalent isotropically radiated power (e.i.r.p.):	The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna *(absolute or isotropic gain)*.
equivalent satellite link noise temperature:	The noise temperature referred to the output of the receiving antenna of the *earth station* corresponding to the radio frequency noise power which produces the total observed noise at the output of the *satellite link* excluding noise due to *interference* coming from *satellite links* using other *satellites* and from terrestrial systems.
experimental station:	A *station* utilizing *radio waves* in experiments with a view to the development of science or technique. This definition does not include *amateur stations.*
facsimile:	A form of *telegraphy* for the transmission of fixed images, with or without half-tones, with a view to their reproduction in a permanent form.
feeder link:	A radio link from an *earth station* at a given location to a *space station*, or vice versa, conveying information for a *space radiocommunication service* other than for the *fixed-satellite service*. The given location may be at a specified fixed point, or at any fixed point within specified areas.
fixed service:	*A radiocommunication service* between specified fixed points.
fixed station:	A *station* in the *fixed service*.
fixed-satellite service:	A *radiocommunication service* between *earth stations* at given positions, when one or more *satellites* are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the *inter-satellite service*; the fixed-satellite service may also include *feeder links* for other *space radiocommunication services*.
frequency tolerance:	The maximum permissible departure by the centre frequency of the frequency band occupied by an *emission* from the *assigned frequency* or, by the *characteristic frequency* of an *emission* from the *reference frequency*.

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	The frequency tolerance is expressed in parts in 10^6 or in hertz.
frequency-shift telegraphy:	*Telegraphy* by frequency modulation in which the telegraph signal shifts the frequency of the carrier between predetermined values.
full carrier single-sideband emission:	A *single-sideband emission* without reduction of the carrier.
gain of an antenna:	The ratio, usually expressed in decibels, of the power required at the input of a loss-free reference antenna to the power supplied to the input of the given antenna to produce, in a given direction, the same field strength or the same power flux-density at the same distance. When not specified otherwise, the gain refers to the direction of maximum *radiation*. The gain may be considered for a specified polarization. Depending on the choice of the reference antenna a distinction is made between: a) absolute or isotropic gain (*Gi*), when the reference antenna is an isotropic antenna isolated in space; b) gain relative to a half-wave dipole (*Gd*), when the reference antenna is a half-wave dipole isolated in space whose equatorial plane contains the given direction; c) gain relative to a short vertical antenna (*Gv*), when the reference antenna is a linear conductor, much shorter than one quarter of the wavelength, normal to the surface of a perfectly conducting plane which contains the given direction.
geostationary satellite:	A *geosynchronous satellite* whose circular and direct *orbit* lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a *geosynchronous satellite* which remains approximately fixed relative to the Earth. (WRC-03)
geostationary-satellite orbit:	The *orbit* of a *geosynchronous satellite* whose circular and direct *orbit* lies in the plane of the Earth's equator.
geosynchronous satellite:	An earth *satellite* whose period of revolution is equal to the period of rotation of the Earth about its axis.
harmful interference:	*Interference* which endangers the functioning of a *radionavigation service* or of other *safety services* or seriously degrades, obstructs, or repeatedly interrupts a *radiocommunication service* operating in accordance with Radio Regulations (CS).
high altitude platform station:	A *station* located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth.
inclination of an orbit (of an earth satellite):	The angle determined by the plane containing the *orbit* and the plane of the Earth's equator measured in degrees between 0º and 180º and in counter-clockwise direction from the Earth's equatorial plane at the ascending node of the *orbit*. (WRC-2000)
individual reception (in the broadcasting-satellite service):	The reception of *emissions* from a *space station* in the *broadcasting-satellite service* by simple domestic installations and in particular those possessing small antennas.
industrial, scientific and medical (ISM) applications (of radio frequency energy):	Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of *telecommunications*.
instrument landing system (ILS):	A *radionavigation* system which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing.

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instrument landing system glide path:	A system of vertical guidance embodied in the *instrument landing system* which indicates the vertical deviation of the aircraft from its optimum path of descent.
instrument landing system localizer:	A system of horizontal guidance embodied in the *instrument landing system* which indicates the horizontal deviation of the aircraft from its optimum path of descent along the axis of the runway.
interference:	The effect of unwanted energy due to one or a combination of *emissions*, *radiations*, or inductions upon reception in a *radiocommunication* system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.
inter-satellite service:	A *radiocommunication service* providing links between artificial *satellites*.
ionospheric scatter:	The propagation of *radio waves* by scattering as a result of irregularities or discontinuities in the ionization of the ionosphere.
land earth station:	An *earth station* in the *fixed-satellite service* or, in some cases, in the *mobile-satellite service,* located at a specified fixed point or within a specified area on land to provide a *feeder link* for the *mobile-satellite service*.
land mobile earth station:	A *mobile earth station* in the *land mobile-satellite service* capable of surface movement within the geographical limits of a country or continent.
land mobile service:	A *mobile service* between *base stations* and *land mobile stations*, or between *land mobile stations*.
land mobile station:	A *mobile station* in the *land mobile service* capable of surface movement within the geographical limits of a country or continent.
land mobile-satellite service:	A *mobile-satellite service* in which *mobile earth stations* are located on land.
land station:	A station in the mobile service not intended to be used while in motion.
left-hand (anticlockwise) *polarized wave:*	An elliptically- or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a left-hand or anticlockwise direction.
maritime mobile service:	A *mobile service* between *coast stations* and *ship stations*, or between *ship stations*, or between associated *on-board communication stations*; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.
maritime mobile-satellite service:	A *mobile-satellite service* in which *mobile earth stations* are located on board ships; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.
maritime radionavigation service:	A *radionavigation service* intended for the benefit and for the safe operation of ships.
maritime radionavigation-satellite service:	A *radionavigation-satellite service* in which *earth stations* are located on board ships.
marker beacon:	A transmitter in the *aeronautical radionavigation service* which radiates vertically a distinctive pattern for providing position information to aircraft.
mean power (of a radio transmitter):	The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions.
meteorological aids land station:	A *station* in the *meteorological aids service* not intended to be used while in motion. (WRC-15)

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meteorological aids mobile station:	A *station* in the *meteorological aids service* intended to be used while in motion or during halts at unspecified points. (WRC-15)
meteorological aids service:	A *radiocommunication service* used for meteorological, including hydrological, observations and exploration.
meteorological-satellite service:	An *earth exploration-satellite service* for meteorological purposes.
mobile earth station:	An *earth station* in the *mobile-satellite service* intended to be used while in motion or during halts at unspecified points.
mobile service:	A *radiocommunication service* between *mobile* and *land stations*, or between *mobile stations* (CV).
mobile station:	A *station* in the *mobile service* intended to be used while in motion or during halts at unspecified points.
mobile-satellite service:	A *radiocommunication service:* – between *mobile earth stations* and one or more *space stations*, or between *space stations* used by this service; or – between *mobile earth stations* by means of one or more *space stations*. This service may also include *feeder links* necessary for its operation.
multi-satellite link:	A radio link between a transmitting *earth station* and a receiving *earth station* through two or more *satellites*, without any intermediate *earth station*. A multi-satellite link comprises one up-link, one or more satellite-to-satellite links and one down-link.
necessary bandwidth:	For a given *class of emission*, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.
occupied bandwidth:	The width of a frequency band such that, below the lower and above the upper frequency limits, the *mean powers* emitted are each equal to a specified percentage b/2 of the total *mean power* of a given *emission*. Unless otherwise specified in an ITU-R Recommendation for the appropriate *class of emission*, the value of b/2 should be taken as 0.5%.
on-board communication station:	A low-powered *mobile station* in the *maritime mobile service* intended for use for internal communications on board a ship, or between a ship and its lifeboats and life-rafts during lifeboat drills or operations, or for communication within a group of vessels being towed or pushed, as well as for line handling and mooring instructions.
orbit:	The path, relative to a specified frame of reference, described by the centre of mass of a *satellite* or other object in space subjected primarily to natural forces, mainly the force of gravity.
out-of-band domain (of an emission):	The frequency range, immediately outside the *necessary bandwidth* but excluding the *spurious domain*, in which *out-of-band emissions* generally predominate. *Out-of-band emissions*, defined based on their source, occur in the out-of-band domain and, to a lesser extent, in the *spurious domain*. *Spurious emissions* likewise may occur in the out-of-band domain as well as in the *spurious domain*. (WRC-03)
out-of-band emission:	*Emission* on a frequency or frequencies immediately outside the *necessary bandwidth* which results from the modulation process, but excluding *spurious emissions*.
passive sensor:	A measuring instrument in the *earth exploration-satellite service* or in the *space research service* by means of which information is obtained by reception of *radio waves* of natural origin.
peak envelope power (of a radio transmitter):	The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions.

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period (of a satellite):	The time elapsing between two consecutive passages of a *satellite* through a characteristic point on its *orbit*.
permissible interference[5]*:*	Observed or predicted *interference* which complies with quantitative *interference* and sharing criteria contained in these Regulations or in ITU-R Recommendations or in special agreements as provided for in these Regulations.
Programme Making and Special Events (PMSE)	*Programme making*: The creation of content for broadcast, the production of films, presentations, advertisements, audio or video recordings; and the staging or performance of an entertainment, sporting, social or other public/private event. *Special events*: Occurrences of limited duration, typically from one day to several weeks or longer, which take place in specifically defined locations. Also known as Services Ancillary to Broadcasting (SAB)/ Services Ancillary to Programme making (SAP).
port operations service:	A *maritime mobile service* in or near a port, between *coast stations* and *ship stations*, or between *ship stations*, in which messages are restricted to those relating to the operational handling, the movement and the safety of ships and, in emergency, to the safety of persons. Messages which are of a *public correspondence* nature shall be excluded from this service.
port station:	A *coast station* in the *port operations service*.
power:	Whenever the power of a radio transmitter, etc. is referred to it shall be expressed in one of the following forms, according to the class of *emission*, using the arbitrary symbols indicated: – *peak envelope power* (*P*X or *p*X); – *mean power* (*P*Y or *p*Y); – *carrier power* (*P*Z or *p*Z). For different *classes of emission*, the relationships between *peak envelope power*, *mean power* and *carrier power*, under the conditions of normal operation and of no modulation, are contained in ITU-R Recommendations which may be used as a guide. For use in formulae, the symbol *p* denotes power expressed in watts and the symbol *P* denotes power expressed in decibels relative to a reference level.
primary radar:	A *radiodetermination* system based on the comparison of reference signals with radio signals reflected from the position to be determined.
protection ratio (R.F.):	The minimum value of the wanted-to-unwanted signal ratio, usually expressed in decibels, at the receiver input, determined under specified conditions such that a specified reception quality of the wanted signal is achieved at the receiver output.
public correspondence:	Any *telecommunication* which the offices and *stations* must, by reason of their being at the disposal of the public, accept for transmission (CS).
radar beacon (racon):	A transmitter-receiver associated with a fixed navigational mark which, when triggered by a *radar*, automatically returns a distinctive signal which can appear on the display of the triggering *radar*, providing range, bearing and identification information.
radar:	A *radiodetermination* system based on the comparison of reference signals with radio signals reflected, or retransmitted, from the position to be determined.
radiation:	The outward flow of energy from any source in the form of *radio waves*.

[5] The terms "permissible interference" and "accepted interference" are used in the coordination of frequency assignments between *administrations*.

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radio altimeter:	*Radionavigation* equipment, on board an aircraft or *spacecraft,* used to determine the height of the aircraft or the *spacecraft* above the Earth's surface or another surface.
radio astronomy service:	A service involving the use of *radio astronomy*.
radio astronomy station:	A *station* in the *radio astronomy service*.
radio astronomy:	Astronomy based on the reception of *radio waves* of cosmic origin.
radio direction-finding station:	A *radiodetermination station* using *radio direction-finding*.
radio direction-finding:	*Radiodetermination* using the reception of *radio waves* for the purpose of determining the direction of a *station* or object.
radio waves or *hertzian waves:*	Electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide.
radio:	A general term applied to the use of *radio waves*.
radiobeacon station:	A *station* in the *radionavigation service* the *emissions* of which are intended to enable a *mobile station* to determine its bearing or direction in relation to the radiobeacon station.
radiocommunication service:	A service as defined in this Section involving the transmission, *emission* and/or reception of *radio waves* for specific *telecommunication* purposes. In these Regulations, unless otherwise stated, any radiocommunication service relates to *terrestrial radiocommunication*.
radiocommunication:	*Telecommunication* by means of *radio waves* (CS) (CV).
radiodetermination service:	A *radiocommunication service* for the purpose of *radiodetermination*.
radiodetermination station:	A *station* in the *radiodetermination service*.
radiodetermination:	The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of *radio waves*.
radiodetermination-satellite service:	*A radiocommunication service* for the purpose of *radiodetermination* involving the use of one or more *space stations*. This service may also include *feeder links* necessary for its own operation.
radiolocation land station:	A *station* in the *radiolocation service* not intended to be used while in motion.
radiolocation mobile station:	A *station* in the *radiolocation service* intended to be used while in motion or during halts at unspecified points.
radiolocation service:	A *radiodetermination service* for the purpose of *radiolocation*.
radiolocation:	*Radiodetermination* used for purposes other than those of *radionavigation*.
radiolocation-satellite service:	A *radiodetermination-satellite service* used for the purpose of *radiolocation*. This service may also include the *feeder links* necessary for its operation.
radionavigation land station:	A *station* in the *radionavigation service* not intended to be used while in motion.
radionavigation mobile station:	A *station* in the *radionavigation service* intended to be used while in motion or during halts at unspecified points.
radionavigation service:	A *radiodetermination service* for the purpose of *radionavigation*.
radionavigation:	*Radiodetermination* used for the purposes of navigation, including obstruction warning.
radionavigation-satellite service:	A *radiodetermination-satellite service* used for the purpose of *radionavigation*. This service may also include *feeder links* necessary for its operation.

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radiosonde:	An automatic radio transmitter in the *meteorological aids service* usually carried on an aircraft, free balloon, kite or parachute, and which transmits meteorological data.
radiotelegram:	A *telegram*, originating in or intended for a *mobile station* or a *mobile earth station* transmitted on all or part of its route over the *radiocommunication* channels of the *mobile service* or of the *mobile-satellite service*.
radiotelemetry:	*Telemetry* by means of *radio waves*.
radiotelephone call:	A telephone call, originating in or intended for a *mobile station* or a *mobile earth station*, transmitted on all or part of its route over the *radiocommunication* channels of the *mobile service* or of the *mobile-satellite service*.
radiotelex call:	A telex call, originating in or intended for a *mobile station* or a *mobile earth station*, transmitted on all or part of its route over the *radiocommunication* channels of the *mobile service* or the *mobile-satellite service*.
reduced carrier single-sideband emission:	A *single-sideband emission* in which the degree of carrier suppression enables the carrier to be reconstituted and to be used for demodulation.
reference frequency:	A frequency having a fixed and specified position with respect to the *assigned frequency*. The displacement of this frequency with respect to the *assigned frequency* has the same absolute value and sign that the displacement of the *characteristic frequency* has with respect to the centre of the frequency band occupied by the *emission*.
reflecting satellite:	A *satellite* intended to reflect *radiocommunication* signals.
right-hand (clockwise) *polarized wave:*	An elliptically- or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a right-hand or clockwise direction.
safety service:	Any *radiocommunication service* used permanently or temporarily for the safeguarding of human life and property.
satellite emergency position-indicating radiobeacon:	An *earth station* in the *mobile-satellite service* the *emissions* of which are intended to facilitate search and rescue operations.
satellite link:	A radio link between a transmitting *earth station* and a receiving *earth station* through one *satellite*. A satellite link comprises one up-link and one down-link.
satellite network:	A *satellite system* or a part of a *satellite system*, consisting of only one *satellite* and the cooperating *earth stations*.
satellite system:	A *space system* using one or more artificial earth *satellites*.
satellite:	A body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body.
secondary radar:	A *radiodetermination* system based on the comparison of reference signals with radio signals retransmitted from the position to be determined.
semi-duplex operation:	A method which is *simplex operation* at one end of the circuit and *duplex operation* at the other[6].
ship earth station:	A *mobile earth station* in the *maritime mobile-satellite service* located on board ship.
ship movement service:	A *safety service* in the *maritime mobile service* other than a *port operations service*, between *coast stations* and *ship stations*, or between

[6] In general, *semi-duplex operation* require two frequencies in *radiocommunication*;

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	ship stations, in which messages are restricted to those relating to the movement of ships. Messages which are of a *public correspondence* nature shall be excluded from this service.
ship station:	A *mobile station* in the *maritime mobile service* located on board a vessel which is not permanently moored, other than a *survival craft station*.
ship's emergency transmitter:	A ship's transmitter to be used exclusively on a distress frequency for distress, urgency or safety purposes.
simplex operation:	Operating method in which transmission is made possible alternately in each direction of a *telecommunication* channel, for example, by means of manual control. [7]
single-sideband emission:	An amplitude modulated *emission* with one sideband only.
space operation service:	A *radiocommunication service* concerned exclusively with the operation of *spacecraft*, in particular *space tracking, space telemetry* and *space telecommand*. These functions will normally be provided within the service in which the *space station* is operating.
space radiocommunication:	Any *radiocommunication* involving the use of one or more *space stations* or the use of one or more *reflecting satellites* or other objects in space.
space research service:	A *radiocommunication service* in which *spacecraft* or other objects in space are used for scientific or technological research purposes.
space station:	A *station* located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere.
space system:	Any group of cooperating *earth stations* and/or *space stations* employing *space radiocommunication* for specific purposes.
space telecommand:	The use of *radiocommunication* for the transmission of signals to a *space station* to initiate, modify or terminate functions of equipment on an associated space object, including the *space station*.
space telemetry:	The use of *telemetry* for the transmission from a *space station* of results of measurements made in a *spacecraft*, including those relating to the functioning of the *spacecraft*.
space tracking:	Determination of the *orbit*, velocity or instantaneous position of an object in space by means of *radiodetermination*, excluding *primary radar*, for the purpose of following the movement of the object.
spacecraft:	A man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere.
special service:	A *radiocommunication service*, not otherwise defined in this Section, carried on exclusively for specific needs of general utility, and not open to *public correspondence*.
spurious domain (of an emission):	The frequency range beyond the *out-of-band domain* in which *spurious emissions* generally predominate. (WRC-03)
spurious emission:	*Emission* on a frequency or frequencies which are outside the *necessary bandwidth* and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic *emissions*, parasitic *emissions*, intermodulation products and frequency conversion products, but exclude *out-of-band emissions*.
standard frequency and time signal service:	A *radiocommunication service* for scientific, technical and other purposes, providing the transmission of specified frequencies, time signals, or both, of stated high precision, intended for general reception.
standard frequency and time signal station:	A *station* in the *standard frequency and time signal service*.

[7] In general, *simplex operation* may use either one or two frequencies in *radiocommunication*;

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station:	One or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a *radiocommunication service*, or the *radio astronomy service*. Each station shall be classified by the service in which it operates permanently or temporarily.
steerable satellite beam:	A *satellite* antenna beam that can be re-pointed.
suppressed carrier single-sideband emission:	A *single-sideband emission* in which the carrier is virtually suppressed and not intended to be used for demodulation.
survival craft station:	A *mobile station* in the *maritime mobile service* or the *aeronautical mobile service* intended solely for survival purposes and located on any lifeboat, life-raft or other survival equipment.
telecommand:	The use of *telecommunication* for the transmission of signals to initiate, modify or terminate functions of equipment at a distance.
telecommunication:	Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems (CS).
telegram:	Written matter intended to be transmitted by *telegraphy* for delivery to the addressee. This term also includes *radiotelegrams* unless otherwise specified (CS). In this definition the term *telegraphy* has the same general meaning as defined in the Convention.
telegraphy[8]	A form of *telecommunication* in which the transmitted information is intended to be recorded on arrival as a graphic document; the transmitted information may sometimes be presented in an alternative form or may be stored for subsequent use (CS 1016).
telemetry:	The use of *telecommunication* for automatically indicating or recording measurements at a distance from the measuring instrument.
telephony:	A form of *telecommunication* primarily intended for the exchange of information in the form of speech (CS 1017).
television:	A form of *telecommunication* for the transmission of transient images of fixed or moving objects.
terrestrial radiocommunication:	Any *radiocommunication* other than *space radiocommunication* or *radio astronomy.*
terrestrial station:	A *station* effecting *terrestrial radiocommunication*. In these Regulations, unless otherwise stated, any *station* is a terrestrial station.
tropospheric scatter:	The propagation of *radio waves* by scattering as a result of irregularities or discontinuities in the physical properties of the troposphere.
unwanted emissions:	Consist of *spurious emissions* and *out-of-band emissions*.

[8] A graphic document records information in a permanent form and is capable of being filed and consulted; it may take the form of written or printed matter or of a fixed image.

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Acronyms

AAA	Astronomy Advantage Area
ACS	Automatic Connection System
AGAA	Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007)
ASDE	Airports Surface Detection Equipment
ATC/CGC	Auxiliary Terrestrial Component /Complimentary Ground Component
BFWA	Broadband Fixed Wireless Access
BSS	Broadcast Satellite Service
BTX	Base Transmit
C-band	Frequency range between about 4 and 6 GHz
CT2	Second generation cordless telephones operating to specification MPT1334.
dBW	Decibels relative to one Watt of power.
DECT	Digital European Cordless Telecommunication system. ERC Decision ERC/DEC/ (94)03 refers.
DF	Duplex Frequency
DRM	Digital Radio Mondiale
DRM30	Digital Radio Mondiale in the AM Bands
DRM+	DRM in the VHF Bands including the FM-Band
DSB	Digital Sound Broadcasting
DSC	Digital Selective Calling
DSSS	Direct Sequence Spread Spectrum
FRMCS	Future Railway Mobile Communication System
ECA	Electronic Communications Act, 2005 (No 36. of 2005)
ENG	Electronic News Gathering
ENG/OB	Electronic News Gathering / Outside Broadcasting

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EPIRB	Emergency Position Indicating Radio Beacon
FDDA	Field Disturbance and Doppler Apparatus
FM	Frequency Modulation
FSS	Fixed Satellite Service
FWA	Fixed Wireless Access
GLONASS	Global Navigation Satellite System
GMDSS	Global Maritime Distress and Safety System.
GPS	Global Positioning System - a satellite radio navigation system.
GSM	Global System for Mobile Communications. Originally Groupe Spécial Mobile. See ERC Decision ERC/DEC/ (94)01.
GSM-R	GSM Railways
GSO	Geostationary Orbit
HAP	High Altitude Platform
HDFS	High Density Fixed Service
HDFSS	High Density Fixed Satellite Service
HF	High Frequency (3 to 30 MHz)
ICAO	International Civil Aviation Organisation
ILS	Instrument Landing System-aeronautical radio navigation system.
IMO	International Maritime Organisation
IMT	International Mobile Telecommunications
ISM	Industrial, Scientific and Medical. The use of radio for non-communication purposes such as microwave heating etc.
ITU	International Telecommunication Union.
Ku-band	Part of the frequency band between about 12 and 18 GHz

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LEO	Low Earth Orbit satellite
LMDS	Local Multipoint Distribution Services
LPVS	Low Power Video Surveillance
LTE	Long Term Evolution
MF	Medium Frequency (300 to 3000 kHz)
MMS	Maritime Mobile Service
MSI	Maritime Safety Information
MPT	Mobile Public Trunking
MSS	Mobile Satellite Service
NGSO	Non-geostationary Satellite Orbit
OB	Outside Broadcast.
PAMR	Public Access Mobile Radio.
PMR	Private Mobile Radio.
PPDR	Public Protection and Disaster Relief
PSTN	Public Switched Telephone Network
RFID	Radio Frequency Identification systems
RLAN	Radio Local Area Network
RNSS	Radio Navigation Satellite Service
RR	Radio Regulation of the International Telecommunication Union
RTT	Road Transport Telematics
SAB	Services Ancillary to Broadcasting
SABRE	South African Band Replanning Exercise
SADC	Southern African Development Community
SAP	Services Ancillary to Programme-making

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~~S-DAB~~	~~Satellite Digital Audio Broadcasting~~
SHF	Super High Frequency (3 to 30 GHz)
SKA	Square Kilometre Array
SNG	Satellite News Gathering
SRDs	Short Range Devices, formerly referred to as Low Power Devices (LPDs).
T-DAB	Terrestrial Digital Audio Broadcasting.
TDD	Time Division Duplex
UHF	Ultra-High Frequency (300 to 3000 MHz)
UAV	Unmanned Aerial Vehicle
VHF	Very High Frequency (30 to 300 MHz)
VLF	Very Low Frequency (3 to 30 kHz)
VOR	Very high frequency Omnidirectional Range (aeronautical radionavigation system).
VSAT	Very Small Aperture Terminal
WAS	Wireless Access Services
WARC	World Administrative Radio Conference. The last WARC was held in 1992. WARCs are now superseded by WRCs.
WLAN	Wireless Local Area Network
WRC	World Radiocommunication Conference.

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2 PREAMBLE

2.1 Legislative Framework

Section 30 (1) of the Electronic Communications Act, 2005 (Act No. 36 of 2005) (the "ECA"), provides that "*In carrying out its functions under this Act and the related legislation, the Authority controls, plans, administers and manages the use and licensing of the radio frequency spectrum …*"

Section 34 (2) of the ECA provides that "*The Minister must approve the national radio frequency plan developed by the Authority, which must set out the specific frequency bands designated for use by particular types of services, taking into account the radio frequency spectrum bands allocated to the security services.*"

Section 34 (5) of the ECA provides that "*The national radio frequency plan must be updated when necessary in order to keep the plan current. When updating and amending this plan due regard must be given to the current and future usage of radio frequency spectrum.*"

Section 231 (2) of the Constitution of the Republic of South Africa, 1996 provides that "*An international agreement binds the Republic only after it has been approved by resolution in both the National Assembly and the National Council of Provinces, unless it is an agreement referred to in subsection (3).*"

The NRFP-25 incorporates the decisions taken by the 2023 World Radiocommunication Conferences (WRC-23) including supporting Circular Letters from the BR.. The revision reflects the 2024 edition of the ITU Radio Regulations, including the frequency allocations relevant to Region 1 and its associated footnotes. The NRFP-25 also includes updates to the Table of Frequency Allocations in the range of 8.3 kHz to 3000 GHz in addition to associated international and South African National Footnotes. The NRFP-25 allocates the Radio Frequency Spectrum to Radio Services in the Frequency Bands between 8.3 kHz and 3000 GHz. All frequency assignments must be in accordance with the national radio frequency plan.

The 2024 edition of the ITU Radio Regulations provides the ITU-R Resolutions and Recommendations referred in this document.

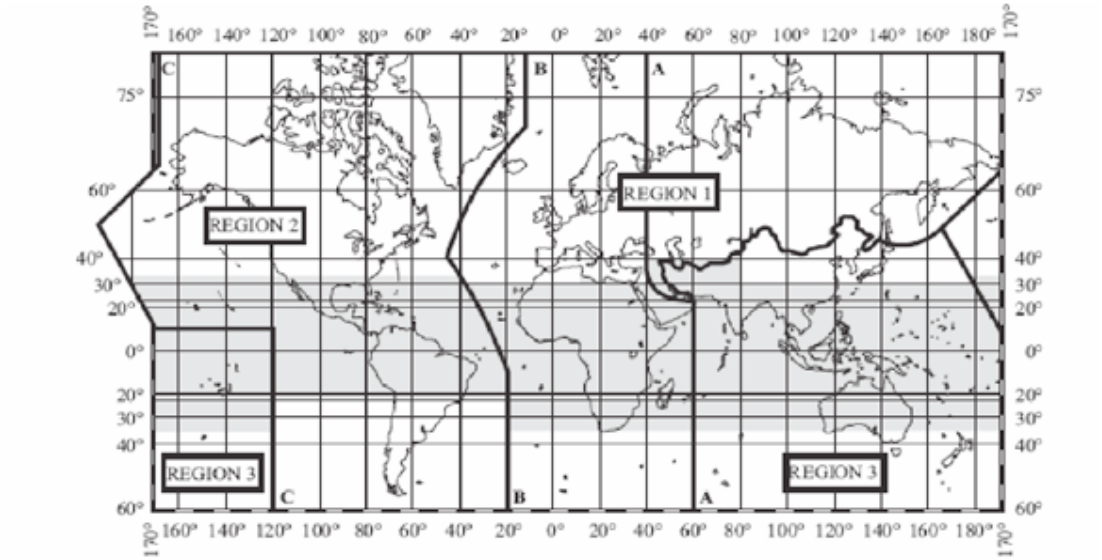
The following updates and amendments amongst others have been implemented in NRFP-25:

- National footnotes have been revised.
- The resolutions and decisions taken by World Radiocommunication Conferences preceding WRC-23.
- References to the SADC Frequency Allocation Plan (FAP) and SADC Harmonised Guidelines
- Incorporated the published RFSAP's where applicable.
- The published RFSAP's where applicable.
- Circular Letters from the BR.

2.2 ITU-R Radio Regions

For the purposes of allocating frequencies, the ITU has divided the world into three Regions as shown on the following map:

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Region 1: Region 1 includes the area limited on the east by line A (lines A, B and C are defined below) and on the west by line B, excluding any of the territory of the Islamic Republic of Iran which lies between these limits. It also includes the whole of the territory of Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Turkey and Ukraine and the area to the north of Russian Federation which lies between lines A and C.

Region 2: Region 2 includes the area limited on the east by line B and on the west by line C.

Region 3: Region 3 includes the area limited on the east by line C and on the west by line A, except any of the territory of Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Turkey and Ukraine and the area to the north of Russian Federation. It also includes that part of the territory of the Islamic Republic of Iran lying outside of those limits.

The Republic of South Africa falls under ITU Region 1 and thus aligns its frequency allocations with those specified for ITU Region 1 in the ITU Radio Regulations as required by the Act.

2.3 Structure of the Table of Frequency Allocations

The Table of Frequency Allocations (section 4) lists all the allocations in the radio-frequency spectrum in the Republic of South Africa. The structure of the Table, which is outlined below, is similar to that of the International Table of Frequency Allocations as it appears in Article **5** of the ITU Radio Regulations.

The Table of Frequency Allocations covers the frequency range 8.3 kilohertz (kHz) to 3 000 Gigahertz (GHz). The table of frequency allocations list for each frequency range the radiocommunication services that are permitted and which ones are currently in use in South Africa. Information is also given on possible future uses or changes in use of particular frequency bands.

2.3.1 Column 1 - ITU Region 1 Allocations and footnotes

This column shows the type of radiocommunications service allocated to the frequency band by ITU. These allocations are defined in the ITU Radio Regulations. Entries in UPPER CASE denote primary services while entries in lower case denote secondary services as defined in the ITU Radio Regulations. Footnotes (e.g., **5.149**) are the footnotes to the Table of Frequency Allocations as detailed in Article **5** of the Radio Regulations.

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Values in this column denote the radio-frequency band. Magnitude of frequency units used in the column header are: kHz indicates kilohertz, MHz indicates Megahertz and GHz indicates Gigahertz.
Secondary services are on a non-interference and non-protection basis (NINP) to the primary services[9].
Spectrum assigned on a secondary basis means that the secondary station:

(i) cannot cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date;
(ii) cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date, however;
(iii) can claim protection from interference from stations of the secondary service(s) to which frequencies may be assigned at a later date.

The frequency band referred to in each allocation is indicated in the left hand top corner of the part of the Table concerned.

The order of listing does not indicate relative priority within each category.
The footnote references are those that appear in Article 5 of the ITU Radio Regulations and are applicable to region 1.

- The footnote references which appear in the bottom of the table reflect the allocated service or services which apply to more than one of the allocated services, or to the whole of the allocation concerned.
- The footnote references which appear to the right of the name of a service are applicable only to that particular service.

2.3.2 Column 2 – South African allocations and footnotes

This column indicates the allocations of radiocommunication service(s) specified for South Africa, based on Article **5** of the ITU Radio Regulations. Names of services are based on the definitions in the ITU Radio Regulations and footnotes relevant to South Africa are included. The allocations highlighted with UPPER-CASE letters correspond to primary status allocations; the allocations with secondary status are written in lower-case.

Values in this column denote the radio-frequency band. The magnitude of the frequency units used in the column header are: kilohertz(kHz), Megahertz(MHz) and GHz indicates Gigahertz.
Whilst the South African allocations are broadly aligned with the ITU Region 1 requirements, a number of variations exist. In accordance with Radio Regulations No. **4.4**, such variations are subject to the condition that the associated radio installations do not cause harmful interference to the radio services or communications of other ITU Member States that operate in accordance with the provisions of the Radio Regulations, and that the possibility of harmful interference from such services and communications is accepted.

The column further makes reference to national footnotes (e.g., NF xx) that are indicated as 'NF' and appear in the table of allocation on the same basis as the ITU footnotes.

2.3.3 Column 3 – Typical Applications

This column indicates the current national usage of the frequency band in South Africa and contains allowed applications. Contains the main service, systems and application(s) of this frequency band or a part of it, authorized in South Africa. If the use covers more than one frequency band or concerns only one part of the band, the frequency range is generally indicated.

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[9] Article **4.4** of the Radio Regulations: Administrations of the Member States shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations.

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2.3.4 Column 4 – Notes and comments

This column gives relevant document references as well as other additional information applicable to the frequency band. This column contains information about reference documents and relevant standards as well as other guidelines applicable to the frequency band, e.g., Government Gazette Notices ("GG") pertinent to specific frequency bands, future requirements in specific bands, and ITU-R Recommendations or Resolutions which require implementation.

2.3.5 ITU-R Region 1 and National Footnotes

South African National Footnotes and ITU-R footnotes applicable to Region 1 are contained in sections 5 and 6 respectively.

2.3.6 List of frequency bands used for Maritime services

The List of frequency bands used for Maritime services is contained in section 8.

2.3.7 Frequency and wavelength bands

The radio spectrum shall be subdivided into nine frequency bands, which shall be designated by progressive whole numbers in accordance with the following table. As the unit of frequency is the hertz (Hz), frequencies shall be expressed:

– in kilohertz (kHz), up to and including 3 000 kHz;

– in megahertz (MHz), above 3 MHz, up to and including 3 000 MHz;

– in gigahertz (GHz), above 3 GHz, up to and including 3 000 GHz.

However, where adherence to these provisions would introduce serious difficulties, for example in connection with the notification and registration of frequencies, the lists of frequencies and related matters, reasonable departures may be made. (WRC-15).

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Table 1: Frequency and wavelength bands

Band number	Symbols	Frequency Range (lower limit exclusive, upper limit inclusive)	Corresponding metric Subdivision=
4	VLF	3 to 30 kHz	Myriametric waves
5	LF	30 to 300 kHz	Kilometric waves
6	MF	300 to 3 000kHz	Hectometric waves
7	HF	3 to 30 MHz	Decametric waves
8	VHF	30 to 300 MHz	Metric waves
9	UHF	300 to 3000 MHz	Decimetric waves
10	SHF	3 to 30 GHz	Centimetric waves
11	EHF	30 to 300 GHz	Millimetric waves
12		300 to 3000 GHz	Decimillimetric waves

NOTE 1: "Band N" (N = band number) extends from 0.3×10^N Hz to 3×10^N Hz.
NOTE 2: Prefix: k = kilo (10^3), M = mega (10^6), G = giga (10^9).

Table 2: Standard Frequency Band Nomenclature

Table 2 below illustrates the standard letter-band designations.

Band	Frequency Range (GHz)	Wavelength in Free Space (centimeters)
L band	1 to 2	30.0 to 15.0
S band	2 to 4	15 to 7.5
C band	4 to 8	7.5 to 3.8
X band	8 to 12	3.8 to 2.5
Ku band	12 to 18	2.5 to 1.7
K band	18 to 27	1.7 to 1.1
Ka band	27 to 40	1.1 to 0.75
V band	40 to 75	0.75 to 0.40
W band	75 to 110	0.40 to 0.27
Millimetre band	110 to 300	0.27 to 0.10

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3 CONTACT DETAILS

Further information on the South African Table of Frequency Allocations and its interpretation can be obtained by contacting:

Independent Communications Authority of South Africa
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Phone: +27 12 568 3000
URL: http://www.icasa.org.za
E-mail: info@icasa.org.za

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4 TABLE OF FREQUENCY ALLOCATIONS

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Below 8.3 kHz (Not allocated) 5.53 5.54	**Below 8.3 kHz** (Not allocated) 5.53 5.54		Frequency bands below 8.3 kHz are not allocated in South Africa	
8.3-9 kHz METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	**8.3-9 kHz** METEOROLOGICAL AIDS 5.54A	Thunderstorm detection stations		
9-11.3 kHz METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	**9-11.3 kHz** METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	Thunderstorm detection stations Navigational Aids Inductive Loop Systems (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~	
11.3-14 kHz	**11.3-14 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIONAVIGATION	RADIONAVIGATION	Navigational Aids Inductive Loop Systems (9 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	 Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1[10] latest version.	
14-19.95 kHz FIXED MARITIME MOBILE 5.57	**14-19.95 kHz** FIXED MARITIME MOBILE 5.57	 Maritime mobile communications Inductive Loop Systems (9 – 135 kHz)	 Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.55 5.56	5.56	SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 2153-7 latest version.	
19.95-20.05 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	**19.95-20.05 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	Standard frequency and time Inductive 9–135 kHz; ULP-AMI 9–315 kHz. SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. SRDs - see ITU-R Rec.SM. 1896-1 latest version.	ERC/REC 70-03 Annex 9 and ECC Report 135 (informative).
20.05-70 kHz FIXED MARITIME MOBILE 5.57	**20.05-70 kHz** FIXED MARITIME MOBILE 5.57	Maritime mobile communications		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.56 5.58	STANDARD FREQUENCY AND TIME SIGNAL 5.56	Inductive Loop Systems (9 – 135 kHz) RFID (59.75 – 60.25 kHz) SRDs – inductive short-range radiocommunications (9 –135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
70-72 kHz RADIONAVIGATION 5.60	**70-72 kHz** RADIONAVIGATION 5.60	Navigational Aids (pulsed radionavigation per RR 5.60 in 70-86 kHz) ~~Inductive Loop Systems (9 – 135 kHz)~~ RFID (70 – 135 kHz)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		SRDs – inductive short-range radiocommunications (9 – 135 kHz) Ultra-Low Power Active Medical implants (ULP-AMI) inductive applications (9 kHz - 148.5 kHz)	SRDs - see ITU-R Rec.SM.1896-X latest version. Report ITU-R .SM. 2153-72153-X Inductive SRD : ETSI EN 300 330 Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195	Operation is licence-exempt, non-interference / no-protection, and subject to type approval. See SANS 300 330 (aligned with ETSI EN 300 330) for inductive SRDs; ETSI EN 302 195 for ULP-AMI (9 kHz-315 kHz). For SRD harmonization context see Rec. ITU-R SM.1896 (latest) and Report ITU-R SM.2153-9 (2022). Adjacent-band awareness: standard-frequency/time-signal and maritime constraints per RR 5.56/5.57.
72-84 kHz FIXED MARITIME MOBILE 5.57	**72-84 kHz** FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60	 Maritime mobile communications Navigational Aids		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIONAVIGATION 5.60 5.56	STANDARD FREQUENCY AND TIME SIGNAL 5.56	Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications (9 kHz-148.5 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).. SRDs - see ITU-R Rec.SM. 1896-latest version. Inductive SRD : ETSI EN 300 330 Report ITU-R .SM. 2153-72153-X	
84-86 kHz RADIONAVIGATION 5.60	**84-86 kHz** RADIONAVIGATION 5.60	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		SRDs – inductive short-range radiocommunications (9 – 135 kHz)	48643 Notice 1822 of 23 May 2023.. SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
86-90 kHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56	**86-90 kHz** FIXED MARITIME MOBILE 5.57 RADIONAVIGATION STANDARD FREQUENCY AND TIME SIGNAL 5.56	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
90-110 kHz	**90-110 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIONAVIGATION 5.62 Fixed 5.64	RADIONAVIGATION 5.62 Fixed 5.64	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
110-112 kHz FIXED MARITIME MOBILE RADIONAVIGATION	**110-112 kHz** FIXED MARITIME MOBILE RADIONAVIGATION	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.64	5.64	SRDs – inductive short-range radiocommunications (9 – 135 kHz)	48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
112-115 kHz RADIONAVIGATION 5.60	**112-115 kHz** RADIONAVIGATION 5.60	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
115-117.6 kHz	**115-117.6 kHz** RADIONAVIGATION 5.60	Navigational Aids		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.66	Fixed Maritime mobile 5.64	Maritime mobile communications Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
117.6-126 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60	**117.6-126 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60	Maritime mobile communications Navigational Aids		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.64	5.64	Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
126-129 kHz RADIONAVIGATION 5.60	**126-129 kHz** RADIONAVIGATION 5.60	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
129-130 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**129-130 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
130-135.7 kHz FIXED MARITIME MOBILE	**130-135.7 kHz** FIXED MARITIME MOBILE	Maritime mobile communications	Radio Frequency Spectrum Regulations (GG. No.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.64 5.67	5.64	Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 – 135 kHz)	38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)~~ SRDs - see ITU-R Rec.SM. 1896-1 latest version.	
135.7-137.8 kHz FIXED MARITIME MOBILE Amateur 5.67A 5.64 5.67 5.67B	**135.7-137.8 kHz** FIXED MARITIME MOBILE Amateur 5.67A 5.64	 Maritime mobile communications Amateur	 Amateur (135.7-137.8 kHz) services are limited to maximum radiated power of 1 W (e.i.r.p). Radio Frequency Spectrum Regulations (Annex ~~B~~ I) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
137.8-148.5 kHz FIXED MARITIME MOBILE 5.64 5.67	**137.8-148.5 kHz** FIXED MARITIME MOBILE 5.64	Maritime mobile communications		
148.5-255 kHz BROADCASTING 5.68 5.69 5.70	**148.5-160 kHz** BROADCASTING	Broadcasting	Frequency Assignment Plan (GE75) applies.	
	160-200 kHz FIXED 5.68			
	200-255 kHz AERONAUTICAL RADIONAVIGATION 5.70	Navigational Aids		
255-283.5 kHz BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70	**255-283.5 kHz** AERONAUTICAL RADIONAVIGATION 5.70	Navigational Aids		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
283.5-315 kHz AERONAUTICAL RADIONAVIGATIO N MARITIME RADIONAVIGATIO N (radiobeacons) 5.73	**283.5- 285.3 kHz** AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 MARITIME RADIONAVIGATION 5.74	Navigational Aids Supplementary navigational information using narrow-band		
	285.3-285.7 kHz AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 5.74	Navigational Aids Supplementary navigational information using narrow-band		
	285.7-315 kHz AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	Navigational Aids Supplementary navigational		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.74	5.74	information using narrow-band		
315-325 kHz AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73 5.75	**315-325 kHz** AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73	Navigational Aids Coast Radio Telegraph Stations Radionavigation		
~~2~~325-405 kHz AERONAUTICAL RADIONAVIGATION	**325-405 kHz** AERONAUTICAL RADIONAVIGATION	Navigational Aids		
405-415 kHz RADIONAVIGATION 5.76	**405-415 kHz** RADIONAVIGATION 5.76	Navigational Aids		
415-435 kHz MARITIME MOBILE 5.79	**415-435 kHz** MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	Maritime mobile communications	NAVDAT System (TX for coast stations only)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL RADIONAVIGATION		Under the MMS, the use of the band 415-495 kHz is limited to radiotelegraphy		
435-472 kHz MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.82	**435-472 kHz** MARITIME MOBILE 5.79 Aeronautical radionavigation 5.82	Maritime mobile communications Coast Stations in the NAVTEX service on 490 kHz; Res.339 applies. Transmission of navigational and meteorological warnings and urgent info for ships (NBDP telegraphy).	NAVDAT System (TX for coast stations only) Under the MMS, the use of the band 415-495 kHz and 505-526.5 kHz are limited to radiotelegraphy Article 31 and Article 52 apply.	
472-479 kHz MARITIME MOBILE 5.79	**472-479 kHz** MARITIME MOBILE 5.79		NAVDAT System (TX for coast stations only) Under the MMS, the use of the band 415-495 kHz and	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Amateur 5.80A Aeronautical radionavigation 5.77 5.80 5.80B 5.82	Amateur 5.80A Aeronautical radionavigation 5.82	Navigational Aids	505-526.5 kHz are limited to radiotelegraphy	
479-495 kHz MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.77 5.82	**479-495 kHz** MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.82	NAVTEX service on 490 kHz	NAVDAT System (TX for coast stations only) Article 31 and Article 52 apply Under the MMS, the use of the band 415-495 kHz and 505-526.5 kHz are limited to radiotelegraphy	
495-505 kHz MARITIME MOBILE 5.82C 5.82D	**495-505 kHz** MARITIME MOBILE 5.82C 5.82D	Navigational Data ~~Limited to radiotelegraphy;~~	NAVDAT System (TX for coast stations only) Article 31 and Article 52 apply. Resolution **364 (WRC-23)** apply.	Radiotelegraphy appears under 415-495 kHz and 505–526.5 kHz with RR footnote 5.79

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
505-526.5 kHz MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	**505-526.5 kHz** MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	Maritime mobile communications Maritime Radio Telegraphy NAVTEX service on 518 kHz Coast Stations in the NAVTEX service on 518 kHz; Navigational Aids	NAVDAT System (TX for coast stations only) Articles 31 and 52 apply. Resolution 339 Rev.WRC-07) applies. The use of the band 505-526.5 kHz in the MMS is limited to radiotelegraphy.	
526.5-1 606.5 kHz BROADCASTING	**526.5-1 606.5 kHz** BROADCASTING	Medium Wave Sound Broadcasting (535.5 - 1606.5 kHz) ~~Inductive Loop Systems (740 – 8800 kHz)~~	The Terrestrial Broadcasting Frequency Plan as amended (GG No. 36321) 02 April 2013 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	Does not align with the Annex B of the RR

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.87 5.87A		Digital Sound Broadcasting (DSB) services: DRM30	GG 43514 Notice 759 of 10 July 2020 GG 44469 Notice 215 of 23 April 2021, Digital Sound Broadcasting (DSB) Services Regulations, 2021 ITU-R BS.1660-9 (2023) ITU-R BS.1514-2 (2019) ITU-R BS.1615-2 (2011)	GG 43514 Notice 759 of 10 July 2020 mandates all DAB and DRM variants of DSB standards to complement the existing analogue sound broadcasting. ICASA Digital Sound Broadcasting Trials (2014–2015) African Union of Broadcasters (AUB) and SADC Communications Regulators' Association (CRASA): Both have recognised DRM30 in MW and SW bands as a relevant standard for extending coverage to rural and underserved areas in Africa.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 606.5-1 625 kHz FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	**1 606.5-1 625 kHz** FIXED MARITIME MOBILE 5.90 LAND MOBILE RADIODETERMINATION 5.92	 Maritime mobile communications Land mobile communications		
1 625-1 635 kHz RADIOLOCATION 5.93	**1 625-1 635 kHz** RADIOLOCATION	 Navigational Aids		
1 635-1 800 kHz FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92 5.96	**1 635-1 800 kHz** FIXED MARITIME MOBILE 5.90 LAND MOBILE RADIODETERMINATION 5.92	 Maritime mobile communications Land mobile communications		
1 800-1 810 kHz RADIOLOCATION 5.93	**1 800-1 810 kHz** RADIOLOCATION	 Navigational Aids		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 810-1 850 kHz AMATEUR 5.98 5.99 5.100	**1 810-1 850 kHz** AMATEUR	Amateur communications	Radio Frequency Spectrum Regulations (Annex ~~B~~ I) (GG. No.38641, 30 March 2015).	Correction of the Annex
1 850-2 000 kHz FIXED MOBILE except aeronautical mobile 5.92 5.96 5.103	**1 850-2 000 kHz** FIXED MOBILE except aeronautical mobile RADIODETERMINATION AMATEUR 5.92 5.103	Maritime mobile applications. Maritime mobile communications Land mobile communications Amateur communications	1850-1950 kHz is used for Maritime Coast Stations; 1950-2045 kHz is used by ship stations SSB Radio Telephony. Radio Frequency Spectrum Regulations (Annex ~~B~~ I) (GG. No.38641, 30 March 2015).	Correction of the Annex and the allocation
2 000-2 025 kHz FIXED MOBILE except aeronautical mobile (R)	**2 000-2 025 kHz** FIXED MOBILE except aeronautical mobile (R) RADIODETERMINATION	Maritime mobile communications Land mobile communications	1950-2045 kHz is used by ship stations SSB Radio Telephony	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.92 5.103	5.92 5.103			
2 025-2 045 kHz FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103	**2 025-2 045 kHz** FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 RADIODETERMINATION 5.92 5.103	Maritime mobile communications Limited to Oceanographic buoy stations	1950-2045 kHz is used by ship stations SSB Radio Telephony	
2 045-2 160 kHz FIXED MARITIME MOBILE LAND MOBILE 5.92	**2 045-2 160 kHz** FIXED MARITIME MOBILE LAND MOBILE RADIODETERMINATION 5.92	Maritime mobile communications Land mobile communications		
2 160-2 170 kHz RADIOLOCATION 5.93 5.107	**2 160-2 170 kHz** RADIOLOCATION	Navigational Aids		
2 170-2 173.5 kHz MARITIME MOBILE	**2 170-2 173.5 kHz** MARITIME MOBILE	Maritime mobile communications		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
2 173.5-2 190.5 kHz MOBILE (distress and calling) 5.108 5.109 5.110 5.111	**2 173.5-2 190.5 kHz** MOBILE (distress and calling) 5.108 5.109 5.110 5.111	Distress & Watch keeping (2182 kHz) 2 182 kHz is an international distress and calling frequency for radiotelephony. 2 187.5 kHz – DSC for distress and calling; 2 174.5 kHz – international distress frequency for NBDP telegraphy-Automatic connection system.	Article 31 and Article 52 applies South Africa no longer provides watchkeeping on 2182 kHz; 2 174.5 kHz – Recommendation ITU-R M.541	At least one stakeholder claims that South Africa no longer provides watchkeeping on 2182 kHz; however, the service still exists for vessels to make use of (calling other vessels equipped with SSB equipment).
2 190.5-2 194 kHz MARITIME MOBILE	**2 190.5-2 194 kHz** MARITIME MOBILE	Maritime mobile communications		
2 194-2 300 kHz FIXED MOBILE except aeronautical mobile (R)	**2 194-2 300 kHz** FIXED MOBILE except aeronautical mobile (R)	Maritime mobile communications		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.92 5.103	RADIODETERMINATION 5.92 5.103	Land mobile communications		
2 300-2 498 kHz FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103	**2 300-2 498 kHz** FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103	Land Mobile and Maritime applications DRM Sound Broadcasting	Terrestrial Broadcasting Frequency Plan 2013 (GG No. 36321) 02 April 2013 ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010)	International precedent: India & Russia
2 498-2 501 kHz STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	**2 498-2 501 kHz** STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)			
2 501-2 502 kHz STANDARD FREQUENCY AND TIME SIGNAL Space Research	**2 501-2 502 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space Research			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
2 502-2 625 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 502-2 625 kHz** FIXED MOBILE except aeronautical mobile (R) RADIODETERMINATION 5.92 5.103	Land Mobile and Maritime applications		
2 625-2 650 kHz MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	**2 625-2 650 kHz** MARITIME MOBILE MARITIME RADIONAVIGATION RADIODETERMINATION 5.92	Sonobuoys Maritime mobile communications		
2 650-2 850 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 650-2 850 kHz** FIXED MOBILE except aeronautical mobile (R) RADIODETERMINATION 5.92 5.103	Fixed Services links Maritime mobile communications Land mobile communications		
2 850-3 025 kHz AERONAUTICAL MOBILE (R)	**2 850-3 025 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile (R)	Appendix 27 Allotment Plan applies Article 31 applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.111 5.115	5.111 5.115	3 023 kHz may be used under the MMS for search and rescue operations		
3 025-3 155 kHz AERONAUTICAL MOBILE (OR)	**3 025-3 155 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR)	Appendix 26 Allotment Plan applies	
3 155-3 200 kHz FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	**3 155-3 200 kHz** FIXED MOBILE except aeronautical mobile (R) 5.116	Maritime mobile communications Land mobile communications SRD[11] Low power wireless hearing aids	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional channels may be assigned in the band 3155 – 3400 kHz.	
3 200-3 230 kHz FIXED MOBILE except aeronautical mobile (R)	**3 200-3 230 kHz** FIXED MOBILE except aeronautical mobile (R)	Maritime mobile communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

[11] http://www.crasa.org/common_up/crasa-setup/06-07-2015_SADC%20FREQUENCIES%20FOR%20SHORT%20RANGE%20DEVICE%20(SRDs)%20CRASA%20%202011%20-ANNEXURE%20B%20AND%20C.pdf

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
BROADCASTING 5.113 5.116	BROADCASTING 5.113 5.116	Land mobile communications HF Sound Broadcasting Low power wireless hearing aids DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG No.36321) 02 April 2013 Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional channels may be assigned in the band 3155 – 3400 kHz. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: India & Russia
3 230-3 400 kHz FIXED MOBILE except aeronautical mobile BROADCASTING 5.113	**3 230-3 400 kHz** FIXED MOBILE except aeronautical mobile BROADCASTING 5.113	HF Sound Broadcasting Low power wireless hearing aids	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.116	5.116	DRM Sound Broadcasting	channels may be assigned in the band 3155 – 3400 kHz. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: India, China, Russia
3 400-3 500 kHz AERONAUTICAL MOBILE (R)	**3 400-3 500 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile (R)	Appendix 27 Allotment Plan applies	
3 500-3 800 kHz AMATEUR FIXED MOBILE except aeronautical mobile 5.92	**3 500-3 800 kHz** AMATEUR FIXED MOBILE except aeronautical mobile RADIODETERMINATION 5.92	Amateur communications Maritime communications Land mobile communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
3 800-3 900 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**3 800-3 900 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Aeronautical mobile (OR)	Appendix 26 Allotment Plan applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
3 900-3 950 kHz AERONAUTICAL MOBILE (OR) 5.123	**3 900-3 950 kHz** AERONAUTICAL MOBILE (OR) BROADCASTING 5.123	Aeronautical mobile (OR)	Appendix 26 Allotment Plan applies	
3 950-4 000 kHz FIXED BROADCASTING	**3 950-4 000 kHz** FIXED BROADCASTING	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG No.36321) 02 April 2013 ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: India, China, Russia
4 000-4 063 kHz FIXED MARITIME MOBILE 5.127 5.126	**4 000-4 063 kHz** FIXED MARITIME MOBILE 5.127	Maritime mobile communications	Use of the band 4000-4063 kHz by the MMS is limited to ship stations using radiotelephony	
4 063-4 438 kHz	**4 063-4 4 438 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MARITIME MOBILE 5.79A 5.82D 5.109 5.110 5.130 5.131 5.132	MARITIME MOBILE 5.79A 5.82D 5.109 5.110 5.130 5.131 5.132 FIXED	Maritime mobile communications 4125 kHz – use of this frequency prescribed in Article 31. 4209.5 kHz - Coast Stations in the NAVTEX service; Res.339 applies. 4207.5 kHz – DSC for distress and calling; 4177.5 kHz – ACS~~international distress frequency for NBDP telegraphy~~;. 4209.5 kHz – exclusive for transmission by coast stations of meteorological and navigational warnings and urgent information to ships (NBDP). 4210 kHz – maritime safety information (MSI) 4226 kHz – Coast stations in the NAVDAT system – Resolution 364 (WRC-23) applies	See Section 7 for details ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies Resolution 339 (Rev. WRC-07) applies Articles 31 and Article 52 applies Resolution **364 (WRC-23)** Recommendation ITU-R M.541 applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.128	5.128			
4 438-4 488 kHz FIXED MOBILE except aeronautical mobile (R) Radiolocation 5.132A	**4 438-4 488 kHz** FIXED MOBILE except aeronautical mobile (R) Radiolocation 5.132A	Maritime communications Land mobile communications Oceanographic Radars		
4 488-4 650 kHz FIXED MOBILE except aeronautical mobile (R)	**4 488-4 650 kHz** FIXED MOBILE except aeronautical mobile (R)			
4 650-4 700 kHz AERONAUTICAL MOBILE (R)	**4 650-4 700 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile (R)	Appendix 27 Allotment Plan applies	
4 700-4 750 kHz AERONAUTICAL MOBILE (OR)	**4 700-4 750 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR)	Appendix 26 Allotment Plan applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
4 750-4 850 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	**4 750-4 850 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	Aeronautical mobile (OR) Land mobile HF Sound Broadcasting DRM Sound Broadcasting	Appendix 26 Allotment Plan applies The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: India, China, Russia
4 850-4 995 kHz FIXED LAND MOBILE BROADCASTING 5.113	**4 850-4 995 kHz** FIXED LAND MOBILE BROADCASTING 5.113	Land mobile HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: India, China, Russia
4 995-5 003 kHz STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	**4 995-5 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)			
5 003-5 005 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**5 003-5 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research			
5 005-5 060 kHz FIXED BROADCASTING 5.113	**5 005-5 060 kHz** FIXED BROADCASTING 5.113	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	 International precedent: India, China, Russia
5 060-5 250 kHz	**5 060-5 250 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED Mobile except aeronautical mobile 5.133	FIXED Mobile except aeronautical mobile	SADC harmonised HF frequencies for cross-border mobile communications;		
5 250-5 275 kHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	**5 250-5 275 kHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	SADC[12] harmonised HF frequencies for cross-border mobile communications; Oceanographic Radar	Oceanographic Radars are used in accordance with ITU Resolution 612 (Rev WRC-12).	
5 275-5 351.5 kHz FIXED MOBILE except aeronautical mobile	**5 275- 5 351.5 kHz** FIXED MOBILE except aeronautical mobile Amateur NF0	Amateur communications (5290 KHz)		Consistent with NF0
5 351.5-5 366.5 kHz FIXED	**5 351.5-5 366.5 kHz** FIXED			

[12] http://www.crasa.org/common_up/crasa-setup/10-03-2015_SADC%20FREQUENCY%20BAND%20%202013.pdf

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile Amateur 5.133B	MOBILE except aeronautical mobile Amateur NF0	Amateur communications (5350-5450 MHz)		Consistent with NF0
5 366.5-5 450 kHz FIXED MOBILE except aeronautical mobile	**5 366.5-5 450 kHz** FIXED MOBILE except aeronautical mobile Amateur NF0	Amateur communications (5350-5450 MHz)		Consistent with NF0
5 450-5 480 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**5 450-5 480 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Aeronautical mobile (OR)	Appendix 27 Allotment plan applies	
5 480-5 680 kHz AERONAUTICAL MOBILE (R) 5.111 5.115	**5 480-5 680 kHz** AERONAUTICAL MOBILE (R) 5.111 5.115	Aeronautical mobile (R)	Appendix 27 Allotment plan applies	
5 680-5 730 kHz	**5 680-5 730 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL MOBILE (OR) 5.111 5.115	AERONAUTICAL MOBILE (OR) 5.111 5.115	Aeronautical mobile (OR) 5 680 kHz may be used under the MMS for search and rescue operations . SRD[13] applications (5 725 – 5 875 kHz)	Appendix 26Allotment plan applies Article 31 applies on the use of 6215 kHz Common international SRD band; see ITU-R Rec.SM 1896-1 latest version. Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
5 730-5 900 kHz FIXED LAND MOBILE	**5 730-5 900 kHz** FIXED LAND MOBILE	Land mobile communications		
5 900-5 950 kHz BROADCASTING 5.134	**5 900-5 950 kHz** BROADCASTING 5.134	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013	

[13] http://www.crasa.org/common_up/crasa-setup/06-07-2015_FRAME%20WORK%20FOR%20HARMONISATION%20FREQUENICES%20FOR%20SHORT%20RANGE%20DEVICES%20%20OF%20%20SHORT%20RANGE%20DEVICES%20%20(SRDs)%20-%20ANNEXURE%20A.pdf

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.136	Fixed 5.136 Land Mobile 5.136 5.136	DRM Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	South African DRM Trials (ICASA/Sentech, 2014–2015) International precedent: BBC World Service, Deutsche Welle, Radio Romania International, All India Radio
5 950-6 200 kHz BROADCASTING	**5 950-6 200 kHz** BROADCASTING	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Article 12 Planning Procedures and Res.517 apply. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010)	International precedent: BBC World Service, Deutsche Welle,

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			RR, Article 5	Radio Romania International, All India Radio
6 200-6 525 kHz MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137A	**6 200-6 213.5 kHz** ~~FIXED~~ MARITIME MOBILE 5.109 5.110 5.130 5.132 Fixed 5.137 5.137	Maritime mobile communications 6312 kHz – DSC for distress and calling; ~~6314 kHz – maritime safety information (MSI)~~ Fixed (6 200-6 213.5 kHz and 6 220.5-6 525 kHz)	ITU-RR Article 31 applies ITU RR ~~Appendix~~ Appendices 15 and 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies FS may be used on a secondary basis in the band 6 200 – 6 213.5 kHz and 6 220.5 – 6 525 kHz.	As per 5.109, ITU-RR Article 31 applies to the use of frequency 6312 kHz As per 5.137
	6 213.5-6 220.5 kHz MARITIME MOBILE 5.109 5.110 5.130 5.132	Maritime mobile communications 6215 kHz DSC for distress and calling;	ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies ~~FS may be used on a secondary basis in the band 6~~	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.137		~~200 – 6 213.5 kHz and 6 220.5 – 6 525 kHz~~.	
5.137	**6 220.5-6 525 kHz** ~~FIXED~~ MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137A Fixed 5.137 ~~5.137~~	Maritime mobile communications 6312 kHz and 6215 kHz – DSC for distress and calling; 6268 kHz – international distress frequency for NBDP telegraphy;. ~~6314~~ 6337.5 kHz – ~~maritime safety information (~~MSI~~)~~; App.17 applies Fixed (6 200-6 213.5 kHz and 6 220.5-6 525 kHz)	ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies Article 31 applies FS may be used on a secondary basis in the band 6 200 – 6 213.5 kHz and 6 220.5 – 6 525 kHz.	As per 5.137
6 525-6 685 kHz AERONAUTICAL MOBILE (R)	**6 525-6 685 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	Appendix 27 Allotment Plan applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
6 685-6 765 kHz AERONAUTICAL MOBILE (OR)	**6 685-6 765 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	Appendix 26 Allotment Plan applies	
6 765-7 000 kHz FIXED MOBILE except aeronautical mobile (R) 5.138	**6 765-7 000 kHz** FIXED MOBILE except aeronautical mobile (R) 5.138	Inductive Loop Systems (6765 – 6795 kHz)		
7 000-7 100 kHz AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	**7 000-7 100 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
7 100-7 200 kHz AMATEUR 5.141A 5.141B	**7 100-7 200 kHz** AMATEUR	Amateur communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
7 200-7 300 kHz BROADCASTING	**7 200-7 300 kHz** BROADCASTING	HF Sound Broadcasting DRM Sound Broadcasting	ITU RR Article 12 Planning Procedures applies ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: Broadcasters such as BBC, Radio Romania, All India Radio, and China National Radio
7 300-7 400 kHz BROADCASTING 5.134	**7 300-7 350 kHz** BROADCASTING 5.134 5.143B 5.143	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Article 12 Planning Procedures and Res.517 apply. NINP basis to broadcasting FS and LMS may operate in the band 7 300 – 7 450 kHz on a secondary basis ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: All India Radio, Radio Romania International, and China National Radio
	7 350-7 400 kHz BROADCASTING 5.134	HF Sound Broadcasting		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.143 5.143A 5.143B 5.143C 5.143D	FIXED 5.143 LAND MOBILE 5.143 5.143A 5.143B 5.143D	DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Article 12 Planning Procedures and Res.517 apply. NINP basis to broadcasting ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: in active use worldwide (e.g. Radio Romania International, China National Radio, All India Radio)
7 400-7 450 kHz BROADCASTING	**7 400-7 450 kHz** BROADCASTING	HF Sound Broadcasting Inductive Loop Systems (7400 – 8800 kHz)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Article 12 Planning Procedures and Res.517 apply.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.143B 5.143C	5.143B	DRM Sound Broadcasting	~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).~~ Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. FS and LMS may operate in the band 7 350 – 7 450 kHz on a secondary basis ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: in active use worldwide (e.g. Radio Romania International, China National Radio, All India Radio)
7 450-8 100 kHz FIXED MOBILE except aeronautical mobile (R)	**7 450-8 100 kHz** FIXED MOBILE except aeronautical mobile (R)	Inductive Loop Systems (7400 – 8800 kHz)	~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).~~ Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.144			amended by GG 48643 Notice 1822 of 23 May 2023.. SADC harmonised HF frequencies for cross-border mobile communications;	
8 100-8 195 kHz FIXED MARITIME MOBILE	**8 100-8 195 kHz** FIXED MARITIME MOBILE	Maritime mobile communications Inductive Loop Systems (7400 – 8800 kHz)	~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).~~ Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023..	
8 195-8 815 kHz MARITIME MOBILE 5.109 5.110 5.132 ~~5.145~~5.137A 5.145	**8 195-8 815 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.137A 5.145	Digital Selective Calling (GMDSS) Distress Watch keeping on 8414.5 kHz Transmission of meteorological	Appendix 15 of ITU RR See Section 7 for details ~~Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).~~	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.111	5.111	bulletins and notices to navigators Inductive Loop Systems (7400 – 8800 kHz) Maritime mobile communications 8414.5 kHz – DSC for distress and calling; 8 376.5 kHz – ~~international distress frequency for NBDP telegraphy~~ACS~~;~~ 8416.5 and 8443 kHz – ~~maritime safety information (~~MSI~~);~~ ~~App.17 applies.~~	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023.. ~~ITU RR Appendix17 Channelling Plan applies~~ ITU RR Appendix 25 Allotment Plan applies Article 31 applies ~~Article 31 applies.~~ Recommendation ITU-R M.541 applies .	
8 815-8 965 kHz AERONAUTICAL MOBILE (R)	**8 815-8 965 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies	
8 965-9 040 kHz AERONAUTICAL MOBILE (OR)	**8 965-9 040 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies	
9 040-9 305 kHz FIXED	**9 040-9 305 kHz** FIXED	Fixed Applications		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
9 305-9 355 kHz FIXED Radiolocation 5.145A 5.145B	**9 305-9 355 kHz** FIXED Radiolocation 5.145A	Fixed Applications Oceanographic radars		
9 355-9 400 kHz FIXED	**9 355-9 400 kHz** FIXED			
9 400-9 500 kHz BROADCASTING 5.134 5.146	**9 400-9 500 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Fixed services may be used on a secondary basis ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: BBC World Service, Deutsche Welle, Radio Romania International, All India Radio, and Voice of America
9 500-9 900 kHz BROADCASTING	**9 500-9 775 kHz** BROADCASTING	HF Sound Broadcasting		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.147	DRM Sound Broadcasting (L)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 ITU RR Article 12 Planning Procedures applies ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: BBC World Service, Deutsche Welle, Voice of America, All India Radio, and Radio Romania International
	9 775-9 900 kHz BROADCASTING FIXED 5.147	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 ITU RR Article 12 Planning Procedures applies ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. BBC World Service, Deutsche Welle, Voice of America, All India Radio, and Radio Romania International

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.147				
9 900-9 995 kHz FIXED	**9 900-9 995 kHz** FIXED	Fixed Applications		
9 995-10 003 kHz STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	**9 995-10 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111			
10 003-10 005 kHz	**10 003-10 005 kHz**	Passive sensing		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111			
10 005-10 100 kHz AERONAUTICAL MOBILE (R) 5.111	**10 005-10 100 kHz** AERONAUTICAL MOBILE (R) 5.111	Aeronautical mobile communications	Appendix 27 Allotment Plan applies	
10 100-10 150 kHz FIXED Amateur	**10 100-10 150 kHz** FIXED Amateur	Fixed Applications Amateur communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
10 150-11 175 kHz FIXED Mobile except aeronautical mobile (R)	**10 150-11 175 kHz** FIXED Mobile except aeronautical mobile (R)	SADC harmonised HF frequencies for cross-border mobile communications;		
11 175-11 275 kHz	**11 175-11 275 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies	
11 275-11 400 kHz AERONAUTICAL MOBILE (R)	**11 275-11 400 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies	
11 400-11 600 kHz FIXED	**11 400-11 600 kHz** FIXED	Fixed Applications		
11 600-11 650 kHz BROADCASTING 5.134 5.146	**11 600-11 650 kHz** BROADCASTING 5.134 FIXED	HF Sound Broadcasting DRM Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. BBC World Service, Deutsche Welle, Voice of America, Radio Romania International, All India Radio

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
11 650-12 050 kHz BROADCASTING	**11 650-11 700 kHz** BROADCASTING FIXED	HF Sound Broadcasting DRM Sound Broadcasting	ITU RR Article 12 Planning Procedures applies ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. BBC World Service, Deutsche Welle, Voice of America, Radio Romania International, All India Radio
	11 700-11 975 kHz BROADCASTING 5.147	HF Sound Broadcasting DRM Sound Broadcasting	ITU RR Article 12 Planning Procedures applies ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. BBC World Service, Deutsche Welle, Voice of America, Radio Romania International, All India Radio
	11 975-12 050 kHz BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.147	FIXED 5.147	DRM Sound Broadcasting	ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. BBC World Service, Deutsche Welle, Voice of America, Radio Romania International, All India Radio
12 050-12 100 kHz BROADCASTING 5.134 5.146	**12 050-12 100 kHz** BROADCASTING 5.134 FIXED 5.146	HF Sound Broadcasting DRM Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. BBC World Service, Deutsche Welle, Voice of America, Radio Romania International, All India Radio
12 100-12 230 kHz	**12 100-12 230 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED	FIXED	Fixed Applications		
12 230-13 200 kHz MARITIME MOBILE 5.109 5.110 5.132 5.137A 5.145	**12 230-13 200 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.137A 5.145	Maritime mobile communications Digital Selective Calling(GMDSS) Distress Watch keeping (12 577 kHz) 12 577 kHz – DSC for distress and calling; 12 520 kHz – ~~international distress frequency for NBDP telegraphy~~ACS; 12 663.5 and 12579 kHz ~~– maritime safety information (~~MSI~~)~~	ITU RR Appendix 17 Channeling Plan applies Appendix 15 of ITU RR Transmission of meteorological bulletins and notices to navigators See Section 7 for details ITU RR Appendix 17 Channelling Plan and Article 31 applies. Recommendation ITU-R M.541 applies App 15 and App.17 applies. ITU RR Appendix 25 Allotment Plan applies	
13 200-13 260 kHz	**13 200-13 260 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies	
13 260-13 360 kHz AERONAUTICAL MOBILE (R)	**13 260-13 360 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies	
13 360-13 410 kHz FIXED RADIO ASTRONOMY 5.149	**13 360-13 410 kHz** FIXED RADIO ASTRONOMY 5.149	Radio astronomy (Observations of decametric radiation)	See section 5 for coordination with radio astronomy	
13 410-13 450 kHz FIXED Mobile except aeronautical mobile (R)	**13 410-13 450 kHz** FIXED Mobile except aeronautical mobile (R)	Maritime and/or land mobile communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
13 450-13 550 kHz FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A	**13 450-13 550 kHz** FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A	Oceanographic radars		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149A				
13 550-13 570 kHz FIXED Mobile except aeronautical mobile (R) 5.150	**13 550-13 570 kHz** FIXED Mobile except aeronautical mobile (R) 5.150	Inductive Loop Systems (13 553 – 13 567 kHz) RFID and EAS systems (13 553 – 13 567 kHz) SRD[14] applications (13 553-13 567kHz)	Common international SRD band; see ITU-R Rec. SM. 1896-1 latest version Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

[14] http://www.crasa.org/common_up/crasa-setup/06-07-2015_SADC%20FREQUENCIES%20%20FOR%20SHORT%20RANGE%20%20DEVICES%20CRASA%202011.pdf

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
13 570-13 600 kHz BROADCASTING 5.134 5.151	**13 570-13 600 kHz** BROADCASTING 5.134 Fixed Mobile except aeronautical mobile (R)	HF Sound Broadcasting DRM Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	 International precedent: eg. Radio Romania International, BBC, All India Radio, and Voice of America
13 600-13 800 kHz BROADCASTING	**13 600-13 800 kHz** BROADCASTING	HF Sound Broadcasting DRM Sound Broadcasting	ITU RR Article 12 Planning Procedures applies ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	 International precedent: eg. Radio Romania International, BBC, All India Radio, and Voice of America
13 800-13 870 kHz BROADCASTING 5.134	**13 800-13 870 kHz** BROADCASTING 5.134	HF Sound Broadcasting		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.151		DRM Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. Radio Romania International, All India Radio, and Voice of America have scheduled DRM services in the 13 MHz broadcast band
13 870-14 000 kHz FIXED Mobile except aeronautical mobile (R)	**13 870-14 000 kHz** FIXED Mobile except aeronautical mobile (R)	Fixed Applications Land mobile communications Maritime communications		
14 000-14 250 kHz AMATEUR AMATEUR-SATELLITE	**14 000-14 250 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
14 250-14 350 kHz AMATEUR 5.152	**14 250-14 350 kHz** AMATEUR	Amateur communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
14 350-14 990 kHz FIXED Mobile except aeronautical mobile (R)	**14 350-14 990 kHz** FIXED Mobile except aeronautical mobile (R)	SADC harmonised HF frequencies for cross-border mobile communications;		
14 990-15 005 kHz STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	**14 990-15 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111			
15 005-15 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**15 005-15 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research			
15 010-15 100 kHz AERONAUTICAL MOBILE (OR)	**15 010-15 100 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
15 100-15 600 kHz BROADCASTING	**15 100-15 600 kHz** BROADCASTING	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG No.36321) 02 April 2013. ITU RR Article 12 Planning Procedures applies ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. India (AIR), Romania (RRI), USA (VOA), UK (BBC), China (CNR)
15 600-15 800 kHz BROADCASTING 5.134	**15 600-15 800 kHz** BROADCASTING 5.134	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. Article 12 Planning Procedures and Res.517 apply. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. India (AIR), Romania (RRI), Germany

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.146	FIXED 5.146			(DW), USA (VOA), UK (BBC)
15 800-16 100 kHz FIXED 5.153	**15 800-16 100 kHz** FIXED	Fixed Applications		
16 100-16 200 kHz FIXED Radiolocation 5.145A 5.145B	**16 100-16 200 kHz** FIXED Radiolocation 5.145A	Oceanographic radars		
16 200-16 360 kHz FIXED	**16 200-16 360 kHz** FIXED	Fixed Applications		
16 360-17 410 kHz MARITIME MOBILE 5.109	**16 360-17 410 kHz** MARITIME MOBILE 5.109	Maritime mobile communications Digital Selective Calling (GMDSS) Transmission of meteorological bulletins and notices to navigators. 16 804.5 kHz – DSC for distress and calling;	Appendix 15 of ITU RR See Section 7 for details ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies Article 31 applies. Recommendation ITU-R M.541 applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.110 5.132 5.137A 5.145	5.110 5.132 5.137A 5.145	16 695 kHz – ACS; 16 806.5 and 16909.5 kHz Maritime Safety Information (MSI)		
17 410-17 480 kHz FIXED	**17 410-17 480 kHz** FIXED	Fixed		
17 480-17 550 kHz BROADCASTING 5.134 5.146	**17 480-17 550 kHz** BROADCASTING 5.134 FIXED 5.146	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG No.36321) 02 April 2013. Article 12 Planning Procedures and Res.517 apply. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. India (AIR), Romania (RRI), Germany (DW), UK (BBC)

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
17 550-17 900 kHz BROADCASTING	**17 550-17 900 kHz** BROADCASTING	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG No.36321) 02 April 2013. ITU RR Article 12 Planning Procedures applies ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. India (AIR), Romania (RRI), Germany (DW), UK (BBC)
17 900-17 970 kHz AERONAUTICAL MOBILE (R)	**17 900-17 970 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies	
17 970-18 030 kHz AERONAUTICAL MOBILE (OR)	**17 970-18 030 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies	
18 030-18 052 kHz FIXED	**18 030-18 052 kHz** FIXED	Fixed Applications		
18 052-18 068 kHz FIXED	**18 052-18 068 kHz** FIXED	Fixed Applications		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Space research	Space research			
18 068-18 168 kHz AMATEUR AMATEUR-SATELLITE 5.154	**18 068-18 168 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
18 168-18 780 kHz FIXED Mobile except aeronautical mobile	**18 168-18 780 kHz** FIXED Mobile except aeronautical mobile	Land mobile communications		
18 780-18 900 kHz MARITIME MOBILE	**18 780-18 900 kHz** MARITIME MOBILE	Maritime communications	ITU RR Appendix 17 Channelling Plan applies	
18 900-19 020 kHz BROADCASTING 5.134	**18 900-19 020 kHz** BROADCASTING 5.134	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG No.36321) 02 April 2013. Article 12 Planning Procedures and Res.517 apply.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.146	FIXED 5.146	DRM Sound Broadcasting	ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. India (AIR), Romania (RRI), USA (VOA), UK (BBC)
19 020-19 680 kHz FIXED	**19 020-19 680 kHz** FIXED	Fixed Applications		
19 680-19 800 kHz MARITIME MOBILE 5.132	**19 680-19 800 kHz** MARITIME MOBILE 5.132	19 680.5 kHz – ~~maritime safety information (~~MSI~~)~~; App.17 applies	The frequency 19 680.5 kHz is the international frequency for transmission of MSI.	
19 800-19 990 kHz FIXED	**19 800-19 990 kHz** FIXED	Fixed Applications		
19 990-19 995 kHz STANDARD FREQUENCY AND TIME SIGNAL	**19 990-19 995 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Space research 5.111	5.111			
19 995-20 010 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	**19 995-20 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111			
20 010-21 000 kHz FIXED Mobile	**20 010-21 000 kHz** FIXED Mobile			
21 000-21 450 kHz AMATEUR AMATEUR-SATELLITE	**21 000-21 450 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
21 450-21 850 kHz BROADCASTING	**21 450-21 850 kHz** BROADCASTING	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. ITU RR Article 12 Planning Procedures applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		DRM Sound Broadcasting	ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010) RR, Article 5	International precedent: eg. India (AIR), Romania (RRI), USA (VOA), UK (BBC)
21 850-21 870 kHz FIXED 5.155A 5.155	**21 850-21 870 kHz** FIXED	Fixed Applications[15]		
21 870-21 924 kHz FIXED 5.155B	**21 870-21 924 kHz** FIXED 5.155B	Fixed Applications	This band is used by the FS for services related to aircraft flight safety (5.155B)	
21 924-22 000 kHz AERONAUTICAL MOBILE (R)	**21 924-22 000 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies	
22 000-22 855 kHz MARITIME MOBILE 5.132 5.137A	**22 000-22 855 kHz** MARITIME MOBILE 5.132 5.137A			

[15] http://www.crasa.org/common_up/crasa-setup/10-03-2015_FREQUENCY%20CHANNELING%20ARRANGEMENTS%20FOR%20TERRESTRIAL%20FIXED%20AND%20MOBILE%202011.pdf

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.156		22450.5 kHz – ~~maritime safety information~~ (MSI); ~~App.17 applies~~ 22 376 kHz - MSI.	ITU RR Appendix 17 Channelling Plan applies. ITU RR Appendix 25 Allotment Plan applies. ~~The frequency 22 376 kHz is the~~ The international frequency for transmission of MSI. See Section 7 for details	
22 855-23 000 kHz FIXED 5.156	**22 855-23 000 kHz** FIXED	Fixed Applications		
23 000-23 200 kHz FIXED Mobile except aeronautical mobile (R) 5.156	**23 000-23 200 kHz** FIXED Mobile except aeronautical mobile (R)			
23 200-23 350 kHz FIXED 5.156A AERONAUTICAL MOBILE (OR)	**23 200-23 350 kHz** FIXED 5.156A AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	The use of this band by the FS is limited to the provision of services related to aircraft flight safety (5.156A)	
23 350-24 000 kHz	**23 350-24 000 kHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED MOBILE except aeronautical mobile 5.157	FIXED MARITIME MOBILE 5.157	 Inter-ship radiotelegraphy	 The use of this band by the MMS is limited to inter-ship radiotelegraphy (5.157).	
24 000-24 450 kHz FIXED LAND MOBILE	**24 000-24 450 kHz** FIXED LAND MOBILE			
24 450-24 600 kHz FIXED LAND MOBILE Radiolocation 5.132A 5.158	**24 450-24 600 kHz** FIXED LAND MOBILE Radiolocation 5.132A	 Oceanographic radars		
24 600-24 890 kHz FIXED LAND MOBILE	**24 600-24 890 kHz** FIXED LAND MOBILE			
24 890-24 990 kHz AMATEUR AMATEUR-SATELLITE	**24 890-24 990 kHz** AMATEUR AMATEUR-SATELLITE		 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
24 990-25 005 kHz STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	**24 990-25 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)			
25 005-25 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**25 005-25 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research			
25 010-25 070 kHz FIXED MOBILE except aeronautical mobile	**25 010-25 070 kHz** FIXED MOBILE except aeronautical mobile			
25 070-25 210 kHz MARITIME MOBILE	**25 070-25 210 kHz** MARITIME MOBILE	Maritime mobile communications	ITU RR Appendix 17 Channelling Plan applies	
25 210-25 550 kHz FIXED	**25 210-25 550 kHz** FIXED			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile			
25 550-25 670 kHz RADIO ASTRONOMY 5.149	**25 550-25 670 kHz** RADIO ASTRONOMY 5.149	Radio astronomy (Observations of decametric radiation)	See section 5 for coordination with radio astronomy	
25 670-26 100 kHz BROADCASTING	**25 670-26 100 kHz** BROADCASTING	HF Sound Broadcasting DRM Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 ITU RR Article 12 Planning Procedures applies. ITU-R BS.1660-9 (2023) ITU-R BS.1615-2 (2011) ITU-R BS.1348-4 (2010)	This upper HF band is less heavily used than lower bands (5–21 MHz) because of propagation constraints, but it remains in service for DRM and AM shortwave during high solar activity (daytime, equatorial, and transcontinental paths).

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
				All India Radio (AIR) and Radio Romania International (RRI) have both experimented with DRM transmissions in the 25.7–26.0 MHz band. DRM Consortium test transmissions have been conducted around 26 MHz to demonstrate DRM's performance at the top end of HF.
26 100-26 175 kHz MARITIME MOBILE 5.132	**26 100-26 175 kHz** MARITIME MOBILE 5.132	26 100.5 kHz —~~maritime safety information~~ (MSI; App.17 applies	ITU RR Appendix 17 Channelling Plan applies. ITU RR Appendix 25 Allotment Plan applies. The frequency 26 100.5 kHz is the international frequency for transmission of MSI.	
26 175-26 200 kHz FIXED MOBILE except aeronautical mobile	**26 175-26 200 kHz** FIXED MOBILE except aeronautical mobile	Single Frequency Mobile	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		Mobile systems (single frequency) CB Radio (26.96-27.410 MHz) ISM applications (26.975-27.283 MHz) SRD applications (26 957-27 283 kHz)	Common international SRD band; see ITU-R Rec. SM. 1896-1 latest version.	
26 200-26 350 kHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A 5.133A	**26 200-26 350 kHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	Single Frequency Mobile Oceanography radars		
26 350-27 500 kHz FIXED MOBILE except aeronautical mobile 5.150	**26 350-27 500 kHz** FIXED MOBILE except aeronautical mobile 5.150	Single Frequency Mobile Inductive Loop Systems, Non-specific SRD's (26.957 – 27.283 MHz) Surface Model Control (26.995 MHz, 27.045 MHz, 27.095 MHz,	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		27.145 MHz and 27.195 MHz)		
27.5-28 MHz METEOROLOGICAL AIDS FIXED MOBILE	**27.5-28 MHz** METEOROLOGICAL AIDS FIXED MOBILE	Radiosondes		
28-29.7 MHz AMATEUR AMATEUR-SATELLITE	**28-29.7 MHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
29.7-30.005 MHz FIXED MOBILE	**29.7-30.005 MHz** FIXED MOBILE Amateur NF1	Single frequency mobile (29.7-29.99 MHz) Government Services	Amateur – disaster and emergencies Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
30.005-30.01 MHz SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	**30.005-30.01 MHz** SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	Government Services		
30.01-37.5 MHz FIXED MOBILE	**30.01-37.5 MHz** FIXED MOBILE	Single Frequency Mobile (32 – 32.325 MHz) Government Services Mobile 1 MTX (32.325 – 33.675 MHz) Single Frequency Mobile (33.675 – 34.175 MHz) Mobile 2 MTX (34.175 – 35 MHz) Model Aircraft Control (35 – 35.5 MHz) Wireless microphone (36.65 – 36.75 MHz) Single Frequency Mobile (33.25 – 33.5 MHz)	Paired with 41.65 – 43 MHz Paired with 40.625 – 41.25 MHz Exclusive use by Model Aircraft Control Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Paired with 38.5 – 39.825 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		Mobile 3 BTX 35.5 – 36.825 MHz Single Frequency Mobile 36.825 – 38.5 MHz PMR[16]		
37.5-38.25 MHz FIXED MOBILE Radio astronomy 5.149	**37.5-38.25 MHz** FIXED MOBILE Radio astronomy 5.149	Single Frequency Mobile (36.825 – 38.5 MHz) Government Services Radio Astronomy (Observations of decametric radiation)	See Section 5 for coordination with radio astronomy	
38.25-39 MHz FIXED MOBILE	**38.25-39 MHz** FIXED MOBILE	Single Frequency Mobile (36.825 – 38.5 MHz) Government Services Mobile 3 MTX (38.5 – 39.825 MHz)	Paired with 35.5 – 36.825 MHz	
39-39.5 MHz	**39-39.5 MHz**			

[16] http://www.crasa.org/common_up/crasa-setup/10-03-2015_GUIDELINES%20%20ON%20PMR%202014.pdf

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED MOBILE Radiolocation 5.132A ~~Space research~~ ~~5.159~~	FIXED MOBILE Radiolocation 5.132A ~~Space research~~	Mobile 3 MTX (38.5 – 39.825 MHz) Single Frequency Mobile (39.825 – 40.625 MHz) Oceanographic radars	Paired with 35.5 – 36.825 MHz	According to the SADC2024 or RR2024, there is no evidence for allocation of 39 - 39.5 MHz band for space research. Frequency band 39.986 - 40.2 MHz is allocated to Space research.
39.5-39.986 MHz FIXED MOBILE ~~Space research~~	**39.5-39.986 MHz** FIXED MOBILE ~~Space research~~	Mobile 3 MTX (38.5 – 39.825 MHz) Single Frequency Mobile (39.825 – 40.625 MHz) PMR	Paired with 35.5 – 36.825 MHz	According to the SADC2024 or RR2024,

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
				there is no evidence for allocation of 39 - 39.5 MHz band for space research. Frequency band 39.986 - 40.2 MHz is allocated to Space research.
~~**39.986-40.02 MHz**~~ ~~FIXED~~ ~~MOBILE~~ ~~Earth-exploration-satellite (active) 5.159A~~ ~~Space research~~	~~**39.986-40.02 MHz**~~ ~~FIXED~~ ~~MOBILE~~ ~~Earth-exploration-satellite (active) 5.159A~~ ~~Space research~~	~~Single Frequency Mobile (39.825 - 40.625 MHz)~~ ~~PMR~~		
39.986-40.0 MHz FIXED MOBILE Space research	**39.986-40.0 MHz** FIXED MOBILE Space research	PMR		39.986-40.2MHz range was split into 39.986-40 MHz and 40-40.2 MHz as per SADC 2024 and RR 2024. Applications were updated in accordance with SADC 2024.
40-40.02 MHz FIXED MOBILE	**40-40.02 MHz** FIXED MOBILE	Fixed applications PMR		39.986-40.2MHz range was split into 39.986-40 MHz and 40-40.2 MHz as per SADC 2024 and RR 2024. Applications were

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
				updated in accordance with SADC 2024.
		Model Control Devices (40.66 – 40.7 MHz): Radio Microphone Wireless control devices		Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023.
Earth exploration satellite (active) 5.159A Space research	Earth exploration satellite (active) 5.159A Space research	Measurement equipment Earth exploration - satellite (active)		
40.02-40.98 MHz FIXED MOBILE	**40.02-40.98 MHz** FIXED MOBILE	Single Frequency Mobile (39.825 – 40.625 MHz) Mobile 2 BTX (40.625 – 41.45 MHz) Wireless microphones (40.65 – 40.7 MHz)	Paired with 34.175 – 35 MHz Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Earth exploration-satellite (active) 5.159A 5.150	AMATEUR Earth exploration-satellite (active) 5.159A 5.150	Non-specific SRD's (40.66 – 40.7 MHz) Surface Model Control (40.665 MHz, 40.675 MHz, 40.685 MHz, 40.695 MHz) SRD applications (40.66 - 40.77 MHz) ISM applications (40.66 – 40.7 MHz) PMR Amateur propagation studies / beacons (8 m): 40.675–40.685 MHz	Common international SRD band; see ITU-R Rec. SM.1896 latest version. Radio Frequency Spectrum Regulations, 2015 (Annexure I); RR No. 5.150 (ISM band 40.66–40.70 MHz).	Per Annexure I; accepts ISM interference per RR 5.150)
40.98-41.015 MHz FIXED MOBILE	**40.98-41.015 MHz** FIXED MOBILE		Paired with 34.175 – 35 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Earth exploration-satellite (active) 5.159A Space research 5.160 5.161	Earth exploration-satellite (active) 5.159A Space research	Mobile 2 BTX (40.625 – 41.45 MHz) PMR		
41.015-42 MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.160 5.161 5.161A	**41.015-42 MHz** FIXED MOBILE Earth exploration-satellite (active) 5.159A	Mobile 2 BTX (40.625 – 41.45 MHz) Single Frequency Mobile (41.45 – 41.65 MHz) Mobile 1 BTX (41.65 – 43 MHz) Government Services PMR	Paired with 34.175 – 35 MHz Paired with 32.325 – 33.675 MHz	
42-42.5 MHz FIXED MOBILE	**42-42.5 MHz** FIXED MOBILE	Mobile 1 BTX (41.65 – 43 MHz)	Paired with 32.325 – 33.675 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Earth exploration-satellite (active) 5.159A Radiolocation 5.132A 5.160 5.161B	Earth exploration-satellite (active) 5.159A Radiolocation 5.132A	Government Services Oceanographic radars		
42.5-44 MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.160 5.161 5.161A	**42.5-44 MHz** FIXED MOBILE Earth exploration-satellite (active) 5.159A	Mobile 1 BTX (41.65 – 43 MHz) Government Services	Paired with 32.325 – 33.675 MHz	
44-47 MHz FIXED MOBILE	**44-47 MHz** FIXED MOBILE	Meteor Burst (45.3 – 46.9 MHz) CT0 Cordless Telephones BTX (46.61 – 46.97 MHz) Government Services PMR	Paired with 47.5 – 49.1 MHz 10 frequency pairs assigned to CT0; paired with 49.67 – 49.97 MHz; Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Earth exploration-satellite (active) 5.159A 5.162 5.162A	Earth exploration-satellite (active) 5.159A			
47-50 MHz BROADCASTING Earth exploration-satellite (active) 5.159A 5.162A 5.163 5.164 5.165	**47-50 MHz** BROADCASTING LAND MOBILE 5.164 Earth exploration-satellite (active) 5.159A	CT0 Cordless Telephones MTX (49.67 – 49.97 MHz) PMR Meteor Burst (47.5-49.1 MHz) CT0 Cordless Telephony MTX (49.67-49.97 MHz) Government	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Paired with 45.3-46.9 MHz Paired with 46.61 – 46.97 MHz Paired with 45.3-46.9 MHz Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
50-52 MHz BROADCASTING Amateur 5.166A 5.166B 5.166C 5.166D 5.166E 5.169 5.169A 5.169B 5.162A 5.164 5.165	**50-54 MHz** AMATEUR 5.169	Government Services Wireless microphones (53 – 54 MHz)	Radio Frequency Spectrum Regulations (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023.	
52-68 MHz BROADCASTING	**54-68 MHz** BROADCASTING FIXED 5.171 MOBILE except aeronautical mobile 5.171	Government Services Model control (54.45 – 54.55 MHz) PMR Single Frequency Mobile (54 – 54.325 MHz) Mobile 1 BTX (54.325 – 54.45 MHz) Mobile 2 BTX (55.45 – 56.85 MHz)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Paired with 59.9 – 60.025 MHz Paired with 58.5 – 59.9 MHz Paired with 55.45 – 56.85 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.162A 5.163 5.164 5.165 5.169 5.169A 5.169B 5.171		Single Frequency Mobile (56.85 – 58.5 MHz) Mobile 2 MTX (58.5 – 59.9 MHz) Mobile 1 MTX (59.9 – 60.025 MHz) Spare60.025-60.215 MHz Sport Stadium Communications (62.8 – 62.85 MHz) National Emergency Alarm Radio (NEAR) (66 – 68 MHz)	Paired with 54.325 – 54.45 MHz	
68-74.8 MHz FIXED MOBILE except aeronautical mobile	**68-74.8 MHz** FIXED MOBILE except aeronautical mobile	Single Frequency Mobile (68 – 69.25 MHz) Mobile 1 BTX (69.25 – 70 MHz) Mobile 2 BTX (70 – 70.975 MHz) Single Frequency Mobile (70.975 – 71.475 MHz) Mobile 3 BTX (71.475 – 72.525 MHz)	Paired with 76.175 – 76.925 MHz Paired with 75.2 – 76.175 MHz Current assignments for fire fighting Paired with 76.925 – 77.975 MHz	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149 5.175 5.177 5.179	Amateur (70 – 70.3 MHz) NF2 Radio Astronomy (73 – 74.6 MHz) 5.149	Single Frequency Mobile (72.525 – 73.425 MHz) Mobile 4 BTX (73.425 – 74.8 MHz) PMR and/or PAMR	Paired with 78.625 – 80 MHz Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
74.8-75.2 MHz AERONAUTICAL RADIONAVIGATION 5.180 5.181	**74.8-75.2 MHz** AERONAUTICAL RADIONAVIGATION 5.180	Instrument Landing System Markers 74.80 – 75.20 Marker beacons (75 MHz)		
75.2-87.5 MHz FIXED MOBILE except aeronautical mobile	**75.2-87.5 MHz** FIXED MOBILE except aeronautical mobile	Mobile 2 MTX (75.2 – 76.175 MHz) Mobile 1 MTX (76.175 – 76.925 MHz) Mobile 3 MTX (76.925 – 77.975 MHz) Mobile 4 MTX (78.625 – 80 MHz) Mobile 5 BTX (77.975 – 78.625 MHz) Mobile 6 BTX (80 – 80.5 MHz)	Paired with 70 – 70.975 MHz Paired with 69.25 – 70 MHz Paired with 71.475 – 72.525 MHz Paired with 73.425 – 74.8 MHz Paired with 82.975 – 83.625 MHz Paired with 87 – 87.5 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.175 5.179 5.187		Single Frequency Mobile (80.5 – 81 MHz) Mobile 7 BTX (81 – 81.625 MHz) Mobile 8 BTX (81.625 – 82.975 MHz) Mobile 5 MTX (82.975 – 83.625 MHz) Single Frequency Mobile (83.625 – 85.025 MHz) Mobile 8 MTX (85.025 – 86.375 MHz) Mobile 7 MTX (86.375 – 87 MHz) Mobile 6 MTX (87 – 87.5 MHz) PMR and/or PAMR	Paired with 86.375 - 87 MHz Paired with 85.025 - 86.375 MHz Paired with 77.975 - 78.625 MHz Paired with 81.625 - 82.975 MHz Paired with 81 - 81.625 MHz Paired with 80 - 80.5 MHz Radio Frequency Spectrum Assignment Plan GG 42286 Notice 124 of 2019	
87.5-100 MHz BROADCASTING	**87.5-100 MHz** BROADCASTING	FM Sound Broadcasting (87.5-108 MHz)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Geneva agreement GE84 Digital Sound Broadcasting (DSB) Regulations was	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.190		Digital sound broadcasting (DSB)- services: DRM+	published in GG44469 Notice 215 of 2021 GG 43514 Notice 759 of 10 July 2020, GG 44469 Notice 215 of 23 April 2021, Digital Sound Broadcasting Services Regulations, 2021 ITU-R BS.1114-7 (2019) ITU-R BT.1872 (2010)	ICASA/Sentech DRM+ FM-band trials (2014–2015) proved technical viability in local conditions. International precedent: India, Pakistan, China, Indonesia: active DRM rollouts (mainly DRM30, but DRM+ recognised for FM). European trials: Germany, Switzerland, and others tested DRM+ in the FM band
100-108 MHz BROADCASTING	**100-108 MHz** BROADCASTING	FM Sound Broadcasting (87.5-108 MHz) Digital sound broadcasting (DSB)- services: DRM+	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Geneva agreement GE84 GG 43514 Notice 759 of 10 July 2020	ICASA/Sentech DRM+ FM-band trials

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.192 5.194			GG 44469 Notice 215 of 23 April 2021, Digital Sound Broadcasting (DSB) Services Regulations, 2021 ITU-R BS.1114-7 (2019) ITU-R BT.1872 (2010)	(2014–2015) proved technical viability in local conditions. International precedent: Germany, Switzerland, Czech Republic and others have conducted DRM+ FM-band trials. India recognises DRM+ alongside DRM30 (though main rollout has been DRM30).
108-117.975 MHz AERONAUTICAL RADIONAVIGATION	**108-112 MHz** AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE (R) (ground to air)(ground based TX and associated RX for navigational information for navigational functions) 5.197A	ILS localiser (108 – 112 MHz) Aeronautical mobile communications (108-117.975 MHz	AM(R)S shall operate in accordance with Res.413(Rev.WRC-07). Safety and regularity of flights; in the band 108-112 MHz AM(R)S limited to ground based transmitters.	
	112-117.975 MHz AERONAUTICAL MOBILE (R)			

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.197 5.197A	AERONAUTICAL RADIONAVIGATION 5.197A	Aeronautical mobile communications (108-117.975 MHz VOR (VHF Omni-directional Range) (112 – 117.975 MHz)		
117.975-137 MHz AERONAUTICAL MOBILE (R) AERONAUTICAL MOBILE-SATELLITE (R)	**117.975-137 MHz** AERONAUTICAL MOBILE (R) AERONAUTICAL MOBILE-SATELLITE (R)	Aeronautical mobile communications (117.975-121.450 MHz) ~~International Distress Frequency (121.5 MHz) (121.450-121.550 MHz)~~ Aeronautical emergency Frequency (121.5 MHz) Aeronautical frequency auxiliary to 121.5 MHz (123.1 MHz) Aeronautical mobile communications (121.550-137.000 MHz)	Safety and regularity of flights ~~EPIRBs at 121.5 MHz~~ ITU RR Article 31 applies 123.1 MHz - auxiliary emergency frequency Resolution 406 (WRC-23) applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.198A 5.198B 5.111 5.200 5.201 5.202	5.198A 5.198B 5.111 5.200 5 201	Aeronautical mobile communications (R) (117.975 -137 MHz)		
137-137.025 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL -SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209	**137-137.025 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) (non-GSO) 5.208A 5.208B 5.209 NF3	MET SAT	As per 5.208A, MSS assignments to space stations in the 137-138 MHz frequency band, administrations shall take all practicable steps to protect the radio astronomy service in the frequency band 150.05-153 MHz.	NF3 also provides an option to deploy an MSS space-to-earth link in 137 – 138 MHz depending on the satellite system. Radio astronomy services (e.g. MeerKAT and SKA-Mid telescope) in South Africa, needs to be protected from international radio transmissions e.g. planes, satellites, and High-Altitude Platform Stations (HAPS) that may operate across borders,

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.208			as indicated in footnote 5.208A.
137.025-137.175 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209	**137.025-137.175 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) (non-GSO) 5.208A 5.208B 5.209 NF3		As per 5.208A, MSS assignments to space stations in the 137-138 MHz frequency band,	Radio astronomy services (e.g. MeerKAT and SKA-Mid telescope) in

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	Mobile except aeronautical mobile (R) 5.208		administrations shall take all practicable steps to protect the radio astronomy service in the frequency band 150.05-153 MHz.	South Africa, needs to be protected from international radio transmissions e.g. planes, satellites, and High-Altitude Platform Stations (HAPS) that may operate across borders, as indicated in footnote 5.208A NF3 also provides an option to deploy an MSS space-to-earth link in 137 – 138 MHz depending on the satellite system.
137.175-137.825 MHz SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth)	**137.175-137.825 MHz** SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth)	NOAA meteorological satellite (137.5 – 137.62 MHz)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209	MOBILE-SATELLITE (space-to-Earth) (non-GSO) 5.208A 5.208B 5.209 NF3		As per 5.208A, MSS assignments to space stations in the 137-138 MHz frequency band, administrations shall take all practicable steps to protect the radio astronomy service in the frequency band 150.05-153 MHz.	NF3 also provides an option to deploy an MSS space-to-earth link in 137 – 138 MHz depending on the satellite system. Radio astronomy services (e.g. MeerKAT and SKA-Mid telescope) in South Africa, needs to be protected from international radio transmissions e.g. planes, satellites, and High-Altitude Platform Stations (HAPS) that may operate across borders, as indicated in footnote 5.208A.
SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R)	SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R)			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.204 5.205 5.206 5.207 5.208	5.208			
137.825-138 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R)	**137.825-138 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) (non-GSO) 5.208A 5.208B 5.209 NF3 Mobile except aeronautical mobile (R)		As per 5.208A, MSS assignments to space stations in the 137-138 MHz frequency band, administrations shall take all practicable steps to protect the radio astronomy service in the frequency band 150.05-153 MHz.	Radio astronomy services (e.g. MeerKAT and SKA-Mid telescope) in South Africa, needs to be protected from international radio transmissions e.g. planes, satellites, and High-Altitude

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.204 5.205 5.206 5.207 5.208	5.208			Platform Stations (HAPS) that may operate across borders, as indicated in footnote 5.208A. NF3 also provides an option to deploy an MSS space-to-earth link in 137 – 138 MHz depending on the satellite system.
138-143.6 MHz AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	**138-144 MHz** FIXED MOBILE	Single Frequency Alarms (140.5 – 141 MHz) Mobile 1 MTX (138 – 140.5 MHz) Single Frequency Mobile (141 – 141.5 MHz) Mobile 1 BTX (141.5 – 144 MHz) Remote control industrial apparatus (141 – 142 MHz) PMR and / or PAMR	Paired with 141.5 - 144 MHz Paired with 138 – 140.5 MHz Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Paired with 138 – 140.5 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
143.6-143.65 MHz AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 5.211 5.212 5.214		Mobile 1 BTX (141.5 – 144 MHz) PMR and / or PAMR	Allocation includes BTX assignments at 142.8 – 143.275MHz and 143.325 - 143.975 MHz Radio Frequency Spectrum Assignment Plan GG 41512 Notice 146 of 2018 Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	
143.65-144 MHz AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214				

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
144-146 MHz AMATEUR AMATEUR-SATELLITE 5.216	**144-146 MHz** AMATEUR AMATEUR-SATELLITE			
146-148 MHz FIXED MOBILE except aeronautical mobile (R)	**146-148 MHz** FIXED MOBILE except aeronautical mobile (R)	Mobile 2 MTX (146 – 148.95 MHz) PMR and / or PAMR	Paired with 153.05 – 156 MHz	
148-149.9 MHz FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209	**148-149.9 MHz** FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) (non-GSO) 5.209 NF3	Mobile 2 MTX (146 – 148.95 MHz) Single Frequency Mobile (148.950 – 151 MHz) Wildlife telemetry Tracking (148 – 152 MHz) Low Earth Orbit systems	Paired with 153.05 – 156 MHz Systems are paired with either 137 – 138 MHz or 400.15 – 401 MHz For some small LEO systems this band is supplemented by the band 149.9-150.05 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.218 5.218A 5.219 5.221	SPACE OPERATION (Earth-to-space) 5.218 5.219 5.221		Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
149.9-150.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	**149.9-150.05 MHz** MOBILE-SATELLITE (Earth-to-space) (non-GSO) 5.209 5.220 NF3	Low Earth Orbit systems Mobile-satellite communications Wildlife telemetry Tracking (148 – 152 MHz) Single Frequency Mobile (148.950 – 151 MHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Radio Frequency Spectrum Assignment Plan GG 41512 Notice 149 of 2018	
150.05-153 MHz FIXED MOBILE except aeronautical mobile	**150.05-153 MHz** FIXED MOBILE except aeronautical mobile	Single frequency alarms (152.05 – 152.55 MHz) Alarms, Single Frequency Mobile and Load Shedding (148.950 – 151 MHz) PMR and PAMR Paging	Channels 150.550 MHz and 150.5625 MHz are used for load shedding. Channels 150.625 MHz and 150.675 MHz are reserved for in-house paging	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIO ASTRONOMY 5.149	RADIO ASTRONOMY 5.149	Government Services Wildlife Telemetry Tracking (148 – 152 MHz) Single Frequency Mobile (152.55 – 153.05 MHz) Radio Astronomy (continuum band and also used for pulsar and solar observations).	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). RFSAP was published in GG 41512 Notice 149 0f 2018. See section 5 for coordination with radio astronomy	
153-154 MHz FIXED MOBILE except aeronautical mobile (R) Meteorological aids	**153-154 MHz** FIXED MOBILE except aeronautical mobile (R) Meteorological aids	Single Frequency Mobile (152.55 – 153.05 MHz) Mobile 2 BTX (153.05 – 156 MHz) PMR and/or PAMR	Paired with 146 – 148.95 MHz	
154-156.4875 MHz FIXED MOBILE except aeronautical mobile (R)	**154-156.4875 MHz** FIXED MOBILE except aeronautical mobile (R)	PMR and/or PAMR(154-156 MHz)	See Section 7 for details Paired with 146 – 148.95 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.225A 5.226	5.226	Maritime Mobile 2 BTX (153.05 – 156 MHz) Mobile 3 MTX (156 – 156.7625 MHz) Single Frequency Mobile (156.375 – 156.7625 MHz)	Paired with 160.6 – 160.975 MHz (156 – 156.375 MHz allocated to Land Mobile MTX in inland areas) Limited to inland areas	
		Maritime mobile communications (Ship stations) (156.00-156.4875 MHz) Land mobile in areas remote from coast (156.00-156.4875 MHz)	Paired with 160.625-160.950 MHz, single frequency 156.3 MHz and in the band 156.375-156.475 MHz ITU RR Articles 31 and 52 and Appendix 18 apply.	
156.4875-156.5625 MHz MARITIME MOBILE (distress and calling via DSC)	**156.4875-156.5125 MHz** MARITIME MOBILE (distress and calling via DSC). FIXED 5.227	Single Frequency Mobile (156.375 – 156.7625 MHz)	The use of this band by the maritime services shall be in accordance with ITU Appendix 18. ITU RR Articles 31 and 52 and Appendix 18 apply. NINP basis to Maritime Mobile Service; Limited to inland areas	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.111 5.226 5.227	LAND MOBILE 5.227 5.111 5.226 5.227	The band 156.4875-156.5125 MHz may also be used for land mobile services while protecting the maritime mobile service.		
	156.5125-156.5375 MHz MARITIME MOBILE (distress and calling via DSC) 5.111 5.111 5.226 5.227	Maritime mobile distress, safety and calling frequency 156.525 MHz for maritime mobile VHF radiotelephone service using DSC. Single Frequency Mobile (156.375 – 156.7625 MHz)	The use of this band by the maritime services shall be in accordance with ITU Appendix 18. ITU RR Articles 31 and 52 and Appendix 18 apply.	
	156.5375-156.5625 MHz FIXED LAND MOBILE MARITIME MOBILE (distress and calling via DSC)	The bands 156.5375-156.5625 MHz may also be used for land mobile services while protecting the maritime mobile service.	The use of this band by the maritime services shall be in accordance with ITU Appendix 18. ITU RR Articles 31 and 52 and Appendix 18 apply.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.111 5.226 5.227	Single Frequency Mobile (156.375 – 156.7625 MHz)		
156.5625-156.7625 MHz FIXED MOBILE except aeronautical mobile (R) 5.226	**156.5625-156.7625 MHz** FIXED MOBILE except aeronautical mobile (R) 5.226	Fixed and Mobile applications. Maritime mobile communications (156.5625-156.7625 MHz). Land mobile in areas remote from coast.	Single frequency applications ITU RR Articles 31 and 52 and Appendix 18 apply.	
156.7625-156.7875 MHz MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	**156.7625-156.7875 MHz** MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	International distress, safety and calling frequency at 156.8 MHz for the maritime mobile VHF radiotelephone service. Distress safety and calling (156.76250 – 156.8375) Reception of AIS emissions of long-range AIS broadcast messages	ITU RR Article 31 and Appendix 18 apply to the use of the frequency 156.8 MHz and this band.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
156.7875-156.8125 MHz MARITIME MOBILE (distress and calling) 5.111 5.226	**156.7875-156.8125 MHz** MARITIME MOBILE (distress and calling) 5.111 5.226	Distress safety and calling (156.76250 – 156.8375, channel 16)	See Section 7 for details	
156.8125-156.8357 MHz MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	**156.8125-156.8375 MHz** MARITIME MOBILE Mobile-satellite (Earth-to-space)	Distress safety and calling (156.76250 – 156.8375) Reception of AIS emissions of long-range AIS broadcast messages	See section 7 for details.	
156.8357-156.8375 MHz MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	5.111 5.226 5.228			
156.8375-157.1875 MHz	**156.8375-157.1875 MHz** FIXED	Government Services		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED MOBILE -except aeronautical mobile 5.226	MOBILE -except aeronautical mobile 5.226	156.8375-157.45 MHz Maritime mobile communications (ship stations). Land mobile in areas remote from coast.	Paired with 161.5-162.0 MHz and single frequency applications; ITU RR Articles 31 and 52 and Appendix 18 apply	
157.1875-157.3375 MHz FIXED MOBILE -except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	**157.1875-157.3375 MHz** FIXED MOBILE -except aeronautical mobile Maritime mobile-satellite (Earth-to-space) (non-GSO) Maritime mobile-satellite (space-to-Earth) (non-GSO) 5.228AB 5.228AC 5.208A 5.208B 5.226	Government Services	Resolution 739 (Rev.WRC-19) apply ~~MSS and Maritime mobile-satellite shall protect RAS in line with 5.208A~~ As per 5.208A, maritime MSS (space-to-Earth) assignments in the frequency bands 157.1875-157.3375 MHz, administrations shall take all practicable steps to protect the RAS in the frequency band 150.05-153 MHz.	Protection for radio astronomy services (e.g. MeerKAT and SKA-Mid telescope) in South Africa, needs to be protected from international radio transmissions e.g. planes, satellites, and High-Altitude Platform Stations (HAPS) that may operate across borders, as indicated in footnote 5.208A.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
157.3375-161.7875 MHz FIXED MOBILE -except aeronautical mobile 5.226	**157.3375-161.7875 MHz** FIXED MOBILE -except aeronautical mobile 5.226	Government Services (157.450-160.6 MHz) PMR and/or PAMR (160.600-160.975 MHz) Maritime mobile communications (Coast stations). Land mobile in areas remote from coast (160.975-161.475 MHz) PMR and/or PAMR (161.475-162.050 MHz)	Single frequency applications Paired with 156.025-156.350 MHz; Paired with 156.9-157.4 MHz; ITU RR Article 31 and Article 52 apply Appendix 18 apply.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
161.7875-161.9375 MHz	**161.7875-161.9375 MHz**			
FIXED	FIXED	Government Services (161.475-162.050 MHz)		
MOBILE -except aeronautical mobile	MOBILE -except aeronautical mobile NF4	Sonobuoy (161.875 – 173.875)		NF4 applies to the band 161.875-173.875 MHz.
Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC	Maritime mobile-satellite (Earth-to-space) (non-GSO) 5.228A 5.228B 5.228AB 5.228AC	Maritime mobile communications (Coast stations)	ITU RR Article 31 and Article 52 Appendix 18 apply.	
	Maritime mobile-satellite (space-to-Earth) 5.208A(non-GSO)5.228A 5.228B 5.228AB 5.228AC	Land mobile in areas remote from coast Automatic Identification System (AIS) at 161.975 MHz, 162.025 MHz and 162.050-174 MHz PMR and/or PAMR	As per 5.208A, maritime MSS (space-to-Earth) assignments in the frequency bands 161.7875-161.9375 MHz, administrations shall take all practicable steps to protect the RAS in the frequency band 150.05-153 MHz.	Protection for radio astronomy services (e.g. MeerKAT and SKA-Mid telescope) in South Africa, needs to be protected from international radio transmissions e.g. planes, satellites, and High-Altitude Platform Stations (HAPS) that may operate across borders, as indicated in footnote 5.208A.
5.226	5.226			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
161.9375 -161.9625 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	**161.9375 -161.9625 MHz** FIXED MOBILE except aeronautical mobile NF4 Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	Sonobuoy (161.875 – 173.875) Transmission of meteorological bulletins and notice to navigators Mobile 1 MTX-DF (161.475 – 165.0375 MHz) Single Frequency Mobile (160.45 – 161.475 MHz) Single Frequency Mobile (156.8375 – 156.875 MHz) Private Maritime MTX (157.45 – 157.95 MHz)	See Section 7 for details Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz) Inland areas only Paired with 162.05 – 162.55 MHz	
161.9625-161.9875 MHz FIXED	**161.9625-161.9875 MHz** FIXED	Search and rescue (air to ground)	Search and rescue operations and other safety-related communications (air to ground)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	MOBILE except aeronautical mobile NF4 Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	Mobile 1 MTX-DF (161.475 – 165.0375 MHz) Sonobuoy (161.875 – 173.875) Reception of AIS emissions from stations in the mms	Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz)	NF4 applies to the band 161.875-173.875 MHz
161.9875-162.0125 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226 ~~5.229~~	**161.9875-162.0125 MHz** FIXED MOBILE except aeronautical mobile NF4 Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	 Sonobuoy (161.875 – 173.875) Transmission of meteorological bulletins and notice to navigators Mobile 1 MTX-DF (161.475 – 165.0375 MHz)	See Section 7 for details Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz)	NF4 applies to the band 161.875-173.875 MHz
162.0125-162.0375 MHz FIXED	**162.0125-162.0375 MHz** FIXED MOBILE except aeronautical mobile NF4	 Sonobuoy (161.875 – 173.875)		NF4 applies to the band 161.875-

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B ~~5.229~~	 Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	Mobile 1 MTX-DF (161.475 – 165.0375 MHz) Reception of AIS emissions from stations in the mms. Search and rescue (air to ground)	Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz) Search and rescue operations and other safety-related communications (air to ground)	173.875 MHz
162.0375-174 MHz FIXED MOBILE except aeronautical mobile	**162.0375-174 MHz** FIXED MOBILE except aeronautical mobile NF4	Sonobuoy in maritime service(161.875 – 173.875) Mobile 1 MTX-DF (161.475 – 165.0375 MHz) Mobile 2 MTX-DF (165.05 – 165.5375 MHz) Single Frequency Mobile (168.95 – 170.05 MHz)	 Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz) Paired with Mobile 2 BTX-DF (170.05 – 170.5375 MHz) Paired with Mobile 3 BTX-DF (172.05 – 173.9875 MHz)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		Mobile 3 MTX-DF (165.55 – 167.4875 MHz) Single Frequency Mobile (172 – 172.0375 MHz) Mobile 4 MTX-DF (167.5 – 168.9375 MHz) Meter Reading (169.4 – 169.475 MHz) Non-specific SRD's – Telecommand only (173.2125 – 173.2375 MHz) Non-specific SRDs (173.2375 – 173.2875 MHz) Wireless microphones and assistive listening devices (173.7 – 175.1 MHz)	Paired with Mobile 4 BTX (170.55 – 171.9875 MHz) Radio Frequency Spectrum Regulations (Annex B) ~~(GG. No.38641, 30 March 2015)~~ GG No. 48643 (Notice 1822) of 23 May 2023 .	GG No. 48643 (Notice 1822) of 23 May 2023 supercedes the GG. No.38641, 30 March 2015)
5.226 ~~5.229~~	5.226 NF5	SAB/SAP (173.7-175.1 MHz)		SAB/SAP is consistent with NF5
174-223 MHz BROADCASTING	**174-223 MHz** BROADCASTING	Analogue Television Broadcasting (174 – 214 MHz)	TV Band III Migration from analogue to digital is harmonised in SADC.	ICASA to conduct a study to identify the highest value uses and develop RFSAP.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.235 5.237 5.243	NF5	T-DAB (214 – 230 MHz) Digital Sound-Broadcasting (DSB) services: DAB+ (214-240 MHz) Digital Television Broadcasting (174 – 214 MHz) Wireless microphones (173.7 – 175.1 MHz) SAB/SAP (173.7-175.1 MHz)	Digital Sound Broadcasting (DSB) planned for this band. TV Band III GG 43514 Notice 759 of 10 July 2020 GG 44469 Notice 215 of 23 April 2021, Digital Sound Broadcasting (DSB) Services Regulations, 2021 The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013 Radio Frequency Spectrum Regulations (Annex B) ~~(GG. No.38641, 30 March 2015)~~ GG No. 48643 (Notice 1822) of 23 May 2023 To Develop RFSAP for this band	GG 43514 Notice 759 of 10 July 2020 mandates all DAB and DRM variants of DSB standards to complement the existing analogue sound broadcasting SAB/SAP is consistent with NF5

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
223-230 MHz BROADCASTING Fixed Mobile 5.243 5.246 5.247	**223-230 MHz** BROADCASTING Fixed Mobile	T-DAB (214 – 230 MHz) Digital Sound Broadcasting (DSB) services: DAB+(214-240 MHz)	GG 43514 Notice 759 of 10 July 2020 GG 44469 Notice 215 of 23 April 2021, Digital Sound Broadcasting (DSB) Services Regulations, 2021 Migration from analogue to digital is harmonised in SADC. Digital sound broadcasting is being planned in this band. The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013 To Develop RFSAP for this band	GG 43514 Notice 759 of 10 July 2020 mandates all DAB and DRM variants of DSB standards to complement the existing analogue sound broadcasting ICASA to conduct a study to identify the highest value uses and develop RFSAP

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
230-235 MHz FIXED MOBILE 5.247 5.251 5.252	**230-238 MHz** BROADCASTING 5.252	Digital Television Broadcasting Digital Sound Broadcasting (DSB) services: DAB+(214-240 MHz) ~~(230 – 238 MHz)~~	GG 43514 Notice 759 of 10 July 2020. GG 44469 Notice 215 of 23 April 2021, Digital Sound Broadcasting (DSB) Services Regulations, 2021 The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013 Develop RFSAP for this band	GG 43514 Notice 759 of 10 July 2020 mandates all DAB and DRM variants of DSB standards to complement the existing analogue sound broadcasting ICASA to conduct a study to identify the highest value uses and develop RFSAP
235-267 MHz FIXED MOBILE	**238-246 MHz** FIXED MOBILE Mobile-satellite	PMR and/or PAMR(238- 242.95 MHz) International Distress Frequency at 243 MHz (242.95 – 243.05 MHz) Low-power devices (243.05-246.00 MHz)	Band available for distress and safety purposes. Low-power devices ancillary to the broadcasting service.	ICASA to conduct a study to identify the highest value uses and develop RFSAP

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		~~DAB+ (238-242.95 MHz)~~ (DSB) services: DAB+(214-240 MHz)	Mobile-satellite may be used in (235 -322 MHz) and (335.4 -399.9 MHz) GG 43514 Notice 759 of 10 July 2020. GG 44469 Notice 215 of 23 April 2021, Digital Sound Broadcasting (DSB) Services Regulations, 2021 ~~Future consideration for Digital Sound Broadcasting in the band 238 – 240 MHz~~ Channel 13F (239.2 MHz) can be used nationally for DAB+ as currently used.during DAB+ trials Radio Frequency Spectrum Regulations (Annex B) ~~(GG. No.38641, 30 March 2015)~~ GG No. 48643 (Notice 1822) of 23 May 2023	The MSS allocation does not align with Region 1. Authority to review this allocation. GG 43514 Notice 759 of 10 July 2020 mandates all DAB and DRM variants of DSB standards to complement the existing analogue sound broadcasting GG No. 48643 (Notice 1822) of 23 May 2023 supercedes the GG. No.38641, 30 March 2015) 5.252 is applicable to 230-238 MHz and 246-254 MHz
5.111 5.252 5.254 5.256 5.256A	5.111 ~~5.252~~ 5.254 5.256			
	246-254 MHz			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	BROADCASTING 5.254	Digital Television broadcasting (246-254 MHz)	The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013	
	254-267 MHz MOBILE FIXED Mobile-satellite 5.111 5.252 5.254 5.256	 Trunking BTX (254 – 259.4 MHz) Trunking MTX (262 – 267.4 MHz) Government Services (267.4-272 MHz)	 Paired with 262 – 267.4 MHz Paired with 254 – 259.4 MHz Mobile-satellite may be used in (235 -322 MHz) and (335.4 -399.9 MHz)	 5.252 is applicable to 230-238 MHz and 246-254 MHz
267-272 MHz FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	**267-272 MHz** FIXED MOBILE SPACE OPERATION (telemetry) Mobile-satellite Space operation (space-to-Earth) 5.254 5.257	 Government Services Trunking MTX (262 – 267.4 MHz) Space Telemetry (267 – 272 MHz)	 Paired with 254 – 259.4 MHz Mobile-satellite may be used in (235 -322 MHz) and (335.4 -399.9 MHz)	
272-273 MHz	**272-273 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	SPACE OPERATION (space-to-Earth) FIXED MOBILE Mobile-satellite 5.254	Government Services	Mobile-satellite may be used in (235 -322 MHz) and (335.4 -399.9 MHz)	
273-312 MHz FIXED MOBILE 5.254	**273-312 MHz** FIXED MOBILE Mobile-satellite 5.254	Government Services Single Frequency Mobile (278 – 286 MHz)	Mobile-satellite may be used in (235 -322 MHz) and (335.4 -399.9 MHz)	
312-315 MHz FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	**312-315 MHz** FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	Government Services	Mobile-satellite may be used in (235 -322 MHz) and (335.4 -399.9 MHz)	
315-322 MHz FIXED MOBILE	**315-322 MHz** FIXED MOBILE Mobile-satellite	Government Services		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.254	5.254		Mobile-satellite may be used in (235 -322 MHz) and (335.4 -399.9 MHz)	
322-328.6 MHz FIXED MOBILE RADIO ASTRONOMY 5.149	**322-328.6 MHz** FIXED MOBILE RADIO ASTRONOMY 5.149	Government Services Radio Astronomy (Observation of deuterium)	See Section 5 coordination with radio astronomy	
328.6-335.4 MHz AERONAUTICAL RADIONAVIGATION 5.258 5.259	**328.6-335.4 MHz** AERONAUTICAL RADIONAVIGATION 5.258	ILS Glide Path		
335.4-387 MHz FIXED MOBILE	**335.4-387 MHz** FIXED NF6 MOBILE NF7 Mobile-satellite	PTP/PTMP FWA (336 – 346 MHz) FWA (356 – 366 MHz) Government Services (366-380 MHz)	Paired with 356 – 366 MHz Paired with 336 – 346 MHz Paired with 390 – 397 MHz	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.254	5.254	Digital Trunking (Emergency) (380 – 387 MHz) (PPDR[17]) PMR and/or PAMR (335.4-336 MHz) Unmanned Aerial Vehicle (UAV) (366.0-380.0 MHz)	(Coordination is required with PTP/PTMP in the implement of UAV) Radio Frequency Spectrum Assignment Plan ~~GG 41512 Notice 148 of 2018~~ GG 49079 Notice 3764 of 4th of August 2023 Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	GG 49079 Notice 3764 of 4th of August 2023 states that 380 to 399.9 MHz band is "Reserve the overall band for digital public safety. All non-digital and non-PPDR users will be migrated out of this band. Next Generation Radio Frequency Spectrum for Economic Development GG 50725 Notice 166 of 28 May 2024, supports the allocation of spectrum for PPDR services

[17] http://www.crasa.org/common_up/crasa-setup/12-03-2015_GUIDELINES%20ON%20FREQUENCIES%20FOR%20PPDR%202014.pdf

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
387-390 MHz	**387-390 MHz**		Radio Frequency Spectrum Assignment Plan ~~GG 41512 Notice 148 of 2018~~ GG 49079 Notice 3764 of 4th of August 2023	
FIXED	FIXED	~~Digital Trunking (387 – 390 MHz) (Govt.)~~	~~Paired with 397 – 399.9 MHz (To be used mainly for digital systems.)~~	
MOBILE	MOBILE NF7	~~PMR and/or PAMR~~	Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	
		PPDR	Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	GG 49079 Notice 3764 of 4th of August 2023 states that 380 to 399.9 MHz band is "Reserve the overall band for digital public safety. All non-digital and non-PPDR users will be migrated out of this band. Next Generation Radio Frequency Spectrum for Economic

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255		As per 5.208A, MSS assignments to space stations in the 387-390 MHz frequency band, administrations shall take all practicable steps to protect the radio astronomy service in the frequency band 150.05-153 MHz.	Development GG 50725 Notice 166 of 28 May 2024, supports the allocation of spectrum for PPDR services Protection for radio astronomy services (e.g. MeerKAT and SKA-Mid telescope) in South Africa, needs to be protected from international radio transmissions e.g. planes, satellites, and High-Altitude Platform Stations (HAPS) that may operate across borders, as indicated in footnote 5.208A.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
390-399.9 MHz FIXED MOBILE	**390-399.9 MHz** FIXED MOBILE NF7 Mobile-satellite	~~Digital Trunking Emergency) (390 – 397 MHz) (PPDR)~~ ~~Government Services~~ ~~Digital Trunking (397 – 399.9 MHz) (Govt.)~~ ~~PMR and/or PAMR~~	Radio Frequency Spectrum Assignment Plan ~~GG 41512 Notice 148 of 2018~~ GG 49079 Notice 3764 of 4th of August 2023 ~~Paired with 380 – 387 MHz~~ ~~Paired with 387 – 390 MH~~z ~~In accordance with Resolution 646 and Recommendation ITU-R M.2015-2 latest version.~~ Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures. Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	GG 49079 Notice 3764 of 4th of August 2023 states that 380 to 399.9 MHz band is "Reserve the overall band for digital public safety. All non-digital and non-PPDR users will be migrated out of this band. Next Generation Radio Frequency Spectrum for Economic Development GG 50725 Notice 166 of 28 May 2024, supports the allocation of spectrum for PPDR services

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.254	5.254			
399.9-400.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B	**399.9-400.05 MHz** MOBILE-SATELLITE (Earth-to-space) (non-GSO) 5.209 5.220 5.260A 5.260B		Radio Frequency Spectrum Assignment Plan GG 49079 Notice 3764 of 4th of August 2023 ~~Radio Frequency Spectrum Assignment Plan GG 41512 Notice 148 of 2018~~ Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
400.05-400.15 MHz STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	**400.05-400.15 MHz** STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262		Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR
400.15-401 MHz METEOROLOGICAL AIDS	**400.15-401 MHz** METEOROLOGICAL AIDS	Radiosonde Communication with manned space vehicles		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
METEOROLOGICAL -SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-space) 5.263	METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)(non-GSO) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-space) 5.263		As per 5.208A, MSS assignments to space stations in the 400.15-401 MHz frequency band, administrations shall take all practicable steps to protect the radio astronomy service in the frequency band 322-328.6 MHz.	Radio astronomy services (e.g. MeerKAT and SKA-Mid telescope) in South Africa, needs to be protected from international radio transmissions e.g. planes, satellites, and High-Altitude Platform Stations (HAPS) that may operate across borders, as indicated in footnote 5.208A.
Space operation (space-to-Earth)	Space operation (space-to-Earth)		Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.262 5.264	5.264			
401-402 MHz METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	**401-402 MHz** METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	Radiosonde Data uplink to Geostationary Satellite orbit	Note limitations in e.i.r.p 5.264A Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.264A 5.264B	5.264A 5.264B		for by Resolution 646 (WRC-15) for technical and operational measures.	
402-403 MHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL -SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	**402-403 MHz** METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	Radiosonde Medical implants (402 – 405 MHz) Various SRD's (402 – 406 MHz) SRDs – ultra low power active medical implants	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Note limitations in e.i.r.p 5.264A SRDs (402 – 405 MHz) ITU-R Recommendation. SM.1896-1 latest version ITU-R Recommendation. RS.1346 latest version. Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			for by Resolution 646 (WRC-15) for technical and operational measures.	
5.264A 5.264B	5.264A 5.264B			
403-406 MHz METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	**403-406 MHz** METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	Radiosonde Medical implants (402 – 405 MHz) Various SRD's (402 – 406 MHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Note limitations in e.i.r.p 5.264A SRDs (402 – 405 MHz) ITU-R Recommendation. SM.1896-1 latest version ITU-R Recommendation. RS.1346 latest version Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR

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			(WRC-15) for technical and operational measures.	
5.265	5.265			
406-406.1 MHz MOBILE-SATELLITE (Earth-to-space)	**406-406.1 MHz** MOBILE-SATELLITE (Earth-to-space)	COSPAS – SARSAT: Emergency Position Indicating Radio Beacon (EPIRB) Low power satellite EPIRBs (distress and safety purposes)	~~Public~~ Personal Locator Beacon ITU RR Articles 32 apply ITU RR Articles 34 apply Appendix 15 apply Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR .

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5.265 5.266 5.267	5.265 5.266 5.267			
406.1-410 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265	**406.1-410 MHz** FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265	Fixed Links (406.1 – 407.625 MHz) Mobile MTX (407.625 – 410 MHz) Government use for public safety PMR and/or PAMR PPDR Radio Astronomy (continuum observations)	Paired with 416.1 – 417.625 MHz Paired with BTX(417.625 – 420 MHz) ~~The use of this band for PPDR to be studied.~~ Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures. See section 5 for coordination with radio astronomy.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR

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410-420 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space)	**410-420 MHz** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space)	~~Government Services~~ ~~Mobile MTX (410 – 413 MHz)~~ ~~Mobile Data MTX (413-413.7625 MHz~~) Digital Trunking MTX (413.7625 – 416.1 MHz) ~~Mobile BTX (416.1 – 417.625 MHz)~~ ~~PMR and/or PAMR~~ PPDR PAMR/PMR IoT	Radio Frequency Spectrum Assignment Plan GG 49079 Notice 3766 of 4th of August 2023 ~~Paired with BTX (420 – 423 MHz) (Government Services)~~ ~~Paired with BTX (423-423.7625 MHz)~~ Paired with 423.7625 – 426.1 MHz ~~Paired with MTX (406.1 – 407.625 MHz)~~ ~~The use of this band for PPDR to be studied~~. Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	As per GG 49079 Notice 3766 of 4th of August 2023 (RFSAP), the Authority concluded that "this band will be made available for other potential emerging applications such as broadband PPDR (BB-PPDR), PAMR, PMR and IoT, in addition to digital public trunking" .

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.268	5.268	Communication links with an orbiting, manned space vehicle	Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR Next Generation Radio Frequency Spectrum for Economic Development GG 50725 Notice 166 of 28 May 2024.
420-430 MHz FIXED	**420-430 MHz** FIXED	~~Single Frequency Links (426.1 – 430 MHz)~~	Radio Frequency Spectrum Assignment Plan GG 49079 Notice 3766 of 4th of August 2023 ~~Frequencies will only be assigned for SF links where~~	As per GG 49079 Notice 3766 of 4th of August 2023 (RFSAP), the Authority concluded that "this band will be made available for

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Digital Trunking BTX (423.7625 – 426.1 MHz) ~~Digital Trunked Mobile BTX (420 – 423 MHz)~~ ~~Mobile Data BTX (423 – 423.7625 MHz)~~ ~~PMR and/or PAMR~~ PPDR PAMR/PMR IoT	~~migration above 1 GHz would be impractical~~ Paired with MTX (413.7626 – 416.1 MHz) ~~Paired with 410 - 413 MHz (Government use)~~ ~~Paired with MTX (413 – 413.7625 MHz~~) ~~The use of this band for PPDR to be studied.~~ Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019) Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	other potential emerging applications such as broadband PPDR (BB-PPDR), PAMR, PMR and IoT, in addition to digital public trunking". Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR Next Generation Radio Frequency Spectrum for Economic Development GG

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Radiolocation 5.269 5.270 5.271	Radiolocation			50725 Notice 166 of 28 May 2024.
430-432 MHz AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277	**430-432 MHz** AMATEUR NF8 RADIOLOCATION	Amateur Applications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
432-438 MHz AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A	**432-438 MHz** AMATEUR NF8 RADIOLOCATION Earth exploration-satellite (active) 5.279A Amateur -satellite	Amateur (432-438 MHz) ISM (433.0-434.79 MHz) Non Specific SRD including RFID (433.05 – 434.79 MHz) ISM applications Amateur-satellite (435-438 MHz)	Conditions for amateur satellite service is given in 5.282 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). For earth exploration-satellite see Rec. ITU-R RS.1260-2 latest version Conditions for amateur satellite service is given in 5.282 For earth exploration-satellite see Rec. ITU-R RS.1260-2 Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.138 5.271 5.276 5.277 5.280 5.281 5.282	5.138 5.282			
438-440 MHz AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277 5.283	**438-440 MHz** AMATEUR NF8 RADIOLOCATION	Amateur	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR
440-450 MHz FIXED	**440-450 MHz** FIXED		Radio Frequency Spectrum Assignment Plan GG 49079 Notice 3767 of 4th of August 2023	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		Telemetry / Data BTX (440 – 441 MHz) FIXED (telemetry, dual frequency alarm systems) Agricultural Telemetry Application Roving simplex Application Simplex Applications Mobile MTX (441.1 – 445 MHz) Single Frequency Mobile (441 – 441.1 MHz) PPDR PMR and/or PAMR446 (446 – 446.1 MHz)	Paired with MTX (445 – 446 MHz) Channels 440.0125, 440.3625, 445.0125 and 445.3625 MHz are used for Agricultural Telemetry. Channels 440.275 MHz, 440.2875 MHz, 445.2750 MHz, 445.2875 MHz, 440.375 MHz and 445.375 MHz are roving simplex channels. Channels 440 - 440.100 MHz and 445 – 445.1 MHz are used as simplex. Paired with BTX (446.1 – 450 MHz) 8 channels - PMR446-ERC/DEC/ (98)25 Radio Frequency Spectrum Assignment Plan GG 42230 Notice 74 of 2019 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile ~~SPACE OPERATION (Earth-to-space)~~ ~~SPACE RESEARCH (Earth-to-space)~~			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Further studies Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019) Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR
Radiolocation 5.269 5.285 5.270 5.271 5.284 5.286	Radiolocation 5.269 5.285 5.270 5.271 5.284 5.286			

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
450-455 MHz FIXED MOBILE 5.286AA	**450-455 MHz** FIXED MOBILE 5.286AA NF9	~~Fixed links (450 – 453 MHz)~~ Government Services (fixed links) ~~Trunked Mobile BTX (454.425 – 460 MHz)~~ ~~Single Frequency Mobile (453 – 454 MHz)~~ ~~Paging (454 – 454.425 MHz)~~ IMT450 (450-470 MHz) ~~PMR and/or PAMR~~ IoT, M2M	RFSAP- GG No. 48353, 31 March 2023 (Notice 3246 of 2023) ~~Paired with 460 – 463 MHz~~ ~~Paired with MTX (464.425 – 470 MHz)~~ ~~This band is currently used for a variety of fixed and mobile systems in the various SADC countries~~. ITU-R Recommendation M.1036-~~6~~ 7 ~~latest version.~~ Resolution 224 (Rev WRC-~~19~~ 23) Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~Radio Frequency Spectrum Assignment Plan 2015, Government Gazette 38640 (Notice 270 of 2015)~~ International Mobile Telecommunication	As per RFSAP- GG No. 48353, 31 March 2023 (Notice 3246 of 2023) the Authority concluded that this band is licensed to IMT System and additional services, including Narrowband services capable of coexistence with IMT and PPDR supporting or M2M services.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Roadmap (GG No.42829 Notice 600 of 2019). ~~New RFSAP to be developed.~~	
		PPDR	Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR Next Generation Radio Frequency Spectrum for Economic Development GG 50725 Notice 166 of 28 May 2024.
	SPACE OPERATION (Earth-to-space) SPACE RESEARCH (Earth-to-space)			
5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	5.209 5.286 5.286A 5.286B 5.286C			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
455-456 MHz FIXED MOBILE 5.286AA	**455-456 MHz** FIXED MOBILE 5.286AA NF9	Government Services (fixed) ~~Trunked mobile BTX (454.425 – 460 MHz)~~ IMT450 (450-470 MHz) IoT M2M PPDR	RFSAP- GG No. 48353, 31 March 2023 (Notice 3246 of 2023) ~~Paired with 464.425 – 470 MHz~~ ITU-R Recommendation M.1036-~~6~~ 7 ~~latest version.~~ Resolution 224 (Rev WRC-~~19~~ 23) Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~Radio Frequency Spectrum Assignment Plan 2015, Government Gazette 38640 (Notice 270 of 2015)~~ International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019). ~~New RFSAP to be developed~~ Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as	As per RFSAP- GG No. 48353, 31 March 2023 (Notice 3246 of 2023) the Authority concluded that this band is licensed to IMT System and additional services, including Narrowband services capable of coexistence with IMT and PPDR supporting or M2M services. Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.209 5.271 5.286A 5.286B 5.286C 5.286E	5.209 5.286A 5.286B 5.286C		described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	frequency range 694-894 MHz) band for PPDR Next Generation Radio Frequency Spectrum for Economic Development GG 50725 Notice 166 of 28 May 2024.
456-459 MHz FIXED MOBILE 5.286AA	**456-459 MHz** FIXED MOBILE 5.286AA NF9	~~Trunked mobile BTX (454.425 – 460 MHz~~) IMT450 (450-470 MHz) IoT M2M Government Services (Fixed links)	RFSAP - GG No.48353 of 31 March 2023 (Notice 3246 of 2023) ~~Paired with 464.425 – 470 MHz~~ ITU-R Recommendation M.1036-~~6~~ 7 ~~latest version.~~ Resolution 224 (Rev WRC-~~19~~ 23) Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~Radio Frequency Spectrum Assignment Plan 2015, Government Gazette 38640 (Notice 270 of 2015)~~	As per RFSAP- GG No. 48353, 31 March 2023 (Notice 3246 of 2023) the Authority concluded that this band is licensed to IMT System and additional services, including Narrowband services capable of coexistence with IMT and PPDR supporting or M2M services.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.271 5.287 5.288	5.287	PPDR	International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019). ~~New RFSAP to be developed~~ Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR Next Generation Radio Frequency Spectrum for Economic Development GG 50725 Notice 166 of 28 May 2024.
459-460 MHz FIXED MOBILE 5.286AA	**459-460 MHz** FIXED MOBILE 5.286AA NF9	~~Trunked Mobile BTX 454.425—460 MHz~~	RFSAP- GG ~~overnment Gazette~~ No. 48353of 31 March of 2023 (Notice 3246 of 2023 ~~Paired with 464.425—470 MHz~~ ITU-R Recommendation M.1036-~~6~~ 7 ~~latest version.~~	As per RFSAP- GG No. 48353, 31 March 2023 (Notice 3246 of 2023) the Authority concluded that this band is licensed to IMT System and additional services, including Narrowband

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Resolution 224 (Rev WRC-~~19~~ 23)	services capable of coexistence with IMT and PPDR supporting or M2M services
		IMT450 (450-470 MHz) Government Services (Fixed links) IoT M2M Government Services	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~30 March 2015).~~ ~~Radio Frequency Spectrum Assignment Plan 2015, Government Gazette 38640 (Notice 270 of 2015)~~ International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019). ~~New RFSAP to be developed~~	
		PPDR	Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Resolution 646 also encourages administrations to consider 380-470 MHz (in addition t0 frequency range 694-894 MHz) band for PPDR Next Generation Radio Frequency Spectrum for Economic Development GG
	5.209 5.286A 5.286B 5.286C			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.209 5.271 5.286A 5.286B 5.286C 5.286E				50725 Notice 166 of 28 May 2024.
460-470 MHz FIXED MOBILE 5.286AA 5.287 5.288	**460-470 MHz** FIXED MOBILE 5.286AA 5.287 NF9	~~Fixed Links (460 – 463 MHz)~~ ~~Trunked Mobile MTX (464.425 – 470 MHz)~~ ~~Single Frequency Mobile (463.025 – 463.975 MHz)~~ ~~Low Power Mobile Radio (463.975 MHz, 464.125 MHz, 464.175 MHz, 464.325 MHz, 464.375 MHz)~~ ~~Single Frequency Mobile (464.375 – 464.425 MHz)~~ IMT450 (450-470 MHz)	RFSAP- GG ~~Government Gazette~~ No. 48353 of 31 March 2023. (Notice 3246 of 2023) ~~Paired with 450 – 453 MHz~~ ~~Paired with BTX (454.425 – 460 MHz)~~ ITU-R Recommendation M.1036-~~6~~ 7 ~~latest version.~~ Resolution 224 (Rev WRC-~~19~~ 23)	As per RFSAP- GG No. 48353, 31 March 2023 (Notice 3246 of 2023) the Authority concluded that this band is licensed to IMT System and additional services, including Narrowband services capable of coexistence with IMT and PPDR supporting or M2M services

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		~~Security Systems (464.5375 MHz)~~ ~~Non-specific SRDs (464.5 – 464.5875 MHz)~~ IoT M2M Government Services	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~30 March 2015).~~ ~~Radio Frequency Spectrum Assignment Plan 2015, GG 38640 (Notice 270 of 2015)~~ International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019). ~~New RFSAP to be developed~~	
Meteorological-satellite (space-to-Earth) 5.290	Meteorological-satellite (space-to-Earth) Earth exploration-satellite (space-to-Earth)	PPDR	Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 380-470 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC-15) for technical and operational measures.	Next Generation Radio Frequency Spectrum for Economic Development GG 50725 Notice 166 of 28 May 2024.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
~~5.287 5.288~~ 5.289 ~~5.290~~	~~5.287~~ 5.289			
470-694 MHz BROADCASTING	**470-606 MHz** BROADCASTING	DTT Broadcasting (470-694 MHz)	Broadcasting Allotments in accordance with GE89 and GE06. Broadcast assignments in accordance with the latest version of the Terrestrial Broadcasting Frequency Plan as amended (GG No.36321) 02 April 2013. Radio Frequency Spectrum Assignment Plan, GG 43341 (Notice 284 of 2020) ~~Band IV/V Analogue television is to be migrated to digital television and ensure harmonisation with SADC. The use of Television Whitespaces in the band 470 – 694 MHz excluding sub band 606 to 614 MHz, subject to non-Interference non-Protection~~	DCDT Ministerial Notice of 28 Feb 2022 confirming 31st of March 2022 as the end of dual illumination period and the Analogue Switch-Off (ASO) date. https://www.dcdt.gov.za/images/Minister-

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			~~basis to users under a primary allocation, max. 50 mW ERP.~~ Regulations Television Whitespaces – GG 44373 (Notice 164 of 2021) and GG No. 41512 (Notice 147 of 2018)	Speeches/Media_Statementon_the_Progress_Update_on_Broadcast_Digital_Migration.pdf
		PMSE e.g. Wireless microphones (470-786 MHz) ~~Applications ancillary to broadcasting and programme making SAP/SAB Applications~~ Services Ancillary to Programme making and Services Ancillary to Broadcasting (SAP/SAB)	All wireless microphone applications are consistent with Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015, amended by GG 48643 included Notice No 1822, 23 May 2023)	ECC Report 002, SAP/SAB (INCL. ENG/OB) SPECTRUM USE AND FUTURE REQUIREMENTS, Lisbon, February 2002
	Land mobile		The use of land mobiles in accordance with footnote No. 5.296) Terrestrial broadband services can be provided within the allocation of Land Mobile Services. According	Terrestrial broadband services can be

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.149 5.296 5.304 5.306		to ITU Article 1.26, the transmission is restricted to "terrestrial" only	provided within the allocation of Land Mobile Services. According to ITU Article 1.26, the transmission is restricted to "terrestrial" only (ITU Article 1.26).
	606-614 MHz BROADCASTING	DTT Broadcasting (470-694 MHz)	Broadcasting Allotments in accordance with GE89 and GE06. Broadcast assignments in accordance with the latest version of the Terrestrial Broadcasting Frequency Plan as amended (GG No.36321) 02 April 2013 ~~Band IV/V Analogue television is to be migrated to digital television and ensure harmonisation with SADC.~~ Radio Frequency Spectrum Assignment Plan, GG 43341 Notice 284 of 2020	DCDT Ministerial Notice of 28 Feb 2022 confirming 31st of March 2022 as the end of dual illumination period and the Analogue Switch-Off (ASO) date.. https://www.dcdt.gov.za/images/Minister-

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
				Speeches/Media_Statementon_the_Progress_Update_on_Broadcast_Digital_Migration.pdf
			RAS VLBI Observations (608 – 614 MHz). See Section 5 for coordination with radio astronomy.	
		PMSE e.g. Wireless microphones (470-786 MHz) ~~Applications ancillary to broadcasting and programme making SAP/SAB Applications~~ Services Ancillary to Programme making and Services Ancillary to Broadcasting (SAP/SAB)	All wireless microphone applications are consistent with Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015, amended by GG 48643, Notice No 1822, 23 May 2023)	ECC Report 002, SAP/SAB (INCL. ENG/OB) SPECTRUM USE AND FUTURE REQUIREMENTS, Lisbon, February 2002
	RADIO ASTRONOMY Land mobile 5.149 5.296 5.304 5.306	Radio Astronomy (606 – 614 MHz)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	614-694 MHz BROADCASTING	DTT Broadcasting (470-694 MHz)	Broadcasting Allotments in accordance with GE89 and GE06. Broadcast assignments in accordance with the latest version of the Terrestrial Broadcasting Frequency Plan as amended (GG No.36321) 02 April 2013. Radio Frequency Spectrum Assignment Plan, GG 43341 Notice 284 of 2020 ~~Band IV/V Analogue television is to be migrated to digital television and ensure harmonisation with SADC.~~ The use of Television Whitespaces in the band 470 – 694 MHz excluding sub band 606 to 614 MHz, subject to non-Interference	DCDT Ministerial Notice of 28 Feb 2022 confirming 31st of March 2022 as the end of dual illumination period and the Analogue Switch-Off (ASO) date.. https://www.dcdt.gov.za/images/Minister-

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			non-Protection basis (to users under a primary allocation, max. 50 mW ERP). Regulations Television Whitespaces – GG 44373 Notice 164 of 2021 and GG No. 41512 1913 (Notice 147 of 2018)	Speeches/Media_Statementon_the_Progress_Update_on_Broadcast_Digital_Migration.pdf
5.149 5.291A 5.294 5.295A 5.296 5.300 5.304 5.306 5.307A 5.307B 5.312	Land mobile 5.149 5.296 5.304 5.306	PMSE e.g. Wireless microphones (470-786 MHz) ~~Applications ancillary to broadcasting and programme making SAP/SAB Applications~~ Services Ancillary to Programme making and Services Ancillary to Broadcasting (SAP/SAB) IMT (614-694 MHz)	All wireless microphone applications are consistent with Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015, amended by GG 48643 included Notice No 1822, 23 May 2023) SADC 2024_EN- 04.4 - MICT-- Edition 2024 SADC Radio Frequency Spectrum Allocation Plan	ECC Report 002, SAP/SAB (INCL. ENG/OB) SPECTRUM USE AND FUTURE REQUIREMENTS, Lisbon, February 2002
694-790 MHz	**694-790 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile 5.312A 5.312B 5.317A	MOBILE except aeronautical mobile 5.312A 5.312B 5.317A NF9 ~~NF9~~ ~~5.312A 5.317A~~	IMT700 MTX (703 – 733 MHz) IMT750 (733 to 758 MHz) ~~LTE~~ ~~LTE Advance~~ SDL	Paired with BTX (758 – 788 MHz) International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019). ~~Radio Frequency Spectrum Assignment Plan (GG 38640 Notice 271 and 272 of 2015) as amended~~ Radio Frequency Spectrum Assignment Plan IMT700 (GG 47788 Notice 2886 of 2022) Radio Frequency Spectrum Assignment Plan IMT750 (GG 47788 Notice 2887 2022) IMT in accordance with ITU-R Recommendation ITU-R M.2090 latest version ~~and Resolutions 760 (WRC-19)~~ Res 224 (Rev. WRC-23), Res 760 (Rev. WRC-23) and Res 749 (Rev. WRC-23), apply Recommendation ITU-R M.1036-7 .	The IMT750 band shall be used as a Supplementary Downlink (SDL) band. IMT identification in Regions 1 and 2 ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			HCM4A for cross-border coordination Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 694-790 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC15) for technical and operational measures. SADC PPDR recommendation Framework for Harmonisation of Radio Frequency Spectrum for Public Protection and Disaster Relief (PPDR) in SADC Edition 2020 ~~Band IV/V analogue television is to be migrated to digital television and ensure harmonisation with SADC.~~ ~~WRC-07, WRC-12 and WRC-15 allocated this band to Mobile service except~~	SADC recommended ("Framework for Harmonisation of Radio Frequency Spectrum for Public Protection and Disaster Relief (PPDR), edition 2020") the use of the sub-bands 698-703 MHz paired with 753-758 MHz (2x5 MHz) and 733-736 MHz paired with 788-791 MHz (2x3 MHz) for broadband PPDR services. DCDT Ministerial Notice of 28 Feb 2022 confirming 31st of March 2022 as the end of dual illumination period and the Analogue Switch-Off (ASO) date..

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
BROADCASTING 5.300 5.312		HIBS (694-960 MHz) – ~~Resolution 213 (WRC-23) applies~~ . Wireless microphones (470-786 MHz)	~~aeronautical mobile and identified it for IMT. Fixed links operating in this band will have to be migrated in order to accommodate IMT.~~ Resolution 213 (WRC-23) applies	https://www.dcdt.gov.za/images/Minister-Speeches/Media_Statementon_the_Progress_Update_on_Broadcast_Digital_Migration.pdf As per the footnote 5.312B, HIBS shall not claim protection from existing primary services All wireless microphone applications are consistent with Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015, amended by GG 48643 included Notice No 1822, 23 May 2023)

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790-862 MHz FIXED MOBILE except aeronautical mobile 5.312B 5.316B 5.317A	**790-862 MHz** FIXED MOBILE except aeronautical mobile 5.316B 5.317A NF9	IMT800 MTX (832 - 862 MHz) ~~Fixed Links (856 – 864.1 MHz)~~ ~~Wireless Access (827.775 – 832.695 MHz)~~ ~~IMT850 MTX (825 – 830 MHz)~~	~~Paired with 868.1 – 876 MHz~~ Paired with BTX (791 – 821 MHz) ~~Paired with 827.775- 832.695 MHz~~ ~~Paired with BTX (870 – 875 MHz)~~ Radio Frequency Spectrum Assignment Plan (GG No 47788, Notice 2888 of 20th December 2022) IMT 850 RFSAP GG No 48353, Notice 3245 of 31st March 2023 was Repealed. This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023 Res 224 (Rev. WRC-23), Res 760 (Rev. WRC-23) and Res 749 (Rev. WRC-23) apply	This is a Region 1 IMT band The IMT850 RFSAP was officially repealed on 1 April 2024. This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023. IMT identification in all Regions. ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			~~International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019) . Radio Frequency Spectrum Assignment Plan (GG 38640 Notice 271 and 272 of 2015) as amended IMT~~ IMT in accordance with ITU-R Recommendation ~~ITU-R~~ M.2090 latest version and Resolution 760 (WRC-15) applies Recommendation ITU-R M.1036-~~6~~ 7 Resolution 213 (WRC-23) applies HCM4A for cross-border coordination Consideration of the future spectrum needs of	As per the footnote 5.312B, HIBS shall not claim protection from existing primary services ICASA's 2021 amendment accepted 823–832 MHz for wireless microphones; GG No. 45690, Notice 737 of 2021 SADC recommended ("Framework for Harmonisation of Radio Frequency Spectrum for Public
		HIBS (694-960 MHz) – Resolution 213 (WRC-23) applies . PMSE (823–832 MHz)		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Broadband Public Protection and Disaster Relief (PPDR) in the range 694-790 MHz as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC15) for technical and operational measures. SADC PPDR recommendation Framework for Harmonisation of Radio Frequency Spectrum for Public Protection and Disaster Relief (PPDR) in SADC Edition 2020 ~~Band IV/V analogue television is to be migrated to digital television and ensure harmonisation with SADC.~~ ~~WRC-07, WRC-12 and WRC-15 allocated this band to Mobile service except aeronautical mobile and identified it for IMT.~~ ~~Fixed links operating in this band will have to be migrated in order to accommodate IMT.~~	Protection and Disaster Relief (PPDR), edition 2020") the use of the sub-bands 698-703 MHz paired with 753-758 MHz (2x5 MHz) and 733-736 MHz paired with 788-791 MHz (2x3 MHz) for broadband PPDR services. DCDT Ministerial Notice of 28 Feb 2022 confirming 31st of March 2022 as the end of dual illumination period and the Analogue Switch-Off (ASO) date.. https://www.dcdt.gov.za/images/Minister-Speeches/Media_Statementon_the_Progress_Update_on_Broadcast_Digital_Migration.pdf

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
BROADCASTING 5.312 5.319	5.312A 5.312B 5317A	Body Worn Equipment (823-826 MHz)	~~Radio Frequency Spectrum Assignment Plan GG 42337 Notice 165 of 2019~~ ~~Radio Frequency Spectrum Assignment Plan (GG 38640 Notice 273 of 2015) as amended~~ ~~Radio Frequency Spectrum Assignment Plan GG 41082 Notice 648 of 2017~~	All lowpower applications are consistent with Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015, amended by GG 48643 included Notice No 1822, 23 May 2023)
862-890 MHz FIXED	**862-890 MHz** FIXED	~~Fixed Links (856 – 864.1 MHz)~~	~~Paired with 868.1 – 876 MHz~~	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile 5.312B 5.317A	MOBILE except aeronautical mobile 5.312B 5.317A NF9 NF10	~~Wireless Access (872.775-877.695 MHz)~~ GSM-R MTX (877.695 – 880 MHz)~~ NF10~~ IMT900 MTX (880-915 MHz) ~~IMT850 BTX (870-875 MHz)~~	~~Paired with 827.775 – 832.695 MHz~~ Paired with 921 – 925 MHz Paired with BTX (925 – 960 MHz) ~~Paired with MTX (825-830 MHz~~) Radio Frequency Spectrum Assignment Plan GG 49556, 27 Oct 2023 Notice 3999) IMT 850 RFSAP GG No 48353, Notice 3245 of 31st March 2023 was Repealed. This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023 Res 224 (Rev. WRC-23), Res 760 (Rev. WRC-23) and Res 749 (Rev. WRC-23) apply Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641,	The IMT850 RFSAP was officially repealed on 1 April 2024. This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023. IMT identification in all Regions. ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa Belarus, the Russian Federation and

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Notice 279, 30 March 2015). ~~30 March 2015,~~ HCM4A for cross-border coordination ~~Radio Frequency Spectrum Assignment Plan GG 42337 Notice 1656 of 2019~~ ~~Radio Frequency Spectrum Assignment Plan (GG 38640 Notice 275 of 2015) as amended~~ ~~International Mobile Telecommunication Roadmap GG No.42829 Notice 600 of 2019).~~	Ukraine allocated this band for mobile-satellite except aeronautical mobile-satellite through the footnote 5.319. ICASA is following the regional trends, ECC Report 357 conducted Regulatory analyses of satellite use in this band.
		Wireless Audio systems and Wireless microphones (863 – 865 MHz) CT2 cordless phones (864.1 – 868.1 MHz) ~~FWA (864.1 – 868.1 MHz)~~ RFID (865 – 868 MHz)	Recommendation ITU-R M.1036 ~~6~~ 7	All lowpower applications are consistent with Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015, amended by GG 48643 included Notice No 1822, 23 May 2023) All FWA systems have been migrated and the spectrum license surrendered.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
BROADCASTING 5.322 5.319 5.323		Non-specific SRD and RFID (869.4 – 869.65 MHz) Non Specific SRDs (862-863. 863-870 , 868 – 868.6 MHz, 868.7 – 869.2 MHz, 869.4 – 869.65 MHz, 869.7 – 870.0 MHz) Alarms (868.6 – 868.7 MHz, 869.25 – 869.3 MHz, 869.65 – 869.7 MHz) Social Alarms (869.2-869.25 MHz) HIBS (694-960 MHz) – ~~Resolution 213 (WRC-23) applies~~ . PMR for GSM-R (874.4-880.0 MHz paired with 919.4-925.0 MHz)	Resolution 213 (WRC-23) applies CEPT report 90	As per the footnote 5.312B, HIBS shall not claim protection from existing primary services

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
890-942 MHz FIXED MOBILE except aeronautical mobile 5.312B 5.317A	**890-942 MHz** FIXED MOBILE except aeronautical mobile 5.312B 5.317A NF9 NF10 ~~NF11~~	IMT900 MTX (880 – 915 MHz) GSM-R (BTX) (921 - 925 MHz) RMR/FRMCS (downlink 919.4–925 MHz)	Paired with BTX (925 – 960 MHz Paired with MTX (877.695 – 880 MHz) Radio Frequency Spectrum Assignment Plan (GG 49556, 27 Oct 2023 Notice 3999) ~~GG 38640 Notice 275 of 2015) International Mobile Telecommunication Roadmap GG No.42829 Notice 600 of 2019). Final Frequency Migration Plan 2019 (GG No.42337 Notice 36166 of 2019)~~ HCM4A for cross-border coordination Res 224 (Rev. WRC-23), Res 760 (Rev. WRC-23) and Res 749 (Rev. WRC-23) apply	ICASA RFSAP for 880–915 / 925–960 MHz. Shows "GSM-R (BTX) 921–925 MHz" paired with "GSM-R (MTX) 877.695–880 MHz" (SA-specific uplink subset of 876–880). Harmonised CEPT basis: ECC/DEC/(02)05 Designates 876–880 MHz (uplink) paired with 921–925 MHz (downlink) for railway purposes (GSM-R). System/standards context (informative): ETSI EN 301 515 (GSM requirements for railways) and UIC EIRENE SRS confirm the GSM-R bands 876–880 / 921–925 MHz and the pairing.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
BROADCASTING 5.322 Radiolocation 5.323	Radiolocation	RFID (including, passive tags and vehicle location) (915.1 – 921 MHz)	GG No. 48643, Notice 822 of 2023	IMT identification in all Regions. ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa RFID; must protect IMT per RFSAP" (this reconciles the NRFP "typical" with the 2022 RFSAP). GG No. 48643, Notice 822 of 2023 https://www.gov.za/sites/default/files/gcis_document/202306/48643gon1822.pdf
942-960 MHz FIXED MOBILE except aeronautical mobile 5.312B 5.317A	**942-960 MHz** FIXED MOBILE except aeronautical mobile 5.312B 5.317A NF9	IMT900 BTX (925 – 960 MHz)	Paired with MTX(880 – 915 MHz) Recommendation ITU-R M.1036 ~~-6~~ 7 ~~latest version.~~	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
BROADCASTING 5.322 5.323		HIBS (694-960 MHz) ~~Resolution 213 (WRC-23) applies~~.	Radio Frequency Spectrum Assignment Plan (GG 49556, 27 Oct 2023 Notice 3999) Res 224 (Rev. WRC-23), Res 760 (Rev. WRC-23) and Res 749 (Rev. WRC-23) apply HCM4A for cross-border coordination Resolution 213 (WRC-23) applies	IMT identification in all Regions. ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa As per the footnote 5.312B, HIBS shall not claim protection from existing primary services
960-1 164 MHz AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328	**960-1 087.7 MHz** AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328	Distance measuring equipment / Secondary surveillance radar (Airborne electronic aids to air navigation and	Resolution 425 (rev WRC-19) apply.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		any directly associated ground-based facilities		
	1087.7 -1 093.3 MHz AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) AERONAUTICAL RADIONAVIGATION 5.328	Space station reception of ADS-B emissions from aircraft transmitters) Airborne electronic aids to air navigation and any directly associated ground-based facilities	Resolution 425 (rev WRC-19) apply.	
5.328AA	**1093.3 -1 164 MHz** AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328	Airborne electronic aids to air navigation and any directly associated ground-based facilities	Resolution 425 (rev WRC-19) apply.	
1 164-1 215 MHz AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE	**1 164-1 215 MHz** AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)	Galileo (1164 – 1214 MHz) GLONASS (1190.3 – 1213.8 MHz)		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
(space-to-Earth) (space-to-space) 5.328B 5.328A	 5.328A	Airborne electronic aids to air navigation and any directly associated ground-based facilities		
1 215-1 240 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	**1 215-1 240 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.331 5.332	Radar/navigation systems (1215 – 1300 MHz) GPS (1215 – 1260 MHz) GLONASS (1237.8-1253.8 MHz)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 240-1 300 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur	**1 240-1 260 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.331 5.332 5.332A 5.335A	Air Traffic Control Radar (1240 – 1350 MHz) Radar/navigation systems (1215 – 1300 MHz) GPS (1215 – 1260 MHz) GLONASS (1237.8 – 1253.8 MHz) Amateur (1 240 – 1 300 MHz)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	1 260-1 270 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A SPACE RESEARCH (active) Amateur Amateur-Satellite (Earth-to-space) 5.282 5.331 5.332 5.332A 5.335A	Air Traffic Control Radar (1 240 – 1 350 MHz) Radar/navigation systems (1215 – 1300 MHz) Galileo (1260 – 1300 MHz) Amateur (1 240 – 1 300 MHz)		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.282 5.330 5.331 5.332 5.332A 5.335 5.335A				
	1 270-1 300 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur	Air Traffic Control Radar (1 240 – 1 350 MHz) Radar/navigation systems (1215 – 1300 MHz) Galileo (1260 – 1300 MHz)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.282 5.331 5.332 5.332A 5.335A	Amateur (1 240 – 1 300 MHz)		
1 300-1 350 MHz AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A	**1 300-1 350 MHz** AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) Radio Astronomy 5.149 5.337A	Air Traffic Control Radar (1 240 – 1 350 MHz) Ground-based radars and associated airborne transponders Radio Astronomy (Doppler shifted radiation from hydrogen	See section 5 for coordination with radio astronomy	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 350-1 400 MHz	**1 350-1 400 MHz**			
FIXED	FIXED NF 14	1 350-1 375 MHz Fixed links (duplex) 1 375-1 400 MHz Fixed links (duplex)	Paired with 1492-1517 MHz; ITU-R F.1242 refers. Paired with 1427-1452 MHz; ITU-R F.1242 refers. Resolution 528 (Rev. WRC-19) Resolution 739 (Rev. WRC-19).	
MOBILE	MOBILE	Audio applications, specifically wireless microphones	ITU-R BT.2338-1 (2014); ITU-R Resolution 59 (Rev.WRC-19);	ECC Decision (09)03; ECC Report 002 & ECC Report 204; ETSI EN 300 422 series; ICASA RFSAP for 1350–1400 MHz already lists wireless microphones as permitted.
RADIOLOCATION	RADIOLOCATION Radio Astronomy	Radio Astronomy applicable to band 1350 to 1370 MHz. Radio Astronomy (Doppler shifted radiation from hydrogen	See section 5 for coordination with radio astronomy	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149 5.338 5.338A 5.339	5.149 5.338A 5.339			
1 400-1 427 MHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**1 400-1 427 MHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	Radio Astronomy (Doppler shifted radiation from hydrogen Passive sensing	All emissions are prohibited in this band	
1 427-1 429 MHz SPACE OPERATION (Earth-to-space) FIXED	**1 427-1 429 MHz** SPACE OPERATION (Earth-to-space) FIXED NF14	~~Fixed links (duplex)(1 427-1 452 MHz)~~	RFSAP (GG 48353 Notice 3244, 31 March 2023)~~'s to be developed~~ This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023.~~'s to be developed~~ ~~Paired with 1 375 – 1 400 MHz~~	Section 9.2, of the GG 48353 Notice 3244, 31 March 2023, states that "1427 to 1518 MHz band…, exclusively for ….MFCN SDL and IMT TDD/SDL" This followed the publication of the Reasons Document GG 48353 (Notice

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile 5.341A 5.341B 5.341C 5.338A 5.341	MOBILE except aeronautical mobile 5.341A NF9 5.338A 5.341	IMT TDD/SDL (1427-1518) MFCN SDL	~~In accordance with Recommendation ITU-R F.1242~~ ITU Res. 223 (Rev.WRC-23 ~~15~~) Recommendation ITU-R M.1036 ~~-6~~ 7 (International Mobile Telecommunications (IMT)) ~~Resolution 528 (Rev. WRC-19) Resolution 739 (Rev. WRC-19)~~. Res 750	3243) of 31st March 2023. IMT identification in Regions 1. ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa. - Hence no deletion of 5.341A These resolutions are applicable to T-DAB and S-DAB. RFSAP (GG 48353 Notice 3244) assumes IMT for the entire band.
1 429-1 452 MHz FIXED	**1 429-1 452 MHz** FIXED	~~Fixed links (duplex)(1 427-1 452 MHz)~~	RFSAP (GG 48353 Notice 3244, 31 March 2023) ~~'s to be developed~~ ~~Paired with 1 375—1 400 MHz)~~	Section 9.2, of the GG 48353 Notice 3244, 31 March 2023, states that "1427 to 1518 MHz band…, exclusively for

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			~~In accordance with Recommendation ITU-R F.1242~~	….MFCN SDL and IMT TDD/SDL" This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023.
MOBILE except aeronautical mobile 5.341A	MOBILE except aeronautical mobile 5.341A NF9	IMT (1427-1518)	Resolution 223 (Rev. WRC-23) This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023. Recommendation ITU-R M.1036-~~6~~ 7 (International Mobile Telecommunications (IMT)) Res 750 (Rev. WRC-19).(passive) ~~Resolution 528 (Rev. WRC-19)~~ ~~Resolution 739 (Rev. WRC-19).~~	IMT identification in Regions 1. ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa Hence no deletion of 5.341A These resolutions are applicable to T-DAB and S-DAB. RFSAP (GG 48353 Notice 3244) assumes IMT for the entire band.
5.338A 5.341 5.342	5.338A 5.341			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 452-1 492 MHz FIXED	**1 452-1 492 MHz** FIXED NF14			Section 9.2, of the GG 48353 Notice 3244, 31 March 2023, states that "1427 to 1518 MHz band…, exclusively for ….MFCN SDL and IMT TDD/SDL" This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023.
MOBILE except aeronautical mobile 5.346	MOBILE except aeronautical mobile 5.346 NF9	IMT (1427-1518)	223 (Rev. WRC-23) Resolution 761 (Rev. WRC-19) Res 750 (Rev. WRC-19).(passive) RFSAP (GG 48353 Notice 3244, 31 March 2023) ~~'s to be developed~~ This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023	IMT identification in 44 African countries. ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Recommendation ITU-R M.1036~~-6~~ 7 International Mobile Telecommunications (IMT))	
BROADCASTING	BROADCASTING		Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	
			~~Resolution 528 (Rev. WRC-19) Resolution 739 (Rev. WRC-19).~~	
BROADCASTING-SATELLITE 5.208B	BROADCASTING-SATELLITE 5.208B	~~Terrestrial Digital Audio Broadcasting (T-DAB)~~		These resolutions are applicable to T-DAB and S-DAB. RFSAP (GG 48353 Notice 3244) assumes IMT for the entire band.
5.341 5.342 5.345	5.341 5.345			
1 492-1 518 MHz	**1 492-1 518 MHz**			
FIXED	FIXED	~~Fixed Links (1 492 – 1 517 MHz)~~ ~~Single Frequency Links (1 517 – 1 525 MHz)~~	~~Paired with 1 350 – 1 375 MHz.~~ ~~In accordance with Recommendation ITU-R F.1242~~	Section 9.2, of the GG 48353 Notice 3244, 31 March 2023, states that "1427 to 1518 MHz band…, exclusively for

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile 5.341A 5.341 5.342	MOBILE except aeronautical mobile 5.341A NF9 5.341	IMT (1427-1518)	ITU-R Res. 223 (Rev.WRC-~~15~~ 23) Radio Frequency Spectrum Assignment Plan ~~RFSAP~~ (GG 48353 Notice 3244 of 31st March 2023) ~~'s to be developed~~ Recommendation ITU-R M.1036-~~6~~ 7 International Mobile Telecommunications (IMT)) ~~Resolution 528 (Rev. WRC-19) and Resolution 739 (Rev. WRC-19)~~	….MFCN SDL and IMT TDD/SDL" This followed the publication of the Reasons Document GG 48353 (Notice 3243) of 31st March 2023. IMT identification in Regions 1. ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa Hence no deletion of 5.341A These resolutions are applicable to T-DAB and S-DAB. RFSAP (GG 48353 Notice 3244) assumes IMT for the entire band.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 518-1 525 MHz FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A	**1 518-1 525 MHz** FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.351A	IMT Satellite component	The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies. Radio Frequency Spectrum Assignment Plan GG No. 49079 Notice 3768 of 4 August 2023 ~~Radio Frequency Spectrum Assignment Plan GG42286 Notice 125 of 2019~~ Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	About the stakeholder comment of IMT identification cap at 1492 MHz to ensure the interference-free operation in 1518-1525, ICASA observes that the ITU-R M.1036-7 provides IMT channeling arrangements for 1427-1518 MHz band i.e. the band below. Hence RFSAP for the 1427 to 1518 band (GG 48353 Notice 3244 of 31 March 2023) ICASA also observes that ECC Report 263 provides recommendations based on adjacent band compatibility studies between IMT

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.341 5.342	5.341			operating in the frequency band 1492-1518 MHz and the MSS operating in the frequency band 1518-1525 MHz. ECC Report 263 also considers Maritime scenarios.
1 525-1 530 MHz SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349	**1 525-1 530 MHz** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz)	ITU Resolution 212(Rev.WRC-19) and 225 (Rev WRC-07) Paired with 1 626.5 – 1 660.5 MHz The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.341 5.342 5.350 5.351 5.352A 5.354	5.341 5.351 5.354			
1 530-1 535 MHz SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	**1 530-1 535 MHz** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.351 5.354	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz)	Paired with 1 626.5 – 1 660.5 MHz The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies. In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies.	
1 535-1 559 MHz	**1 535-1 544 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.356 5.357 5.357A	GMDSS Maritime satellite (1 525 – 1 544 MHz)	Paired with 1 626.5 – 1 660.5 MHz The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies. In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies.	
	1 544-1 545 MHz MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.356 5.357 5.357A	Mobile satellite (1544 – 1545 MHz) (Distress and safety)	The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies.	
	1 545-1 555 MHz AERONAUTICAL MOBILE (R) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A	Aeronautical Mobile satellite (1545 – 1555 MHz) (Air to air) (Ground to air)	The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.341 5.351 5.353A 5.354 5.356 5.357 5.357A			
5.341 5.351 5.353 A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A	**1 555-1 559 MHz** MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.356 5.357 5.357A	Land Mobile satellite (1555 – 1559 MHz)	The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies.	
1 559-1 610 MHz AERONAUTICAL RADIONAVIGATIO N RADIONAVIGATIO N-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341	**1 559-1 610 MHz** AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341	Global Positioning System (1 563.42 – 1 587.42 MHz) GALILEO (1559.42 – 1591.42 MHz) GLONAS (1592.9 – 1610.5 MHz)		
1 610-1 610.6 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A	**1 610-1 610.6 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A	MSS (1 610 – 1 626.5 MHz)	Paired with 2 483.5 – 2 500 MHz for some systems The band 1610-1645.5 MHz is identified for satellite	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite 5.341 5.364 5.366 5.367 5.368 5.371 5.372	GLONASS (1 592.9 – 1610.5 MHz) Airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities	component of IMT; Res.225 applies. This band is designated world-wide for the MSS. Paired with 2483.5-2484.1 MHz for some systems.	
1 610.6-1 613.8 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY	**1 610.6-1 613.8 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY	MSS (1 610 – 1 626.5 MHz) Radio Astronomy (Observation of OH radical and molecules) Airborne electronic aids to air navigation and any directly associated	Paired with 2 483.5 – 2 500 MHz for some systems The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies. This band is designated world-wide for the MSS. Paired with 2484.1-2487.3 MHz for some systems. See Section 5 for coordination with radio astronomy	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite 5.149 5.341 5.364 5.366 5.367 5.368 5.371 5.372	ground-based or satellite-borne facilities		
1 613.8-1 621.35 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372 5.372A	**1 613.8-1 621.35 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B Radiodetermination-satellite 5.341 5.364 5.365 5.366 5.367 5.368 5.371 5.372 5.372A	MSS (1 610 – 1 626.5 MHz) Airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities	Paired with 2 483.5 – 2 500 MHz for some systems The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies. Paired with 1593-1594 MHz for aeronautical public correspondence	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 621.35-1 626.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A Mobile-satellite (space-to-Earth) except maritime mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1 621.35-1 626.5 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A Mobile-satellite (space-to-Earth) except maritime mobile-satellite (space-to-Earth) 5.365 Radiodetermination-satellite 5.371 5.208B 5.341 5.364 5.366 5.368 5.372	MSS (1 610 – 1 626.5 MHz) Airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities	Paired with 2 483.5 – 2 500 MHz for some systems The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies. Recommendation ITU-R RA769-2 and ITU RRA.1513-2 and Recommendation ITU-R M.1583-1 and Recommendation ITU-R RA.1631-0 all apply to this band.	
1 626.5-1 660 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A	**1 626.5-1 645.5 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A	GMDSS Maritime satellite (1 525 – 1 544 MHz)	In the band 1626.5-1645.5 MHz priority is given to maritime mobile distress,	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			urgency and safety communications (GMDSS) ; Res.222 applies.	
		Mobile satellite (1544 – 1545 MHz)	1 544-1 545 MHz by the MSS (space-to-Earth) is limited to distress and safety communications (see Article 31) Res.222	
		Aeronautical Mobile satellite (1545 – 1555 MHz) 1 525-1 559 MHz	Paired with 1 646.5-1 656.5 MHz (Earth-to-space) Res.222	
		Land Mobile satellite (1555 – 1559 MHz)	The bands 1610-1645.5 MHz and 1646.5-1660.5 MHz are identified for the satellite component of IMT; Res.225 applies.	
	5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376			
	1 645.5-1 646.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz)	Paired with 1 626.5 – 1 660.5 MHz The bands 1610-1645.5 MHz and 1646.5-1660.5 MHz are identified for the satellite	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376	Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz) Distress and safety	component of IMT; Res.225 applies. In the band 1626.5-1645.5 MHz priority is given to maritime mobile distress, urgency and safety communications (GMDSS) ; Res.222 applies.	
	1 646.5-1 656.5 MHz AERONAUTICAL MOBILE (R) MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz) Air to air Air to ground	Paired with 1 626.5 – 1 660.5 MHz The bands 1610-1645.5 MHz and 1646.5-1660.5 MHz are identified for satellite component of IMT; Res.225 applies. In the band 1626.5-1645.5 MHz priority is given to maritime mobile distress, urgency and safety communications (GMDSS) ; Res.222 applies.	
	1 656.5-1 660 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A	GMDSS Maritime satellite (1 525 – 1 544 MHz)	Paired with 1 626.5 – 1 660.5 MHz The bands 1610-1645.5 MHz and 1646.5-1660.5 MHz are	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376	Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz)	identified for satellite component of IMT; Res.225 applies. In the band 1626.5-1645.5 MHz priority is given to maritime mobile distress, urgency and safety communications (GMDSS) ; Res.222 applies.	
1 660-1 660.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A	**1 660-1 660.5 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.376A	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz) Radio Astronomy (Observation of OH radical and molecules)	Paired with 1 626.5 – 1 660.5 MHz The band 1610-1645.5 MHz and 1646.5-1660.5 MHz are identified for satellite component of IMT; Res.225 applies. See Section 5 for coordination with radio astronomy	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 660.5-1 668 MHz RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	**1 660.5-1 668 MHz** RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379A	Radio Astronomy (Observation of OH radical and molecules) Fixed Applications	See Section 5 for coordination with radio astronomy	
1 668-1 668.4 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile	**1 668-1 668.4 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile	IMT satellite component (1 668 – 1 675 MHz) Radio Astronomy (Observation of OH radical and molecules)	The band 1668-1675 MHz is identified for the satellite component of IMT; Res.225 applies. See Section 5 for coordination with radio astronomy	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149 5.341 5.379 5.379A	5.149 5.341 5.379A			
1 668.4-1 670 MHz METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	**1 668.4-1 670 MHz** METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	Radiosonde (1 668 – 1 700 MHz) IMT satellite component (1 668 – 1 675 MHz) Radio Astronomy (Observation of OH radical and molecules)	The band 1668-1675 MHz is identified for satellite component of IMT; Res.225 applies. See Section 5 for coordination with radio astronomy Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	
1 670-1 675 MHz METEOROLOGICAL AIDS	**1 670-1 675 MHz** METEOROLOGICAL AIDS FIXED	Radiosonde (1 668 – 1 700 MHz)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED METEOROLOGICAL -SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	 IMT satellite component (1 668 – 1 675 MHz)	Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019) The band 1668-1675 MHz is identified for the satellite component of IMT; Res.225 applies.	
1 675-1 690 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL -SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	**1 675-1 690 MHz** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	 Radiosonde (1 668 – 1 700 MHz) Fixed Applications		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 690-1 700 MHz METEOROLOGICAL AIDS METEOROLOGICAL -SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	**1 690-1 700 MHz** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile Earth exploration-satellite (space-to-Earth) 5.289 5.341	Radiosonde (1 668 – 1 700 MHz)	Channels 1695.6938 MHz; 1695.7250 MHz; 1695.7562 MHz; 1695.7874 MHz; 1691 MHz and 1694.5 MHz	
1 700-1 710 MHz FIXED METEOROLOGICAL -SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	**1 700-1 710 MHz** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Earth exploration-satellite (space-to-Earth) 5.289 5.341	Fixed links (single frequency)		

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1 710-1 930 MHz FIXED MOBILE 5.384A 5.388 5.388A ~~5.388B~~	**1 710-1 930 MHz** FIXED MOBILE 5.384A 5.388 5.388A NF9	FWA TDD (1880 – 1900 MHz) FWA TDD (1900 – 1920 MHz) Fixed Broadband data applications (1 785 – 1 805 MHz) IMT1800 MTX (1710 – 1785 MHz) IMT2100 MTX (1920 – 1980 MHz) ~~IMT 1800 BTX (1 805 - 1 880 MHz)~~ ~~IMT (terrestrial)~~ IMT1900 TDD (1900 – 1920 MHz)	Paired with IMT 1800 BTX (1805 – 1880 MHz) Paired with IMT2100 BTX (2110 – 2170 MHz) ~~IMT TDD applications RFSAP's to be developed to address compatibility between TDD IMT in the band 1900-1920 MHz with FDD IMT systems deployed in the IMT2100 b~~ ~~See NF9-8 for IMT frequency band – terrestrial (International Mobile Telecommunications (IMT))~~ Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015)., amended by GG	IMT identification in all Regions. ATU-R ecommendation 008-0, JULY 2025

			45690, 24 Dec 2021 and then in GG 48643, 18 May 2023) Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23) Res. 221 (Rev. WRC-23) RFSAP for the IMT1800 band to be developed. RFSAP for the IMT2100 band to be developed. ITU-R Report BT.2338 (2014); ITU-R Resolution 59 (Rev.WRC-19);	IMT Spectrum Roadmap For Africa IMT TDD applications RFSAP's to be developed to address compatibility between TDD IMT in the band 1900-1920 MHz with FDD IMT systems deployed in the IMT2100 ~~b~~ See NF9 ~~8~~ for IMT frequency band – terrestrial (International Mobile Telecommunications (IMT)) ECC Report 196 (2013); ERC Decision (98)22; ICASA's RFSAP already recognises DECT systems CEPT report 90
		DECT Cordless telephones (1880 – 1900 MHz) DECT Cordless Telecommunications Systems DECT-based audio applications		

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		PMR for GSM-R (1900-1910 MHz) FRMCS (1895-1951 MHz) HIBS (1 710-1 980, 2 010-2 025 MHz and 2 110-2 170 MHz)	PMR for GSM-R (paired with 874.4-880.0 MHz) Resolution 221 (Rev.WRC-23)	The European Union have designated the 1.9 GHz band as the target spectrum band for FRMCS, since 2019. Angola have allocated this spectrum band to the railway industry As per the footnote 5.388A, HIBS shall not claim protection from existing primary services
5.149 5.341 5.385 5.386 5.387 5.388	Radio astronomy 5.149 5.341 5.385 5.388	Radio astronomy (1718.8-1722.2 MHz) Radio astronomy (OH radical and molecules)	See Section 5 of this NRFC for coordination with radio astronomy	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
1 930-1 970 MHz FIXED MOBILE 5.388A ~~5.388B~~ 5.388	**1 930-1 970 MHz** FIXED MOBILE 5.388A NF9 5.388	IMT2100 MTX (1920 – 1980 MHz) HIBS (1 710-1 980, 2 010-2 025 MHz and 2 110-2 170 MHz1)	Paired with BTX(2110 – 2170 MHz) [FIXED (HAPS) (base stations for IMT)] ~~Resolution 221 (Rev. WRC-07)~~ ~~(International Mobile Telecommunications (IMT))~~ Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23) Res. 221 (Rev. WRC-23)	IMT identification in all Regions. ATU-R ecommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa As per the footnote 5.388A, HIBS shall not claim protection from existing primary services
1 970-1 980 MHz FIXED MOBILE 5.388A ~~5.388B~~	**1 970-1 980 MHz** FIXED MOBILE 5.388A NF9	IMT2100 MTX (1920 – 1980 MHz)	Paired with BTX(2110 – 2170 MHz)	

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			[FIXED (HAPS) (base stations for IMT)] ~~Resolution 221 (Rev. WRC-07)~~ ~~(International Mobile Telecommunications (IMT))~~ Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23)	IMT identification in all Regions. ATU-R ecommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa
5.388	5.388 5.388B	HIBS (1 710-1 980, 2 010-2 025 MHz and 2 110-2 170 MHz1)	Resolution 221 (Rev.WRC-23)	As per the footnote 5.388A, HIBS shall not claim protection from existing primary services
1 980-2 010 MHz FIXED MOBILE	**1 980-2 010 MHz** FIXED MOBILE	Fixed links (1980 – 2010 MHz) CGC/ATC fixed systems (1980 – 2010 MHz)	Paired with 2170 – 2200 MHz Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23) Res. 221 (Rev. WRC-23)	IMT identification in all Regions.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A NF13	IMT (satellite) (1980-2010 MHz)	(International Mobile Telecommunications (IMT)) The development of satellites for IMT services to be monitored. Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019) RFSAP to be developed for this band	ATU-R ecommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa ICASA is closely following developments in this band in Region 1, e.g.RSPG opinion RSPG24-007 in Europe and Saudi Arabia.
2 010-2 025 MHz FIXED MOBILE 5.388A ~~5.388B~~	**2 010-2 025 MHz** FIXED MOBILE 5.388A NF9	IMT (2010 – 2025 MHz)	[FIXED (HAPS) (base stations for IMT)] IMT TDD applications Recommendation ITU-R M.1036 - 7 Resolution 221 (Rev. WRC-07) (International Mobile Telecommunications (IMT)) Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23)	IMT identification in all Regions.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.388	5.388	HIBS (1 710-1 980, 2 010-2 025 MHz and 2 110-2 170 MHz)	Res. 221 (Rev. WRC-23) Resolution 221 (Rev.WRC-23)	ATU-R ecommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa As per the footnote 5.388A, HIBS shall not claim protection from existing primary services
2 025-2 110 MHz SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED	**2 025-2 110 MHz** SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED NF14	Earth exploration satellite applications Fixed Links (2025 – 2110 MHz)	RFSAP GG 42230 Notice 75 of 2019 Paired with 2200 – 2285 MHz Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	Current RFSAP mandates assignments for fixed links and migration of other fixed links from other bands into this band where appropriate. It also provides

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MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392			assignments for BFWA where the band continues to be under-utilized and allows coexistence between BFWA systems and PtP links.
2 110-2 120 MHz FIXED MOBILE 5.388A~~5.388B~~	**2 110-2 120 MHz** FIXED MOBILE 5.388A NF9	IMT2100 BTX (2110 – 2170 MHz)	FIXED (HAPS) (base stations for IMT)] Paired with MTX(1920 – 1980 MHz) Recommendation ITU-R M.1036-7 ~~[Resolution 221 (Rev. WRC-07)~~ ~~(International Mobile Telecommunications (IMT))~~ Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23)	IMT identification in all Regions. ATU-R ecommendation 008-0, JULY 2025

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH (deep space) (Earth-to-space) 5.388	SPACE RESEARCH (deep space) (Earth-to-space) 5.388 ~~5.388B~~	HIBS (1 710-1 980, 2 010-2 025 MHz and 2 110-2 170 MHz1)	Resolution 221 (Rev.WRC-23) RFSAP to be developed for this band	IMT Spectrum Roadmap For Africa As per the footnote 5.388A, HIBS shall not claim protection from existing primary services
2 120-2 160 MHz FIXED MOBILE 5.388A ~~5.388B~~	**2 120-2 160 MHz** FIXED MOBILE 5.388A NF9	IMT-2100 BTX (2110 – 2170 MHz)	[FIXED (HAPS) (base stations for IMT)] Paired with MTX(1920 – 1980 MHz) Recommendation ITU-R M.1036-7 ~~Resolution 221 (Rev. WRC-07)~~ ~~(International Mobile Telecommunications (IMT)~~) Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23)	IMT identification in all Regions. ATU-R recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.388	5.388 ~~5.388B~~	HIBS (1 710-1 980, 2 010-2 025 MHz and 2 110-2 170 MHz1)	Resolution 221 (Rev.WRC-23) RFSAP to be developed for this band	
2 160-2 170 MHz FIXED MOBILE 5.388A ~~5.388B~~	**2 160-2 170 MHz** FIXED MOBILE 5.388A NF9	IMT2100 BTX (2110 – 2170 MHz) HIBS (1 710-1 980, 2 010-2 025 MHz and 2 110-2 170 MHz1)	[FIXED (HAPS) (base stations for IMT)] Paired with MTX(1920 – 1980 MHz) Recommendation ITU-R M.1036- 7 ~~Resolution 221 (Rev. WRC-07)~~ ~~(International Mobile Telecommunications (IMT))~~ Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23) Resolution 221 (Rev.WRC-23)	IMT identification in all Regions. ATU-R ecommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.388	5.388 ~~5.388B~~		RFSAP to be developed for this band	
2 170-2 200 MHz FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth) 5.351A ~~5.388~~ 5.389A 5.389F	**2 170-2 200 MHz** FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth) 5.351A ~~5.388~~ 5.389A 5.389F NF13	~~Fixed Links (2170 – 2200 MHz)~~ CGC/ATC fixed systems (1980 – 2010 MHz) IMT (satellite) (2170-2200 MHz)	Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019) Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23) Res. 221 (Rev. WRC-23) Paired with 1980 – 2010 MHz IMT (satellite)	IMT identification in all Regions. ATU-R ecommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa
2 200-2 290 MHz	**2 200-2 290 MHz**			

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SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED NF14 MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	TT&C received from space Earth exploration satellite applications Fixed Links (2200 – 2285 MHz) BFWA (2 285-2 300 MHz)	Paired with 2025 – 2110 Radio Frequency Spectrum Assignment Plan GG 42230 Notice 75 of 2019. Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	Current RFSAP mandates assignments for fixed links and migration of other fixed links from other bands into this band where appropriate. It also provides assignments for BFWA where the band continues to be under-utilized and allows coexistence between BFWA systems and PtP links

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
2 290-2 300 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	**2 290-2 300 MHz** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	Fixed Links, BFWA (2 285-2 300 MHz) (Coordination is expected prior to the implementation of ~~these~~ Fixed links and BFWA services)	Radio Frequency Spectrum Assignment Plan GG 41512 Notice 145 of 2018	
2 300-2 450 MHz FIXED MOBILE 5.384A	**2 300-2 450 MHz** FIXED MOBILE 5.384A NF9	FAR147 IMT2300 TDD (2300 – 2400 MHz) WLAN, FDDA and model ctrl. (2400 – 2483.5 MHz) Non-Specific SRDs and low power video surveillance (2400 – 2483.5 MHz)	RFSAP (GG50657, Notice No.4824 of 2024) ~~International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019) as amended~~. Resolution 223 (Rev. WRC-23) Common international SRD band; see ITU-R Rec. SM.1896 latest version (above 2400 MHz)	As per RFSAP (GG50657, Notice No.4824 of 2024) the Authority concluded that utilisation of the frequency band 2300 MHz to 2400 MHz for IMT2300. All fixed services in the band should be cleared, except for FAR147 IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		RFID (2 400 – 2 483.5 MHz)	~~Radio Frequency Spectrum Assignment Plan (GG N. 38640) as amended 30 March 2015~~. Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~(Notice No. 279) of 30 March 2015~~. GG No. 48643 (Notice 1822) of 23 May 2023 Recommendation ITU-R M.1036- 7 (International Mobile Telecommunications (IMT))	GG No. 48643 (Notice 1822) of 23 May 2023 supersedes GG 38641.
		ISM applications (2400 2500 – ~~2483.5~~ MHz) Radiodetermination Applications for Material Sensing	~~Radio Frequency Spectrum Assignment Plan to be amended to incorporate capabilities and requirements for IMT2020.~~ Final Frequency Migration Plan 2019 (GG No.42337 Notice 36 of 2019)	Radiodetermination Applications for Material Sensing applications are consistent with Radio Frequency Spectrum Regulations 5395 is not applicable to South Africa
Amateur Radiolocation	Amateur Radiolocation			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.150 5.282 5.395	Amateur-satellite 5.150 5.282 ~~5.395~~	Amateur-satellite (2400 – 2450 MHz)		
2 450-2 483.5 MHz FIXED MOBILE Radiolocation 5.150	**2 450-2 483.5 MHz** FIXED MOBILE Radiolocation 5.150	WLAN, FDDA and model ctrl. (2400 – 2483.5 MHz) RFID (2400 – 2483.5 MHz) Non-Specific SRDs and low power video surveillance (2400 – 2483.5 MHz) ISM applications (2400 2500 ~~– 2483.5~~ MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). Common international SRD band; see ITU-R Rec. SM.1896 latest version	
2 483.5-2 500 MHz FIXED MOBILE	**2 483.5-2 500 MHz** FIXED MOBILE	~~Fixed links PTP/PTMP(2400-2500 MHz~~ ISM applications ~~The band~~ (2 400-2 500 MHz) ~~is designated for (5.150).~~	~~FS paired with 2300-2400 MHz~~ The band 2483.5-2500 MHz is identified for satellite component of IMT; Res.225 (WRC-23) applies	These FS FDD systems had to migrate from the band 2300-2400 MHz and therefore Fixed Links, PTP/PTMP are deleted.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 Radiolocation 5.398A 5.150 5.368 5.372A 5.399 5.401 5.402	MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 Radiolocation 5.150 5.368 5.372A ~~5.399~~ 5.401 5.402	SRD's Aeronautical Mobile Video surveillance MSS (2483.5 – 2500 MHz) Res 365 (WRC-23) (MMSS) Res 212 (Rev.WRC-23) (MSS) Res 225 (Rev.WRC-23) (MSS)	Unmanned aerial vehicles only Some MSS systems are paired with 1610 – 1626.5 MHz Common international SRD band; see ITU-R Rec. SM.1896 latest version	Foot Note 5.399 is not relevant to South Africa.
2 500-2 520 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A	**2 500-2 520 MHz** MOBILE except aeronautical mobile 5.384A 5.409A NF9	IMT2600 ~~MTX~~ (2500 – ~~2570~~ 2690 MHz)	~~Paired with 2620 – 2690 MHz~~ ~~International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019)~~. Radio Frequency Spectrum Assignment Plan on 22 May 2020 (GG 43341, Notice 285 of 2020).	To be consistent with "Option C3 shall apply in respect to South Africa" in RFSAP of 22 May 2020 (GG 43341, Notice 285 of 2020

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.412		HIBS (2500-2690 MHz)	~~Radio Frequency Spectrum Assignment Plan GG 43341 Notice 285 of 2020~~ Recommendation ITU-R M.1036-7 ~~(International Mobile Telecommunications (IMT))~~ ~~Radio Frequency Spectrum Assignment Plan to be amended to incorporate capabilities and requirements for IMT2020.~~ Resolution 223 (Rev. WRC-23) Resolution 218 (WRC-23)	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa As per the Footnote 5.409A of RR, HIBS shall not claim protection from existing primary services
2 520-2 655 MHz	**2 520-2 655 MHz**			

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A	MOBILE except aeronautical mobile 5.384A 5.409A NF9	IMT2600 ~~MTX~~ (2500 – ~~2570~~ 2690 MHz) ~~IMT2600 TDD (2570 - 2620 MHz)~~ ~~IMT2600 BTX (2620 - 2690 MHz)~~ ~~IMT (2500-2690 MHz)~~	~~Paired with BTX (2620 - 2690 MHz)~~ ~~Paired with 2500 - 2570 MHz International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019).~~ Radio Frequency Spectrum Assignment Plan on 22 May 2020 (GG 43341, Notice 285 of 2020). Recommendation ITU-R M.1036 -7. ~~The band 2 500-2 690 MHz is also used for BFWA in some SADC countries.~~ ~~Radio Frequency Spectrum Assignment Plan GG 43341 Notice 285 of 202~~ ~~(International Mobile Telecommunications (IMT))~~ ~~Radio Frequency Spectrum Assignment Plan to be amended to incorporate capabilities and requirements for IMT2020~~. Resolution 223 (Rev. WRC-23) Resolution 218 (WRC-23)	To be consistent with "Option C3 shall apply in respect to South Africa" in RFSAP of 22 May 2020 (GG 43341, Notice 285 of 2020 The band 2 500-2 690 MHz is also used for BFWA in some SADC countries.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
BROADCASTING-SATELLITE 5.413 5.416 5.339 5.412 5.418B 5.418C	Earth exploration-satellite (passive) Space research (passive) 5.339 5.418B 5.418C	HIBS (2500-2690 MHz) Earth exploration-satellite (passive)(2 640-2 655 MHz) Space research (passive) (2 640-2 655 MHz)		IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa As per the Footnote 5.409A of RR, HIBS shall not claim protection from existing primary services
2 655-2 670 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A	**2 655-2 670 MHz** MOBILE except aeronautical mobile 5.384A 5.409A NF9	IMT2600 ~~MTX~~ (2500 – ~~2570~~ 2690 MHz) ~~IMT2600 MTX (2500-2570 MHz)~~	~~Paired with MTX (2500-2570 MHz)~~	To be consistent with "Option C3 shall apply in respect to South Africa" in RFSAP of 22 May 2020 (GG 43341, Notice 285 of 2020

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Resolution 223 (Rev. WRC-23) International Mobile Telecommunication Roadmap (GG No.42829 Notice 600 of 2019). Radio Frequency Spectrum Assignment Plan on 22 May 2020 (GG 43341, Notice 285 of 2020).. Recommendation ITU-R M.1036-7 ~~Radio Frequency Spectrum Assignment Plan GG 43341 Notice 285 of 2020~~ (International Mobile Telecommunications (IMT))	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa
BROADCASTING-SATELLITE 5.208B 5.413 5.416 Earth exploration-satellite (passive)	Earth exploration-satellite (passive)	HIBS (2500-2690 MHz)	Resolution 218 (WRC-23) ~~Radio Astronomy (2655 – 2690 MHz)~~. See section 5	As per the Footnote 5.409A of RR, HIBS shall not claim protection from existing primary services

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Radio astronomy Space research (passive) 5.149 5.412	Radio astronomy Space research (passive) 5.149	Radio Astronomy (2655 – 2690 MHz) (Continuum measurement and galactic studies)	for coordination with radio astronomy	
2 670-2 690 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A Earth exploration-satellite (passive)	**2 670-2 690 MHz** MOBILE except aeronautical mobile 5.384A 5.409A NF9 Earth exploration-satellite (passive)	IMT2600 ~~MTX~~ (2500 – ~~2570~~ 2690 MHz) ~~IMT2600 MTX (2500-2570 MHz)~~	Radio Frequency Spectrum Assignment Plan on 22 May 2020 (GG 43341, Notice 285 of 2020) ~~Paired with 2500 – 2570 MHz International Mobile~~ Resolution 223 (Rev. WRC-23) ~~Telecommunication Roadmap (GG No.42829 Notice 600 of 2019)~~. . Recommendation ITU-R M.1036-7 ~~(International Mobile Telecommunications (IMT)) Radio Frequency Spectrum Assignment Plan to be~~	To be consistent with "Option C3 shall apply in respect to South Africa" in RFSAP of 22 May 2020 (GG 43341, Notice 285 of 2020 IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			~~amended to incorporate capabilities and requirements for IMT2020~~.	
		HIBS (2500-2690 MHz)	Resolution 218 (WRC-23)	As per the Footnote 5.409A of RR, HIBS shall not claim protection from existing primary services
Radio astronomy Space research (passive) 5.149 5.412	Radio astronomy Space research (passive) 5.149	Radio Astronomy (Continuum measurement and galactic studies)	See section 5 for coordination with radio astronomy	
2 690-2 700 MHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	**2 690-2 700 MHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive sensing Radio Astronomy (Continuum measurement and galactic studies)		
2 700-2 900 MHz	**2 700-2 900 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	AERONAUTICAL RADIONAVIGATION 5.337 METEOROLOGICAL AIDS Radiolocation 5.423	Aeronautical radionavigation radars : Primary surveillance radar Meteorological radar Government Services Ground-based radars and associated airborne transponders		
2 900-3 100 MHz RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	**2 900-3 100 MHz** RADIOLOCATION 5.424A AERONAUTICAL RADIONAVIGATION 5.337 5.425 5.427	Aeronautical radionavigation radars : Primary surveillance radar Meteorological radar		
3 100-3 300 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	**3 100-3 300 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
3 300-3 400 MHz RADIOLOCATION 5.149 5.429 5.429A 5.429B 5.430	**3 300-3 400 MHz** RADIOLOCATION MOBILE except aeronautical mobile NF9 5.149 5.429A 5.429B	Radio astronomy (CH Molecules) IMT (3300-3400 MHz) ~~Res. 223 (Rev.WRC-15)~~	See section 5 for coordination with radio astronomy RFSAP (GG . 47788 Notice 2891 of 20 December 2022. Res. 223 (Rev.WRC-23) Recommendation ITU-R M.1036-~~6~~ 7 ~~(International Mobile Telecommunications (IMT))~~ ~~Develop a RFSAP for the band~~	IMT identification in 49 African countries ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa
3 400-3 600 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.430A	**3 400-3 600 MHz** FIXED MOBILE except aeronautical mobile 5.430A NF9	~~BFWA~~ IMT3500 TDD (3400 – 3600 MHz)	~~The band 3400 -3600 MHz is also used for BFWA in some SADC countries~~ RFSAP (GG . 47763 Notice 2879 of 19 December 2022. ~~International Mobile Telecommunication (GG No.42829 Notice 600 of 2019). Radio Frequency Spectrum Assignment Plan (GG N. 38640) as amended 30 March 2015~~.	The band 3400 -3600 MHz is also used for BFWA in some SADC countries IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Radiolocation 5.431	Radiolocation		Res. 223 (Rev.WRC-23) Recommendation ITU-R M.1036-~~6~~ 7 ~~(International Mobile Telecommunications (IMT))~~	IMT Spectrum Roadmap For Africa
3 600-~~4 2003~~ 800 MHz FIXED FIXED-SATELLITE (space-to-Earth) ~~Mobile~~MOBILE except aeronautical mobile 5.433B 5.434A 5.434B 5.435A	**3 600-3 800~~4 200~~ MHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.434A 5.434B NF09	 Fixed links (4 GHz) (3600 – 4200 MHz) BFWA (3600 – 3800 MHz) C-band downlink (VSAT/SNG/PTP links)(3600 – 4200 MHz) IMT (3600 – 3800 MHz)	 ~~The sub-band 3 600-3 800 MHz could be used for BFWA where frequency sharing with FS PTP and/or FSS is feasible.~~ The band 3 600-3 800 MHz shall be used for IMT noting ITU-R Recommendation 1036-7 ~~8~~. The channelling arrangement for PTP links in this band is based on ITU-R Recommendation F.635 latest versionAnnex 1. ~~The sub-band~~ 3 600-4 200 MHz band is used for	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			medium and high capacity PTP links and FSS. In the band 3 600-3 800 MHz, FS PTP and FSS applications will have to operate on coordinated basis. Operators are encouraged to apply for spectrum licenses including registering all C-Band Earth stations on the ICASA online database RFSAP to be developed for this band	Development of the RFSAP will consider ITU RRB's Circular letter CCRR/78 specific Rules of Procedure (RoP) governing how the Radiocommunication Bureau should apply coordination procedures in the 3600–3800 MHz band, as part of the WRC-23 framework. This would address BFWA and the future of Fixed links.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
3 800-4 200 MHz	**3 800-4 200 MHz**			
FIXED	FIXED NF14	Fixed links (4 GHz) (3600 – 4200 MHz) ~~BFWA (3600 – 3800 MHz~~)	The channelling arrangement for PTP links in this band is based on ITU-R Recommendation F.635 Annex 1 latest version .	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	C-band downlink (VSAT/SNG/PTP links)(3600 – 4200 MHz)	The ~~sub-band~~ frequency band 3 600-4 200 MHz is used for medium and high capacity PTP links and FSS. ~~In the band 3 600-3 800 MHz, FS PTP and FSS applications will have to operate on coordinated basis~~ . Licensees are encouraged to register all C-Band licenses including Earth stations on the ICASA online database ~~Operators are encouraged to apply for spectrum licenses including registering all C-Band Earth stations on the ICASA online database~~	Licensees are encouraged to register all C-Band licenses including Earth stations on the ICASA online database to facilitate dynamic and opportunistic sharing opportunities.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Mobile	Mobile		Spectrum sharing regulations in progress. e.g. The development of Draft Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum is in progress (GG 52415 No 6066 of 28 March 2025)	ICASA is mindful of the recent WRC-23 outcome for Region 1 on this band - NO CHANGE. No IMT identification in Region 1 and no mention of this band in ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa for IMT.
4 200-4 400 MHz AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438	**4 200-4 204 MHz** AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (4 202 MHz) (space-to-Earth) Earth exploration-satellite (passive)	Wireless avionics intra-communication systems Radio altimeters on board aircraft and associated ground transponders) Radars		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	Space research (passive) 5.437 5.440			
5.437 5.439 5.440	**4 204-4 400 MHz** AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 Earth exploration-satellite (passive) Space research (passive) 5.437 5.440	Wireless avionics intra-communication systems Radio altimeters on board aircraft and associated ground transponders)		
4 400-4 500 MHz FIXED MOBILE 5.440A	**4 400-4 500 MHz** FIXED NF14 NF15 MOBILE NF15	Fixed links (4.8 GHz) (4400 – 5000 MHz) Government services Outside Broadcast links Electronic News Gathering		
4 500-4 800 MHz FIXED	**4 500-4 800 MHz** FIXED NF14 NF15	Fixed links (4.8 GHz) (4400 – 5000 MHz)	The band 4 500-4 800 MHz is part of the APP30B Plan	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED-SATELLITE (space-to-Earth) 5.441	FIXED-SATELLITE (space-to-Earth) 5.441	Government services (FS) Outside Broadcast links	(FSS space-to-Earth). ~~Refer to Annex B.~~	
MOBILE 5.440A	MOBILE NF15	Electronic News Gathering SRD (reservoir level probing radar)	Ultra wideband applications (UWB) see ITU-R Recommendation SN.1896-1. Rec SM.1755 and Rep SM.2153-7 (latest versions)	
4 800-4 990 MHz	**4 800-4 825 MHz**			
FIXED	FIXED NF14 NF15	Fixed links (4.8 GHz) (4400 – 5000 MHz) Government services Outside Broadcast Links	Recommendation ITU-R F.1099, Annex 1	
MOBILE 5.440A 5.441A 5.441B 5.442	MOBILE 5.441B NF9 NF15	IMT4800 TDD (4800-4990 MHz) Electronic News Gathering	Res. 223 (Rev. WRC-23) Recommendation ITU-R M.1036- ~~6~~ 7 ~~(International Mobile Telecommunications (IMT))~~ RFSAP to be developed for this band	IMT identification in 26 African countries, ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Radio astronomy 5.443	Radio astronomy 5.443 ~~NF15~~	Radio astronomy (Observations of formaldehyde (H2CO) interstellar clouds)	See section 5 for coordination with radio astronomy	
	4 825-4 835 MHz FIXED NF14 NF15 MOBILE except aeronautical mobile 5.441B NF9 NF15 Radio astronomy 5.149	Outside Broadcast Links Government services IMT4800 TDD (4800-4990 MHz) Electronic News Gathering .Radio astronomy (Observations of formaldehyde (H2CO) interstellar clouds)	Res. 223 (Rev. WRC-23) Recommendation ITU-R M.1036- ~~6~~ 7 (International Mobile Telecommunications (IMT)) RFSAP to be developed for this band See section 5 for coordination with radio astronomy	IMT identification in 26 African countries, ATU-R, Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa
	4 835-4 950 MHz FIXED NF14 NF15	Fixed links (4.8 GHz) (4400 – 5000 MHz) Government services	Recommendation ITU-R F.1099, Annex 1	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149 5.339 5.443		Outside Broadcast Links		
	MOBILE 5.441B NF9 NF15	IMT4800 TDD (4800-4990 MHz) Electronic News Gathering (International Mobile Telecommunications (IMT))	Res. 223 (Rev. WRC-23) Recommendation ITU-R M.1036- ~~6~~ 7 RFSAP to be developed	IMT identification in 26 African countries, ATU-R, Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa
	Radio astronomy	Radio astronomy (Observations of formaldehyde (H2CO) interstellar clouds)	See section 5 for coordination with radio astronomy	
	4 950-4 990 MHz			
	FIXED NF14 NF15	Fixed links (4.8 GHz) (4400 – 5000 MHz) Government services Outside Broadcast Links	Recommendation ITU-R F.1099, Annex 1	
	MOBILE except aeronautical mobile5.441B 5.442 NF9 NF15	Electronic News Gathering IMT4800 TDD (4800-4990 MHz) (International Mobile Telecommunications (IMT))	Res. 223 (Rev. WRC-23) Recommendation ITU-R M.1036- ~~6~~ 7	IMT identification in 26 African countries, ATU-R, Recommendation 008-0, JULY 2025

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.339	Radio astronomy (Observations of formaldehyde (H2CO) interstellar clouds)	RFSAP to be developed See section 5 for coordination with radio astronomy	IMT Spectrum Roadmap For Africa
4 990-5 000 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	**4 990-5 000 MHz** FIXED NF14 NF15 MOBILE except aeronautical mobile NF15 RADIO ASTRONOMY Space research (passive) 5.149 ~~NF15~~	Fixed links (4.8 GHz) (4400 – 5000 MHz) Outside Broadcast links Government Electronic News Gathering Radio astronomy (Observations of formaldehyde (H2CO) interstellar clouds)	Recommendation ITU-R F.1099, Annex 1 See section 5 for coordination with radio astronomy	
5 000-5 010 MHz	**5 000-5 010 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)			
5 010-5 030 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B	**5 010-5 030 MHz** AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.443B 5.328B			
5 030-5 091 MHz AERONAUTICAL MOBILE (R) 5.443C	**5 030-5 091 MHz** AERONAUTICAL MOBILE (R) 5.443C			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	Microwave Landing System AERONAUTICAL RADIONAVIGATION (MLS) (precision approach and landing)]		
5 091-5 150 MHz FIXED-SATELLITE (Earth-to-space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	**5 091-5 150 MHz** FIXED-SATELLITE (Earth-to-space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE (telemetry) AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	~~Feeder links of non-GSO satellite systems in the MSS~~ NGSO MSS feeder links (5091 – 5150 MHz) Surface applications at airports AMT (Air to ground) (5091-5250 MHz) AERONAUTICAL RADIONAVIGATION (MLS) (precision approach and landing) (5030-5150 MHz)	Resolution 114 (Rev.WRC-15) (NGSO MSS) Resolution 748 (Rev.WRC-19) (AM(R)) Resolution 418 (Rev.WRC-19) (AMT)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5 150-5 250 MHz AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B	**5 150-5 216 MHz** AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL MOBILE (telemetry) Radiodetermination-satellite (space-to-Earth) 5.446 5.446C 5.447B 5.447C	Feeder links of non-GSO-satellite systems in the MSS (5150-5250 MHz) NGSO MSS feeder links (~~5091~~5150 – ~~5150~~ 5216 MHz) WAS / RLAN (5150 – 5350 MHz) AMT Air-to-ground (5091-5250 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).30 March 2015). ITU Resolution 229 revised WRC-19 Resolution 418 (Rev.WRC-19) (AMT)	
	5 216-5 250 MHz AERONAUTICAL MOBILE (telemetry) (air to ground) AERONAUTICAL RADIONAVIGATION	WAS / RLAN (5150 – 5350 MHz) (indoor use only – ITU Res229 WRC-19) AMT Air-to-ground (5091-5250 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). Resolution 418 (Rev.WRC-19) (AMT)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.446 5.446C 5.446D 5.447 5.447B 5.447C	FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B 5.446 5.446C ~~5.447B~~ 5.447C	Feeder links of non-GSO-satellite systems in the MSS (Earth-to-space) (5150-5250 MHz)	ITU Resolution 229 revised WRC-19	With the split in the band, this FN to be deleted in this sub-band - it applies only to the sub-band 5150-5216 MHz.
5 250-5 255 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F	**5 250-5 255 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F Space research 5.448A	WAS / RLAN (5150 – 5350 MHz) (indoor use only) Active spaceborne sensors Other than active spaceborne sensors (secondary basis)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~ITU~~ Resolution 229 revised WRC ~~19~~ 23 (WAS/RLAN)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.447E 5.448 5.448A				
5 255-5 350 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A	**5 255-5 350 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.448A	WAS / RLAN (5150 – 5350 MHz) (~~Power limitation ITU Resolution 229 WRC-19)~~ Indoor use only	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~ITU~~ Resolution 229 revised WRC-~~19~~ 23 (WAS/RLAN)	
5 350-5 460 MHz EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449	**5 350-5 460 MHz** EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D	Ground based airborne weather radars and associated airborne beacons		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIOLOCATION 5.448D				
5 460-5 470 MHz RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B	**5 460-5 470 MHz** AERONAUTICAL RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D RADIONAVIGATION except aeronautical radionavigation 5.448B	Ground based airborne weather radars and associated airborne beacons	~~ITU Resolution 229 revised WRC-19~~	Res.229 doesn't apply to the band 5460-5470 MHz
5 470-5 570 MHz MARITIME RADIONAVIGATION	**5 470-5 570 MHz** MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A	WAS / RLAN (5470 – 5725 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~ITU~~ Resolution 229 revised WRC-~~19~~ 23	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451	EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B			
5 570-5 650 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B	**5 570-5 600MHz** MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.452	~~Weather Radars (5600 – 5650 MHz)~~ WAS / RLAN (5470 – 5725 MHz) Location Radar	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ~~ITU~~ Resolution 229 revised WRC-~~19~~ 23	
	5 600-5 650MHz		Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015)..	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.450 5.451 5.452	MARITIME RADIONAVIGATION METEOROLOGICAL AIDS MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.452	WAS / RLAN (5470 – 5725 MHz) Ground based meteorological radars (5600 – 5650 MHz ~~Weather Radars (5600 – 5650 MHz~~)	ITU Resolution 229 revised WRC-~~19~~ 23	The band 5600-5650 could be used for meteorological purposes but these are ground based radars, operating under the RLS (see 5.452)
5 650-5 725 MHz RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur	**5 650-5 670 MHz** RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Amateur-satellite (Earth-to-space)	WAS / RLAN (5470 – 5725 MHz) Indoor use only (~~Power limitation ITU Resolution 229 WRC-19))~~	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). ITU Resolution 229 revised WRC-~~19~~ 23	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Space research (deep space) 5.282 5.451 5.453 5.454 5.455	Space research (deep space) 5.282 ~~5.453~~			South Africa, the footnote 5.453 applies only to the band 5725-5850 MHz
	5 670-5 725 MHz RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) ~~5.282~~ 5.453	WAS / RLAN (5470 – 5725 MHz) (indoor use only)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).	5.282 applies only to the band 5650-5670 MHz
5 725-5 830 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur	**5 725-5 830 MHz** FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Fixed NF16	RTT data (5795 – 5815 MHz) Fixed links (5725 – 5850 MHz) BFWA (5725-5850 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).. . ~~BFWA in some SADC countries is limited to below 5850 MHz in order to protect~~	BFWA in some SADC countries is limited to below 5850 MHz in order to protect FSS in

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.150 5.451 5.453 5.455	5.150 5.453	ISM applications (5725 – 5875 MHz) ~~ISM (5725-5875 MHz)~~ RTTT (Road Transport and Traffic Telematics) (5795-5815 MHz) SRD applications (5 725-5 875 MHz) SRD - Transport and information control systems (5 805-5 815 MHz)	~~FSS in the band 5850-6425 MHz~~ Common international SRD band; see ITU-R Rec. SM.1896 latest version Transport information and control systems Recommendation ITU-R M.1453	the band 5850-6425 MHz
5 830-5 850 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth)	**5 830-5 850 MHz** FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) Fixed NF16	Fixed links BFWA (5725 – 5850 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 3417238641, 3130 March 2015) BFWA in some SADC countries is limited to below 5850 MHz in order to protect FSS in the band 5850-6425 MHz	As per 5.453, the band 5725-5850 MHz is allocated to Fixed service on primary basis. However, fixed

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.150 5.451 5.453 5.455	5.150 5.453	ISM applications (5725 – 5875 MHz) SRD's – Reservoir Level Probing Radars	.	service shall not cause harmful interference to and shall not claim protection from other primary services SRD's –Reservoir Level Probing Radar SRD's – Reservoir Level Probing Radar application to be added to RFSR, Annexure B through an amendment.
5 850-5 925 MHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	**5 850-5 925 MHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	~~PTP~~ FIXED links (5850-5925 MHz) C-band uplink (VSAT/SNG links) Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) ISM applications (5725 – 5875 MHz) ~~ISM (5725-5875 MHz)~~	FS could be used for temporary OB links.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.150	5.150			
5 925-6 700 MHz FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C ~~–~~5.457D~~–~~. 5.457E ~~–~~ 5.457F~~–~~	**5 925-6 425 MHz** FIXED ~~5.457~~ NF14 FIXED-SATELLITE (Earth-to-space) 5.457A ~~5.457B~~ MOBILE	Fixed links - Lower 6 GHz (5925-6425 MHz) BFWA Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) ESVs (5925 – 6425 MHz) Radio astronomy (observation of Methanol) WAS/RLAN (5925-6425 MHz)	Channelling plan for L6 GHz band in accordance with ITU-R Rec. F.383 latest version. ~~Earth Station onboard vessels (ESV) also allowed under FSS~~. Resolution 902 (WRC-03) Consideration may be made for future License exempt provided it is feasible for the protection of incumbent service. Radio Frequency Spectrum Regulations, 2015 – Annexure B as amended by GG No. 48643 (Notice 1822) of 23 May 2023 RFSAP to be developed for this band	Spectrum highest value use analysis and a followup RFSAP for

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.149 5.440 5.458		The development of Draft Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum are in progress (GG 52415 No 6066 of 28 March 2025)	the 5925-6425 MHz band would identify suitable applications, including dynamic and opportunistic sharing opportunities.
	6 425-6 429 MHz FIXED 5.457 NF14 FIXED-SATELLITE (Earth-to-space) MOBILE 5.457E	Upper 6 GHz (6425-7110 MHz), BFWA Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) Radio astronomy (observation of Methanol) IMT ~~Identification~~ (6425-6429 MHz)	Radio Frequency Spectrum Regulations, 2015 – Annexure B as amended by GG No. 48643 (Notice 1822) of 23 May 2023 Channelling plan for U6 GHz band in accordance with ITU-R Rec. F.384 latest version. ~~Resolution 150 (WRC 12~~) Resolution 220 (WRC 23)	Resolution does not apply to South Africa The U6 band is used for PTP links and for

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		WAS/RLAN (6425-7125 MHz)	Channel plan to be developed within ITU-R Recommendation M1036 ~~8~~	BFWA. The shared use between BFWA and FS links will be very difficult. Also, with the identification of this band for IMT, sharing with BFWA will not be possible. RFSAP will address these issues.
			RFSAP to be developed for this band.	Follow key Region 1 activities for the developments of RFSAP IMT identification in Region 1, and some countries in Regions 2 and 3, ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa CEPT Mandate to develop conditions for shared use of the band between Mobile and RLAN. https://cept.org/files/1412/Mandate%20to%20CEPT%20upper%20
	STANDARD FREQUENCY AND TIME SIGNAL-			

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	SATELLITE (6 427 MHz) (space-to-Earth) 5.149 5.440 5.458			6%20GHz%20band.pdf
	6 429-6700 MHz FIXED ~~5.457~~ MOBILE . 5.457E	Upper 6 GHz (6425-7110 MHz), BFWA Radio astronomy (observation of Methanol) IMT ~~Identification~~ (6429-6700 MHz) WAS/RLAN (6425-7125 MHz)	Channelling plan for U6 GHz band in accordance with ITU-R Rec. F.384 latest version. ~~Resolution 150 (WRC-12)~~ Resolution 220 (WRC 23) Channel plan to be developed within ITU-R Recommendation M1036-7 ~~8~~ RFSAP to be developed for this band .	IMT identification in Region 1, and some countries in Regions 2 and 3, ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa Follow key Region 1 activities for the developments of RFSAP CEPT Mandate to develop conditions for

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149 5.440 5.458	5.458			shared use of the band between Mobile and RLAN. https://cept.org/files/1412/Mandate%20to%20CEPT%20upper%206%20GHz%20band.pdf
6 700-7 075 MHz FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.457E	**6 700-7 075 MHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.457E	Fixed Links (U6) (6425 – 7110 MHz) IMT ~~Identification~~ (6700 -7125 MHz) WAS/RLAN (6425-7125 MHz)	Channelling plan for U6 GHz band in accordance with ITU-R Rec. F.384 latest version. The band 6 725-7 025 MHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex B. Resolution 220 (WRC 23) ITU-R Recommendation M1036.-7 .~~8~~	IMT identification in Region 1, and some countries in Regions 2 and 3, ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.458 5.458A 5.458B	5.458 5.458A 5.458B		RFSAP to be developed for this band	Follow key Region 1 activities for the developments of RFSAP CEPT Mandate to develop conditions for shared use of the band between Mobile and RLAN. https://cept.org/files/1412/Mandate%20to%20CEPT%20upper%206%20GHz%20band.pdf
7 075-7 145 MHz FIXED MOBILE 5.457E	**7 075-7 145 MHz** FIXED NF14 MOBILE 5.457E	Fixed Links (U6) (6425 – 7110 MHz) Fixed Links (L7) (7110 – 7425 MHz) IMT ~~Identification~~ (6700 - 7125 MHz) WAS/RLAN (6425-7125 MHz)	Channelling plan for U6 band in accordance with ITU-R Rec. F.384 latest version. Channelling plan for L7 band is in accordance with ITU-R Rec. F.385 latest version Annex 3. Resolution 220 (WRC 23) ITU-R Recommendation M1036.-7 .~~8~~	IMT identification in Region 1, and some countries in Regions 2 and 3, ATU-R Recommendation 008-0, JULY 2025 IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.458 5.459	5.458		RFSAP to be developed for this band	Follow key Region 1 activities for the developments of RFSAP CEPT Mandate to develop conditions for shared use of the band between Mobile and RLAN. https://cept.org/files/1412/Mandate%20to%20CEPT%20upper%206%20GHz%20band.pdf
7 145-7 190 MHz FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	**7 145-7 190 MHz** FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458	Fixed links ~~Lower 7 GHz~~ (7110-7425 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 Annex 3 latest version ~~Annex 3~~.	SANAS to erected a facility near Matjiesfontein
7 190-7 235 MHz	**7 190-7 235 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459	EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B FIXED NF14 MOBILE SPACE RESEARCH (except deep space) (Earth-to-space) 5.460 5.458	Tracking, telemetry and command for spacecraft operation Fixed Links (L7) (7110 – 7425 MHz)	~~SANAS to erected a facility near Matjiesfontein~~	SANAS to erected a facility near Matjiesfontein
7 235-7 250 MHz EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A FIXED MOBILE 5.458	**7 235-7 250 MHz** EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A FIXED NF14 MOBILE 5.458	Tracking, telemetry and command for spacecraft operation Fixed links ~~- Lower 7 GHz~~ (7110-7425 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 latest version Annex 3.	SANAS to erected a facility near Matjiesfontein
7 250-7 300 MHz FIXED	**7 250-7 300 MHz** FIXED NF14	Fixed links - ~~Lower 7 GHz~~ (7110-7425 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 latest version Annex 3.	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) 5.461		~~RFSAP to be developed~~.	This band is used only for fixed links.
7 300-7 375 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	**7 300-7 375 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.461	Fixed links - ~~Lower 7 GHz~~ (7110-7425 MHz) and ~~Upper 7 GHz~~ (7425-7750 MHz) MSS (7250-735 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 latest version Annex 3. Channelling plan for U7 band in accordance with ITU-R Rec. F.385 latest version Annex 3. ~~RFSAP to be developed~~.	
7 375-7 450 MHz FIXED FIXED-SATELLITE (space-to-Earth)	**7 375-7 450 MHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth)	Fixed links - ~~Lower 7 GHz~~ (7110-7425 MHz) and ~~Upper 7 GHz~~ (7425-7750 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 Annex 3. Channelling plan for U7 band in accordance with ITU-R	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461AC	MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (space-to-Earth) ~~(GSO)~~ 5.461AA 5.461AB 5.461AC		Rec. F.385 Annex 3 latest version.	
7 450-7 550 MHz FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL -SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461A 5.461AC	**7 450-7 550 MHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (GSO) (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) (GSO) 5.461AA 5.461AB 5.461A 5.461AC	Fixed links - ~~Upper 7 GHz~~ (7425-7750 MHz)	Channelling plan for U7 band in accordance with ITU-R Rec. F.385 Annex 3 latest version.	
7 550-7 750 MHz FIXED FIXED-SATELLITE (space-to-Earth)	**7 550-7 750 MHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth)	Fixed links - ~~Upper 7 GHz~~ (7425-7750 MHz)	Channelling plan for U7 band in accordance with ITU-R Rec. F.385 Annex 3 latest version..	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461AC	MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AC			
7 750-7 900 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	**7 750-7 900 MHz** FIXED NF14 METEOROLOGICAL-SATELLITE(non-GSO) (space-to-Earth) 5.461B MOBILE except aeronautical mobile	Fixed links ~~Lower 8 GHz~~ (7725-8275 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 2 ~~1~~.latest version	Annex 1 is based on a 2 MHz frequency raster, which is not applied in South Africa in any frequency band
7 900-8 025 MHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	**7 900-8 025 MHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.461	Fixed links ~~Lower 8 GHz~~ (7725-8275 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 2 ~~1~~. latest version.	Annex 1 is based on a 2 MHz frequency raster, which is not applied in South Africa in any frequency band
8 025-8 175 MHz	**8 025-8 175 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED NF14 FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A ~~5.463~~	Earth exploration satellite systems Fixed links - Lower 8 GHz (7725-8275 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 2 ~~1~~. latest version .	Annex 1 is based on a 2 MHz frequency raster, which is not applied in South Africa in any frequency band
8 175-8 215 MHz EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	**8 175-8 215 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED NF14 FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A 5.463	Earth exploration satellite systems Fixed links - ~~Lower 8 GHz~~ (7725-8275 MHz) Ground to air	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 2 ~~1~~latest version.	Annex 1 is based on a 2 MHz frequency raster, which is not applied in South Africa in any frequency band
8 215-8 400 MHz	**8 215-8 400 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED NF14 FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A 5.463	Ground to air Fixed links - ~~Lower 8 GHz~~ (7725-8275 MHz) and ~~Upper 8 GHz~~ (8275-8500 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 2 ~~1~~ latest version..Channelling plan for U8 band in accordance with ITU-R Rec. F.386 Annex 2 ~~1~~ latest version..	Annex 1 is based on a 2 MHz frequency raster, which is not applied in South Africa in any frequency band
8 400-8 500 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466	**8 400-8 450 MHz** FIXED NF14 MOBILE except aeronautical mobile SPACE RESEARCH(deep space) (space-to-Earth) 5.465	Fixed links - ~~Upper 8 GHz~~ (8275-8500 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 2 ~~1~~ latest version..	Annex 1 is based on a 2 MHz frequency raster, which is not applied in South Africa in any frequency band
	8 450-8 500 MHz FIXED NF14	Fixed links - ~~Upper 8 GHz~~ (8275-8500 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 2 ~~1~~ latest version.	Annex 1 is based on a 2 MHz frequency raster, which is not applied in South

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth)			Africa in any frequency band
8 500-8 550 MHz RADIOLOCATION 5.468 5.469	**8 500-8 550 MHz** RADIOLOCATION	RADARS. aeronautical radio navigation e.g. precision airfield approach radars.		
8 550-8 650 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	**8 550-8 650 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.469A	RADARS. aeronautical radionavigation e.g. precision airfield approach radars		
8 650-8 750 MHz RADIOLOCATION 5.468 5.469	**8 650-8 750 MHz** RADIOLOCATION	RADARS. aeronautical radio navigation e.g. precision airfield approach radars		
8 750-8 850 MHz	**8 750-8 850 MHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470	RADARS. aeronautical radionavigation e.g. precision airfield approach radars Airborne Doppler navigation aids (8 800 MHz)		
8 850-9 000 MHz RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	**8 850-9 000 MHz** RADIOLOCATION MARITIME RADIONAVIGATION 5.472	RADARS. aeronautical radionavigation e.g. precision airfield approach radars Shore-based radars		
9 000-9 200 MHz AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.471 5.473A	**9 000-9 200 MHz** AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.473A	Approach radars RADARS. aeronautical radionavigation e.g. precision airfield approach radars Ground-based radars and associated airborne transponders		
9 200-9 300 MHz	**9 200-9 225 MHz**			

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474 5.474D	EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474 5.474D	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g. precision airfield approach radars Harbour radars Shore-based radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015)..	
	9 225-9 300 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) Harbour radars RADARS. aeronautical radionavigation e.g. precision airfield approach radars Shore-based radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015)..	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.474 5.474D			
9 300-9 500 MHz RADIONAVIGATION 5.475 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION	**9 300-9 320 MHz** RADIONAVIGATION except aeronautical radionavigation EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.427 5.474 5.475 5.475A 5.475B 5.476A	 Shore based radars (9380 – 9440 MHz) Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g. precision airfield approach radars Airborne weather radars Ground-based radar beacons Ground-based radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).	
	9 320-9 500 MHz			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	RADIONAVIGATION except aeronautical radionavigation EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION AERONAUTICAL RADIONAVIGATION	Shore based radars (9380 – 9440 MHz) Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g. precision airfield approach radars Airborne weather radars Ground-based radar beacons Ground-based radars Airborne weather radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).	
5.427 5.474 5.475A 5.475B 5.476A	5.427 5.474 5.475 5.475A 5.475B 5.476A			
9 500-9 800 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active)	**9 500-9 800 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active)	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g.	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.476A	5.476A	precision airfield approach radars		
9 800-9 900 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477 5.478 5.478A 5.478B	**9 800-9 900 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.478A 5.478B	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).	
9 900-10 000 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Fixed	**9 900-9 975 MHz** EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Fixed 5.474D 5.479	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g. precision airfield approach radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).).	
	9 975-10 000 MHz			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.474D 5.477 5.478 5.479	EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Fixed Meteorological-satellite 5.474D 5.479	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g. precision airfield approach radars Weather radars Fixed Meteorological (9975-10025 Mhz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015)..	
10-10.4 GHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION	**10-10.025 GHz** EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED ~~NF14~~ MOBILE RADIOLOCATION Amateur	Fixed PtP Links Low power video links (10.0 – 10.15 GHz	Rec ITU-R RS.2066-0 (EESS) Rec ITU-R RS.2065-0 (EESS)	NF14 is deleted as it is not listed in NF14 as it is not a PTP band

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Amateur 5.474D 5.479	Meteorological-satellite 5.474D 5.479			
	10.025-10.4 GHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED NF14 MOBILE RADIOLOCATION Amateur 5.474D 5.479	Fixed PtP Links Low power video links (10.0 – 10.15 GHz FS links or BFWA (10.15-10.3 GHz)	Rec ITU-R RS.2066-0 (EESS) Rec ITU-R RS.2065-0 (EESS) Paired with 10.5-10.65 GHz	
10.4-10.45 GHz FIXED MOBILE RADIOLOCATION Amateur	**10.4-10.45 GHz** FIXED NF14 MOBILE RADIOLOCATION Amateur	Low power video links (10.0 – 10.15 GHz) BFWA (10.15 – 10.3 GHz) Motion sensors	Paired with 10.50-10.65 GHz Channelling plan for 10.5 GHz band in accordance with ITU-R Rec. F.1568 latest version Annex 1.	
10.45-10.5 GHz	**10.45-10.5 GHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIOLOCATION Amateur Amateur-satellite 5.481	RADIOLOCATION Amateur Amateur-satellite	Radiolocation Radars Motion Sensors		
10.5-10.55 GHz FIXED MOBILE Radiolocation	**10.5-10.55 GHz** FIXED NF14 MOBILE Radiolocation	BFWA (10.5 – 10.65 GHz) SAP/SAB Applications (Video connections) (10.5 – 10.68 GHz) FDDA (10.5 – 10.6 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). Paired with 10.15-10.30 GHz Channelling plan for 10.5 GHz band in accordance with ITU-R Rec. F.1568 Annex 1 latest version.	
10.55-10.6 GHz FIXED MOBILE except aeronautical mobile	**10.55-10.6 GHz** FIXED NF14 MOBILE except aeronautical mobile	BFWA (10.5 – 10.65 GHz) SAP/SAB Applications (video connections) (10.5 – 10.68 GHz)	Paired with 10.15 – 10.3 GHz Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). Paired with 10.15-10.30 GHz Channelling plan for 10.5 GHz band in accordance	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Radiolocation	Radiolocation	FDDA (10.5 – 10.6 GHz)	with ITU-R Rec. F.1568 Annex 1 latest version	
10.6-10.68 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	**10.6-10.68 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 MOBILE except aeronautical mobile RADIO ASTRONOMY RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	BFWA (10.5 – 10.65 GHz) SAP/SAB Applications (video connections) (10.5 – 10.68 GHz) Radio astronomy (Non thermal synchrotron and enigmatic quasars) Motion sensors	Paired with 10.15 – 10.3 GHz Channelling plan for 10.5 GHz band in accordance with ITU-R Rec. F.1568 Annex 1 latest version. For sharing between EESS (passive) and the fixed and mobile service Res.751 (WRC-07) applies. See section 5 for coordination with radio astronomy	
10.68-10.7 GHz EARTH EXPLORATION-	**10.68-10.7 GHz** EARTH EXPLORATION-SATELLITE (passive)			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Radio astronomy (Non thermal synchrotron and enigmatic quasars)	See section 5 for coordination with radio astronomy	
10.7-10.95 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**10.7-10.95 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	Feeder links in the BSS (UL) Fixed Links (11 GHz) (10.7 – 11.7 GHz) ~~DTH Applications under the FSS~~ The band is available for FSS Planned services (see Appendix 30B) -	~~This band is used for Fixed links (11 GHz) (10.7-11.7 GHz).~~ The channeling plan for FS Links are in accordance with ITU-R Rec.F387.latest version The band is also available for FSS Planned services (see Appendix 30B). The use of the band 10.7-11.7 GHz by the fixed-satellite service (Earth-to-space) is limited, can also be used for BSS feeder links (see 5.484). RFSAP to be developed for the band	DTH doesn't apply to this sub band
10.95-11.2 GHz	**10.95-11.2 GHz**			

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED	FIXED NF14	Feeder links in the BSS (UL) Fixed Links (11 GHz) (10.7 – 11.7 GHz)	~~This band is used for Fixed links (11 GHz) (10.7-11.7 GHz).~~ The channeling plan for FS Links are in accordance with ITU-R Rec.F387 latest version..	
FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	DTH Applications under the FSS Ku-band downlink (VSAT/SNG)	Resolution 155 ~~This band is also used for FSS (downlink) (VSAT/SNG/BSS feeder links).~~ ~~The use of the band 10.7-11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to can also be used for BSS feeder links (see 5.484).~~ RFSAP to be developed for the band	Resolution 155 (WRC-19) applies to Earth stations on board unmanned aircraft, which operate with GSO networks in the FSS
11.2-11.45 GHz FIXED	**11.2-11.45 GHz** FIXED NF14	Feeder links in the BSS (uplink) Fixed Links (11 GHz) (10.7 – 11.7 GHz)	~~This band is used for Fixed links (11 GHz) (10.7-11.7 GHz).~~ The channeling plan for FS Links are in accordance with ITU-R Rec.F387 latest version.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	DTH Applications ~~under the FSS~~	The band is also available for FSS Planned services (see Appendix 30B). The use of the band 10.7-11.7 GHz by the ~~fixed-satellite service~~ FSS (Earth-to-space) ~~is limited to~~ can also be used for BSS feeder links (see 5.484). A RFSAP to be developed for the band.	
11.45-11.7 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484	**11.45-11.7 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484	Fixed Links (11 GHz) (10.7 – 11.7 GHz) Fixed-satellite downlinks (PTP/VSAT/SNG), Feeder links in the BSS (uplink) DTH Applications ~~under the FSS~~	~~This band is used for Fixed links (11 GHz) (10.7-11.7 GHz)~~. The channeling plan for FS Links are in accordance with ITU-R Rec.F387 latest version. ~~This band is also used for FSS (downlink) (VSAT/SNG)/BSS feeder links).~~ The use of the band 10.7-11.7 GHz by the ~~fixed-satellite service~~ FSS(Earth-to-space) is limited to ~~can also be used~~	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		~~for~~ BSS feeder links (see 5.484). A RFSAP to be developed for this band	
11.7-12.5 GHz FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	**11.7-12.5 GHz** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 FIXED-SATELLITE (non-GSO) (space-to-Earth) 5.487 5.487A	Fixed links OB links Broadcast satellite systems BSS feeder links ENG	This band is available for BSS in accordance with Appendix 30 of ITU RR. Refer to Annex B.	
12.5-12.75 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space)	**12.5-12.75 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space)	FSS uplinks (VSAT/SNG)(12.5 – 12.75 GHz) Aeronautical Earth Stations/ESV/ESIM Applications NGSO FSS	Article 9.12 applies Res. 155 (WRC-195) applies	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.494 5.495 5.496		Fixed Links		
12.75-13.25 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.441 5.496A MOBILE Space research (deep space) (space-to-Earth)	**12.75-13.25 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.441 5.496A MOBILE Space research (deep space) (space-to-Earth)	Fixed Links (13 GHz) (12.75 – 13.25 GHz)	Channelling plan for 13 GHz band in accordance with ITU-R Rec. F.497 latest version. The band 12.75-13.25 GHz is part of the APP30B Plan (FSS Earth-tospace) Article 9.12 applies ~~Res. 172 (WRC-19) applies~~ Res 121 (WRC-23)	Resolution 172 (WRC-19) was replaced by Res-121(WRC-23 _ ESIM on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service
13.25-13.4 GHz	**13.25-13.4 GHz** EARTH EXPLORATION-SATELLITE (active)			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A	Airborne Doppler Radar Doppler navigation aids		
13.4-13.65 GHz EARTH EXPLORATION-SATELLITE (active) FIXED SATELLITE (space-to-Earth) 5.499A 5.499B RADIOLOCATION	**13.4-13.65 GHz** EARTH EXPLORATION-SATELLITE (active) FIXED SATELLITE (GSO) (space-to-Earth) 5.499A 5.499B RADIOLOCATION SPACE RESEARCH 5.499C 5.499D	SRD: Radio Determination ~~Allications~~ Allocations Active spaceborne sensors Relay data from GSO space stations to associated Earth stations Relay data from GSO space stations to associated non-GSO space stations Space research	ITU-R Rec SM 1896-1 and Report ITU-R SM.2153-7 latest versions	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH 5.499C 5.499D Standard frequency and time signal-satellite (Earth-to-space) 5.499E 5.500 5.501 5.501B	SPACE RESEARCH (space-to-Earth) SPACE RESEARCH (space-to-space) Standard frequency and time signal-satellite (Earth-to-space) 5.499E 5.501B 5.499 5.499E 5.500 5.501 5.501B			
13.65-13.75 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	**13.65-13.75 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.501B	FDDA (13.4 – 14 GHz) RADIOLOCATION Active spaceborne sensors Other than active spaceborne sensors	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
13.75-14 GHz FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.499 5.500 5.501 5.502 5.503	**13.75-14 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.502 5.503	FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) FDDA (13.4 – 14 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015)	
14-14.25 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B	**14-14.25 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A ~~5.457B~~ 5.484A 5.484B 5.506 ~~5.506B~~ NF17	FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz) Feeder links ~~in~~ for the BSS (14- 14.5 GHz)	Res 155 (WRC-19) (unmanned aircraft) Rec ITU-R M.1643-0 (aircraft earth stations) ~~Earth Station onboard vessels (ESV) also allowed under FSS~~; Res 902 (Rev.WRC-23) (ESVs)	5.457B and 5.506 foot notes are not applicable to South Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space research 5.504A 5.505	RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space research 5.504A		The band 14.0-14.5 GHz may also be used for ~~AES~~ UAS CNPC (aircraft-to-space station). RFSAP to be developed for this band.	Res 902 applies to the use of ESVs in this band ITU-R M.1643-0 Rec applies in the band RFSAP to be developed for the band 14-14.5 GHz due to the multiple services operating in this band (ESVs, UAS CNPC, aircraft earth stations, VSATs, etc) and the complex sharing environment, . Cross-border coordination is required as per 5.509A (14.3 to 14.5 GHz).
14.25-14.3 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B	**14.25-14.3 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A ~~5.457B~~ 5.484A 5.484B 5.506 ~~5.506B~~ NF17	FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz) Feeder links ~~in~~ for the BSS	~~Earth Station onboard vessels (ESV) also allowed under FSS~~; Res 155 ~~(WRC-15)~~(WRC-19) (unmanned aircraft) Rec ITU-R M.1643-0 (aircraft earth stations)	5.457B and 5.506 foot notes are not applicable to South Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Res. 902 (Rev.WRC-23) (ESVs) ~~applies~~. The band 14.0-14.5 GHz may also be used for ~~AES~~ UAS CNPC (aircraft-to-space station).	Res 902 applies to the use of ESVs in this band ITU-R M.1643-0 Rec applies in the band
		~~Aeronautical earth stations/ESV/ESIM Applications~~	RFSAP to be developed for the band 14-14.5 GHzt	Aeronautical earth stations/ESV/ESIM Applications are deleted since the band is not available for ESIMs (Res.156). Secondly, aeronautical is not linked with ESVs, which is associated with vessels (ship stations).
RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508	RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A Space research 5.504A ~~5.508A~~	Fixed links		.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
14.3-14.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A	**14.3-14.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.457A ~~5.457B~~ 5.484A 5.484B 5.506 ~~5.506B~~ NF17 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A ~~5.509A~~ Radionavigation-satellite 5.504A	FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz) Feeder links ~~in~~ for the BSS (14 - 14.5 GHz) ~~Aeronautical earth stations/ESV/ESIM Applications~~ ~~Fixed links~~	~~Earth Station on board vessels (ESV) also allowed under FSS~~; Res. 902 (Rev.WRC-23) (ESVs) ~~applies~~. The band 14.0-14.5 GHz may also be used for ~~AES~~ UAS CNPC (aircraft-to-space station). ~~Recommendation~~ ITU-R M.1643-0 (aircraft earth station) ~~(WRC-15)~~ A RFSAP for the band 14-14.5 GHz to be developed.	5.457B and 5.506 foot notes are not applicable to South Africa Res 902 applies to the use of ESVs in this band ITU-R M.1643-0 Rec applies in the band 5.509A foot note is not applicable to South Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
14.4-14.47 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A	**14.4-14.47 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.457A ~~5.457B~~ 5.484A 5.484B 5.506 5.506B NF17 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A	FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz) Feeder links ~~in~~ for the BSS (14 - 14.5 GHz) ~~Aeronautical earth stations/ESV/ESIM Applications~~ Fixed links	~~Earth Station on board vessels (ESV) also allowed under FSS~~; Res. 902 (Rev.WRC-23) (ESVs) ~~applies~~. The band 14.0-14.5 GHz may also be used for ~~AES~~ UAS CNPC (aircraft-to-space station). ~~Recommendation~~ ITU-R M.1643-0 (aircraft earth station) ~~(WRC-15)~~ A RFSAP to be developed for the band 14-14.5 GHz.	5.457B footnote is not applicable to South Africa Res 902 applies to the use of ESVs in this band ITU-R M.1643-0 Rec applies in the band
14.47-14.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B	**14.47-14.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.457A ~~5.457B~~ 5.484A 5.506~~ 5.506B~~ NF17	FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz) Feeder links ~~in~~ for the BSS (14 - 14.5 GHz)	~~Earth Station on board vessels (ESV) also allowed under FSS~~; Res. 902 (Rev.WRC-23) (ESVs) ~~applies~~. The band 14.0-14.5 GHz may also be used for ~~AES~~ UAS CNPC (aircraft-to-space station).	5.457B and 5.506 foot notes are not applicable to South Africa Res 902 applies to the use of ESVs in this band

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	~~Aeronautical earth stations/ESV/ESIM Applications~~ ~~Fixed links~~ Radio Astronomy (non-thermal synchrotron and enigmatic quasars	Rec ITU-R M.1643-0 (aircraft earth station) See section 5 for coordination with radio astronomy A RFSAP for the band 14-14.5 GHz to be developed.	ITU-R M.1643-0 Rec applies in the band
14.5-14.75 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510 MOBILE Space research 5.509G	**14.5-14.75 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) ~~5.509B 5.509C 5.509D 5.509E 5.509F~~ 5.510 MOBILE SPACE RESEARCH (Earth-to-space) 5.509G	Fixed links - 15 GHz (14.5-15.35 GHz) Feeder links ~~in~~ for the BSS (14 - 14.8 GHz) Relay data to GSO space stations from	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636.latest version The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some SADC countries. ~~Refer to Annex B.~~	This band is included in NF14 Footnotes 5.509B, 5.509C, 5.509d, 5.509E and 5.509F are not applicable to South Africa There is no Annex B in the draft Band Plan

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		associated Earth stations		
14.75-14.8 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research 5.509G	**14.75-14.8 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE SPACE RESEARCH (Earth-to-space) 5.509G	Fixed links - 15 GHz (14.5-15.35 GHz) Feeder links ~~in~~ for the BSS (14 - 14.8 GHz) Relay data to GSO space stations from associated Earth stations	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636 latest version. The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some SADC countries. ~~Refer to Annex B.~~	There is no Annex B in the draft Band Plan
14.8-15.35 GHz FIXED MOBILE ~~Space research~~ SPACE RESEARCH 5.510A	**14.8-15.2 GHz** FIXED NF14 MOBILE SPACE RESEARCH 5.510A ~~Space research~~ 5.339	Fixed Links (15 GHz) (14.5 – 15.35 GHz)	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636 latest version. .	
	15.2-15.35 GHz			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.339	FIXED NF14 MOBILE Earth exploration-satellite (passive) ~~Space research~~ SPACE RESEARCH 5.510A Space research (passive) 5.339	Fixed Links (15 GHz) (14.5 – 15.35 GHz)	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636 latest version.	This band is included in NF14 According to 5.510A, the band 14.815.35 GHz could also be used on a primary basis, albeit for satellite systems at distances from the Earth of less than 2000000km.
15.35-15.4 GHz EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	**15.35-15.4 GHz** EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Very long base inferometry Observations Radio Astronomy (non-thermal synchrotron and enigmatic quasars Passive sensing		
15.4-15.41 GHz RADIOLOCATION 5.511E 5.511F	**15.4-15.41 GHz** RADIOLOCATION 5.511E 5.511F	Radio Altimeters/Doppler Radars		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION			
~~15.4-15.43 GHz~~ **15.41-15.43 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION Aeronautical mobile (OR) 5.511G	~~15.4-15.43 GHz~~ **15.41-15.43 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION Aeronautical mobile (OR) 5.511G	Radio Altimeters/~~Dopler~~ Doppler Radars	ICAO: Guidelines on Radiocommunication (Annex 10)	
15.43-15.63 GHz FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION Aeronautical mobile (OR) 5.511G	**15.43-15.63 GHz** FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION Aeronautical mobile (OR) 5.511G	Feeder links of non-GSO-satellite systems in the MSS Radio Altimeters ~~Dopler~~ Doppler Radars	ICAO: Guidelines on Radiocommunication (Annex 10)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.511C	5.511C			
15.63-15.7 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION Aeronautical mobile (OR) 5.511G	**15.63-15.7 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION Aeronautical mobile (OR) 5.511G	Radio Altimeters ~~Dopler~~ Doppler Radars	ICAO: Guidelines on Radiocommunication (Annex 10)	
15.7-16.6 GHz RADIOLOCATION 5.512 5.513	**15.7-16.6 GHz** RADIOLOCATION	~~Dopler~~ Doppler Radars Government Services	Altimeters / Distance measuring equipment	
16.6-17.1 GHz RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513	**16.6-17.1 GHz** RADIOLOCATION Space research (deep space) (Earth-to-space)			
17.1-17.2 GHz RADIOLOCATION	**17.1-17.2 GHz** RADIOLOCATION	WAS / RLAN (17.1 – 17.3 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.512 5.513				
17.2-17.3 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	**17.2-17.3 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.513A	WAS / RLAN (17.1 – 17.3 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015).	
17.3-17.7 GHz FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	**17.3-17.7 GHz** FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B (non-GSO) (Earth-to-space) Radiolocation	Feeder links of GSO-satellite systems in the BSS [~~HIGH-DENSITYAPPLICATIONS IN THE FSS~~ High Density FSS(space-to-Earth)]	The band 17.3-17.7 GHz is part of the APP30A Plan (Feeder Links for BSS) for many SADC countries; refer to Annex B. The band 17.3-17.7 GHz is identified for HDFSS; Res.143 applies.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
17.7-18.1 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A 5.517B (Earth-to-space) 5.516 MOBILE	**17.7-18.1 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A 5.517B (Earth-to-space) 5.516 ~~(non-GSO) (Earth-to-space)~~ MOBILE	Fixed Links (18 GHz) (17.7 – 19.7 GHz) BSS Feeder Links (17.3-18.1 GHz) ~~Feeder links of GSO satellite systems in the BSS~~ FSS ESIM (17.7-18.6 GHz)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 latest version ~~Annex 1.~~ Resolution 169-GSO ESIM (WRC-19) Resolution 123-NGSO ESIM (WRC-23)	FSS ESIM is an application in this band according to Resolution 123. Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band
18.1-18.4 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A 5.517B	**18.1-18.4 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.484A ~~5~~.~~516B~~ 5.517A 5.517B (Earth-to-space) 5.520	Fixed Links (18 GHz) (17.7 – 19.7 GHz) BSS Feeder Links (18.1-18.4 GHz) ESIMS (under the FSS)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 latest version ~~Annex 1.~~	As per 5.516B 18.3-

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
(Earth-to-space) 5.520 INTER-SATELLITE 5.521A MOBILE 5.519 5.521	 INTER-SATELLITE 5.521A MOBILE METEOROLOGICAL-SATELLITE (GSO) (space-to-Earth) 5.519	~~Feeder links of GSO satellite systems in the BSS~~ Inter-satellite (18.1 -18.6 GHz)	Resolution 169 (Rev. WRC-~~19~~ 23) Resolution 123 (WRC-23) Resolution 679 (WRC-23)	19.3 GHz band is applicable in Region 2 Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band
18.4-18.6 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A 5.517B INTER-SATELLITE 5.521A MOBILE	**18.4-18.6 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.484A ~~5.516B~~ 5.517A 5.517B INTER-SATELLITE 5.521A MOBILE	 Fixed Links (18 GHz) (17.7 – 19.7 GHz) ESIMS (under the FSS) Inter-satellite (18.1 -18.6 GHz)	 Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 latest version Annex 1. Resolution 169 (WRC-19) Resolution 123 (WRC-23) Resolution 679 (WRC-23)	 As per 5.516B 18.3-19.3 GHz band is applicable in Region 2 Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
				broader deployment of aeronautical and maritime ESIMs in this band
18.6-18.8 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	**18.6-18.8 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A ~~5.522C~~	Fixed Links (18 GHz) (17.7 – 19.7 GHz) Under FSS, only GSO and systems with orbit apogee greater than 20 000 km ESIMS (under the FSS) Passive Sensing	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 latest version ~~Annex 1.~~ Resolution 169 (WRC-19) (ESIMs GSO FSS)	5.522C is applicable to South Africa
18.8-19.3 GHz FIXED FIXED-SATELLITE (space-to-Earth)	**18.8-19.3 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth~~) 5.516B~~ 5.517A 5.517B 5.523A ~~5.517B~~	Fixed Links (18 GHz) (17.7 – 19.7 GHz) ESIMS (under the FSS)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 latest version ~~Annex 1.~~	As per 5.516B 18.3-

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.516B 5.517A 5.517B 5.523A INTER-SATELLITE 5.521A MOBILE	INTER-SATELLITE 5.521A MOBILE	Inter-satellite (18.8-20.2 GHz)	Resolution 169 (Rev. WRC~~-19~~ 23) Resolution 123 (WRC-23) Resolution 679 (WRC-23)	19.3 GHz band is applicable in Region 2 FSS ESIM is an application in this band according to Resolution 123. Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band
19.3-19.6~~7~~ GHz FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E	**19.3-19.6~~7~~ GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E ~~(Earth-to-space) 5.523B 5.523C 5.523D 5.523E~~	Fixed Links (18 GHz) (17.7 – 19.7 GHz) FSS (Earth-to-space) is limited to feeder links of non-GSO-satellite systems in the MSS ESIMS (under the FSS)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1 latest version ~~Annex 1.~~ Resolution 169 (WRC-19)	. Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
~~(Earth-to-space) 5.523B 5.523C 5.523D 5.523E~~ INTER-SATELLITE 5.521A 5.523DA MOBILE	INTER-SATELLITE 5.521A 5.523DA MOBILE	Inter-satellite (18.8-20.2 GHz)	Resolution 679 (WRC-23)	aeronautical and maritime ESIMs in this band
	~~**19.6-19.7 GHz**~~ ~~FIXED NF14~~ ~~FIXED-SATELLITE (space-to-Earth) 5.523C 5.523D 5.523E (Earth-to-space) 5.523C 5.523D 5.523E~~ ~~MOBILE~~	~~Fixed Links (18 GHz) (17.7 – 19.7 GHz)~~ ~~Feeder links of non-GSO satellite systems in the MSS~~ ~~ESIMS (under the FSS)~~	~~Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 latest version Annex 1.~~ ~~Resolution 169 (WRC-19)~~	
19.7-20.1 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A	**19.7-20.1 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A INTER-SATELLITE 5.521A	ESIMS (under the FSS) GSO/FSS [~~HIGH-DENSITYAPPLICATIONS IN THE FSS~~ High Density FSS(space-to-Earth)] (19.7-20.2 GHz)	Resolution 123 (WRC-23) ~~The band 19.7-20.2 GHz is identified for HDFSS~~; Res.143 applies. Resolution 156 (WRC-15) applies to ESIMS Resolution 143 (Rev.WRC-19) Resolution 679 (WRC-23)	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
INTER-SATELLITE 5.521A Mobile-satellite (space-to-Earth) 5.524	Mobile-satellite (space-to-Earth)	Inter-satellite (18.8-20.2 GHz)		aeronautical and maritime ESIMs in this band
20.1-20.2 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A INTER-SATELLITE 5.521A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	**20.1-20.2 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A INTER-SATELLITE 5.521A MOBILE-SATELLITE (space-to-Earth) 5.525 5.526 5.527 5.528	ESIMS (under the FSS) [~~HIGH DENSITYAPPLICATIONS IN THE FSS~~ High Density FSS (space-to-Earth)] (19.7-20.2 GHz) Inter-satellite (18.8-20.2 GHz)	Resolution 123 (WRC-23) The band 19.7-20.2 GHz is identified for HDFSS; Res.143 applies. Resolution 156 (WRC-15) applies to ESIMS Resolution 143 (Rev.WRC-19) Resolution 679 (WRC-23)	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band
20.2-21.2 GHz FIXED-SATELLITE (space-to-Earth)	**20.2-21.2 GHz** FIXED-SATELLITE (space-to-Earth)	Fixed Satellite Systems(TVRO)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.524 5.529A	MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.529A			
21.2-21.4 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	**21.2-21.4 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 MOBILE SPACE RESEARCH (passive)	Passive Sensing Fixed Links (23 GHz) (21.2 – 23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 latest version ~~Annex 1.~~	
21.4-22 GHz FIXED MOBILE BROADCASTING-SATELLITE 5.208B	**21.4-22 GHz** FIXED NF14 MOBILE BROADCASTING-SATELLITE 5.208B	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Broadcast satellite systems	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 latest version ~~Annex 1.~~ The use of BSS in this band is subject to the provisions of ~~WRC-15~~ Re~~solutions~~ 552 (Rev.WRC-~~19~~ 23), Resolution 554 (WRC-23),	Stakeholders are requested to provide Information related to

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.530A 5.530B	5.530A 5.530B		~~and~~ Res ~~-~~ 553 (Rev. WRC-~~15~~23) and Res ~~-~~555." ~~Resolution 555~~ (Rev. WRC-15) was abrogated on 23 November 2019 (Res~~olutio~~n 99 (Rev. WRC-~~19~~ 23))	the use of BSS in this band Resolution 554 (WRC-12) applies to the use of BSS in the band 21.4-23 GHz
22-22.21 ~~4~~ GHz FIXED MOBILE except aeronautical mobile (R) 5.531A 5.531B 5.531C 5.531D 5.531F 5.149	**22-22.21 ~~4~~ GHz** FIXED NF14 MOBILE except aeronautical mobile (R) 5.531A 5.531B 5.531C 5.531D 5.531F 5.149	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Radio astronomy (red-shifted H_2O Passive Sensing	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 latest version ~~Annex 1.~~ See section 5 for coordination with radio astronomy	
22.2 -22.21 FIXED MOBILE except aeronautical mobile 5.149	**22.2 -22.21** FIXED MOBILE except aeronautical mobile 5.149	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Radio astronomy (red-shifted H_2O Passive Sensing	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 latest version ~~Annex 1.~~ See section 5 for coordination with radio astronomy	
22.21-22.5 GHz	**22.21-22.5 GHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Radio astronomy (red-shifted H_2O Passive Sensing	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 latest version ~~Annex 1.~~ See section 5 for coordination with radio astronomy	
22.5-22.55 GHz FIXED MOBILE	**22.5-22.55 GHz** FIXED NF14 MOBILE	Fixed Links (23 GHz) (21.2 – 23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 latest version ~~Annex 1.~~	
22.55-23.15 GHz FIXED	**22.55-23.15 GHz** FIXED NF14 INTER-SATELLITE 5.338A	Fixed Links (23 GHz) (21.2 – 23.6 GHz)	Channelling plan for 23 GHz band in accordance with	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149		ITU-R Rec. F.637 Annex 1 latest version ~~Annex 1.~~ See section 5 for coordination with radio astronomy Resolution 750 (Rev.WRC-19) (passive protection)	Resolution 750 applies in the band for the protection of passive service. See 5.338A.
23.15-23.55 GHz FIXED INTER-SATELLITE 5.338A MOBILE	**23.15-23.55 GHz** FIXED NF14 INTER-SATELLITE 5.338A MOBILE	Fixed Links (23 GHz) (21.2 – 23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 latest version Resolution 750 (Rev.WRC-19) (passive protection)	
23.55-23.6 GHz FIXED MOBILE	**23.55-23.6 GHz** FIXED NF14 MOBILE	Fixed Links (23 GHz) (21.2 – 23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 latest version ~~Annex 1.~~	
23.6-24 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY	**23.6-24 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY	Radio astronomy (observation of ammonia and	See section 5 for coordination with radio astronomy	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	SPACE RESEARCH (passive) 5.340	continuum observations) Passive Sensing		
24-24.05 GHz AMATEUR AMATEUR-SATELLITE 5.150	**24-24.05 GHz** AMATEUR AMATEUR-SATELLITE 5.150	Non-specific SRDs (24-24.25 GHz) ISM (24.0-24.25 GHz) SRD applications (24-24.25 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). Common international SRD band; see ITU-R Rec. SM.1896 latest version. The band 24.0-24.25 GHz is designated for ISM applications (5.150).	
24.05-24.25 GHz RADIOLOCATION Amateur Earth exploration-satellite (active)	**24.05-24.25 GHz** RADIOLOCATION Amateur Earth exploration-satellite (active)	FDDA (24.05 – 24.25 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). 30 March 2015).	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.150	5.150	SRDs (24-24.25 GHz) (Reservoir Level Probing Radar) ISM (24.0-24.25 GHz)	The band 24.0-24.25 GHz is designated for ISM applications (5.150). Common international SRD band; see ITU-R Rec. SM.1896 ITU-R Report SM.2153-7 latest version applies	
24.25-24.45 GHz FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	**24.25-24.45 GHz** FIXED NF14 MOBILE except aeronautical mobile 5.338A 5.532AB NF9	Fixed links – 26 GHz (24.25-26.5 GHz) IMT TDD (24.25 – 27.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1 latest version Annex 1. Temporary fixed links for ENG/OB Resolution 242 (WRC-19 23) (IMT) Recommendation ITU-R M.1036-67 currently being updated and revised within the ITU-R (International Mobile Telecommunications (IMT)) RFSAP to be developed for the band 24.25-27.5 GHz	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa. Spectrum highest-value analysis and a follow-up RFSAP to be conducted to

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			Res 750 (Rev.WRC-19) (passive protection)	identify suitable applications, considering both IMT, Fixed Service (FS) links and sharing opportunities.
24.45-24.65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	**24.45-24.65 GHz** FIXED NF14 INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB NF9	Fixed links – 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT TDD (24.25 – 27.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1 latest version ~~Annex 1.~~ Re~~solution~~ 242 (WRC-~~19~~ 23) (IMT) Recommendation ITU-R M.1036-~~6 currently being updated and revised within the ITU-R (International Mobile Telecommunications (IMT))~~ RFSAP to be developed for the band 24.25-27.5 GHz Res 750 (Rev.WRC-19) (passive protection)	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa. Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications, considering both IMT, Fixed Service (FS) links and sharing opportunities.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
24.65-24.75 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	**24.65-24.75 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB NF9	Fixed links – 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25 – 27.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1 latest version ~~Annex 1.~~ Re~~solution~~ 242 (WRC-~~19~~ 23) (IMT) Rec~~ommendation~~ ITU-R M.1036-~~6~~ ~~currently being updated and revised within the ITU-R (International Mobile Telecommunications (IMT))~~ RFSAP to be developed for the band 24.25-27.5 GHz Res 750 (Rev.WRC-19) (passive protection)	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa. Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications, considering both IMT, Fixed Service (FS) links and sharing opportunities.
24.75-25.25 GHz FIXED	**24.75-25.25 GHz** FIXED NF14			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED-SATELLITE (Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB	FIXED-SATELLITE (Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB NF9	Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT TDD (24.25 – 27.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1 latest version ~~Annex 1.~~ Re~~solution~~ 242 (WRC-~~19~~ 23) (IMT) Rec~~ommendation~~ ITU-R M.1036-~~6 currently being updated and revised within the ITU-R (International Mobile Telecommunications (IMT))~~ RFSAP to be developed for the band 24.25-27.5 GHz Res 750 (Rev.WRC-19) (passive protection)	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications, considering both IMT, Fixed Service (FS) links and sharing opportunities.
25.25-25.5 GHz FIXED 5.534A	**25.25-25.5 GHz** FIXED NF14	Fixed Links (26 GHz) (24.5 – 26.5 GHz) BFWA (24.5-26.5 GHz	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1 latest version ~~Annex 1.~~ Re~~solution~~ 242 (WRC-~~19~~ 23) (IMT)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB Standard frequency and time signal-satellite (Earth-to-space)	INTER-SATELLITE (Earth exploration-satellite applications) 5.536 INTER-SATELLITE (space research applications) 5.536 INTER-SATELLITE (transmissions of data originating from industrial and medical activities in space) MOBILE 5.338A 5.532AB NF9 Standard frequency and time signal-satellite (Earth-to-space)	IMT TDD (24.25 – 27.5 GHz)	Recommendation ITU-R M.1036-6 currently being updated and revised within the ITU-R (International Mobile Telecommunications (IMT)) RFSAP to be developed for the band 24.25-27.5 GHz Res 750 (Rev.WRC-19) (passive protection)	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa
25.5-27 GHz EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B FIXED 5.534A	**25.5-27 GHz** EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B FIXED NF14	National Polar-Orbiting Operational Environment Satellite System (NPOESS) 25.5-27 GHz Fixed Links (26 GHz) (24.5 – 26.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 latest version Annex 1 latest version Annex 1. Resolution 242 (WRC-19 23) (IMT) Recommendation ITU-R M.1036-6 currently being	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
INTER-SATELLITE 5.536	INTER-SATELLITE (Earth exploration-satellite applications) 5.536 INTER-SATELLITE (space research applications) 5.536 INTER-SATELLITE (transmissions of data originating from industrial and medical activities in space)	FWA (24.5-26.5 GHz	~~updated and revised within the ITU-R (International Mobile Telecommunications (IMT))~~ RFSAP to be developed for the band 24.25-27.5 GHz Res 750 (Rev.WRC-19) (passive protection)	
MOBILE 5.338A 5.532AB	MOBILE 5.338A 5.532AB NF9	IMT TDD (24.25 – 27.5 GHz)		IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa
SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A	SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A			Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications, considering both IMT, Fixed Service (FS)

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
				links and sharing opportunities.
27-27.5 GHz FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB	**27-27.5 GHz** FIXED INTER-SATELLITE (Earth exploration-satellite applications) 5.536 INTER-SATELLITE (space research applications) 5.536 INTER-SATELLITE (transmissions of data originating from industrial and medical activities in space) MOBILE 5.338A 5.532AB NF9	IMT TDD (24.25 – 27.5 GHz)	Rec~~ommendation~~ ITU-R M.1036 -~~6~~ latest version ~~currently being updated and revised within the ITU-R (International Mobile Telecommunications (IMT))~~ RFSAP for the band 24.25 - 27.5 GHz to be developed Res 750 (Rev.WRC-19) (passive protection)	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
27.5-28.5 GHz FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.539 INTER-SATELLITE 5.521A	**27.5-27.501 GHz** FIXED 5.537A NF14 NF18 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.539 INTER-SATELLITE 5.521A FIXED-SATELLITE (space-to-Earth) (27.5-27.501 GHz)	Fixed Links (28 GHz) (27.5 – 29.5 GHz), Beacon transmission for up-link power control) (FSS (space-toEarth)) [~~HIGH-DENSITYAPPLICATIONS IN THE FSS~~ S HDFSS (Earth-to-space) (27.5-27.82 GHz) ESIMS (under the FSS) GSO (27.5-29.5 GHz) and NGSO (27.5-29.1 GHz)	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2 latest version ~~Annex 2.~~ ~~The band 27.5-27.82 GHz is identified for HDFSS~~; Res.143 (Rev.WRC-19) (HDFSS) ~~applies~~. The band 27.5-30 GHz may be used by the FSS for BSS feeder links under the FSS (Earth-to-space). R~~esolution~~ 169 (Rev.WRC-~~19~~23) (ESIMs GSO FSS) Res 123 (WRC-23) (ESIMs NGSO FSS) Res 679 (WRC-23) (ISS) RFSAP to be developed for the band 27.5-31 GHz).	NF18 applies to the band 27.5-28.35 GHz (paired with 31.0-31.3 GHz). Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	MOBILE			maritime ESIMs in this band
MOBILE	5.538 ~~5.540~~			
	27.501-27.82 GHz FIXED 5.537A NF14 NF18 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.539	Fixed Links (28 GHz) (27.5 – 29.5 GHz), Beacon transmission for up-link power control) (FSS (space-toEarth)) [~~HIGH DENSITYAPPLICATIONS IN THE FSS~~ S HDFSS (Earth-to-space) (27.5-27.82 Hz) ESIMS (under the FSS) GSO (27.5-29.5 GHz) and NGSO (27.529.1 GHz)	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2 latest version ~~Annex 2.~~ ~~The band 27.5-27.82 GHz is identified for HDFSS~~; Res.143 (Rev.WRC-19) (HDFSS) ~~applies~~. The band 27.5-30 GHz may be used by the FSS for BSS feeder links under the FSS (Earth-to-space). R~~esolution~~ 169 (Rev.WRC-~~19~~23) (ESIMs GSO FSS) Res 123 (WRC-23) (ESIMs NGSO FSS) Res 679 (WRC-23) (ISS)	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band
	INTER-SATELLITE 5.521A Fixed-satellite (space-to-Earth) (27.501-29.999 GHz) MOBILE			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.~~538~~ 5.540		RFSAP to be developed for the band 27.5-31 GHz).	5.538 applies to the band 27.500-27.501 GHz and is deleted
5.538 5.540	**27.82-28.45 GHz** FIXED 5.537A NF14 NF18 FIXED-SATELLITE (Earth-to-space) 5.484A ~~5.516B~~ 5.517A 5.517B 5.539 INTER-SATELLITE 5.521A	Fixed Links (28 GHz) (27.5 – 29.5 GHz), Beacon transmission for up-link power control FSS (space-toEarth) ESIMsS (under the FSS) GSO (27.5-29.5 GHz) and NGSO (27.529.1 GHz) FSS for BSS feeder links Inter-satellite (27.5-30 GHz)	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2 latest version ~~Annex 2.~~ ~~The band 27.5-27.82 GHz is identified for HDFSS; Res.143 (Rev.WRC-19) (HDFSS) applies. The band 27.5-30 GHz may be used by the FSS for BSS feeder links under the FSS (Earth-to-space).~~ R~~esolution~~ 169 (Rev.WRC-~~19~~23) (ESIMs GSO FSS) Res 123 (WRC-23) (ESIMs NGSO FSS) Res 679 (WRC-23) (ISS)	NF18 applies to the band 27.5-28.35 GHz (paired with 31.0-31.3 GHz). Resolution 143 does not apply: With the split in the band, the HDFSS application and the associated Res. doesn't apply to the sub-band 27.82-28.45 GHz and is deleted. Res 123 extends the ESIM framework to

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	Fixed-satellite (space-to-Earth) (27.501-29.999 GHz) MOBILE 5.538 5.540		RFSAP to be developed for the band 27.5-31 GHz).	NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band
	28.45-28.5 GHz FIXED 5.537A NF14 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517 5.517B 5.539	Fixed Links (28 GHz) (27.5 – 29.5 GHz) Beacon transmission for up-link power control) FSS (space-toEarth (27.501-29.999 GHz) ~~HIGH-DENSITYAPPLICATIONS IN THE FSS~~ HDFSS (Earth-to-space) (28.45-28.94 GHz) FSS for BSS feeder links ESIMS (under the FSS) GSO (27.5-29.5 GHz) and NGSO (27.529.1 GHz)	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2 latest version ~~Annex 2.~~ ~~The band 27.5-27.82 GHz is identified for HDFSS~~; Res.143 (Rev.WRC-19) (HDFSS) ~~applies~~. ~~The band 27.5-30 GHz may be used by the FSS for BSS feeder links under the FSS (Earth-to-space).~~ R~~esolution~~ 169 (Rev.WRC-~~19~~23) (ESIMs GSO FSS)	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band 5.538 applies to the band 27.500-27.501 GHz and is deleted

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	INTER-SATELLITE 5.521A Fixed-satellite (space-to-Earth) MOBILE ~~5.538~~ 5.540	Inter-satellite (27.5-30 GHz)	Res 123 (WRC-23) (ESIMs NGSO FSS) Res 679 (WRC-23) (ISS) RFSAP to be developed for the band 27.5-31 GHz).	
28.5-29.1 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.523A 5.539	**28.5-28.94 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.523A 5.539	Fixed Links (28 GHz) (27.5 – 29.5 GHz) Transfer of data between stations (EESS) Beacon transmission for up-link power control) (FSS (space-to Earth)) ~~HIGH-DENSITYAPPLICATIONS IN THE FSS~~ HDFSS (Earth - to space) (under the FSS) (28.45-28.94 GHz) ESIMS (under the FSS) GSO (27.5-29.5 GHz)	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2 latest version ~~Annex 2.~~ . ~~The band 28.45-28.94 GHz is identified for HDFSS~~; Res.143 (Rev.WRC19) ~~(HDFSS)applies.~~ ~~The band 27.5-30 GHz may be used by the FSS for BSS feeder links under the FSS~~. Res~~esolution~~ 169 (Rev.WRC-~~19~~23) (ESIMs	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
INTER-SATELLITE 5.521A MOBILE Earth exploration-satellite (Earth-to-space) 5.541	INTER-SATELLITE 5.521A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 Fixed-satellite (space-to-Earth) 5.540	and NGSO (27.529.1 GHz) FSS for BSS feeder links Inter-satellite (27.5-30 GHz)	GSO FSS) Res 123 (WRC-23) (ESIMs NGSO FSS) Res 679 (WRC-23) (ISS) RFSAP to be developed for the band 27.5-31 GHz).	
	28.94-29.1 GHz FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.484A ~~5.516B~~ 5.517A 5.523A 5.517B 5.539	Fixed Links (28 GHz) (27.5 – 29.5 GHz) Transfer of data between stations (EESS) Beacon transmission for up-link power control (FSS (space-toEarth) (27.501-29.999 GHz) ESIMsS (under the FSS) GSO (27.5-29.5 GHz) and NGSO (27.529.1 GHz)	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2 latest version ~~Annex 2.~~ ~~The band 27.5-30 GHz may be used for BSS feeder links under the FSS~~ R~~esolution~~ 169 (Rev.WRC-~~19~~23) (ESIMs GSO FSS) Res 123 (WRC-23) (ESIMs NGSO FSS)	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5..540	INTER-SATELLITE 5.521A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 Fixed-satellite (space-to-Earth) 5.540	FSS for BSS feeder links Inter-satellite (27.5-30 GHz)	Res 679 (WRC-23) (ISS) RFSAP to be developed for the band 27.5-31 GHz).	
29.1-29.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A	**29.1-29.46 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) ~~5.516B~~ 5.517A 5.523C 5.523E 5.535A 5.539 5.541A	Fixed Links (28 GHz) (27.5 – 29.5 GHz) ESIMS (under the FSS) (27.5-29.5 GHz) Fixed-satellite (space-to-Earth) (27.501-29.999 GHz) FSS (uplink) – limited to GSO systems and feeder links of non-NGSO-satellite systems in the MSS	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 latest version Annex 2. Resolution 169 (WRC-~~19~~23) `RFSAP to be developed for the band 27.5-31 GHz).	5.516B does not apply to this band

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
INTER-SATELLITE 5.521A MOBILE Earth exploration-satellite (Earth-to-space) 5.541	INTER-SATELLITE 5.521A ~~FIXED-SATELLITE (GSO) (Earth-to-space)~~ MOBILE Earth exploration-satellite (Earth-to-space) 5.541 Fixed-satellite (space-to-Earth) 5.540	Transfer of data between stations (EESS) Beacon transmission for up-link power control FSS for BSS feeder links Inter-satellite (27.5-30 GHz)	Resolution 679 (WRC-23)	
	29.46-29.5 FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A	ESIMS (under the FSS) (27.5-29.5 GHz) FSS (uplink) – limited to GSO systems and feeder links of non-NGSO-satellite systems in the MSS ~~Feeder links of non-GSO satellite systems in the MSS~~	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 latest Annex 2 latest version. Res 123 (Rev.WRC-23) (ESIMs NGSO FSS) Res 156 (Rev.WRC-23) (ESIMs GSO FSS) Resolution 169 (WRC-~~19~~23)	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.540	INTER-SATELLITE 5.521A FIXED-SATELLITE (GSO) (Earth-to-space) MOBILE Earth exploration-satellite (Earth-to-space) 5.541 Fixed-satellite (space-to-Earth) 5.540	Transfer of data between stations (EESS) Beacon transmission for up-link power control (FSS space-to-earth)~~HIGH DENSITYAPPLICATIONS IN THE FSS~~ HDFSS (in the FSS) (space-to-Earth) FSS for BSS feeder links Inter-satellite (27.5-30 GHz)	Res 155 (Rev.WRC-19) (unmanned aircraft) Res 143 (Rev.WRC19) (HDFSS) Res 679 (WRC-23) (ISS) RFSAP to be developed for the band 27.5-31 GHz).	
29.5-29.9 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.517B 5.527A 5.539	**29.5-29.9 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.517B 5.527A 5.539	Fixed-satellite (space-to-Earth) (27.501-29.999 GHz) ESIMS (under the FSS) GSO and NGSO (29.5-30GHz)	Resolution 123 (WRC-23) ~~The band 29.46-30.0 GHz is identified for HDFSS~~; Res 123 (Rev.WRC-23) (ESIMs NGSO FSS) Res 156 (WRC-~~15~~-23) ESIMs	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		Transfer of data between stations(EESS) Beacon transmission for up-link power control (FSS (space-to-Earth)) ~~HIGH DENSITYAPPLICATIONS IN THE FSS~~ High Density FSS (Earth-to-space) (29.46-30 GHz)	GSO FSS) Res 155 (Rev.WRC-19) (unmanned aircraft)	standards and enabling broader deployment of aeronautical and maritime ESIMs in this band
INTER-SATELLITE 5.521A Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	INTER-SATELLITE 5.521A Earth exploration-satellite (Earth-to-space) 5.541 Fixed-satellite (space-to-Earth) Mobile-satellite (Earth-to-space) 5.540	Inter-satellite (27.5-30 GHz)	Resolution 679 (WRC-23) Res.143 applies for HDFSS RFSAP to be developed for the band 27.5-31 GHz).	
29.9-30 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B	**29.9-29.95 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.517B 5.527A 5.539	ESIMS (under the FSS) Transfer of data between stations	Resolution 123 (WRC-23) The band 29.46-30.0 GHz is identified for HDFSS; Res.143 applies for HDFSS	Res 123 extends the ESIM framework to NGSO (in addition to

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.516B 5.517B 5.527A 5.539 INTER-SATELLITE 5.521A MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543	INTER-SATELLITE 5.521A MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 Fixed-satellite (space-to-Earth) 5.525 5.526 5.527 ~~5.538~~ 5.540	Beacon transmission for up-link power control ~~HIGH-DENSITYAPPLICATIONS IN THE FSS~~ High Density FSS (space-to-Earth)(29.46-30 GHz) Inter-satellite (27.5-30 GHz)	Res 156 (WRC-15) applies for ESIM Res 155 (Rev.WRC-19) (unmanned aircraft) Res 143 (Rev.WRC19) (HDFSS) Resolution 679 (WRC-23) RFSAP to be developed for the band 27.5-31 GHz).	GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band With the splitting of the band, 5.538 doesn't apply to the sub-band 29.9-29.95 GHz.
	29.95-29.999 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.517B 5.539	ESIMS (under the FSS) Fixed-satellite (space-to-Earth) (27.501-29.999 GHz) Transfer of data between stations	~~The band 29.46-30.0 GHz is identified for HDFSS;~~ Res 156 (WRC-15) applies for ESIM Res 155 (Rev.WRC-19) (unmanned aircraft)	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.525 5.526 5.527 5.538 5.540 5.542	INTER-SATELLITE 5.521A MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 Earth exploration-satellite (space-to-space) Fixed-satellite (space-to-Earth) 5.525 5.526 5.527 ~~5.538~~ 5.540	Telemetry, tracking and control Beacon transmission for up-link power control ~~HIGH DENSITYAPPLICATIONS IN THE FSS~~ High Density FSS(space-to-Earth) (29.46-30 GHz) Inter-satellite (27.5-30 GHz)	Resolution 123 (WRC-23) Res 143 (Rev.WRC-19) (HDFSS) Resolution 679 (WRC-23) RFSAP to be developed for the band 27.5-31 GHz).	and enabling broader deployment of aeronautical and maritime ESIMs in this band With the splitting of the band, 5.538 doesn't apply to the sub-band 29.9-29.95 GHz.
	29.999-30 GHz			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.517B 5.539 FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE 5.521A MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 Earth exploration-satellite (space-to-space)	ESIMS (under the FSS) NGSO (29.5-30 GHz) Beacon transmission for up-link power control Fixed-satellite (space-to-Earth) Transfer of data between stations (EESS) Telemetry, tracking and control (EESS) ~~HIGH DENSITYAPPLICATIONS IN THE FSS~~ High Density FSS (space-to-Earth)(29.46-30 GHz) Inter-satellite (27.5-30 GHz)	~~The band 29.46-30.0 GHz is identified for HDFSS;~~ Res 156 (WRC-15) applies for ESIM Resolution 123 (WRC-23) Res.~~olution~~ 155 (WRC-19)(unmanned aircraft) Res.143 (Rev.WRC-19) applies for HDFSS Res.~~olution~~ 679 (WRC-23) RFSAP to be developed for the band 27.5-31 GHz).	Res 123 extends the ESIM framework to NGSO (in addition to GSO), ensuring continuity in protection standards and enabling broader deployment of aeronautical and maritime ESIMs in this band Resolution 155 (WRC-19) applies to Earth stations on board unmanned aircraft, which operate with GSO networks in the FSS is added.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	5.525 5.526 5.527 5.538 ~~5.540~~			5.540 does not apply to this band
30-31 GHz FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.529A 5.542	**30-31 GHz** FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.529A		RFSAP to be developed for the band 27.5-31 GHz).	
31-31.3 GHz FIXED 5.338A 5.543B MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545	**31-31.3 GHz** FIXED 5.338A 5.543B MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.149	~~[FIXED~~ (HAPS)] Fixed Links ~~Fixed satellite links~~ Radio astronomy (Continuum Observations)	Paired with 27.5 – 28.35 GHz (base station to subscriber) Res.~~olution~~ 167 (Rev.WRC~~-19~~ 23) (HAPS) See section 5 for coordination with radio astronomy Res 750 (Rev.WRC-19) (passive protection)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149				
31.3-31.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**31.3-31.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Radio astronomy (Continuum Observations)	Radio astronomy (Continuum Observations)	
31.5-31.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed 5.149	**31.5-31.8 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed 5.546 Mobile except aeronautical mobile 5.546	Radio astronomy (Continuum Observations) Passive Sensing	Radio astronomy (Continuum Observations)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Mobile except aeronautical mobile 5.149 5.546				
31.8-32 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	**31.8-32 GHz** FIXED 5.547A NF14 RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	HDFS (31.8 – 33.4 GHz)	Channelling plan for 32 GHz band in accordance with ITU-R Rec. F.1520 Annex 1 latest version ~~Annex 1.~~ . ~~The band 31.8-33.4 GHz is identified for HDFS; Res.75 applies.~~.	Resolution 75 was abrogated as from 16 December 2023
32-32.3 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548	**32-32.3 GHz** FIXED 5.547A NF14 RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	HDFS (31.8 – 33.4 GHz)	Channelling plan for 32 GHz band in accordance with ITU-R Rec. F.1520 Annex 1 latest version ~~Annex 1.~~ . ~~The band 31.8-33.4 GHz is identified for HDFS~~; ~~Res.75 applies.~~	Resolution 75 was abrogated as from 16 December 2023
32.3-33 GHz FIXED 5.547A	**32.3-33 GHz** FIXED 5.547A NF14	HDFS (31.8 – 33.4 GHz)		Resolution 75 was abrogated as from 16 December 2023

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	INTER-SATELLITE RADIONAVIGATION 5.547 5.548		Channelling plan for 32 GHz band in accordance with ITU-R Rec. F.1520 Annex 1 latest version ~~Annex 1.~~ ~~The band 31.8-33.4 GHz is identified for HDFS; Res.75 applies.~~	
33-33.4 GHz FIXED 5.547A RADIONAVIGATION 5.547 5.547E	**33-33.4 GHz** FIXED 5.547A NF14 RADIONAVIGATION 5.547	HDFS (31.8 – 33.4 GHz)	Channelling plan for 32 GHz band in accordance with ITU-R Rec. F.1520 Annex 1 latest version ~~Annex 1.~~ . ~~The band 31.8-33.4 GHz is identified for HDFS; Res.75 applies.~~.	Resolution 75 was abrogated as from 16 December 2023
33.4-34.2 GHz RADIOLOCATION 5.549	**33.4-34.2 GHz** RADIOLOCATION	Government Services		
34.2-34.7 GHz RADIOLOCATION	**34.2-34.7 GHz** RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space)	Government Services		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH (deep space) (Earth-to-space) 5.549				
34.7-35.2 GHz RADIOLOCATION Space research 5.550 5.549	**34.7-35.2 GHz** RADIOLOCATION Space research	Government Services		
35.2-35.5 GHz METEOROLOGICAL AIDS RADIOLOCATION 5.549	**35.2-35.5 GHz** METEOROLOGICAL AIDS RADIOLOCATION	Government Services		
35.5-36 GHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	**35.5-36 GHz** METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549A	Government Services		
36-37 GHz	**36-37 GHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	Government Services Passive Sensing Radio astronomy (HC3N and OH lines)	 See section 5 for coordination with radio astronomy	
37-37.5 GHz FIXED MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth)	**37-37.5 GHz** FIXED NF14 MOBILE except aeronautical mobile 5.550B NF9 SPACE RESEARCH (space-to-Earth)	 Fixed Links (38 GHz) (37.0 – 39.5 GHz) HDFS (37-40 GHz) (5.547) IMT TDD (37-43.5 GHz)	 Res.~~olution~~ 243 (WRC-~~19~~ 23) ~~Recommendation~~ ITU-R M.1036~~-6~~ latest version ~~currently being updated and revised within the ITU-R (International Mobile Telecommunications~~ (IMT)) RFSAP for the frequency range 37 - 43.5 GHz to be developed. IMT deployment is subject to the publication of the RFSAP.	 IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.547	5.547			
37.5-38 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C 5.550CA MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	**37.5-38 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.550C 5.550CA MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	Fixed Links (38 GHz) (37.0 – 39.5 GHz) HDFS (37-40 GHz) (5.547) IMT TDD (37-43.5 GHz)	~~The band 37-40 GHz is identified for HDFS;~~ Res.~~olution~~ 7~~5~~6 (Rev. WRC-12) applies. Res.~~olution~~ 770 (WRC-~~19~~ 23) (FSS) Res.~~olution~~ 243 (WRC-~~19~~ 23) (IMT) Channelling plan for 38 GHz band in accordance with ITU Rec. F.749 Annex 1. Rec~~ommendation~~-ITU-R M.1036-~~6~~ latest version ~~currently being updated and revised within the ITU-R~~ recommends TDD only ~~(International Mobile Telecommunications~~ (IMT)) RFSAP for the frequency range 37 - 43.5 GHz to be developed. IMT deployment is subject to the publication of the RFSAP.	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
38-39.5 GHz	**38-39.5 GHz**			
FIXED 5.550D	FIXED 5.550D NF14	Fixed Links (38 GHz) (37.0 – 39.5 GHz) HDFS (37-40 GHz) (5.547)	Channelling plan for 38 GHz band in accordance with ITU Rec. F.749 Annex 1. ~~The band 37-40 GHz is identified for HDFS~~; ~~Resolution 75 (Rev. WRC-12) applies.~~	Resolution 75 was abrogated as from 16 December 2023
FIXED-SATELLITE (space-to-Earth) 5.550C	FIXED-SATELLITE (space-to-Earth) 5.550C	~~[~~FIXED (HAPS)~~]~~ (38-39.5 GHz)	Re~~solution~~ 770 (Rev. WRC-~~19~~ 23) (FSS) Res~~olution~~ 243 (WRC-~~19~~ 23) (IMT)	
MOBILE 5.550B	MOBILE 5.550B NF9	IMT TDD (37-43.5 GHz)	Res~~olution~~ 168 (Rev. WRC-23) (HAPS) Rec~~ommendation~~ ITU-R M.1036~~-6~~ latest version ~~currently being updated and revised within the ITU-R~~ recommends TDD only ~~(International Mobile Telecommunications~~ (IMT)) RFSAP for the frequency range 37 - 43.5 GHz to be developed. IMT and HAPS deployment is subject to the publication of the RFSAP.	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Earth exploration-satellite (space-to-Earth) 5.547	Earth exploration-satellite (space-to-Earth) 5.547			
39.5-40 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth)	**39.5-40 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B NF9	HDFS (37-40 GHz) (5.547) ~~HIGH DENSITY APPLICATIONS IN THE~~ High-density applications in the FSS (HDFSS) (space-to-Earth) (39.5-40.5 GHz) IMT TDD (37-43.5 GHz) Fixed links	Res.~~olution~~ 770 (WRC-~~19~~ 23) (FSS) Res.~~olution~~ 243 (WRC-~~19~~ 23) (IMT) ~~The band 39.5-40 GHz is identified for HDFSS~~; Res.~~olution~~ 143 (Rev. WRC-19) ~~applies~~ (HDFSS) ~~Recommendation~~ ITU-R M.1036-~~6~~ 7 ~~currently being updated and revised within the ITU-R~~ recommends TDD only ~~International Mobile Telecommunications~~ (IMT)~~)~~	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
Earth exploration-satellite (space-to-Earth) 5.547 5.550E	MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 5.550E		RFSAP for the frequency range 37 - 43.5 GHz to be developed. IMT deployment is subject to the publication of the RFSAP.	Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications.
40-40.5 GHz EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C	**40-40.5 GHz** EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B NF9	Government Services ~~HIGH DENSITY APPLICATIONS IN THE~~ High-density applications in the FSS (HDFSS) (space-to-Earth) (39.5-40.5 GHz)	~~The band 40-40.5 GHz is identified for HDFSS; Resolution 75 (Rev. WRC-12) applies..~~ Res. 143 (Rev.WRC-19) (HDFSS)	WRC-23 abrogated Resolution 75 via Resolution 99 (Rev.WRC-23)

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) 5.550E	MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) 5.550E	IMT (TDD) (37-43.5 GHz)	Res.~~olution~~ 770 (WRC-~~19~~ 23) (FSS) Res.~~olution~~ 243 (WRC-~~19~~ 23) (IMT) ~~Recommendation~~ ITU-R M.1036-~~6~~ 7 ~~currently being updated and revised within the ITU-R (International Mobile Telecommunications~~ (IMT)) RFSAP for the frequency range 37 - 43.5 GHz to be developed. IMT deployment is subject to the publication of the RFSAP.	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Spectrum highest-value analysis to be conducted to identify suitable applications.and a follow-up RFSAP
40.5-41 GHz FIXED	**40.5-41 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.550C	Fixed links (42 GHz) (40.5 – 43.5 GHz) HDFS (40.5-43.5 GHz) (5.547)	ITU-R F.2005 Annex 1 (channel plan) Res.~~olution~~ 770 (WRC-19) (NGSO FSS)	WRC-23 abrogated Resolution 75 via Resolution 99 (Rev.WRC-23)

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE ~~LAND MOBILE 5.550B~~ Aeronautical mobile Maritime mobile 5.547	LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE ~~LAND MOBILE 5.550B~~ Aeronautical mobile Maritime mobile 5.547	IMT (TDD) (37-43.5 GHz)	~~BFWA or MWS (40.5-43.5 GHz).~~ ~~The band 40.5-43.5 GHz is identified for HDFS; Resolution 75 (Rev. WRC-12) applies..~~ Res.~~olution~~ 243 (WRC-19) (IMT) ~~Recommendation~~ ITU-R M.1036-~~6~~ 7 ~~currently being updated and revised within the ITU-R~~ recommends TDD only (International Mobile Telecommunications (IMT)) RFSAP to be developed	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications.
41-42.5 GHz FIXED	**41-42.5 GHz** FIXED NF14	Fixed links (42 GHz) (40.5 – 43.5 GHz) HDFS (40.5-43.5 GHz) (5.547)	ITU-R F.2005 Annex 1 (channel plan)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B	FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B	IMT (TDD) (37-43.5 GHz)	Res.~~olution~~ 770 (WRC-19) (NGSO FSS) Res.~~olution~~ 243 (WRC-19) (IMT) ~~BFWA or MWS (40.5-43.5 GHz)~~. ~~The band 40.5-43.5 GHz is identified for HDFS;~~ ~~Resolution 75 (Rev. WRC-12) applie~~s. ~~Recommendation~~ ITU-R M.1036-~~6~~ 7 ~~currently being updated and revised within the ITU-R~~ ~~(International Mobile Telecommunications (IMT))~~ RFSAP to be developed	IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Resolution 75 was abrogated as from 16 December 2023 Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications.
BROADCASTING BROADCASTING-SATELLITE ~~LAND MOBILE 5.550B~~ Aeronautical mobile Maritime mobile	BROADCASTING BROADCASTING-SATELLITE ~~LAND MOBILE 5.550B~~ Aeronautical mobile Maritime mobile			Respect 5.551H/5.551I RAS

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.547 5.551F 5.551H 5.551I	5.547 5.551H 5.551I			protection constraints; reinforce with KCAAA where applicable
42.5-43.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile 5.550B RADIO ASTRONOMY	**42.5-43.5 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile 5.550B RADIO ASTRONOMY	Fixed links (42 GHz) (40.5 – 43.5 GHz) HDFS (40.5-43.5 GHz) (5.547) IMT (TDD) (37-43.5 GHz) ~~Government Services (43.5-45.5 GHz)~~	~~BFWA or MWS (40.5-43.5 GHz).~~ ITU-R F.2005 Annex 1 (channel plan) ~~The band 40.5-43.5 GHz is identified for HDFS;Resolution 75 (Rev. WRC-12) applies.~~ Res~~olution~~ **243 (WRC-19)** (IMT) ~~Recommendation~~ ITU-R M.1036-~~67~~ ~~currently being updated and revised within the ITU-R (International Mobile Telecommunications (IMT))~~ RFSAP to be developed	Resolution 75 was abrogated as from 16 December 2023 IMT identification in all Regions ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Spectrum highest-value analysis and a follow-up RFSAP to be conducted to identify suitable applications.

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149 5.547	5.149 5.547	Radio astronomy (Observation of silicon monoxide)	See section 5 for coordination with radio astronomy	
43.5-47 GHz MOBILE 5.553 5.553A MOBILE-SATELLITE RADIONAVIGATIO N RADIONAVIGATIO N-SATELLITE	**43.5-45.5 GHz** **MOBILE 5.553 5.553A** MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	Government Services (43.5-45.5 GHz)		[018] suggested adding "Government Services" to the band
	45.5-47 GHz **MOBILE 5.553** 5.553A MOBILE-SATELLITE RADIONAVIGATION	IMT (TDD) (45.5-47 GHz)	Res.~~olution~~ 244 (WRC-19) (IMT) ~~Recommendation~~ ITU-R M.1036-7~~6 currently being updated and revised within the ITU-R~~ (International Mobile Telecommunications (IMT)) RFSAP to be developed	IMT identification in 35 African countries ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa Spectrum highest-value analysis and a follow-up RFSAP to be conducted to

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.554	RADIONAVIGATION-SATELLITE 5.554			identify suitable applications.
47-47.2 GHz AMATEUR AMATEUR-SATELLITE	**47-47.2 GHz** AMATEUR AMATEUR-SATELLITE	Amateur Amateur satellite		
47.2-47.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552	**47.2-47.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552	~~[FIXED~~ FS (HAPS)~~]~~	Res. 122 (Rev.WRC-19) ITU-R F.1500 (HAPS) Res.~~olution~~ 770 (WRC-19) for non-GSO in 47.2-50.2 GHz (E-to-s) non-GSO/GSO sharing: Res. 770 (Rev.WRC-23) and Res. 771 (WRC-19) apply for non-GSO FSS in 47.2–50.2 GHz	IMT identification in 50 African countries and Region 2 ATU-R Recommendation 008-0, JULY 2025, IMT

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE 5.553B 5.552A	MOBILE 5.553B 5.552A	IMT	Res.~~olution~~ 243 (WRC-19) (IMT) ~~Recommendation~~ ITU-R M.1036-7~~6 currently being updated and revised within the ITU-R~~ (International Mobile Telecommunications (IMT)) RFSAP to be developed	Spectrum Roadmap For Africa
47.5-47.9 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A	**47.5-47.9 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (GSO) (space-to-Earth) 5.516B 5.554A	~~The band 47.5-47.9 GHz is identified for HDFSS; Res.143 applies~~. ~~HIGH DENSITY APPLICATIONS IN THE~~ High-density applications in the FSS (HDFSS) (space-to-Earth)]	Res.~~olution~~ 770 (WRC-19) for non-GSO in 47.2-50.2 GHz (E-to-s) Res. 143 (Rev.WRC-19) (HDFSS s-to-E) ITU-R S.2461 (2019) (HDFSS spectrum needs; 47.5–47.9 GHz s-to-E, GSO-only)	
MOBILE 5.553B	MOBILE 5.553B	IMT (TDD) 47.2-48.2 GHz	Res.~~olution~~ 243 (WRC-19) (IMT) ~~Recommendation~~ ITU-R M.1036-7~~6 currently being~~	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
			~~updated and revised within the ITU-R~~ (International Mobile Telecommunications (IMT)) RFSAP to be developed	
47.9-48.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A	**47.9-48.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A	~~[FIXED~~ FS (HAPS)~~]~~ FSS uplinks (E-to-s), especially BSS feeder uplinks (within 47.2–49.2 GHz per 5.552). IMT (TDD) (47.5-48.5 GHz)	ITU-R F.1500 (HAPS) Res.~~olution~~ 770 (WRC-19) for non-GSO FSS in 47.2-50.2 GHz (E-to-s) Res.~~olution~~ 243 (WRC-19) (IMT) ~~Recommendation~~ ITU-R M.1036-7~~6 currently being updated and revised within the ITU-R~~ (International Mobile Telecommunications (IMT)) RFSAP for the band 47.5-48.5 GHz to be developed	
48.2-48.54 GHz	**48.2-48.54 GHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (GSO) (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	~~HIGH DENSITY APPLICATIONS IN THE~~ High-density applications in the FSS (HDFSS) (space-to-Earth)] (48.2-48.54 GHz) FSS (space-to-Earth) (48.2-48.54 GHz) is limited to GSO FSS uplinks (E-to-s) (incl. NGSO)	~~The band 48.2-48.54 GHz is identified for HDFSS~~; Res.143 (WRC-19) (HDFSS) ~~applies~~. Res.~~olution~~ 770 (WRC-19) for non-GSO FSS in 47.2-50.2 GHz (E-to-s) ~~Recommendation ITU-R M.1036-76 currently being updated and revised to be developed within the ITU-R~~	
48.54-49.44 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE	**48.54-48.94 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.149 5.340 5.555		Res.~~olution~~ 770 (WRC-19) for non-GSO in 47.2-50.2 GHz (E-to-s)	
	48.94-49.04 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE		Res. 770 (WRC-19) applies (non-GSO FSS)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
	RADIO ASTRONOMY 5.149 5.340 5.555	Radio astronomy (diatomic molecules and other molecules)	See section 5 for coordination with radio astronomy	
5.149 5.340 5.555	**49.04-49.44 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.149 5.340 5.555		Res.~~olution~~770 (WRC-19) for non-GSO in 47.2-50.2 GHz (E-to-s)	
49.44-50.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	**49.44-50.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C 5.552 (GSO) (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	~~HIGH DENSITY APPLICATIONS IN THE~~ High-density applications in the FSS (HDFSS) ~~(~~(space-to-Earth)~~]~~ (49.44-50.2 GHz) FSS (space-to-Earth) (49.44-50.2 GHz) is limited to GSO	Res.~~olution~~ 770 (WRC-19) for non-GSO in 47.2-50.2 GHz (E-to-s) ~~The band 49.44-50.2 GHz is identified for HDFSS;~~ Res.143 (WRC-19) applies (HDFSS). Res. 750 applies. Res. 143 (Rev.WRC-19)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
50.2-50.4 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**50.2-50.4 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		~~Resolution 143 (REV.WRC-19~~)	
50.4-51.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-satellite (Earth-to-space)	**50.4-51.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-satellite (Earth-to-space)	Fixed links	Res.~~olution~~ 770 (WRC-19) 50.4–51.4 GHz (E-to-s) Res. 750 applies.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
51.4-52.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE 5.338A 5.547 5.556	**51.4-52.4 GHz** FIXED 5.338A FIXED-SATELLITE (GSO) (Earth-to-space) 5.555C MOBILE 5.547 5.556	Fixed links (52 GHz) (51.4-52.6 GHz) incl. HDFS (51.4-52.6 GHz) (5.547)	~~The band 51.4-52.6 GHz is identified for HDFS;~~ ~~Res.75~~ Res. 750 applies. ITU Rec. F.1496, Annex 1 FSS (Earth-to-space) is limited to GSO networks (ant size min 2.4m)	Res.75 was deleted by WRC23
52.4-52.6 GHz FIXED 5.338A MOBILE 5.547 5.556	**52.4-52.6 GHz** FIXED 5.338A MOBILE 5.547 5.556	HDFS (51.4-52.6 GHz) (5.547)	ITU Rec. F.1496, Annex 1	
52.6-54.25 GHz EARTH EXPLORATION-SATELLITE (passive)	**52.6-54.25 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	Passive Sensing (53.6 – 59.3 GHz) (EESS/SRS)	Res. 750 (WRC-19) applies.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH (passive) 5.340 5.556	5.340 5.556			
54.25-55.78 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B	**54.25-55.78 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE (GSO) 5.556A SPACE RESEARCH (passive)	Passive Sensing (53.6 – 59.3 GHz) (EESS/SRS) GSO inter-satellite links (per 5.556A)		
55.78-56.9 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558	**55.78-56.9 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A NF14 INTER-SATELLITE (GSO) 5.556A MOBILE 5.558 SPACE RESEARCH (passive)	Passive Sensing (53.6 – 59.3 GHz) (EESS/SRS) Fixed links (55.78-57.0 GHz) HDFS (55.78-59 GHz) (5.547)	~~The band 55.78-59 GHz is identified for HDFS; Res.75 applies.~~	Resolution 75 was abrogated as from 16 December 2023

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH (passive) 5.547 5.557	 5.547			
56.9-57 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	**56.9-57 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 INTER-SATELLITE (GSO) 5.558A INTER-SATELLITE (non-GSO) MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Passive Sensing (53.6 – 59.3 GHz) (EESS/SRS) Fixed links (55.78-57.0 GHz) HDFS (55.78-59 GHz) (5.547) Transmission from HEO to LEO	~~The band 55.78-59 GHz is identified for HDFS; Res.75 applies.~~ Channelling plan for the 55.78-57.0 GHz band is in accordance with ITU Rec. F.1497, Annex 1	Resolution 75 was abrogated as from 16 December 2023
57-58.2 GHz	**57-58.2 GHz** EARTH EXPLORATION-SATELLITE (passive)			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558	FIXED NF14 INTER-SATELLITE (GSO) 5.556A MOBILE 5.558	Passive Sensing (53.6 – 59.3 GHz) Fixed links (62 GHz or V-Band) (57-66 GHz) HDFS (55.78-59 GHz) (5.547) Point-to-Point Digital Fixed Radio Systems (DFRS) in 57–64 GHz Multiple GIGABIT wireless systems (MGWS) WAS/RLAN in 57-71 GHz SRD applications (57 – 64 GHz), incl. Level Probing Radar (LPR) 57–64 GHz	~~The band 55.78-59 GHz is identified for HDFS; Res.75 applies~~. FS channel plan in ITU-R F.1497 Annex 2. ~~Radio Frequency Spectrum Regulations Amendments, (GG Number 40436, 22 November 2016).~~ Inter-satellite limits: 5.556A. ITU-R Rec.~~ommendation~~ M.2003~~ latest version ("Multiple Gigabit Wireless Systems in frequencies around 60 GHz")~~ ~~Amendment to the Radio Frequency Spectrum Regulations, 2015 GG 40436 (No~~ Radio Frequency Spectrum Regulations, 2015 (as amended): GN 279, GG 38641 (30 Mar 2015)	Resolution 75 was abrogated as from 16 December 2023

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH (passive) 5.547 5.557	SPACE RESEARCH (passive) 5.547	Passive Sensing (53.6 – 59.3 GHz) (EESS/SRS) Radiodetermination Applications 57-64GHz (per Annex. B)		
58.2-59 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE	**58.2-59 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 MOBILE	Passive Sensing (53.6 – 59.3 GHz) Fixed links (62 GHz or V-Band) (57-66 GHz) HDFS (55.78-59 GHz) (5.547) Point-to-Point Digital Fixed Radio Systems (DFRS) in 57–64 GHz Multiple GIGABIT wireless systems (MGWS) WAS/RLAN in 57-71 GHz	~~The band 55.78-59 GHz is identified for HDFS;~~ ~~Res.75 applies.~~. FS channel plan ITU-R F.1497 (Annex 2). ~~Radio Frequency Spectrum Regulations Amendments, (GG Number 40436, 22 November 2016.~~ ITU-R Rec.~~ommendation~~ M.2003~~ latest version (“Multiple Gigabit Wireless Systems in frequencies around 60 GHz”)~~	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH (passive) 5.547 5.556	SPACE RESEARCH (passive) 5.547 5.556	SRD applications (57 – 64 GHz), incl. Level Probing Radar (LPR) 57–64 GHz Passive Sensing (53.6 – 59.3 GHz) (EESS/SRS) Radiodetermination Applications 57-64GHz (per Annex. B)	~~Amendment to the Radio Frequency Spectrum Regulations, 2015 GG 40436 (No~~ Radio Frequency Spectrum Regulations, 2015 (as amended): GN 279, GG 38641 (30 Mar 2015), as amended	Radio astronomy observations may be carried out under national arrangements (5.556)
59-59.3 GHz	**59-59.3 GHz** EARTH EXPLORATION-SATELLITE (passive)			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558	FIXED INTER-SATELLITE (GSO) 5.556A MOBILE 5.558	~~Multiple GIGABIT wireless systems WAS/RLAN~~ Passive Sensing (53.6 – 59.3 GHz) Fixed links (62 GHz or V-Band) (57-66 GHz) Point-to-Point Digital Fixed Radio Systems (DFRS) in 57–64 GHz Multiple GIGABIT wireless systems (MGWS) WAS/RLAN in 57-71 GHz SRD applications (57 – 64 GHz)	~~Radio Frequency Spectrum Regulations Amendments, (GG Number 40436, 22 November 2016~~ ITU Rec. F.1497, Annex 2 Inter-satellite limits: 5.556A. ITU-R Rec.~~ommendation~~ M.2003~~ latest version (“Multiple Gigabit Wireless Systems in frequencies around 60 GHz”)~~ ~~Amendment to the Radio Frequency Spectrum Regulations, 2015 GG 40436 (No~~ Radio Frequency Spectrum Regulations, 2015 (as amended): GN 279, GG 38641 (30 Mar 2015), as amended The band 59 - 61 GHz reserved for government use.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIOLOCATION 5.559 SPACE RESEARCH (passive)	RADIOLOCATION 5.559 SPACE RESEARCH (passive)	Government Services Radiodetermination Applications 57-64GHz (per Annex. B)		
59.3-64 GHz FIXED INTER-SATELLITE MOBILE 5.558	**59.3-64 GHz** FIXED INTER-SATELLITE MOBILE 5.558	Fixed links (62 GHz or V-Band) (57-66 GHz) Multiple GIGABIT wireless systems (MGWS) / WAS/RLAN in 57-71 GHz SRD applications (57 – 64 GHz) Point-to-Point Digital Fixed Radio Systems (DFRS) in 57–64 GHz Intelligent Transportation Systems (ITS) 63.72-65.88 GHz (per Annex. B)	ITU Rec. F.1497, Annex 2 ~~Radio Frequency Spectrum Regulations Amendments (GG Number 40436, 22 November 2016~~Common international SRD band; see ITU-R Rec. SM. 1896 ITU-R Rec.~~ommendation~~ M.2003 ~~latest version ("Multiple Gigabit Wireless Systems in frequencies around 60 GHz")~~ ~~Amendment to the Radio Frequency Spectrum Regulations, 2015 GG 40436 (No~~ Radio Frequency Spectrum Regulations, 2015 (as	Stakeholders are invited to comment on adding this band to NF14

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIOLOCATION 5.559 5.138	RADIOLOCATION 5.559 5.138	Government Services (59 - 61 GHz) Radiodetermination Applications 57-64GHz (per Annex. B)	amended): GN 279, GG 38641 (30 Mar 2015), as amended The band 61-61.5 GHz is designated for ISM applications (5.138). ETSI EN 302 567 (MGWS), EN 302 217 (PtP FS), EN 302 729 / EN 302 372 (radiodetermination), EN 302 686 / EN 301 091 (ITS/TTT), as applicable The band 59 - 61 GHz reserved for government use.	
64-65 GHz FIXED	**64-65 GHz** FIXED	Point-to-Point, Digital Fixed Radio Systems (DFRS) 64-66 GHz The band 64-66 GHz is identified for HDFS	~~The band 64-66 GHz is identified for HDFS (5.547)~~; ~~Res.75 applies.~~. ITU-R F.1497 (Annex 3)	Stakeholders are invited to comment on adding this band to NF14 Resolution 75 was abrogated as from

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	Multiple Gigabit wireless systems (MGWS) WAS/RLAN Intelligent Transportation Systems (ITS) 63.72-65.88 GHz (per Annex. B)	~~Radio Frequency Spectrum Regulations Amendments (GG Number 40436, 22 November 2016.~~ ITU-R Rec.~~ommendation~~ M.2003 ~~latest version (“Multiple Gigabit Wireless Systems in frequencies around 60 GHz”)~~ ~~Amendment to the~~ Radio Frequency Spectrum Regulations, 2015 ~~GG 40436 (Notice 781 of 2016~~), (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023.	16 December 2023 Radio astronomy observations may be carried out under national arrangements (5.556)
65-66 GHz EARTH EXPLORATION-SATELLITE	**65-66 GHz** EARTH EXPLORATION-SATELLITE			Stakeholders are invited to comment on adding this band to NF14

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
FIXED INTER-SATELLITE MOBILE except aeronautical mobile	FIXED INTER-SATELLITE MOBILE except aeronautical mobile	Fixed links (62 GHz or V-Band) (57-66 GHz) Point-to-Point, Digital Fixed Radio Systems (DFRS) 64-66GHz The band 64-66 GHz is identified for HDFS Multiple GIGABIT wireless systems (MGWS) WAS/RLAN	~~The band 64-66 GHz is identified for HDFS (5.547); Res.75 applies~~. ITU-R F.1497 (Annex 3) ~~Radio Frequency Spectrum Regulations Amendments (GG Number 40436, 22 November 2016~~ ITU-R Rec.~~ommendation~~ M.2003 ~~latest version ("Multiple Gigabit Wireless Systems in frequencies around 60 GHz")~~ ~~Amendment to the~~ Radio Frequency Spectrum Regulations 2015 ~~GG 40436 (Notice 781 of 2016~~), (GG. No. 38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023. RFSAP to be developed fo this band	Resolution 75 was abrogated as from 16 December 2023

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH 5.547	SPACE RESEARCH 5.547	Intelligent Transportation Systems (ITS) 63.72-65.88 GHz (per Annex. B)		
66-71 GHz INTER-SATELLITE MOBILE 5.553 5.558 5.559AA	**66-71 GHz** INTER-SATELLITE MOBILE 5.553 5.558 5.559AA	IMT (TDD) (66-71 GHz) Multiple GIGABIT wireless systems (MGWS) WAS/RLAN	Res~~olution~~ 241 (WRC~~-19~~ 23) ~~Recommendation~~ ITU-R M.1036-7~~6 latest version currently being updated revied within the ITU-R (candidate band for International Mobile Telecommunications (IMT) in line with Res. 241 (WRC-19 23))~~ RFSAP to be developed for this band . ~~Amendment to the~~ Radio Frequency Spectrum Regulations 2015, ~~GG 40436 (Notice 781 of 2016)~~ (GG. No.	IMT identification in all regions, ATU-R Recommendation 008-0, JULY 2025, IMT Spectrum Roadmap For Africa

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554		38641, Notice 279 of 30 March 2015), Annex B as amended by GG 48643 Notice 1822 of 23 May 2023.	
71-74 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	**71-74 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	Fixed Links (80 GHz) (71 – 76 GHz) Government use ~~Fixed links (71-76 GHz)~~	Paired with 81 – 86 GHz. Radio Frequency Spectrum Regulations Amendments (GG Number 40436 Notice 781, 22 November 2016)	
74-76 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth)	**74-76 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth)	Fixed Links (80 GHz) (71 – 76 GHz)	Paired with 81 – 86 GHz. Radio Frequency Spectrum Regulations Amendments (GG Number 40436 Notice 781, 22 November 2016)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.561	5.561	Radiodetermination Applications 75-85GHz (per Annex. B)		
76-77.5 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	**76-77.5 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	Radiodetermination Applications 75-85GHz (per Annex. B) RTTT (76 – 77 GHz) ~~SRD – Road~~ Transport and Traffic Telematics (TTT) Applications ~~Radar~~ (76 – 77 GHz) (per Annex. B) Transport and Traffic Telematics (TTT) Applications for Obstacle Detection Radars for rotorcraft use 76-77GHz (per Annex. B) Transport and Traffic Telematics (TTT) Applications for Automotive Short Range Radars (SRR) 77-81GHz (per Annex. B)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, Notice 279, 30 March 2015). Common international SRD band; see ITU-R Rec. SM.1896 and Rec. M.1452 latest version applies.	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
77.5-78 GHz AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth) 5.149	**77.5-78 GHz** AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth) 5.149	Radiodetermination Applications 75-85GHz (per Annex. B) Short-range radars from ground-based applications, including automotive radars Transport and Traffic Telematics (TTT) Applications for Automotive Short Range Radars (SRR) 77-81GHz (per Annex. B)		
78-79 GHz RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	**78-79 GHz** RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	Radiodetermination Applications 75-85GHz (per Annex. B) Transport and Traffic Telematics (TTT)		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
		Applications for Automotive Short Range Radars (SRR) 77-81GHz (per Annex. B)		
79-81 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	**79-81 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	Radiodetermination Applications 75-85GHz (per Annex. B) Transport and Traffic Telematics (TTT) Applications for Automotive Short Range Radars (SRR) 77-81GHz (per Annex. B)		
81-84 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space)	**81-81.5 GHz** FIXED 5.338A NF14 FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space)	Fixed Links (80 GHz) (81 –86 GHz)	Paired with 71 – 76 GHz. Radio Frequency Spectrum Regulations Amendments (GG Number 40436 Notice 781, 22 November 2016)	

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	RADIO ASTRONOMY Amateur Amateur-satellite Space research (space-to-Earth) 5.149 5.561A	Radiodetermination Applications 75-85GHz (per Annex. B)		
	81.5-84 GHz FIXED 5.338A NF14 FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	Fixed Links (80 GHz) (81 –86 GHz) Radiodetermination Applications 75-85GHz (per Annex. B)	Paired with 71 – 76 GHz. Radio Frequency Spectrum Regulations Amendments (GG Number 40436 Notice 781, 22 November 2016)	
84-86 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE	**84-86 GHz** FIXED 5.338A NF14 FIXED-SATELLITE (Earth-to-space) ~~5.561B~~ MOBILE	Fixed Links (80 GHz) (81 –86 GHz)	Radio Frequency Spectrum Regulations Amendments (GG Number 40436 Notice 781, 22 November 2016)	This FN doesn't apply to South Africa and should be deleted.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIO ASTRONOMY 5.149	RADIO ASTRONOMY 5.149	Radiodetermination Applications 75-85GHz (per Annex. B)		
86-92 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**86-92 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			
92-94 GHz FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**92-94 GHz** FIXED 5.338A NF14 MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149			
94-94.1 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy	**94-94.1 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy	Spaceborne cloud radars Short Range Radar. Cloud profile radar. Spaceborne cloud radars		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.562 5.562A	5.562 5.562A			
94.1-95 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**94.1-95 GHz** FIXED NF14 MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	Short Range Radar		
95-100 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**95-100 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554			
100-102 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	**100-102 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	Passive sensing		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.340 5.341				
102-105 GHz FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	**102-105 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149 5.341			
105-109.5 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	**105-109.5 GHz** FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	Space-based radio astronomy		
109.5-111.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**109.5-111.8 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	Passive Sensing		
111.8-114.25 GHz FIXED	**111.8-114.25 GHz** FIXED			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	Space-based radio astronomy		
114.25-116 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**114.25-116 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341			
116-119.98 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	**116-119.98 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE (GSO) 5.562C SPACE RESEARCH (passive) 5.341	Passive Sensing		
119.98-122.25 GHz	**119.98-122.25 GHz**			

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	Passive Sensing (114.25 – 122.25 GHz) SRD 122-122.25GHz (per Annex. B)		
122.25-123 GHz FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	**122.25-123 GHz** FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	Collision Avoidance Automation SRDs (per Annex. B)		
123-130 GHz FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	**123-130 GHz** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.149 5.554			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
130-134 GHz EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY	**130-133.5 GHz** FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A			
	133.5-134 GHz EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A			
5.149 5.562A				
134-136 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy	**134-136 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy			
136-141 GHz	**136-141 GHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149			
141-148.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**141-148.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149			
148.5-151.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**148.5-151.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive Sensing		
151.5-155.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	**151.5-155.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.149	5.149			
155.5-158.5 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562F 5.562G	**155.5-158.5 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562F 5.562G	Passive Sensing		
158.5-164 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	**158.5-164 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)			
164-167 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY	**164-167 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Passive Sensing		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
SPACE RESEARCH (passive) 5.340	5.340			
167-174.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D	**167-174.5 GHz** FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149			
174.5-174.8 GHz FIXED INTER-SATELLITE MOBILE 5.558	**174.5-174.8 GHz** FIXED INTER-SATELLITE MOBILE 5.558			
174.8-182 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	**174.8-182 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE (GSO) 5.562H SPACE RESEARCH (passive)	Passive sensing (174.8 – 191.8 GHz)		
182-185 GHz	**182-185 GHz**			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive sensing (174.8 – 191.8 GHz)		
185-190 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	**185-190 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE (GSO) 5.562H SPACE RESEARCH (passive)	Passive sensing (174.8 – 191.8 GHz)		
190-191.8 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**190-191.8 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	Passive sensing (174.8 – 191.8 GHz)		
191.8-200 GHz FIXED INTER-SATELLITE	**191.8-200 GHz** FIXED INTER-SATELLITE			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554			
200-209 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	**200-209 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	Passive sensing.		
209-217 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	**209-217 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341			
217-226 GHz FIXED FIXED-SATELLITE (Earth-to-space)	**217-226 GHz** FIXED FIXED-SATELLITE (Earth-to-space)			

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	Space-based radio astronomy		
226-231.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**226-231.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive Sensing (226 – 232 GHz)		
231.5-232 GHz FIXED MOBILE Radiolocation	**231.5-232 GHz** FIXED MOBILE Radiolocation			
232-235 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	**232-235 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation			
235-238 GHz	**235-237.9 GHz**			SADC 2024 [SADC2024]

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
EARTH EXPLORATION-SATELLITE (passive) 5.563AA FIXED FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	EARTH EXPLORATION-SATELLITE (passive) 5.563AA FIXED FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	Passive Sensing		
	237.9-238 GHz EARTH EXPLORATION-SATELLITE (active) EARTH EXPLORATION-SATELLITE (passive) 5.563AA FIXED FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (active) SPACE RESEARCH (passive) 5.563A 5.563B			SADC 2024 [SADC2024]
238-239.2 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION	**238-239.2 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION			SADC 2024 [SADC2024] and RR 2024 [RR2024]

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE			
239.2-240 GHz EARTH EXPLORATION-SATELLITE(passive) FIXED-SATELLITE (space-to-Earth) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	**239.2-240 GHz** EARTH EXPLORATION-SATELLITE(passive) FIXED-SATELLITE (space-to-Earth) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE			SADC 2024 [SADC2024] and RR 2024 [RR2024]
~~**238-240 GHz**~~ ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ ~~RADIOLOCATION~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~	~~**238-240 GHz**~~ ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ ~~RADIOLOCATION~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~			
240-241 GHz EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~	**240-241 GHz** EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ RADIOLOCATION			SADC 2024 [SADC2024] and RR 2024 [RR2024]

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIOLOCATION				
241-242.2 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	**241-242.2 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149			SADC 2024 [SADC2024] and RR 2024 [RR2024]
242.2-244.2 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	**242.2-244.2 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	SRD 244-246GHz (per Annex. B)		SADC 2024 [SADC2024] and RR 2024 [RR2024]
244.2-247.2 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite	**244.2-247.2 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149			SADC 2024 [SADC2024] and RR 2024 [RR2024]

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.138 5.149		SRD 244-246GHz (per Annex. B)		
247.2-248 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	**247.2-248 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149			SADC 2024 [SADC2024] and RR 2024 [RR2024]
~~**241-248 GHz**~~ ~~RADIO ASTRONOMY~~ ~~RADIOLOCATION~~ ~~Amateur~~ ~~Amateur-satellite~~ ~~5.138 5.149~~	~~**241-248 GHz**~~ ~~RADIO ASTRONOMY~~ ~~RADIOLOCATION~~ ~~Amateur~~ ~~Amateur-satellite~~ ~~5.138 5.149~~			
248-250 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	**248-250 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149			
250-252 GHz EARTH EXPLORATION-SATELLITE (passive)	**250-252 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY	Passive Sensing		

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ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	SPACE RESEARCH (passive) 5.340 5.563A			
252-265 GHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**252-265 GHz** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554			
265-275 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	**265-275 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A			
275-3 000 GHz (Not allocated) 5.565	**275-1 000 GHz** (Not allocated) 5.565	Radio astronomy service Earth exploration-satellite service (passive)		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments	Summary of analysis (to be deleted)
5.564A 5.565	5.564A	Space research (passive)		
	1 000-3 000 GHz (Not allocated) 5.565 5.564A		Assignments may be considered for Amateur services on a secondary basis above 1000 GHz	

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5 RADIO ASTRONOMY

The Astronomy Geographic Act, 2007 (AGA Act No. 21 of 2007) provides the legal basis and framework for the declaration of astronomy advantage area and protection of such areas from harmful radio frequency interference that may hamper the cosmic observations by scientific instruments located within those areas. The Authority develops the national spectrum allocation, assign frequencies to licensees, and monitor compliance with licence terms. The Astronomy Management Authority (AMA) within the Department of Science and Innovation was assigned to manage the declared Karoo Central Astronomy Advantage Areas (KCAAAs). The Authority gave notice to all radio frequency spectrum licensees operating within the KCAAAs to apply for a permit with the AMA in terms of KCAAAs Regulations; through GG No. 42080 under Notice No. 765 of 4 December 2018.

This section provides information on the regulatory framework established for the protection of radio astronomy in South Africa.

5.1 DECLARATION OF ASTRONOMY ADVANTAGE AREAS

The Minister of Science, Technology and Innovation, may declare any area or part of an area in the Province of the Northern Cape as an astronomy advantage area to be protected, preserved and properly maintained in respect of radio frequency interference or interference in any other way.

i. The whole of the territory of the Northern Cape Province excluding Sol Plaatje Municipality is declared for radio astronomy purpose, as Declared in GG No. 32951 Notice No. 115 of 19 February 2010.

ii. The Karoo Core Astronomy Advantage Area (KCoreAAA) is used for the purposes of radio astronomy and related scientific endeavours, as declared in GG No. 33462 Notice No. 723 of 20 August 2010.

iii. The Karoo Central Astronomy Advantage Area (KCAAAs) is used for the purpose of radio astronomy and related scientific endeavours, as declared in GG No. 37434 Notice No. 198 of 12 March 2014.

The purpose of the declaration of areas as astronomy advantage areas is to ensure that the geographic area, which are suitable for astronomy and related scientific endeavours is protected, preserved and properly maintained in accordance with good national and international practices.

5.2 REGULATIONS OF ASTRONOMY ADVANTAGE AREAS

The Minister of Science, Technology and Innovation, may make regulations for the management and protection of astronomy advantage areas.

i. Regulations on radio astronomy protection levels in astronomy advantage areas declared for the purpose of radio astronomy were published in GG No. 35007 under Notice No. R. 90 of 10 February 2012.

ii. Regulations to prohibit or restrict certain activities in the core astronomy advantage areas declared for the radio astronomy purposes were published in GG No.35450, under notice No. R. 465of 22 June 2012.

iii. Regulations on the protection of the Karoo central astronomy advantage areas declared for the purpose of radio astronomy were published in GG No. 41321, under Notice No. 1411 of 15 December 2017.

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The Minister obtained concurrence of ICASA when making regulations for prohibiting or restricting activities that have an adverse effect on astronomy and related scientific endeavours.

5.3 ASTRONOMY DEVICES

The Minister of Science, Technology and Innovation, may declare any existing or proposed scientific endeavour to be astronomy and related scientific endeavours for the purpose of the Astronomy Geographic Advantage Act.

i. The establishment and operation of MeerKAT telescope is declared a scientific endeavour in GG No. 33614, under Notice No. 897 of 15 October 2010.

ii. The establishment and operation of Square Kilometre Array (SKA) telescope is declared a scientific endeavour in GG No. 33614, under Notice No. 897 of 15 October 2010.

iii. The operation of C-BASS telescope within the spectrum between 4.5 GHz and 6.5 GHz is declared a scientific endeavour in GG No. 36826, under Notice No. 684 of 13 September 2013.

iv. The development and operation of PAPER telescope and HERA telescope within the spectrum between 100 MHz and 200 MHz is declared a scientific endeavour in GG No. 36826, under Notice No. 684 of 13 September 2013.

5.4 SPECTRUM LIST EXEMPTED FROM PROHIBITION

From one (1) year after the date that KCAAAs Regulations become operational, no licensee or licence exempted operator shall use, or continue to use the radio frequency spectrum from 100 MHz to 25.5 GHz to conduct radio transmissions within the declared KCAAAs, unless the spectrum is exempted from prohibition. The Minister published a list of the radio frequency spectrum and applications that are exempted from the prohibition of use for transmissions located within the KCAAAs in GG No. 45045, under Notice No. 753 of 26 August 2021.

5.5 ASTRONOMY FACILITIES WITHIN THE DECLARED AREAS

The use of radio frequency bands in the areas declared as Karoo Core and Central Astronomy Advantage Areas are regulated as follows:

Unless required for the purpose of radio astronomy and related scientific endeavours the use of the radio frequency spectrum in Table 2 is restricted within the declared as Karoo Core and Central Astronomy Advantage Areas.

Table 2: Restrictions on the use of radio frequency spectrum

Declared Area	Prohibited Band
KCoreAAA	9 kHz to 3 000 GHz
KCAAA 1	100 MHz to 2 170 MHz
KCAAA 2	100 MHz to 6 GHz
KCAAA 3	100 MHz to 25.5 GHz

In terms of section 22(6) of the AGA Actread with section 30(1) and section 31 of the Electronic Communications Act, 2005 (Act No. 36 of 2005) ("ECA"), the Authority has an obligation not

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to issue Radio Frequency Spectrum Licences where frequency used could cause radio frequency interference ("RFI") in the KCAAA. As a result, the Authority has put measures in place to ensure that it fulfils its role of preventing RFI in the KCAAA when licensing radio communication and broadcasting spectrum licenses. The Authority shall apply the necessary enforcement steps in terms of section 31 of the ECA and relevant regulations pertaining to the failure by a Radio Frequency Spectrum Licensees to comply with the provisions of the ECA including Notice No. 765 in GG No. 42080 of 4 December 2018.

5.6 ASTRONOMY FACILITIES OUTSIDE THE DECLARED AREAS

The radio instruments located at Hartebeesthoek Radio Astronomy Observatory near Pretoria are registered in the ITU-R MIFR and they include HART15M, HARTRAO and HARTVGS. The observations undertaken by these instruments in RAS bands are globally recognised and internationally protected. The applications and services operating within a 15 km radius from the location; Latitude 25°53'24.06"S and Longitude 27°41'7.45"E; must coordinate with SARAO and give due consideration when operating stations in frequency bands listed under No. 5.149, also identified in the NRFP2021 table of frequency allocation.

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6 NATIONAL FOOTNOTES TO THE TABLE OF FREQUENCY ALLOCATIONS

NF0 (5350 - 5450 KHz)

The band 5350 – 5450KHz and the channel 5290KHz is allocated on secondary basis to radio amateurs under the Article 4.4 of the ITU Radio Regulations.

NF1 (29.7 - 30 MHz)

This portion of the spectrum is allocated to the amateur service on a secondary basis for use during disaster exercises and emergency situations. This is in addition to the existing exclusive amateur band 28 - 29.7 MHz, which retains its primary status. The additional spectrum is used for single frequency mobile applications.

NF2 (70 - 70.3 MHz)
This sub-band is allocated to the amateur service on a secondary basis in order to undertake experimental work on propagation. The channels 70.025 – 70.150 MHz are used for civil defence purposes.

NF3 (148 - 150.05 MHz)

This frequency band was allocated internationally at WARC-92 for the mobile satellite service (MSS) in the Earth-to-space direction. The space-to-Earth link is provided at either 137 – 138 MHz or 400.15 - 401 MHz, depending on the satellite system.

NF4 (161.875 - 173.875 MHz)

The frequency band is used for sonobouy in the maritime service. Assignments were previously not allowed within a distance of 200 km from the coast. It is generally agreed that there is scope for increased sharing even near the coast. Proper care will be taken in making assignments near the coast in this frequency band and frequency coordination is to be performed with existing services on case by case basis.

NF5 (173.7 – 175.1 MHz)
This frequency band may be used for wireless microphones for services ancillary to Broadcasting (SAB) and services ancillary to programme (SAP) making. Use of wireless microphones must be co-ordinated and licensed.

NF6 (336 - 366 MHz)

The frequency band 336 – 346 MHz, paired with the frequency band 356 – 366 MHz, is allocated to fixed services on a primary basis and is applicable for use by Fixed Wireless Access (FWA) systems. Within this frequency band, the sub-band 337 – 344 MHz paired with 357 – 364 MHz is to be used for WAS whereas the sub-band 344 – 346 MHz paired with 364 – 366 MHz is to be used for alarm monitoring and tracking services using DSSS. The band is also considered for use by the Unmanned Aerial Vehicle (UAV) including Remotely Piloted Aircraft System (RPAS) within the sub band 336-346 paired with 356-366 MHz.This spectrum is potentially very useful for providing electronic communications services, in particular in rural areas considering its excellent propagation conditions.

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NF7 (380 – 399.9 MHz)

The frequency band 380 –399.9 MHz is allocated through ITU Resolution 646 (Rev.WRC-15) to Public Protection and Disaster Relief (PPDR) applications in line with ITU-R M.2015.

NF8 (430 - 440 MHz)

This frequency band is allocated to the amateur service in South Africa in line with ITU Region 1. The sub-band 433.05 - 434.79 MHz, however, is also designated as an ISM band in Region 1, subject to the special authorisation of the administration concerned (see RR 5.138). Furthermore, the sub-band 433.05 - 434.79 MHz can be used for non-specific short range devices on an unlicensed basis in accordance with the prescribed Regulations. The consequence of this is that the amateur service may not claim protection from (in-band) emissions from ISM equipment operating in the band, nor can ISM equipment and low power devices claim protection from amateur users operating in the band.

NF9 (IMT Frequency Bands - Terrestrial)

The table below list all possible IMT frequency bands identified by the ITU, relevant ITU Radio Regulation footnote as well as the applicable ITU-R channel plan. The latest version of the Recommendation ITU-R M.1036 at the time of publication of this document is ITU-R M.1036-7.

Band	Frequency band	Bandwidth (MHz)	RR FN	Channel Plan	WRC Resolution/s
450 MHz	450 – 470 MHz	20 MHz	5.286AA	Recommendation ITU-R M.1036-~~67~~.	224 (Rev. WRC-15)
700 MHz	694 – 790 MHz	96 MHz	5.312A and 5.317A	Recommendation ITU-R M.1036-~~67~~.	224 (Rev.WRC-15) and 760 (WRC-15)
800 MHz	790 — 862 MHz	72 MHz	5.316B and 5.317A	Recommendation ITU-R M.1036-~~67~~. (A3)	224 (Rev. WRC-15) and 749 (Rev. WRC-15)
~~850 MHz~~	~~825 – 830 MHz 870 – 875 MHz~~	~~10 MHz~~	~~NF10~~	~~Recommendation ITU-R M.1036-67 .~~	~~224 (Rev. WRC-19)~~
900 MHz	880 – 915 MHz // 925 – 960 MHz	35 MHz	5.317A	Recommendation ITU-R M.1036-~~67~~.(A2)	224 (Rev. WRC-15) and 749 (Rev. WRC-15)
1500 MHz	1 427-1 518 MHz	91 MHz	5.341A, 5.346, and 5.346A	Recommendation ITU-R M.1036-~~67~~[18] ~~-7~~.	223 (Rev. WRC-15), 750 (Rev. WRC-15), and 761 (WRC-15)

[18] ~~Channelling arrangement for 1 427-1 518 MHz is under study at the ITU-R Working Party 5D~~

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1800 MHz	1710 – 1785 MHz // 1805 – 1880 MHz	75 MHz	5.384A	Recommendation ITU-R M.1036-~~6~~7 .(B2)	223 (Rev. WRC-15)
1900 MHz	1900 – 1920MHz	20 MHz	5.388	Recommendation ITU-R M.1036-~~6~~7(B4)	Resolution **212 (Rev.WRC-19)**
2100 MHz	1920 – 1980 MHz // 2110 – 2170 MHz	60 MHz	5.388	Recommendation ITU-R M.1036-~~6~~7 .(B1)	212 (Rev. WRC-07) and 223 (Rev. WRC-12)
2100 MHz (TDD)	1900 – 1920 MHz, 2010 – 2025 MHz	20 MHz	5.388	Recommendation ITU-R M.1036-~~6~~7 .(B1)	212 (Rev. WRC-07) and 223 (Rev. WRC-12)
2300 MHz	2300 – 2400 MHz	100 MHz	5.384A	Recommendation ITU-R M.1036-~~6~~7 .(E1)	223 (Rev. WRC-12)
2600 MHz	2500 – 2690 MHz	190 MHz	5.384A	Recommendation ITU-R M.1036-~~6~~7 .(C1)	223 (Rev. WRC-12)
3300-3400 MHz	3300 – 3400 MHz	100 MHz	5.429B	Recommendation ITU-R M.1036-~~6~~7[19]	223 (Rev. WRC-19)
3500 MHz	3400 – 3600 MHz	200 MHz	5.429A 5.429B 5.430A	Recommendation ITU-R M.1036-~~7~~[20] -~~6~~.	223 (Rev. WRC-15),
3.~~5~~7 GHz	3~~3~~4600 – 3800 MHz	~~5~~200 MHz	~~5.429B 5.430A~~ 5.434A 5.434B	Recommendation ITU-R M.1036-~~6~~7 .(F1)	~~NA~~ RR ARTICLE 3 Footnote 5.434A
4.9 GHz	4800 – 4990 MHz	190 MHz	5.441A	Recommendation ITU-R M.1036-~~6~~7 .	223 (Rev. WRC-19)
26 GHz	24.25 – 27.5 GHz	3250 MHz	5.532AB	Recommendation ITU-R M.1036-~~6~~7 .	242 (Rev. WRC-19)
40 GHz	37 – 43.5 GHz	6500 MHz	5.550B	Recommendation ITU-R M.1036-~~6~~7 .	243 (Rev. WRC-19)
48 GHz	47.2 – 48.2 GHz	1000 MHz	5.553B	Recommendation ITU-R M.1036-~~6~~7 .	243 (Rev. WRC-19)

[19] ~~Channelling arrangement for 3300 – 3400 MHz is under study at the ITU-R Working Party 5D~~

[20] Channelling arrangement for 3700 – 3800 MHz is not available in the 1036-7

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66 GHz	66 – 71 GHz	5000 MHz	5.559B	Recommendation ITU-R M.1036-67 .	241 (Rev. WRC-19)

NF10 (876 - 880 // 921 - 925 MHz)

This frequency band is used by GSM-R systems.

NF11 (915 - 921 MHz) – Suppressed

NF12 (1452 - 1492 MHz) – Suppressed

NF13 (1980 – 2010 MHz paired with 2170 – 2200 MHz)

These frequency bands are allocated, amongst others, to both the mobile and mobile-satellite services and are also earmarked for the satellite component of IMT. Further, guidance on the implementation of technical and operational measures to facilitate coexistence between terrestrial and satellite components of International Mobile Telecommunications in the frequency bands 1 980- 2 010 MHz and 2 170-2 200 MHz is addressed within ITU-R in accordance with Resolution **212 (Rev. WRC-19)**,

NF14 (Channel arrangements for Fixed Services Systems)

The table below lists the main fixed services frequency bands and the applicable ITU-R Recommendation specifying the applicable frequency channel arrangement. Different channel spacing for each frequency band will be allowed in accordance with the relevant ITU-R Recommendation. Sub-division of channels will also be allowed to cater for smaller bandwidth systems. Hop distances will be determined, amongst others, by propagation conditions. Sharing with services other than fixed services is indicated in the comments column.

Band	Band limits	Channel Plan	Comments
1-2GHz	1350 - 1375 MHz // 1492 – 1517 MHz 1375 – 1400 MHz // 1427 – 1452 MHz	ITU-R F.1242	
2 GHz	2025-2110 MHz // 2200-2285 MHz	ITU-R F.1098	
4 GHz	3600 – 4200 MHz	ITU-R F.635, Annex 1	Shared with FSS (downlink) (Note 1)
4.8 GHz	4400 – 5000 MHz	ITU-R F.1099, Annex 1	Government Services
Lower 6 GHz	5925 – 6425 MHz	ITU-R F.383	Shared with FSS (uplink) (Note 2)
Upper 6 GHz	6425 – 7110 MHz	ITU-R F.384	Shared with FSS (Note 3)
7 GHz (L7 + U7)	7110 – 7750 MHz	ITU-R F385, Annex 3	

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Lower 8 GHz	7725 – 8275 MHz	ITU-R F.386, Annex 6	
Upper 8 GHz	8275 – 8500 MHz	ITU-R F.386, Annex 1	
10.5 GHz	10.15-10.3 GHz// 10.5-10.65 GHz	ITU-R F.1568, Annex 1	
11 GHz	10.7 – 11.7 GHz	ITU-R F.387	Shared with FSS (Note 4)
13 GHz	12.75 – 13.25 GHz	ITU-R F.497	
15 GHz	14.5 – 15.35 GHz	ITU-R F.636	
18 GHz	17.7 – 19.7 GHz	ITU-R F.595, Annex 1	
23 GHz	21.2-23.6 GHz or	ITU-R F.637, Annex 1	Shared with BSS (Note 5)
26 GHz	24.5 – 26.5 GHz	ITU-R F.748-4, Annex 1	Shared with EESS (Note 6)
28 GHz	27.5 – 29.5 GHz	ITU-R F.748-4, Annex 2	
32 GHz	31.8 – 33.4 GHz	ITU-R F.1520, Annex 1	
38 GHz	37.0 – 39.5 GHz	ITU-R F.749 Annex 1	
42 GHz	40.5 – 43.5 GHz	ITU-R F. 2005	
57 GHz	55.78 – 59 GHz	ITU-R F 1497	
80 GHz	71 – 76 GHz // 81 – 86 GHz	ITU-R F.2006	(Note 7)
94 GHz	92 – 94 GHz 94.1 – 95 GHz	ITU –R F. 2004	

Note 1: The band 3600 – 4200 MHz is used on a national basis for high capacity, core network telecommunication services under the fixed service using (for fixed services links generally over long hop lengths. The band 3625 – 4200 MHz, part of the C-band, is used extensively for FSS (space-to-Earth) applications. This band is shared between FS and FSS.

Note 2: In addition to deployment of fixed services links under the fixed services, the band 5850 – 6425 MHz, part of the C-band, is also used for FSS (Earth-to-space) applications on a shared basis with FS. The C-band is also used for satellite news gathering (SNG) operations, which will require frequency co-ordination with fixed links on a case-by-case basis. Users are encouraged to, as far as possible, use the Ku-band for SNG operations in South Africa in order to avoid the need for frequency coordination and the interference problems associated with C-band SNG operations. The band 5850 – 5926 MHz may also be used for temporary deployment for ENG and OB links under the mobile and fixed services respectively on a strictly coordinated basis.

Note 3: This band is used on a national basis for fixed services links under the fixed service. Fixed links are shared with NGSO MSS (space-to-Earth) feeder links and geo-stationary satellite orbit (GSO) FSS (Earth-to-space) systems on a strictly controlled and co-ordinated basis.

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Note 4: This band is used on a national basis for fixed services links under the fixed service. The bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz are also shared with FSS (space-to-Earth) systems (typically VSAT/SNG and PTP links). The sub-bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz is also used DTH satellite broadcasting services on a secondary basis to the FS and FSS services.

Note 5: In addition to the fixed services, the band 21.2 – 23 GHz is also allocated to the BSS on a co-primary basis. In accordance with 5.530A, all fixed links must comply to the prescribed pfd limits at national borders, unless otherwise agreed with the administration concerned. In line with 5.530B, the band 21.2 – 23 GHz will not be used for mobile services in South Africa and fixed service deployments will be restricted to for fixed services links.

Note 6: An unmanned receive only earth station, forming part of the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) is located in South Africa, and this system operates within the frequency band 25.5 to 27 GHz in the Earth Exploration Satellite (space-to-earth) service.

Note 7: The frequency bands 71 – 76 GHz paired with 81 – 86 GHz are allocated to the fixed services and is earmarked for very high capacity Broadband Fixed Wireless Systems over very short hop lengths. Radio frequency channel arrangements for fixed service systems operating in the bands 71-76 GHz and 81-86 GHz are according to the Radio Frequency Spectrum Regulations (GG. No.38641, 30 March 2015).

NF15 (4400 – 5000 MHz)

The frequency band 4400 – 5000 MHz is allocated to electronic news gathering (ENG) and outside broadcasting (OB) services under the mobile and fixed services respectively, and is shared with Government Services.
NF16 (5725 – 5850 MHz)
The band 5725 – 5875 MHz is designated as an ISM band through ITU-R footnote 5.150. In addition to ISM applications, the band 5725 – 5850 MHz is also available for fixed links on a license-exempt basis, provided adherence to the provisions indicated below. Type Approval of these systems is mandatory. See also Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
(for additional requirements in using this band.

Frequency Range	Maximum Power	Modulation	Restrictions
5.725 – 5.850 GHz	1 watt peak e.i.r.p	Any modulation	No other restriction other than those related to the maximum power and the modulation scheme.
5.725 – 5.850 GHz	4 watt peak e.i.r.p	Frequency hopping or digital modulation only	No other restriction other than those related to the maximum power and the modulation scheme.

Frequency Range	Maximum Power	Modulation	Restrictions
5.725 – 5.850 GHz	200 watt peak e.i.r.p with a max 1 watt peak transmitter power	Digital modulation only	- Fixed Radio Link devices only - Peak power spectral density must not exceed 17dBm /MHz

The Authority reserves the right to require users to change the frequency, reduce the power, or cease operations, where harmful interference is caused.

NF17 (14.0 – 14.5 GHz)

The frequency band 14.0 – 14.5 GHz, part of the Ku-band is used extensively for FSS (Earth-to-space) applications (VSAT/SNG/PTP links).

NF18 (27.5 – 28.35 GHz)

The frequency bands 27.5 – 28.35 GHz (base station to subscriber) and 31.000 – 31.300 MHz (subscriber to base station) are allocated to broadband service - local multipoint distribution services (LMDS) under the fixed service using a PTMP topology.

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7 ITU RADIO REGULATIONS FOOTNOTES

The ITU Radio Regulations footnote listed are those that are applicable to Region 1.

5.53	Administrations authorising the use of frequencies below 8.3 kHz shall ensure that no harmful interference is caused ~~thereby~~ to ~~the~~ services to which the bands above 8.3 kHz are allocated. (WRC-12)
5.54	Administrations conducting scientific research using frequencies below 8.3 kHz are urged to advise other administrations that may be concerned in order that such research may be afforded all practicable protection from harmful interference. (WRC-12)
5.54A	Use of the 8.3-11.3 kHz frequency band by stations in the meteorological aids service is limited to passive use only. In the band 9-11.3 kHz, meteorological aids stations shall not claim protection from stations of the radionavigation service submitted for notification to the Bureau prior to 1 January 2013. For sharing between stations of the meteorological aids service and stations in the radionavigation service submitted for notification after this date, the most recent version of Recommendation ITU-R RS.1881 should be applied. (WRC-12)
5.54B	*Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, the Russian Federation, Iran (Islamic Republic of), Iraq, Kuwait, Lebanon, Morocco, Qatar, the Syrian Arab Republic, Sudan and Tunisia, the frequency band 8.3-9 kHz is also allocated to the radionavigation, fixed and mobile services on a primary basis. (WRC-15)
5.54C	Additional allocation: in China, the frequency band 8.3-9 kHz is also allocated to the maritime radionavigation and maritime mobile services on a primary basis. (WRC-12)
5.55	*Additional allocation:* in Armenia, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the frequency band 14-17 kHz is also allocated to the radionavigation service on a primary basis. (WRC-15)
5.56	The stations of services to which the frequency bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the frequency bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-23) ~~The stations of services to which the bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, , Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-12)~~
5.57	The use of the bands 14-19.95 kHz, 20.05-70 kHz and 70-90 kHz (72-84 kHz and 86-90 kHz in Region 1) by the maritime mobile service is limited to coast radiotelegraph stations (A1A and F1B only). Exceptionally, the use of class J2B or J7B emissions is authorized subject to the necessary bandwidth not exceeding that normally used for class A1A or F1B emissions in the band concerned.
5.58	*Additional allocation: in Armenia, Azerbaijan, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the frequency band 67-70 kHz is also allocated to the radionavigation service on a primary basis. (WRC-23)* ~~*Additional allocation:* in Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan, the band 67-70 kHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)~~

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5.59	*Different category of service:* in Bangladesh and Pakistan, the allocation of the bands 70-72 kHz and 84-86 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**). (WRC-2000)
5.60	In the bands 70-90 kHz (70-86 kHz in Region 1) and 110-130 kHz (112-130 kHz in Region 1), pulsed radionavigation systems may be used on condition that they do not cause harmful interference to other services to which these bands are allocated.
5.61	In Region 2, the establishment and operation of stations in the maritime radionavigation service in the bands 70-90 kHz and 110-130 kHz shall be subject to agreement obtained under No. **9.21** with administrations whose services, operating in accordance with the Table, may be affected. However, stations of the fixed, maritime mobile and radiolocation services shall not cause harmful interference to stations in the maritime radionavigation service established under such agreements.
5.62	Administrations which operate stations in the radionavigation service in the band 90-110 kHz are urged to coordinate technical and operating characteristics in such a way as to avoid harmful interference to the services provided by these stations.
5.63	SUP (WRC-97)
5.64	Only classes A1A or F1B, A2C, A3C, F1C or F3C emissions are authorized for stations of the fixed service in the bands allocated to this service between 90 kHz and 160 kHz (148.5 kHz in Region 1) and for stations of the maritime mobile service in the bands allocated to this service between 110 kHz and 160 kHz (148.5 kHz in Region 1). Exceptionally, class J2B or J7B emissions are also authorized in the bands between 110 kHz and 160 kHz (148.5 kHz in Region 1) for stations of the maritime mobile service.
5.65	Different category of service: in Bangladesh, the allocation of the bands 112-117.6 kHz and 126-129 kHz to the fixed and maritime mobile services is on a primary basis (see No. 5.33). (WRC-2000)
5.66	*Different category of service:* in Germany, the allocation of the band 115-117.6 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**) and to the radionavigation service on a secondary basis (see No. **5.32**).
5.67	*Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 130-148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate. (WRC-19)
5.67A	Stations in the amateur service using frequencies in the band 135.7-137.8 kHz shall not exceed a maximum radiated power of 1 W (e.i.r.p.) and shall not cause harmful interference to stations of the radionavigation service operating in countries listed in No. **5.67**. (WRC-07)
5.67B	The use of the frequency band 135.7-137.8 kHz in Algeria, Egypt, Iraq, Lebanon, Syrian Arab Republic, Sudan, South Sudan and Tunisia is limited to the fixed and maritime mobile services. The amateur service shall not be used in the above-mentioned countries in the frequency band 135.7-137.8 kHz, and this should be taken into account by the countries authorizing such use. (WRC-19)
5.68	*Alternative allocation:* in Congo (Rep. of the), the Dem. Rep. of the Congo and South Africa, the frequency band 160- 200 kHz is allocated to the fixed service on a primary basis. (WRC-15)
5.69	*Additional allocation:* in Somalia, the band 200-255 kHz is also allocated to the aeronautical radionavigation service on a primary basis.
5.70	*Alternative allocation:* in Angola, Botswana, Burundi, the Central African Rep., Congo (Rep. of the), Eswatini, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, the Dem. Rep. of the Congo, South Africa, Tanzania, Chad, Zambia and Zimbabwe, the frequency band 200-283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis. (WRC-19)

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5.71	SUP (WRC-19)
5.72	SUP (WRC-12)
5.73	The band 285-325 kHz (283.5-325 kHz in Region 1) in the maritime radionavigation service may be used to transmit supplementary navigational information using narrow-band techniques, on condition that no harmful interference is caused to radiobeacon stations operating in the radionavigation service. (WRC-97)
5.74	*Additional Allocation:* in Region 1, the frequency band 285.3-285.7 kHz is also allocated to the maritime radionavigation service (other than radiobeacons) on a primary basis.
5.75	*Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Moldova, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Romania, the allocation of the band 315-325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned. (WRC-07)
5.76	The frequency 410 kHz is designated for radio direction-finding in the maritime radionavigation service. The other radionavigation services to which the band 405-415 kHz is allocated shall not cause harmful interference to radio direction-finding in the band 406.5-413.5 kHz.
5.77	*Different category of service:* in Australia, China, the French overseas communities of Region 3, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea, the Dem. People's Rep. of Korea and Sri Lanka, the allocation of the frequency band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. In Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Latvia, Uzbekistan and Kyrgyzstan, the allocation of the frequency band 435-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in all the aforementioned countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the frequency band 435-495 kHz do not cause interference to reception by coast stations of transmissions from ship stations on frequencies designated for ship stations on a worldwide basis. (WRC-19)
5.78	*Different category of service:* in Cuba, the United States of America and Mexico, the allocation of the band 415-435 kHz to the aeronautical radionavigation service is on a primary basis.
5.79	In the maritime mobile service, the frequency bands 415-495 kHz and 505-526.5 kHz are limited to radiotelegraphy and may also be used for the NAVDAT system in accordance with the most recent version of Recommendation ITU-R. M.2010, subject to agreement between interested and affected administrations. NAVDAT transmitting stations are limited to coast stations. (WRC-19).
5.79A	When establishing coast stations in the NAVTEX service on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz, administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution **339 (Rev.WRC-07)**). (WRC-07)
5.80	In Region 2, the use of the band 435-495 kHz by the aeronautical radionavigation service is limited to non-directional beacons not employing voice transmission.
5.80A	The maximum equivalent isotropically radiated power (e.i.r.p.) of stations in the amateur service using frequencies in the band 472-479 kHz shall not exceed 1 W. Administrations may increase this limit of e.i.r.p. to 5 W in portions of their territory which are at a distance of over 800 km from the borders of Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iran (Islamic Republic of), Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia, Ukraine and

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	Yemen. In this frequency band, stations in the amateur service shall not cause harmful interference to, or claim protection from, stations of the aeronautical radionavigation service. (WRC-12)
5.80B	The use of the frequency band 472-479 kHz in Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia and Yemen is limited to the maritime mobile and aeronautical radionavigation services. The amateur service shall not be used in the abovementioned countries in this frequency band, and this should be taken into account by the countries authorizing such use.(WRC-12)
5.81	SUP (WRC-2000)
5.82	In the maritime mobile service, the frequency 490 kHz is to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles 31 and 52. In using the frequency band 415-495 kHz for the aeronautical radionavigation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz. In using the frequency band 472-479 kHz for the amateur service, administrations shall ensure that no harmful interference is caused to the frequency 490 kHz. (WRC-12)
5.82A	SUP (WRC-12)
5.82B	(SUP - WRC-12) ~~Administrations authorizing the use of frequencies in the band 495-505 kHz by services other than the maritime mobile service shall ensure that no harmful interference is caused to the maritime mobile service in this band or to the services having allocations in the adjacent bands, noting in particular the conditions of use of the frequencies 490 kHz and 518 kHz, as prescribed in Articles **31** and **52**. (WRC-07)~~
5.82C	The frequency band 495-505 kHz is used for the international NAVDAT system as described in the most recent version of Recommendation ITU-R M.2010. NAVDAT transmitting stations are limited to coast stations. (WRC-19)
5.82D	When establishing coast stations in the NAVDAT system on the frequencies 500 kHz and 4 226 kHz, the conditions for the use of the frequencies 500 kHz and 4 226 kHz are prescribed in Articles **31** and **52**. Administrations are strongly recommended to coordinate the NAVDAT systems operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution **364 (WRC-23)**). (WRC-23)
5.83	SUP (WRC-07)
5.84	The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles **31** and **52**. (WRC-07)
5.85	Not used.
5.86	In Region 2, in the band 525-535 kHz the carrier power of broadcasting stations shall not exceed 1 kW during the day and 250 W at night.
5.87	*Additional allocation:* in Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia and Niger, the frequency band 526.5-535 kHz is also allocated to the mobile service on a secondary basis. (WRC-19)

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5.87A	*Additional allocation:* in Uzbekistan, the band 526.5-1 606.5 kHz is also allocated to the radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-97)
5.88	*Additional allocation:* in China, the band 526.5-535 kHz is also allocated to the aeronautical radionavigation service on a secondary basis.
5.89	In Region 2, the use of the band 1 605-1 705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988). The examination of frequency assignments to stations of the fixed and mobile services in the band 1 625-1 705 kHz shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).
5.90	In the band 1 605-1 705 kHz, in cases where a broadcasting station of Region 2 is concerned, the service area of the maritime mobile stations in Region 1 shall be limited to that provided by ground-wave propagation.
5.91	*Additional allocation:* in the Philippines and Sri Lanka, the band 1 606.5-1 705 kHz is also allocated to the broadcasting service on a secondary basis. (WRC-97)
5.92	Some countries of Region 1 use radiodetermination systems in the bands 1 606.5-1 625 kHz, 1 635-1 800 kHz, 1 850- 2 160 kHz, 2 194-2 300 kHz, 2 502-2 850 kHz and 3 500-3 800 kHz, subject to agreement obtained under No. **9.21**. The radiated mean power of these stations shall not exceed 50 W.
5.93	*Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Tajikistan, Chad, Turkmenistan and Ukraine, the frequency bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-15)
5.94	Not used
5.95	Not used.
5.96	In Germany, Armenia, Austria, Azerbaijan, Belarus, Croatia, Denmark, Estonia, the Russian Federation, Finland, Georgia, Hungary, Ireland, Iceland, Israel, Kazakhstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the United Kingdom, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the frequency bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the frequency bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W. (WRC-15)
5.97	In Region 3, the Loran system operates either on 1 850 kHz or 1 950 kHz, the bands occupied being 1 825-1 875 kHz and 1 925-1 975 kHz respectively. Other services to which the band 1 800-2 000 kHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1 850 kHz or 1 950 kHz.
5.98	*Alternative allocation:* in Armenia, Azerbaijan, Belarus, Belgium, Cameroon, Congo (Rep. of the), Denmark, Eritrea, Spain, Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, theSyrian Arab Republic, Türkiye, Kyrgyzstan, Somalia, Tajikistan, Tunisia and Turkmenistan, the frequency band 1 810-1 830 Kh z is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-23)~~*Alternative allocation:* in Armenia, Azerbaijan, Belarus, Belgium, Cameroon, Congo (Rep. of the), Denmark, Egypt, Eritrea, Spain,~~

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	~~Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan and Turkey, the frequency band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)~~
5.99	*Additional allocation:* in Saudi Arabia, Austria, Egypt, Iraq, Libya, Uzbekistan, Romania, Slovakia,Slovenia, Chad, and Togo, the frequency band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-23)~~*Additional allocation:* in Saudi Arabia, Austria, Iraq, Libya, Uzbekistan, Slovakia, Romania, Serbia, Slovenia, Chad, and Togo, the band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)~~
5.100	In Region 1, the authorization to use the band 1 810-1 830 kHz by the amateur service in countries situated totally or partially north of 40° N shall be given only after consultation with the countries mentioned in Nos. **5.98** and **5.99** to define the necessary steps to be taken to prevent harmful interference between amateur stations and stations of other services operating in accordance with Nos. **5.98** and **5.99**.
5.101	SUP (WRC12)
5.102	*Alternative allocation:* in Bolivia, Chile, Paraguay and Peru, the frequency band 1 850-2 000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis. (WRC-15)
5.103	In Region 1, in making assignments to stations in the fixed and mobile services in the bands 1 850-2 045 kHz, 2 194-2 498 kHz, 2 502-2 625 kHz and 2 650-2 850 kHz, administrations should bear in mind the special requirements of the maritime mobile service.
5.104	In Region 1, the use of the band 2 025-2 045 kHz by the meteorological aids service is limited to oceanographic buoy stations.
5.105	In Region 2, except in Greenland, coast stations and ship stations using radiotelephony in the band 2 065-2 107 kHz shall be limited to class J3E emissions and to a peak envelope power not exceeding 1 kW. Preferably, the following carrier frequencies should be used: 2 065.0 kHz, 2 079.0 kHz, 2 082.5 kHz, 2 086.0 kHz, 2 093.0 kHz, 2 096.5 kHz, 2 100.0 kHz and 2 103.5 kHz. In Argentina and Uruguay, the carrier frequencies 2 068.5 kHz and 2 075.5 kHz are also used for this purpose, while the frequencies within the band 2 072-2 075.5 kHz are used as provided in No. **52.165**.
5.106	In Regions 2 and 3, provided no harmful interference is caused to the maritime mobile service, the frequencies between 2 065 kHz and 2 107 kHz may be used by stations of the fixed service communicating only within national borders and whose mean power does not exceed 50 W. In notifying the frequencies, the attention of the Bureau should be drawn to these provisions.
5.107	*Additional allocation:* in Saudi Arabia, Eritrea, Eswatini, Ethiopia, Iraq, Libya and Somalia, the frequency band 2 160-2 170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W. (WRC-19)
5.108	The carrier frequency 2 182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5-2 190.5 kHz are prescribed in Articles **31** and **52**. (WRC-07)
5.109	The frequencies 2 187.5 kHz, 4 207.5 kHz, 6 312 kHz, 8 414.5 kHz, 12 577 kHz and 16 804.5 kHz are international distress frequencies for digital selective calling. The conditions for the use of these frequencies are prescribed in Article **31**.
5.110	The frequencies 2 174.5 kHz, 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz are used for the automatic connection system (ACS), as described in the most recent version of Recommendation ITU-R M.541. (WRC-23)~~The frequencies 2 174.5 kHz, 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz are~~

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	~~international distress frequencies for narrow-band direct-printing telegraphy. The conditions for the use of these frequencies are prescribed in Article **31**.~~
5.111	The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.525 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31**. The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of ±3 kHz about the frequency. (WRC-07)
5.112	*Alternative allocation:* in Sri Lanka, the frequency band 2 194-2 300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)
5.113	For the conditions for the use of the bands 2 300-2 495 kHz (2 498 kHz in Region 1), 3 200-3 400 kHz, 4 750-4 995 kHz and 5 005-5 060 kHz by the broadcasting service, see Nos. **5.16** to **5.20**, **5.21** and **23.3** to **23.10**.
5.114	*Alternative allocation*: in Iraq, the frequency band 2 502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)
5.115	The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Article **31**, by stations of the maritime mobile service engaged in coordinated search and rescue operations. (WRC-07)
5.116	Administrations are urged to authorize the use of the band 3 155-3 195 kHz to provide a common worldwide channel for low power wireless hearing aids. Additional channels for these devices may be assigned by administrations in the bands between 3 155 kHz and 3 400 kHz to suit local needs. It should be noted that frequencies in the range 3 000 kHz to 4 000 kHz are suitable for hearing aid devices which are designed to operate over short distances within the induction field.
5.117	*Alternative allocation:* in Liberia, Sri Lanka and Togo, the frequency band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-23)~~*Alternative allocation*: in Côte d'Ivoire, Egypt, Liberia, Sri Lanka and Togo, the frequency band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)~~
5.118	*Additional allocation:* in the United States, Mexico and Peru, the frequency band 3 230-3 400 kHz is also allocated to the radiolocation service on a secondary basis. (WRC-19)
5.119	*Additional allocation:* in Peru, the frequency band 3 500-3 750 kHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)
5.120	SUP (WRC-2000)
5.121	Not used.
5.122	*Alternative allocation:* in Bolivia, Chile, Ecuador, Paraguay and Peru, the frequency band 3 750-4 000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)
5.123	*Additional allocation:* in Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, the frequency band 3 900-3 950 kHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-19)
5.124	SUP (WRC-2000)
5.125	*Additional allocation:* in Greenland, the band 3 950-4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of the broadcasting stations operating in this band shall not exceed that necessary for a national service and shall in no case exceed 5 kW.

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5.126	In Region 3, the stations of those services to which the band 3 995-4 005 kHz is allocated may transmit standard frequency and time signals.
5.127	The use of the band 4 000-4 063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. **52.220** and Appendix **17**).
5.128	Frequencies in the frequency bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, on condition that harmful interference is not caused to the maritime mobile service. In addition, in Afghanistan, Argentina, Armenia, Belarus, Botswana, Burkina Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Pakistan, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the frequency bands 4 063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations in the fixed service, with a mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service. (WRC-19)
5.129	SUP (WRC-07)
5.130	The conditions for the use of the carrier frequencies 4 125 kHz and 6 215 kHz are prescribed in Articles **31** and **52**. (WRC-07)
5.131	The frequency 4 209.5 kHz is used exclusively for the transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing techniques. (WRC-97)
5.132	The frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz,22 376 kHz and 26 100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see Appendices **15** and **17**). (WRC-23) ~~The frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see Appendix **17**).~~
5. 132A	Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612 (**WRC-12). (WRC-12)
5. 132B	*Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 4 438-4 488 kHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. (WRC-19)
5.133	*Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Niger,Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5 130-5 250 kHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-12)
5. 133A	*Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 5 250-5 275 kHz and 26 200- 26 350 kHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)
5.133B	Stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 15 W (e.i.r.p.). However, in Region 2 in Mexico, stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 20 W (e.i.r.p.). In the following Region 2 countries: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Dominica, El Salvador, Ecuador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, as well as the overseas countries and territories within the Kingdom of the Netherlands in Region

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	2, stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 25 W (e.i.r.p.). (WRC-19)
5.134	The use of the frequency bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600 15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by the broadcasting service is subject to the application of the procedure of Article **12**. Administrations are encouraged to use these frequency bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution **517 (Rev.WRC-19)**. (WRC-19)
5.135	SUP (WRC-97)
5.136	*Additional allocation:* frequencies in the band 5 900-5 950 kHz may be used by stations in the following services, communicating only within the boundary of the country in which they are located: fixed service (in all three Regions), land mobile service (in Region 1), mobile except aeronautical mobile (R) service (in Regions 2 and 3), on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)
5.137	On condition that harmful interference is not caused to the maritime mobile service, the bands 6 200-6 213.5 kHz and 6 220.5-6 525 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W. At the time of notification of these frequencies, the attention of the Bureau will be drawn to the above conditions.
5.137A	The frequencies 6 337.5 kHz, 8 443 kHz, 12 663.5 kHz, 16 909.5 kHz and 22 450.5 kHz are the regional frequencies for the transmission of maritime safety information (MSI) by means of the NAVDAT system (see Appendices **15** and **17**). (WRC-23)
5.138	The following bands: 6 765-6 795 kHz (centre frequency 6 780 kHz), 433.05-434.79 MHz (centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. **5.280**, 61-61.5 GHz (centre frequency 61.25 GHz), 122-123 GHz (centre frequency 122.5 GHz), and 244-246 GHz (centre frequency 245 GHz) are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant ITU-R Recommendations.
5.138A	(SUP - WRC-12) ~~Until 29 March 2009, the band 6 765-7 000 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. After this date, this band is allocated to the fixed and the mobile except aeronautical mobile (R) services on a primary basis. (WRC-03)~~
5.139	(SUP - WRC-12) ~~*Different category of service:* until 29 March 2009, in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6 765-7 000 kHz to the land mobile service is on a primary basis (see No. **5.33**). (WRC-07)~~
5.140	*Additional allocation:* in Angola, Iraq, Somalia and Togo, the frequency band 7 000-7 050 kHz is also allocated to the fixed service on a primary basis. (WRC-15)

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5.141	*Alternative allocation:* in Egypt, Eritrea, Ethiopia, Guinea, Libya, Madagascar and Niger, the band 7 000-7 050 kHz is allocated to the fixed service on a primary basis. (WRC-12)
5.141A	*Additional allocation:* in Uzbekistan and Kyrgyzstan, the bands 7 000-7 100 kHz and 7 100-7 200 kHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-03)
5.141B	*Additional allocation:* in Algeria, Saudi Arabia, Australia, Bahrain, Botswana, Brunei Darussalam, China, Comoros, Korea (Rep. of), Diego Garcia, Djibouti, Egypt, United Arab Emirates, Eritrea, Guinea, Indonesia, Iran (Islamic Republic of), Japan, Jordan, Kuwait, Libya, Mali, Morocco, Mauritania, Niger, New Zealand, Oman, Papua New Guinea, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sudan, South Sudan, Tunisia, Viet Nam and Yemen, the frequency band 7 100-7 200 kHz is also allocated to the fixed and the mobile, except aeronautical mobile (R), services on a primary basis. (WRC-19)
5.141C	SUP - WRC-12) ~~In Regions 1 and 3, the band 7 100-7 200 kHz is allocated to the broadcasting service until 29 March 2009 on a primary basis. (WRC-03)~~
5.142	~~Until 29 March 2009,~~ the use of the band 7 100-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. ~~After 29 March 2009 the use of the band 7 200-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. (WRC-03)~~ (WRC-12)
5.143	*Additional allocation:* frequencies in the band 7 300-7 350 kHz may be used by stations in the fixed service and in the land mobile service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)
5.143A	In Region 3, the band 7 350-7 450 kHz ~~is allocated, until 29 March 2009, to~~ may be used by stations in the fixed service on a primary basis and to the land mobile service on a secondary basis. ~~After 29 March 2009, frequencies in this band may be used by stations in the above-mentioned services~~, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. ~~(WRC-03)~~ (WRC-12)
5.143B	In Region 1, frequencies in the band 7 350-7 450 kHz ~~is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, on condition that harmful interference is not caused to the broadcasting service, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed and land mobile services communicating only within the boundary of the country in which they are located, each station using a total radiated power that shall not exceed 24 dBW. (WRC-03)~~ may be used by stations in the fixed and land mobile services communicating only within the boundary of the country in which they are located on condition that harmful interference is not caused to the broadcasting service. The total radiated power of each station shall not exceed 24 dBW. (WRC-12)
5.143C	Additional allocation: ~~after 29 March 2009~~ in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Iran (Islamic Republic of), Libya, Jordan, Kuwait, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, South Sudan,Tunisia and Yemen, the bands 7 350-7 400 kHz and 7 400-7 450 kHz are also allocated to the fixed service on a primary basis. (WRC-12)

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5.143D	In Region 2, frequencies in the band 7 350-7 400 kHz ~~is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, frequencies in this band may be used by stations in the above mentioned services,~~ may be used by stations in the fixed service and in the land mobile service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. ~~(WRC-03)~~ (WRC-12)
5.143E	~~Until 29 March 2009, the band 7 450-8 100 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. (WRC-03)~~ (SUP - WRC-12)
5.144	In Region 3, the stations of those services to which the band 7 995-8 005 kHz is allocated may transmit standard frequency and time signals.
5.145	The conditions for the use of the carrier frequencies 8 291 kHz, 12 290 kHz and 16 420 kHz are prescribed in Articles 31 and 52. (WRC-07)
5.145A	Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed service. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612** (WRC-12).
5.145B	*Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 9 305-9 355 kHz and 16 100- 16 200 kHz are allocated to the fixed service on a primary basis. (WRC-19)
5.146	*Additional allocation:* frequencies in the bands 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz may be used by stations in the fixed service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies in the fixed service, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)
5.147	On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9 775-9 900 kHz, 11 650-11 700 kHz and 11 975-12 050 kHz may be used by stations in the fixed service communicating only within the boundary of the country in which they are located, each station using a total radiated power not exceeding 24 dBW.
5.148	(SUP - WRC-97)

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5.149	In making assignments to stations of other services to which the bands: 13 360-13 410 kHz, 25 550-25 670 kHz, 37.5-38.25 MHz, 73-74.6 MHz in Regions 1 and 3, 150.05-153 MHz in Region 1, 322-328.6 MHz, 406.1-410 MHz, 608-614 MHz in Regions 1 and 3, 1 330-1 400 MHz, 1 610.6-1 613.8 MHz, 1 660-1 670 MHz, 1 718.8-1 722.2 MHz, 2 655-2 690 MHz, 3 260-3 267 MHz, 3 332-3 339 MHz, 3 345.8-3 352.5 MHz, 4 825-4 835 MHz, 4 950-4 990 MHz, 4 990-5 000 MHz, 6 650-6 675.2 MHz, 10.6-10.68 GHz, 14.47-14.5 GHz, 22.01-22.21 GHz, 22.21-22.5 GHz, 22.81-22.86 GHz, 23.07-23.12 GHz, 31.2-31.3 GHz, 31.5-31.8 GHz in Regions 1 and 3, 36.43-36.5 GHz, 42.5-43.5 GHz, 48.94-49.04 GHz, 76-86 GHz, 92-94 GHz, 94.1-100 GHz, 102-109.5 GHz, 111.8-114.25 GHz, 128.33-128.59 GHz, 129.23-129.49 GHz, 130-134 GHz, 136-148.5 GHz, 151.5-158.5 GHz, 168.59-168.93 GHz, 171.11-171.45 GHz, 172.31-172.65 GHz, 173.52-173.85 GHz, 195.75-196.15 GHz, 209-226 GHz, 241-250 GHz, 252-275 GHz are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **4.5** and **4.6** and Article **29**). (WRC-07)
5.149A	*Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 13 450-13 550 kHz is allocated to the fixed service on a primary basis and to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-19)

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5.150	The following bands: 13 553-13 567 kHz (centre frequency 13 560 kHz), 26 957-27 283 kHz (centre frequency 27 120 kHz), 40.66-40.70 MHz (centre frequency 40.68 MHz), 902-928 MHz in Region 2 (centre frequency 915 MHz), 2 400-2 500 MHz (centre frequency 2 450 MHz), 5 725-5 875 MHz (centre frequency 5 800 MHz), and 24-24.25 GHz (centre frequency 24.125 GHz) are also designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within these bands must accept harmful interference which may be caused by these applications. ISM equipment operating in these bands is subject to the provisions of No. **15.13**.
5.151	*Additional allocation:* frequencies in the bands 13 570-13 600 kHz and 13 800-13 870 kHz may be used by stations in the fixed service and in the mobile except aeronautical mobile (R) service, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies in these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)
5.152	*Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, the Russian Federation, Georgia, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW. (WRC-03)
5.153	In Region 3, the stations of those services to which the band 15 995-16 005 kHz is allocated may transmit standard frequency and time signals.
5.154	*Additional allocation:* in Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 18 068-18 168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW. (WRC-03)
5.155	*Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Moldova,Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the frequency band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) service on a primary basis. (WRC-23)~~*Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) service on a primary basis. (WRC-07)~~
5.155A	In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Moldova, Uzbekistan, Kyrgyzstan,Slovakia, Tajikistan, Turkmenistan and Ukraine, the use of the frequency band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety. (WRC-23)~~In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety. (WRC-07)~~
5.155B	The band 21 870-21 924 kHz is used by the fixed service for provision of services related to aircraft flight safety.
5.156	*Additional allocation:* in Nigeria, the band 22 720-23 200 kHz is also allocated to the meteorological aids service (radiosondes) on a primary basis.

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5.156A	The use of the band 23 200-23 350 kHz by the fixed service is limited to provision of services related to aircraft flight safety.
5.157	The use of the band 23 350-24 000 kHz by the maritime mobile service is limited to inter-ship radiotelegraphy.
5.158	*Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 24 450-24 600 kHz is allocated to the fixed and land mobile services on a primary basis. (WRC-19)
5.159	*Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 39-39.5 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-19)
5.159A	The use of the frequency band 40-50 MHz by the Earth exploration-satellite service (active) shall be in accordance with the geographical area restrictions and the operational and technical conditions defined in Resolution **677 (WRC-23)**. The provisions of this footnote in no way diminish the obligation of the Earth exploration satellite service (active) to operate as a secondary service in accordance with Nos. **5.29** and **5.30**. (WRC-23)
5.160	*Additional allocation:* in Botswana, Burundi, Dem. Rep. of the Congo and Rwanda, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)
5.161	*Additional allocation:* in Iran (Islamic Republic of) and Japan, the band 41-44 MHz is also allocated to the radiolocation service on a secondary basis.
5.161A	*Additional allocation:* in Korea (Rep. of), the United States and Mexico, the frequency bands 41.015-41.665 MHz and 43.35-44 MHz are also allocated to the radiolocation service on a primary basis. Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612** (**Rev.WRC-12)**. (WRC-19)
5.161B	*Alternative allocation:* in Albania, Germany, Armenia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Cyprus, Vatican, Croatia, Denmark, Spain, Estonia, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malta, Moldova, Monaco, Montenegro, Norway, Uzbekistan, Netherlands, Portugal, Kyrgyzstan, Slovakia, Czech Rep., Romania, United Kingdom, San Marino, Slovenia, Sweden, Switzerland, Turkey and Ukraine, the frequency band 42-42.5 MHz is allocated to the fixed and mobile services on a primary basis. ~~(WRC-19)~~ (WRC-23)
5.162	*Additional allocation:* in Australia, the band 44-47 MHz is also allocated to the broadcasting service on a primary basis. (WRC-12)
5.162A	*Additional allocation:* in Germany, Australia, Austria, Belgium, Bosnia and Herzegovina, China, Vatican,Korea (Rep. of), Denmark, Spain, Estonia, the Russian Federation, Finland, France, Indonesia, Ireland, Iceland, Italy,Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Monaco, Montenegro, Norway, the Netherlands,Poland, Portugal, the Dem. People's Rep. of Korea, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden andSwitzerland, the frequency band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (Rev.WRC-23)**.~~Additional allocation: in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the frequency band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-19)~~

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5.163	Additional allocation: in ~~Germany, Australia, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Korea (Rep. of), Denmark, Spain, Estonia, the Russian Federation, Finland, France, Indonesia, Ireland, Iceland, Italy,Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Dem. People's Rep. of Korea, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland, the frequency band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution 217 (Rev.WRC-23). (WRC-23)~~*~~Additional allocation:~~ in ~~Armenia, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-12)~~ Armenia, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-19)
5.164	*Additional allocation:* in Albania, Algeria, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Croatia, Denmark, Spain, Estonia, Eswatini, Finland, France, Gabon, Greece, Hungary, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Slovakia, Czech Rep., Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Chad, Togo, Tunisia and Turkey, the frequency band 47-68 MHz, in South Africa the frequency band 47-50 MHz, and in Latvia the frequency bands 48.5-56.5 MHz and 58-68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each frequency band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the frequency band. ~~(WRC-19)~~ (WRC-23)
5.165	*Additional allocation:* in Angola, Cameroon, Congo (Rep. of the), Egypt, Madagascar, Mozambique, Niger, Somalia, Sudan, South Sudan, Tanzania and Chad, the frequency band 47-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)
5.166	SUP (WRC-15)
5.166A	*Different category of service:* in Austria, Cyprus, the Vatican, Croatia, Denmark, Spain, Finland, Hungary, Latvia, the Netherlands, the Czech Republic, the United Kingdom, Slovakia and Slovenia, the frequency band 50.0-50.5 MHz is allocated to the amateur service on a primary basis. Stations in the amateur service in these countries shall not cause harmful interference to, or claim protection from, stations of the broadcasting, fixed and mobile services operating in accordance with the Radio Regulations in the frequency band 50.0-50.5 MHz in the countries not listed in this provision. For a station of these services, the protection criteria in No. **5.169B** shall also apply. In Region 1, with the exception of those countries listed in No. **5.169**, wind profiler radars operating in the radiolocation service under No. **5.162A** are authorized to operate on the basis of equality with stations in the amateur service in the frequency band 50.0-50.5 MHz. (WRC-19)
5.166B	In Region 1, stations in the amateur service operating on a secondary basis shall not cause harmful interference to, or claim protection from, stations of the broadcasting service. The field strength generated by an amateur station in Region 1 in the frequency band 50-52 MHz shall not exceed a calculated value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the border of a country with operational analogue broadcasting stations in Region 1 and of neighbouring

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	countries with broadcasting stations in Region 3 listed in Nos. **5.167** and **5.168**. (WRC-19)
5.166C	In Region 1, stations in the amateur service in the frequency band 50-52 MHz, with the exception of those countries listed in No. **5.169**, shall not cause harmful interference to, or claim protection from, wind profiler radars operating in the radiolocation service under No. **5.162A**. (WRC-19)
5.166D	*Different category of service:* in Lebanon, the frequency band 50-52 MHz is allocated to the amateur service on a primary basis. Stations in the amateur service in Lebanon shall not cause harmful interference to, or claim protection from, stations of the broadcasting, fixed and mobile services operating in accordance with the Radio Regulations in the frequency band 50-52 MHz in the countries not listed in this provision. (WRC-19)
5.166E	In the Russian Federation, only the frequency band 50.080-50.280 MHz is allocated to the amateur service on a secondary basis. The protection criteria for the other services in the countries not listed in this provision are specified in Nos. **5.166B** and **5.169B**. (WRC-19)
5.167	*Alternative allocation:* in Bangladesh, Brunei Darussalam, India, Iran (Islamic Republic of), Pakistan and Singapore, the frequency band 50-54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-15)
5.167A	Additional allocation: in Indonesia and Thailand, the frequency band 50-54 MHz is also allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-15)
5.168	*Additional allocation:* in Australia, China and the Dem. People's Rep. of Korea, the band 50-54 MHz is also allocated to the broadcasting service on a primary basis.
5.169	*Alternative allocation:* in Botswana, Eswatini, Lesotho, Malawi, Namibia, Rwanda, South Africa, Zambia and Zimbabwe, the frequency band 50-54 MHz is allocated to the amateur service on a primary basis. In Senegal, the frequency band 50-51 MHz is allocated to the amateur service on a primary basis. (WRC-19)
5.169A	*Alternative allocation:* in the following countries in Region 1: Angola, Saudi Arabia, Bahrain, Burkina Faso, Burundi, the United Arab Emirates, Gambia, Jordan, Kenya, Kuwait, Mauritius, Mozambique, Oman, Uganda, Qatar, South Sudan and Tanzania, the frequency band 50-54 MHz is allocated to the amateur service on a primary basis. In Guinea-Bissau, the frequency band 50.0-50.5 MHz is allocated to the amateur service on a primary basis. In Djibouti, the frequency band 50-52 MHz is allocated to the amateur service on a primary basis. With the exception of those countries listed in No. **5.169**, stations in the amateur service operating in Region 1 under this footnote, in all or part of the frequency band 50- 54 MHz, shall not cause harmful interference to, or claim protection from, stations of other services operating in accordance with the Radio Regulations in Algeria, Egypt, Iran (Islamic Republic of), Iraq, Israel, Libya, Palestine*, the Syrian Arab Republic, the Dem. People's Republic of Korea, Sudan and Tunisia. The field strength generated by an amateur station in the frequency band 50-54 MHz shall not exceed a value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the borders of listed countries requiring protection. (WRC-19)

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5.169B	Except countries listed under No. **5.169**, stations in the amateur service used in Region 1, in all or part of the 50-54 MHz frequency band, shall not cause harmful interference to, or claim protection from, stations of other services used in accordance with the Radio Regulations in Algeria, Armenia, Azerbaijan, Belarus, Egypt, Russian Federation, Iran (Islamic Republic of), Iraq, Kazakhstan, Kyrgyzstan, Libya, Uzbekistan, Palestine*, the Syrian Arab Republic, Sudan, Tunisia and Ukraine. The field strength generated by an amateur station in the frequency band 50-54 MHz shall not exceed a value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the borders of the countries listed in this provision. (WRC-19)
5.170	*Additional allocation:* in New Zealand, the frequency band 51-54 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)
5.171	*Additional allocation:* in Botswana, Eswatini, Lesotho, Malawi, Mali, Namibia, Dem. Rep. of the Congo, Rwanda, South Africa, Zambia and Zimbabwe, the frequency band 54-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)
5.172	*Different category of service:* in the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 54-68 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**). (WRC- 15)
5.173	*Different category of service:* in the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 68-72 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**). (WRC- 15)
5.174	(SUP - WRC-07)
5.175	*Alternative allocation:* in Armenia, Belarus, the Russian Federation, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. In Latvia and Lithuania, the frequency bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting and mobile, except aeronautical mobile, services on a primary basis. In Mongolia, the frequency band 76-87.5 MHz is allocated to the broadcasting service on a primary basis; the stations of the broadcasting service shall not cause harmful interference to, or claim protection from, existing or planned fixed and mobile stations in the neighbouring countries. The services to which these frequency bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned. (WRC-23)~~*Alternative allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. In Latvia and Lithuania, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting and mobile, except aeronautical mobile, services on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned. (WRC-07)~~
5.176	*Additional allocation:* in Australia, China, Korea (Rep. of), the Philippines, the Dem. People's Rep. of Korea and Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis. (WRC-07)
5.177	*Additional allocation:* in Armenia, ~~Azerbaijan,~~ Belarus, the Russian Federation, ~~Georgia,~~ Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 73-74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-~~07~~23)

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5.178	*Additional allocation:* in Colombia, Cuba, El Salvador, Guatemala, Guyana, Honduras and Nicaragua, the band 73-74.6 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)
5.179	*Additional allocation:* in Armenia, Azerbaijan, Belarus, China, the Russian Federation, Georgia, Kazakhstan, Lithuania, Mongolia, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only. ~~(WRC-07)~~ (WRC-12)
5.180	The frequency 75 MHz is assigned to marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guardband to stations of other services which, because of their power or geographical position, might cause harmful interference or otherwise place a constraint on marker beacons. Every effort should be made to improve further the characteristics of airborne receivers and to limit the power of transmitting stations close to the limits 74.8 MHz and 75.2 MHz.
5.181	*Additional allocation:* in Egypt, Israel and the Syrian Arab Republic, the band 74.8-75.2 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **9.21**. (WRC-03)
5.182	*Additional allocation:* in Western Samoa, the band 75.4-87 MHz is also allocated to the broadcasting service on a primary basis. (WRC-23)
5.183	*Additional allocation:* in China, Korea (Rep. of), Japan, the Philippines and the Dem. People's Rep. of Korea, the band 76-87 MHz is also allocated to the broadcasting service on a primary basis.
5.184	SUP (WRC-07)
5.185	*Different category of service: in the United States, the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 76-88 MHz to the fixed and mobile services is on a primary basis (see No.* ***5.33****). (WRC-23)*~~*Different category of service:* in the United States, the French overseas departments and communities in Region 2, and Guyana and Paraguay, , the allocation of the frequency band 76-88 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**). (WRC-15)~~
5.186	SUP (WRC-97)
5.187	*Alternative allocation:* in Albania, the band 81-87.5 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions contained in the Final Acts of the Special Regional Conference (Geneva, 1960).
5.188	*Additional allocation:* in Australia, the band 85-87 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service in Australia is subject to special agreements between the administrations concerned.
5.189	Not used.
5.190	*Additional allocation:* in Monaco, the band 87.5-88 MHz is also allocated to the land mobile service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-97)
5.191	Not used.
5.192	*Additional allocation:* in China and Korea (Rep. of), the band 100-108 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)
5.193	Not used.
5.194	*Additional allocation:* in Kyrgyzstan, Somalia and Turkmenistan, the frequency band 104-108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-19)

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5.195	Not used
5.196	Not used.
5.197	*Additional allocation:* in the Syrian Arab Republic, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. **9.21**. (WRC-12)
5.197A	~~*Additional allocation:* the band 108-117.975 MHz is also allocated on a primary basis to the aeronautical mobile (R) service, limited to systems operating in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **413 (Rev.WRC-07)**. The use of the band 108-112 MHz by the aeronautical mobile (R) service shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions in accordance with recognized international aeronautical standards. (WRC-07)~~Additional allocation: the frequency band 108-117.975 MHz is also allocated on a primary basis to the aeronautical mobile (R) service, limited to systems operating in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution 413 (Rev.WRC-23). The use of the frequency band 108-112 MHz by the aeronautical mobile (R) service shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions in accordance with recognized international aeronautical standards. (WRC-23)
5.198	(SUP - WRC-07)
5.198A	The use of the frequency band 117.975-137 MHz by the aeronautical mobile-satellite (R) service is subject to coordination under No. 9.11A. No. 9.16 does not apply. Such use shall be limited to non-geostationary-satellite systems operated in accordance with international aeronautical standards. Resolution 406 (WRC-23) applies. (WRC-23)
5.198B	The use of the frequency band 117.975-137 MHz by the aeronautical mobile (R) service shall have priority over use by the aeronautical mobile-satellite (R) service. (WRC-23)
5.199	(SUP - WRC-07)

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5.200	In the frequency band 117.975-137 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article 31 for distress and safety purposes with stations of the aeronautical mobile service and the aeronautical mobilesatellite service. (WRC-23)~~In the band 117.975-137 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article 31 for distress and safety purposes with stations of the aeronautical mobile service.~~
5.201	*Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Egypt, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq (Republic of), Japan, Kazakhstan, Mali, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Qatar, Kyrgyzstan, Romania, Senegal, Somalia, Tajikistan and Turkmenistan, the frequency band 132-136 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC- 23)~~*Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq (Republic of), Japan, Kazakhstan, Mali, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Romania, Senegal, Tajikistan, Turkmenistan and Ukraine, the frequency band 132-136 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-19)~~
5.202	*Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, the United Arab Emirates, the Russian Federation, Georgia, Iran (Islamic Republic of), Jordan, Mali, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, Senegal, Tajikistan and Turkmenistan, the frequency band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-23)~~*Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bulgaria, the United Arab Emirates, the Russian Federation, Georgia, Iran (Islamic Republic of), Jordan, Mali, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, Senegal, Tajikistan, Turkmenistan and Ukraine, the frequency band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-19)~~
5.203	SUP (WRC-07)
5.203A	SUP(WRC-07)
5.203B	SUP(WRC-07)
5.203C	The use of the space operation service (space-to-Earth) with non-geostationary satellite short-duration mission systems in the frequency band 137-138 MHz is subject to Resolution **660 (WRC-19)**. Resolution **32 (WRC-19)** applies. These systems shall not cause harmful interference to, or claim protection from, the existing services to which the frequency band is allocated on a primary basis. (WRC-19)
5.204	*Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Kuwait, Montenegro, Oman, Pakistan, the Philippines, Qatar, Singapore, Thailand and Yemen, the frequency band 137-138 MHz is allocated

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	to the fixed and mobile, except aeronautical mobile (R), services on a primary basis (see No. **5.33**). (WRC-19)
5.205	*Different category of service:* in Israel and Jordan, the allocation of the band 137-138 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**).
5.206	*Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, the Russian Federation, Finland, France, Georgia, Greece, Kazakhstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, the Syrian Arab Republic, Slovakia, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 137-138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. **5.33**). (WRC-2000)
5.207	*Additional allocation:* in Australia, the band 137-144 MHz is also allocated to the broadcasting service on a primary basis until that service can be accommodated within regional broadcasting allocations.
5.208	The use of the band 137-138 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-97)
5.208A	In making assignments to space stations in the mobile-satellite service in the frequency bands 137-138 MHz, 387-390 MHz and 400.15-401 MHz and in the maritime mobile-satellite service (space-to-Earth) in the frequency bands 157.1875-157.3375 MHz and 161.7875- 161.9375 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the frequency bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions as shown in the most recent version of Recommendation ITU-R RA.769. (WRC-19)
5.208B*	In the frequency bands: 137-138 MHz, 157.1875-157.3375 MHz, 161.7875-161.9375 MHz, 387-390 MHz, 400.15-401 MHz, 1 452-1 492 MHz, 1 525-1 610 MHz, 1 613.8-1 626.5 MHz, 2 655-2 690 MHz, 21.4-22 GHz, Resolution **739 (Rev.WRC-19)** applies. (WRC-19) * ~~This provision was previously numbered as No. **5.347A**. It was renumbered to preserve the sequential order.~~
5.209	The use of the bands 137-138 MHz, 148-150.05 MHz, 399.9-400.05 MHz, 400.15-401 MHz, 454-456 MHz and 459-460 MHz by the mobile-satellite service is limited to non-geostationary-satellite systems. (WRC-97)
5.209A	The use of the frequency band 137.175-137.825 MHz by non-geostationary satellite systems in the space operation service identified as short-duration mission in accordance with Appendix 4 is not subject to No. 9.11A. (WRC-19)
5.210	*Additional allocation:* in Italy~~, the Czech Rep.~~ and the United Kingdom, the bands 138-143.6 MHz and 143.65-144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis. (WRC-23~~07~~)

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5.211	*Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Denmark, the United Arab Emirates, Spain, Finland, Greece, Guinea, Ireland, Israel, Kenya, Kuwait, Lebanon, Liechtenstein, Luxembourg, North Macedonia, Mali, Malta, Montenegro, Norway, the Netherlands, Qatar, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania, Tunisia and Turkey, the frequency band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. ~~(WRC-19)~~ (WRC-23)
5.212	*Alternative allocation:* in Angola, Botswana, Cameroon, the Central African Rep., Congo (Rep. of the), Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Niger, Oman, Uganda, Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sierra Leone, South Africa, Chad, Togo, Zambia and Zimbabwe, the frequency band 138-144 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-19)
5.213	*Additional allocation:* in China, the band 138-144 MHz is also allocated to the radiolocation service on a primary basis.
5.214	*Additional allocation:* in Eritrea, Ethiopia, Kenya, North Macedonia, Montenegro, Serbia, Somalia, Sudan, South Sudan and Tanzania, the frequency band 138-144 MHz is also allocated to the fixed service on a primary basis. (WRC-19)
5.215	Not used.
5.216	*Additional allocation:* in China, the band 144-146 MHz is also allocated to the aeronautical mobile (OR) service on a secondary basis.
5.217	*Alternative allocation:* in Afghanistan, Bangladesh, Cuba, Guyana and India, the band 146-148 MHz is allocated to the fixed and mobile services on a primary basis.
5.218	*Additional allocation:* the band 148-149.9 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. **9.21**. The bandwidth of any individual transmission shall not exceed ±25 kHz.
5.218A	The frequency band 148-149.9 MHz in the space operation service (Earth-to-space) may be used by nongeostationary- satellite systems with short-duration missions. Non-geostationary-satellite systems in the space operation service used for a short-duration mission in accordance with Resolution **32 (WRC-19)** of the Radio Regulations are not subject to agreement under No. **9.21**. At the stage of coordination, the provisions of Nos. **9.17** and **9.18** also apply. In the frequency band 148–149.9 MHz, non–geostationary–satellite systems with short–duration missions shall not cause unacceptable interference to, or claim protection from, existing primary services within this frequency band, or impose additional constraints on the space operation and mobile–satellite services. In addition, earth stations in non–geostationary–satellite systems in the space operation service with short–duration missions in the frequency band 148–149.9 MHz shall ensure that the power flux–density does not exceed –149 dB(W/(m2 · 4 kHz)) for more than 1% of time at the border of the territory of the following countries: Armenia, Azerbaijan, Belarus, China, Korea (Rep. of), Cuba, Russian Federation, India, Iran (Islamic Republic of), Japan, Kazakhstan, Malaysia, Uzbekistan, Kyrgyzstan, Thailand and Viet Nam. In case this power flux–density limit is exceeded, agreement under No. **9.21** is required to be obtained from countries mentioned in this footnote. (WRC-19)

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5.219	The use of the frequency band 148-149.9 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. The mobile-satellite service shall not constrain the development and use of the fixed, mobile and space operation services in the frequency band 148-149.9 MHz. The use of the frequency band 148-149.9 MHz by non-geostationary- satellite systems in the space operation service identified as short-duration mission is not subject to No. **9.11A**. (WRC-19)
5.220	The use of the frequency bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-15)
5.221	Stations of the mobile-satellite service in the frequency band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Djibouti, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Eswatini, Ethiopia, the Russian Federation, Finland, France, Gabon, Georgia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Türkiye, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Somalia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-23)~~Stations of the mobile-satellite service in the frequency band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Djibouti, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Eswatini, Ethiopia, the Russian Federation, Finland, France, Gabon, Georgia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-19)~~
5.222	SUP (WRC-15)
5.223	SUP (WRC-15)
5.224	SUP (WRC-97)
5.224A	SUP (WRC-15)
5.224B	SUP (WRC-15)

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5.225	*Additional allocation:* in Australia and India, the band 150.05-153 MHz is also allocated to the radio astronomy service on a primary basis.
5.225A	*Additional allocation:* in Algeria, Armenia, Azerbaijan, Belarus, China, the Russian Federation, France, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Viet Nam, the frequency band 154-156 MHz is also allocated to the radiolocation service on a primary basis. The usage of the frequency band 154-156 MHz by the radiolocation service shall be limited to space-object detection systems operating from terrestrial locations. The operation of stations in the radiolocation service in the frequency band 154-156 MHz shall be subject to agreement obtained under No. **9.21**. For the identification of potentially affected administrations in Region 1, the instantaneous field-strength value of 12 dB(V/m) for 10% of the time produced at 10 m above ground level in the 25 kHz reference frequency band at the border of the territory of any other administration shall be used. For the identification of potentially affected administrations in Region 3, the interference-to-noise ratio (I/N) value of 6 dB (N = 161 dBW/4 kHz), or 10 dB for applications with greater protection requirements, such as public protection and disaster relief (PPDR (N = 161 dBW/4 kHz)), for 1% of the time produced at 60 m above ground level at the border of the territory of any other administration shall be used. In the frequency bands 156.7625-156.8375 MHz, 156.5125-156.5375 MHz, 161.9625- 161.9875 MHz, 162.0125-162.0375 MHz, out-of-band e.i.r.p. of space surveillance radars shall not exceed 16 dBW. Frequency assignments to the radiolocation service under this allocation in Ukraine shall not be used without the agreement of Moldova. (WRC-12)
5.226	The frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC). The conditions for the use of this frequency and the band 156.4875-156.5625 MHz are contained in Articles **31** and **52**, and in Appendix **18**. The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency and the band 156.7625-156.8375 MHz are contained in Article **31** and Appendix **18**. In the bands 156-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles **31** and **52**, and Appendix **18**). Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service. However, the frequencies 156.8 MHz and 156.525 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radiocommunications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements. (WRC-07)
5.227	*Additional allocation:* the bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz are also allocated to the fixed and land mobile services on a primary basis. The use of these bands by the fixed and land mobile services shall not cause harmful interference to nor claim protection from the maritime mobile VHF radiocommunication service. (WRC-07)

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5.227A	SUP (WRC-12)
5.228	The use of the frequency bands 156.7625-156.7875 MHz and 156.8125-156.8375 MHz by the mobilesatellite service (Earth-to-space) is limited to the reception of automatic identification system (AIS) emissions of long range AIS broadcast messages (Message 27, see the most recent version of Recommendation ITU-R M.1371). With the exception of AIS emissions, emissions in these frequency bands by systems operating in the maritime mobile service for communications shall not exceed 1W. (WRC-12)
5.228A	The frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz may be used by aircraft stations for the purpose of search and rescue operations and other safety-related communications. (WRC-12)
5.228AA	The use of the frequency bands 161.9375-161.9625 MHz and 161.9875-162.0125 MHz by the maritime mobile-satellite (Earth-to-space) service is limited to the systems which operate in accordance with Appendix 18. (WRC-15)
5.228AB	The use of the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz by the maritime mobile-satellite service (Earth-to-space) is limited to non-GSO satellite systems operating in accordance with Appendix 18. (WRC-19)
5.228AC	The use of the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz by the maritime mobile-satellite service (space-to-Earth) is limited to non-GSO satellite systems operating in accordance with Appendix **18**. Such use is subject to agreement obtained under No. **9.21** with respect to the terrestrial services in Azerbaijan, Belarus, China, Korea (Rep. of), Cuba, the Russian Federation, the Syrian Arab Republic, the Dem. People's Rep. of Korea, South Africa and Viet Nam. (WRC-19)
5.228B	The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the fixed and land mobile services shall not cause harmful interference to, or claim protection from, the maritime mobile service. (WRC-12)
5.228C	The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the maritime mobile service and the mobile-satellite (Earth-to-space) service is limited to the automatic identification system (AIS), including AIS search and rescue transmitters (AIS-SART) and satellite emergency position indicating radio beacons with AIS (EPIRB-AIS). The use of these frequency bands by the aeronautical mobile (OR) service is limited to AIS emissions from search and rescue aircraft operations. The AIS, AIS-SART and EPIRB-AIS operations in these frequency bands shall not constrain the development and use of the fixed and mobile services operating in the adjacent frequency bands. (WRC-23)~~The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the maritime mobile service and the mobile-satellite (Earth-to-space) service is limited to the automatic identification system (AIS). The use of these frequency bands by the aeronautical mobile (OR) service is limited to AIS emissions from search and rescue aircraft operations. The AIS operations in these frequency bands shall not constrain the development and use of the fixed and mobile services operating in the adjacent frequency bands. (WRC-12)~~
5.228D	The frequency bands 161.9625-161.9875 MHz (AIS 1) and 162.0125-162.0375 MHz (AIS 2) may continue to be used by the fixed and mobile services on a primary basis until 1 January 2025, at which time this allocation shall no longer be valid. Administrations are encouraged to make all practicable efforts to discontinue the use of these bands by the fixed and mobile services prior to the transition date. During this transition period, the maritime mobile service in these frequency bands has priority over the fixed, land mobile and aeronautical mobile services. (WRC-12)
5.228E	The use of the automatic identification system in the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the aeronautical mobile (OR) service is limited to aircraft stations for the purpose of search and rescue operations and other safety-related communications. (WRC-12)

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5.228F	The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the mobile-satellite service (Earth-to-space) is limited to the reception of automatic identification system emissions from stations operating in the maritime mobile service. (WRC-12)
~~**5.229**~~	~~*Alternative allocation:* in Morocco, the band 162-174 MHz is allocated to the broadcasting service on a primary basis. The use of this band shall be subject to agreement with administrations having services, operating or planned, in accordance with the Table which are likely to be affected. Stations in existence on 1 January 1981, with their technical characteristics as of that date, are not affected by such agreement.~~ (SUP - WRC-23)
5.230	*Additional allocation:* in China, the band 163-167 MHz is also allocated to the space operation service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**.
5.231	*Additional allocation:* in Afghanistan, and China, the band 167-174 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service into this band shall be subject to agreement with the neighbouring countries in Region 3 whose services are likely to be affected. (WRC 12)
5.232	SUP (WRC-12)
5.233	*Additional allocation:* in China, the band 174-184 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis, subject to agreement obtained under No. **9.21**. These services shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations.
5.234	SUP (WRC-12)
5.235	*Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Malta, Monaco, Norway, the Netherlands, the United Kingdom, Sweden and Switzerland, the band 174-223 MHz is also allocated to the land mobile service on a primary basis. However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.
5.236	Not used
5.237	*Additional allocation:* in Congo (Rep. of the), Egypt, Eritrea, Ethiopia, Gambia, Guinea, the Libya, Mali, Sierra Leone, Somalia and Chad, the band 174-223 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC- 12)
5.238	*Additional allocation:* in Bangladesh, India, Pakistan and the Philippines, the band 200-216 MHz is also allocated to the aeronautical radionavigation service on a primary basis.
5.239	Not used.
5.240	*Additional allocation:* in China and India, the band 216-223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.
5.241	In Region 2, no new stations in the radiolocation service may be authorized in the band 216-225 MHz. Stations authorized prior to 1 January 1990 may continue to operate on a secondary basis.
5.242	*Additional allocation:* in Canada and Mexico, the frequency band 216-220 MHz is also allocated to the land mobile service on a primary basis. (WRC-19)
5.243	*Additional allocation:* in Somalia, the band 216-225 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to not causing harmful interference to existing or planned broadcasting services in other countries.
5.244	SUP (WRC-97)

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5.245	*Additional allocation:* in Japan, the band 222-223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.
5.246	*Alternative allocation:* in Spain, France, Israel and Monaco, the band 223-230 MHz is allocated to the broadcasting and land mobile services on a primary basis (see No. **5.33**) on the basis that, in the preparation of frequency plans, the broadcasting service shall have prior choice of frequencies; and allocated to the fixed and mobile, except land mobile, services on a secondary basis. However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations in Morocco and Algeria.
5.247	*Additional allocation:* in Saudi Arabia, Bahrain, the United Arab Emirates, Jordan, Oman, Qatar and Syrian Arab Republic, the band 223-235 MHz is also allocated to the aeronautical radionavigation service on a primary basis.
5.248	Not used
5.249	Not used.
5.250	*Additional allocation*: in China, the band 225-235 MHz is also allocated to the radio astronomy service on a secondary basis.
5.251	*Additional allocation:* in Nigeria, the band 230-235 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to agreement obtained under No. **9.21.**
5.252	*Alternative allocation:* in Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, the frequency bands 230-238 MHz and 246-254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-19)
5.253	Not used.
5.254	The bands 235-322 MHz and 335.4-399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. **9.21**, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No. **5.256A**. (WRC-03)
5.255	The bands 312-315 MHz (Earth-to-space) and 387-390 MHz (space-to-Earth) in the mobile-satellite service may also be used by non-geostationary-satellite systems. Such use is subject to coordination under No. **9.11A**.
5.256	The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes. (WRC-07)
5.256A	*Additional allocation:* in China, the Russian Federation and Kazakhstan, the frequency band 258-261 MHz is also allocated to the space research service (Earth-to-space) and space operation service (Earth-to-space) on a primary basis. Stations in the space research service (Earth-to-space) and space operation service (Earth-to-space) shall not cause harmful interference to, or claim protection from, or constrain the use and development of, the mobile service systems and mobile-satellite service systems operating in the frequency band. Stations in space research service (Earth-to-space) and space operation service (Earth-to-space) shall not constrain the future development of fixed service systems of other countries. (WRC-15)
5.257	The band 267-272 MHz may be used by administrations for space telemetry in their countries on a primary basis, subject to agreement obtained under No. **9.21**.
5.258	The use of the band 328.6-335.4 MHz by the aeronautical radionavigation service is limited to Instrument Landing Systems (glide path).

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5.259	*Additional allocation:* in Egypt, and the Syrian Arab Republic, the band 328.6-335.4 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **9.21**. (WRC-12)
5.260	~~SUP (WRC-15)~~
5.260A	In the frequency band 399.9-400.05 MHz, the maximum e.i.r.p. of any emission of earth stations in the mobile-satellite service shall not exceed 5 dBW in any 4 kHz band and the maximum e.i.r.p. of each earth station in the mobile-satellite service shall not exceed 5 dBW in the whole 399.9-400.05 MHz frequency band. Until 22 November 2022, this limit shall not apply to satellite systems for which complete notification information has been received by the Radiocommunication Bureau by 22 November 2019 and that have been brought into use by that date. After 22 November 2022, these limits shall apply to all systems within the mobile-satellite service operating in this frequency band. In the frequency band 399.99-400.02 MHz, the e.i.r.p. limits as specified above shall apply after 22 November 2022 to all systems within the mobile-satellite service. Administrations are requested that their mobile-satellite service satellite links in the 399.99-400.02 MHz frequency band comply with the e.i.r.p. limits as specified above, after 22 November 2019. (WRC-19)
5.260B	In the frequency band 400.02-400.05 MHz, the provisions of No. **5.A12** are not applicable for telecommand uplinks within the mobile-satellite service. (WRC-19)
5.261	Emissions shall be confined in a band of ± 25 kHz about the standard frequency 400.1 MHz.
5.262	*Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Botswana, Colombia, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Uzbekistan, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Kyrgyzstan, Romania, Singapore, Somalia, Tajikistan, Chad, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)
5.263	The band 400.15-401 MHz is also allocated to the space research service in the space-to-space direction for communications with manned space vehicles. In this application, the space research service will not be regarded as a safety service.
5.264	The use of the band 400.15-401 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. The power flux-density limit indicated in Annex 1 of Appendix **5** shall apply until such time as a competent world radiocommunication conference revises it.
5.264A	In the frequency band 401-403 MHz, the maximum e.i.r.p. of any emission of each earth station in the meteorological- satellite service and the Earth exploration-satellite service shall not exceed 22 dBW in any 4 kHz band for geostationary systems and non-geostationary systems with an orbit of apogee equal or greater than 35 786 km. The maximum e.i.r.p. of any emission of each earth station in the meteorologicalsatellite service and the Earth exploration-satellite service shall not exceed 7 dBW in any 4 kHz band for non-geostationary systems with an orbit of apogee lower than 35 786 km. The maximum e.i.r.p. of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 22 dBW for geostationary

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	systems and nongeostationary systems with an orbit of apogee equal or greater than 35 786 km in the whole 401-403 MHz frequency band. The maximum e.i.r.p. of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 7 dBW for non-geostationary systems with an orbit of apogee lower than 35 786 km in the whole 401-403 MHz frequency band. Until 22 November 2029, these limits shall not apply to satellite systems for which complete notification information has been received by the Radiocommunication Bureau by 22 November 2019 and that have been brought into use by that date. After 22 November 2029, these limits shall apply to all systems within the meteorological-satellite service and the Earth exploration-satellite service operating in this frequency band. (WRC-19)
5.264B	Non-geostationary-satellite systems in the meteorological-satellite service and the Earth explorationsatellite service for which complete notification information has been received by the Radiocommunication Bureau no later than 28 April 2007 are exempt from provisions of No. **5.264A** and may continue to operate in the frequency band 401.898-402.522 MHz on a primary basis without exceeding a maximum e.i.r.p. level of 12 dBW. (WRC-23)~~Non-geostationary-satellite systems in the meteorological-satellite service and the Earth exploration-satellite service for which complete notification information has been received by the Radiocommunication Bureau before 28 April 2007 are exempt from provisions of No. **5.264A** and may continue to operate in the frequency band 401.898–402.522 MHz on a primary basis without exceeding a maximum e.i.r.p. level of 12 dBW. (WRC-19)~~
5.265	In the frequency band 403-410 MHz, Resolution **205 (Rev.WRC-19)** applies. (WRC-19)
5.266	The use of the band 406-406.1 MHz by the mobile-satellite service is limited to low power satellite emergency position- indicating radiobeacons (see also Article **31**). (WRC-07)
5.267	Any emission capable of causing harmful interference to the authorized uses of the band 406-406.1 MHz is prohibited.
5.268	Use of the frequency band 410-420 MHz by the space research service is limited to space-to-space communication links with an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from transmitting stations of the space research service (space-to-space) in the frequency band 410-420 MHz shall not exceed –153 dB(W/m^2) for $0^o \leq \delta \leq 5^o$, -153+ 0.077 (d – 5) dB(W/m^2) for $5^o \leq \delta \leq 70^o$ and –148 dB(W/m^2) for $70^o \leq \delta \leq 90^o$, where δ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. In this frequency band, stations of the space research service (space-to-space) shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. No. **4.10** does not apply. (WRC-15)
5.269	*Different category of service:* in Australia, Brazil, the United States, India, Japan and the United Kingdom, the allocation of the frequency bands 420-430 MHz and 440-450 MHz to the radiolocation service is on a primary basis (see No. **5.33**). (WRC-23)~~*Different category of service:* in Australia, the United States, India, Japan and the United Kingdom, the allocation of the bands 420-430 MHz and 440-450 MHz to the radiolocation service is on a primary basis (see No. **5.33**).~~
5.270	*Additional allocation:* in Australia, the United States, Jamaica and the Philippines, the bands 420-430 MHz and 440- 450 MHz are also allocated to the amateur service on a secondary basis.
5.271	*Additional allocation:* in Belarus, China, India, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis. (WRC-07) ~~SUP (WRC-12)~~

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5.272	SUP (WRC-12)
5.273	SUP (WRC-12)
5.274	*Alternative allocation:* in Denmark, Norway, Sweden, and Chad the bands 430-432 MHz and 438-440 MHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.(WRC12)
5.275	*Additional allocation:* in Croatia, Estonia, Finland, Libya, North Macedonia, Montenegro and Serbia, the frequency bands 430-432 MHz and 438-440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)
5.276	*Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Djibouti, Egypt, the United Arab Emirates, Ecuador, Eritrea, Ethiopia, Greece, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Jordan, Kenya, Kuwait, Libya, Malaysia, Niger, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Switzerland, Thailand, Togo, Turkey and Yemen, the frequency band 430-440 MHz is also allocated to the fixed service on a primary basis and the frequency bands 430-435 MHz and 438-440 MHz are also allocated, except in Ecuador, to the mobile, except aeronautical mobile, service on a primary basis. ~~(WRC-15)~~ (WRC-23)
5.277	*Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Uzbekistan, Poland, the Dem. Rep. of the Congo, Kyrgyzstan, Slovakia, Romania, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the frequency band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-19)
5.278	*Different category of service:* in Argentina, Brazil, Colombia, Costa Rica, Cuba, Guyana, Honduras, Panama, Paraguay, Uruguay and Venezuela, the allocation of the frequency band 430-440 MHz to the amateur service is on a primary basis (see No. **5.33**). (WRC-19)
5.279	*Additional allocation:* in Mexico, the frequency bands 430-435 MHz and 438-440 MHz are also allocated on a primary basis to the mobile, except aeronautical mobile, service, and on a secondary basis to the fixed service, subject to agreement obtained under No. **9.21**. (WRC-19)
5.279A	The use of the frequency band 432-438 MHz by sensors in the Earth exploration-satellite service (active) shall be in accordance with Recommendation ITU-R RS.1260-2. Additionally, the Earth exploration-satellite service (active) in the frequency band 432-438 MHz shall not cause harmful interference to the aeronautical radionavigation service in China. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellitecservice (active) to operate as a secondary service in accordance with Nos. **5.29** and **5.30**. (WRC-19)
5.280	In Germany, Austria, Bosnia and Herzegovina, Croatia, Liechtenstein, North Macedonia, Montenegro, Portugal, Serbia, Slovenia and Switzerland, the frequency band 433.05-434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this frequency band must accept harmful interference which may be caused by these applications. ISM equipment operating in this frequency band is subject to the provisions of No. **15.13**. (WRC-19)
5.281	*Additional allocation:* in the French overseas departments and communities in Region 2 and India, the band 433.75-434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis. In France and in Brazil, the band is allocated to the same service on a secondary basis.

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5.282	In the bands 435-438 MHz, 1 260-1 270 MHz, 2 400-2 450 MHz, 3 400-3 410 MHz (in Regions 2 and 3 only) and 5 650- 5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. **5.43**). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. **25.11**. The use of the bands 1 260-1 270 MHz and 5 650-5 670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.
5.283	*Additional allocation:* in Austria, the band 438-440 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.
5.284	*Additional allocation:* in Canada, the band 440-450 MHz is also allocated to the amateur service on a secondary basis.
5.285	*Different category of service:* in Canada, the allocation of the band 440-450 MHz to the radiolocation service is on a primary basis (see No. **5.33**).
5.286	The band 449.75-450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space), subject to agreement obtained under No. **9.21**.
5.286A	The use of the bands 454-456 MHz and 459-460 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-97)
5.286AA	The frequency band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) - see Resolution **224 (Rev.WRC-19)**. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)
5.286B	The use of the band 454-455 MHz in the countries listed in No. **5.286D**, 455-456 MHz and 459-460 MHz in Region 2, and 454-456 MHz and 459-460 MHz in the countries listed in No. **5.286E**, by stations in the mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations. (WRC-97)
5.286C	The use of the band 454-455 MHz in the countries listed in No. **5.286D**, 455-456 MHz and 459-460 MHz in Region 2, and 454-456 MHz and 459-460 MHz in the countries listed in No. **5.286E**, by stations in the mobile-satellite service, shall notconstrain the development and use of the fixed and mobile services operating in accordance with the Table of Frequency Allocations. (WRC-97)
5.286D	Additional allocation: in Canada, the United States and Panama, the band 454-455 MHz is also allocated to the mobile- satellite service (Earth-to-space) on a primary basis. (WRC-07)
5.286E	Additional allocation: in Cape Verde, Nepal and Nigeria, the bands 454-456 MHz and 459-460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis. ~~(WRC-07)~~ (WRC-23)
5.287	Use of the frequency bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz by the maritime mobile service is limited to on-board communication stations. The characteristics of the equipment and the channelling arrangement shall be in accordance with Recommendation ITU-R M.1174-4. The use of these frequency bands in territorial waters is subject to the national regulations of the administration concerned. (WRC-19)
5.288	In the territorial waters of the United States and the Philippines, the preferred frequencies for use by on-board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174-4. (WRC-19)

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5.289	Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the bands 460-470 MHz and 1 690-1 710 MHz for space-to-Earth transmissions subject to not causing harmful interference to stations operating in accordance with the Table.
5.290	*Different category of service:* in Afghanistan, Azerbaijan, Belarus, China, the Russian Federation, Japan, Kyrgyzstan, , Tajikistan and, Turkmenistan the allocation of the band 460-470 MHz to the meteorological-satellite service (space- to-Earth) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-12)
5.291	*Additional allocation:* in China, the band 470-485 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis subject to agreement obtained under No. **9.21** and subject to not causing harmful interference to existing and planned broadcasting stations.
5.291A	*Additional allocation:* in Germany, Austria, Denmark, Estonia, Liechtenstein, Serbia and Switzerland, the frequency band 470-494 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (Rev.WRC-23)**. (WRC-23)~~*Additional allocation:* in Germany, Austria, Denmark, Estonia, Liechtenstein, the Czech Rep., Serbia and Switzerland, the frequency band 470-494 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-15)~~
5.292	*Different category of service:* in Argentina, Uruguay and Venezuela, the allocation of the frequency band 470-512 MHz to the mobile service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-15)
5.293	*Different category of service:* in Canada, Chile, Cuba, the United States, Guyana and Panama, the allocation of the frequency bands 470-512 MHz and 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In the Bahamas, Barbados, Canada, Chile, Cuba, the United States, Guyana, Jamaica, Mexico and Panama, the allocation of the frequency bands 470-512 MHz and 614-698 MHz to the mobile service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In Argentina and Ecuador, the allocation of the frequency band 470-512 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-23)~~*Different category of service:* in Canada, Chile, Cuba, the United States, Guyana, Jamaica and Panama, the allocation of the frequency bands 470-512 MHz and 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In the Bahamas, Barbados, Canada, Chile, Cuba, the United States, Guyana, Jamaica, Mexico and Panama, the allocation of the frequency bands 470-512 MHz and 614-698 MHz to the mobile service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In Argentina and Ecuador, the allocation of the frequency band 470-512 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-15)~~
5.294	*Additional allocation:* in Saudi Arabia, Cameroon, Côte d'Ivoire, Egypt, Ethiopia, Israel, Libya, Palestine*, the Syrian Arab Republic, Chad and Yemen, the frequency band 470-582 MHz is also allocated to the fixed service on a secondary basis. (WRC-23)~~*Additional allocation:* in Saudi Arabia, Cameroon, Côte d'Ivoire, Egypt, Ethiopia, Israel, Libya, the Syrian Arab Republic, Chad and Yemen, the frequency band 470-582 MHz is also allocated to the fixed service on a secondary basis. (WRC-15)~~

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5.295	In the Bahamas, Barbados, Canada, the United States and Mexico, the frequency band 470-608 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-19)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. **9.21** and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. (WRC-19)
5.295A	*Additional allocation:* in Albania, Germany, Andorra, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Cyprus, Vatican, Croatia, Denmark, Estonia, Finland, France, Georgia, Greece, Hungary, Ireland, Iceland, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malta, Moldova, Monaco, Montenegro, Norway, Uzbekistan, Kingdom of the Netherlands, Poland, Portugal, Türkiye, Slovakia, the Czech Republic, Romania, the United Kingdom, San Marino, Serbia, Slovenia, Sweden, Switzerland and Ukraine, the frequency band 470-694 MHz is allocated to the mobile, except aeronautical mobile, service on a secondary basis, subject to agreement obtained under No. **9.21**. For the protection of the broadcasting service, stations in the mobile service shall not create a field strength for more than 1% of the time at the highest of the clutter height or 10 m above ground level at the border of the territory of any other administration that exceeds the field strength value as calculated using § 4.1.3.2 of Annex 2 to the GE06 Agreement with regard to allowance for multiple interference, Table A.1.10 and the methodology given in the GE06 Agreement. These limits may be exceeded on the territory of any country whose administration has so agreed. This allocation shall in no way adversely affect the broadcast development or undermine new entries of the broadcasting service to the GE06 Plan. (WRC-23)
5.296	*Additional allocation:* in Albania, Algeria, Germany, Angola, Saudi Arabia, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Burundi, Cameroon, Vatican, Congo (Rep. of the), Côte d'Ivoire, Croatia, Denmark, Djibouti, Egypt, United Arab Emirates, Spain, Estonia, Eswatini, Finland, France, Gabon, Gambia, Georgia, Ghana, Hungary, Iraq, Ireland, Iceland, Israel, Italy, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malawi, Mali, Malta, Morocco, Mauritius, Mauritania, Moldova, Monaco, Mozambique, Namibia, Niger, Nigeria, Norway, Oman, Uganda, Palestine*, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Türkiye, Slovakia, the Czech Republic, Romania, the United Kingdom, Rwanda, San Marino, Senegal, Serbia, Sudan, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tunisia, Ukraine, Zambia and Zimbabwe, the frequency band 470-694 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting and programme-making. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC-23) ~~*Additional allocation:* in Albania, Germany, Angola, Saudi Arabia, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Burundi, Cameroon, Vatican, Congo (Rep. of the), Côte d'Ivoire, Croatia, Denmark, Djibouti, Egypt, United Arab Emirates, Spain, Estonia, Eswatini. Finland, France, Gabon, Georgia, Ghana, Hungary, Iraq, Ireland, Iceland, Israel, Italy, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malawi, Mali, Malta, Morocco, Mauritius, Mauritania, Moldova, Monaco, Mozambique, Namibia, Niger, Nigeria, Norway, Oman, Uganda, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Slovakia, the Czech Republic, Romania, the United Kingdom, Rwanda, San Marino, Serbia, Sudan, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tunisia, Turkey, Ukraine, Zambia and Zimbabwe, the frequency band 470-694 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting and programme-making. Stations of the land mobile service~~

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	~~in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC-19)~~
5.296A	In Micronesia, the Solomon Islands, Tuvalu and Vanuatu, the frequency band 470-698 MHz, or portions thereof, and in Bangladesh, Lao P.D.R., Maldives, New Zealand and Viet Nam, the frequency band 610-698 MHz, or portions thereof, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-23)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. The mobile allocation in this frequency band shall not be used for IMT systems unless subject to agreement obtained under No. **9.21** and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. (WRC-23)~~In Micronesia, the Solomon Islands, Tuvalu and Vanuatu, the frequency band 470-698 MHz, or portions thereof, and in Bangladesh, Maldives and New Zealand, the frequency band 610-698 MHz, or portions thereof, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-19)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. The mobile allocation in this frequency band shall not be used for IMT systems unless subject to agreement obtained under No. **9.21** and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. (WRC-19)~~
5.297	*Additional allocation:* in Canada, Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana and Jamaica, the frequency band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **9.21**. In the Bahamas, Barbados and Mexico, the frequency band 512-608 MHz is also allocated to the mobile service on a primary basis, subject to agreement obtained under No. **9.21**. In Mexico, the frequency band 512-608 MHz is also allocated on a secondary basis to the fixed service (see No. **5.32**). (WRC-19)
5.298	*Additional allocation:* in India, the band 549.75-550.25 MHz is also allocated to the space operation service (space-to- Earth) on a secondary basis.
5.299	Not used.
5.300	*Additional allocation:* in Saudi Arabia, Cameroon, Egypt, United Arab Emirates, Iraq, Israel, Jordan, Libya, Oman, Palestine*, Qatar, the Syrian Arab Republic and Sudan, the frequency band 582-790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC~~-19~~23)
5.301	Not used.
5.302	SUP (WRC-12)
5.303	Not used.

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5.304	*Additional allocation:* in the African Broadcasting Area (see Nos. **5.10** to **5.13**), the band 606-614 MHz is also allocated to the radio astronomy service on a primary basis.
5.305	*Additional allocation:* in China, the band 606-614 MHz is also allocated to the radio astronomy service on a primary basis.
5.306	*Additional allocation:* in Region 1, except in the African Broadcasting Area (see Nos. **5.10** to **5.13**), and in Region 3,except in China and India, the band 608-614 MHz is also allocated to the radio astronomy service on a secondary basis. (WRC-23)
5.307	*Additional allocation:* in India, the band 608-614 MHz is also allocated to the radio astronomy service on a primary basis.
5.307A	*Additional allocation*: in Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, Iraq, Jordan, Kuwait, Oman, Palestine*, Qatar and the Syrian Arab Republic, the frequency band 614-694 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis and identified for International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-23)** subject to the agreement obtained under No. **9.21.** Stations in the mobile service shall not create a field strength for more than 1% of the time at the highest of the clutter height or 10 m above ground level at the border of the territory of any other administration that exceeds the field strength value as calculated using § 4.1.3.2 of Annex 2 to the GE06 Agreement with regard to allowance for multiple interference, Table A.1.10 and the methodology given in the GE06 Agreement. Stations in the mobile service of the countries listed in this footnote shall not cause harmful interference to, or claim protection from the existing and future broadcasting stations of the neighbouring countries operating in accordance with the GE06 Plan. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations and shall in no way adversely affect the development of the existing and future broadcasting service in accordance with the GE06 Agreement. For countries party to the GE06 Agreement, the use of stations in the mobile service is also subject to the successful application of the procedures of that Agreement. This allocation does not establish priority in the Radio Regulations and shall allow the implementation and development of the broadcasting service in accordance with the GE06 Agreement. The countries listed in this footnote and located in the African Broadcasting Area should ensure protection of the radio astronomy service within the frequency band 606-614 MHz, as allocated in No. **5.304**, consistent with the most recent version of Recommendation ITU-R RA.769. The countries listed in this footnote, which are neighbouring to the countries listed in No. **5.312**, should ensure the protection of the aeronautical radionavigation service in the frequency band 645-862 MHz. (WRC-23)
5.307B	*Additional allocation:* in Gambia, Mauritania, Namibia, Nigeria, Senegal, Somalia, Tanzania and Chad, the frequency band 614-694 MHz is allocated to the mobile service on a secondary basis. For the protection of the broadcasting service, stations in the mobile service shall not create a field strength for more than 1% of the time at the highest of the clutter height or 10 m above ground level at the border of the territory of any other administration that exceeds the field strength value as calculated using § 4.1.3.2 of Annex 2 to the GE06 Agreement with regard to allowance for multiple interference, Table A.1.10 and the methodology given in the GE06 Agreement. This allocation shall in no way adversely affect the broadcast development or undermine new entries of the broadcasting service to the GE06 Plan. Additional measures shall be used by administrations implementing stations in the mobile services to protect stations in the broadcasting service of neighbouring administrations such as a distance limitation from the border of a neighbouring country. (WRC-23)

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5.308	*Additional allocation Different category of service:* in Belize, Colombia, El Salvador and Guatemala, the frequency band 614-698 MHz is also allocated to the mobile service on a primary basis. Stations of the mobile service within the frequency band are subject to agreement obtained under No. **9.21**. (WRC-~~19~~23)
5.308A	In the Bahamas, Barbados, Belize, Canada, Colombia, El Salvador, the United States, Guatemala and Mexico, the frequency band 614-698 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-~~19~~23)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. **9.21** an d shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. (WRC-~~19~~23)
5.309	*Different category of service*: in El Salvador, the allocation of the frequency band 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-15)
5.310	SUP (WRC-97)
5.311	SUP (WRC-07)
5.311A	SUP (WRC-19)
5.312	*Additional allocation*: in Armenia, Azerbaijan, Belarus, the Russian Federation, georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 645-862 MHz, and in Bulgaria the frequency bands 726-753 MHz, 778-811 MHz and 822-852 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. (WRC-23) ~~*Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 645-862 MHz, and in Bulgaria the frequency bands 646-686 MHz, 726-753 MHz, 778-811 MHz and 822-852 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. (WRC-19)~~
5.312A	In Region 1, the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service is subject to the provisions of Resolution 760 (Rev.WRC-~~19~~23). See also Resolution 224 (Rev.WRC-~~19~~23). (WRC-23~~19~~)
5.312B	The frequency band 698-960 MHz, or portions thereof, in Region 2, and the frequency band 694-960 MHz, or portions thereof, in Region 1, are identified for use by high-altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **213 (WRC-23)** shall apply. HIBS shall not claim protection from existing primary services. No. **5.43A** does not apply, see *resolves* 2 of Resolution **213 (WRC-23)**. Such use of HIBS in the frequency bands 694-728 MHz, 830- 835 MHz and 805.3-806.9 MHz is limited to reception by HIBS. (WRC-23)
5.313	SUP (WRC-97)
5.313A	The frequency band, or portions of the frequency band 698-790 MHz, in Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Korea (Rep. of), Fiji, India, Indonesia, Japan, Kiribati, Lao P.D.R., Malaysia, Myanmar (Union of), New Zealand, Pakistan, Papua New Guinea, the Philippines, the Dem. People's Rep. of Korea, Solomon Islands, Samoa, Singapore, Thailand, Tonga, Tuvalu, Vanuatu and Viet Nam, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-19)
5.313B	SUP (WRC-15)
5.314	SUP (WRC-15)
5.314A	The frequency band 698-960 MHz, or portions thereof, in Australia, Maldives, Micronesia, Papua New Guinea, Tonga and Vanuatu, and the frequency bands 703-733 MHz, 758-788

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	MHz, 890-915 MHz and 935-960 MHz, or portions thereof, in China, India, Indonesia, Japan, Korea (Rep. of), Malaysia, the Philippines and Thailand are identified for use by high-altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **213 (WRC-23)** shall apply. HIBS shall not claim protection from existing primary services. No. **5.43A** does not apply, see *resolves* 2 of Resolution **213 (WRC-23)**. Such use of HIBS in the frequency bands 698-728 MHz and 830-835 MHz is limited to reception by HIBS. (WRC-23)
5.315	SUP (WRC-15)
5.316	SUP (WRC-15)
5.316A	SUP (WRC-15)
5.316B	In Region 1, the allocation to the mobile, except aeronautical mobile, service in the frequency band 790-862 MHz is subject to agreement obtained under No. **9.21** with respect to the aeronautical radionavigation service in countries mentioned in No. **5.312**. For countries party to the GE06 Agreement, the use of stations of the mobile service is also subject to the successful application of the procedures of that Agreement. Resolutions **224 (Rev.WRC-~~19~~23)** and **749 (Rev.WRC-~~19~~23)** shall apply, as appropriate. (WRC-23~~19~~)
5.317	*Additional allocation*: in Region 2 (except Brazil, the United States and Mexico), the frequency band 806-890 MHz is also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. The use of this service is intended for operation within national boundaries. (WRC-15)
5.317A	The parts of the frequency band 698-960 MHz in Region 2 and the frequency bands 694-790 MHz in Region 1 and 790- 960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions **224 (Rev.WRC- ~~19~~23)**, **760 (Rev.WRC-~~19~~23)** and **749 (Rev.WRC-~~19~~23)**, where applicable. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-~~19~~23)
5.318	*Additional allocation*: in Canada, the United States and Mexico, the bands 849-851 MHz and 894-896 MHz are also allocated to the aeronautical mobile service on a primary basis, for public correspondence with aircraft. The use of the band 849-851 MHz is limited to transmissions from aeronautical stations and the use of the band 894-896 MHz is limited to transmissions from aircraft stations.
5.319	*Additional allocation*: in Belarus, the Russian Federation and Ukraine, the bands 806-840 MHz (Earth-to-space) and 856-890 MHz (space-to-Earth) are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service. The use of these bands by this service shall not cause harmful interference to, or claim protection from, services in other countries operating in accordance with the Table of Frequency Allocations and is subject to special agreements between the administrations concerned.
5.320	Additional allocation: in Region 3, the bands 806-890 MHz and 942-960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service on a primary basis, subject to agreement obtained under No. **9.21.** The use of this service is limited to operation within national boundaries. In seeking such agreement, appropriate protection shall be afforded to services operating in accordance with the Table, to ensure that no harmful interference is caused to such services.
5.321	SUP (WRC-07)

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5.322	In Region 1, in the band 862-960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. **5.10** to **5.13**) excluding Algeria, Burundi, Egypt, Spain, Lesotho, Libya, Morocco, Malawi, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. **9.21**. (WRC~~-12~~-23)
5.323	*Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 862-960 MHz, in Bulgaria the frequency bands 862-880 MHz and 915-925 MHz, and in Romania the frequency bands 862-880 MHz and 915-925 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-19)
5.324	Not used.
5.325	*Different category of service*: in the United States, the allocation of the band 890-942 MHz to the radiolocation service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**.
5.325A	*Different category of service:* in Argentina, Brazil, Costa Rica, Cuba, Dominican Republic, El Salvador, Ecuador, the French overseas departments and communities in Region 2, Guatemala, Paraguay, Uruguay and Venezuela, the frequency band 902-928 MHz is allocated to the land mobile service on a primary basis. In Mexico, the frequency band 902-928 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. In Colombia, the frequency band 902-915 MHz is allocated to the land mobile service on a primary basis. (WRC-23)~~*Different category of service:* in Argentina, Brazil, Costa Rica, Cuba, Dominican Republic, El Salvador, Ecuador, the French overseas departments and communities in Region 2, Guatemala, Paraguay, Uruguay and Venezuela, the frequency band 902-928 MHz is allocated to the land mobile service on a primary basis. In Mexico, the frequency band 902-928 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. In Colombia, the frequency band 902–905 MHz is allocated to the land mobile service on a primary basis. (WRC-19)~~
5.326	*Different category of service*: in Chile, the band 903-905 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21**.
5.327	*Different category of service*: in Australia, the allocation of the band 915-928 MHz to the radiolocation service is on a primary basis (see No. **5.33**).
5.327A	The use of the frequency band 960-1 164 MHz by the aeronautical mobile (R) service is limited to systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **417 (Rev.WRC-15)**. (WRC-15)
5.328	The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities. (WRC-2000)
5.328A	Stations in the radionavigation-satellite service in the band 1 164-1 215 MHz shall operate in accordance with the provisions of Resolution **609 (Rev.WRC-07)** and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1 215 MHz. No. **5.43A** does not apply. The provisions of No. **21.18** shall apply. (WRC-07)

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5.328AA	The frequency band 1 087.7-1 092.3 MHz is also allocated to the aeronautical mobile-satellite (R) service (Earth-to- space) on a primary basis, limited to the space station reception of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft transmitters that operate in accordance with recognized international aeronautical standards. Stations operating in the aeronautical mobile-satellite (R) service shall not claim protection from stations operating in the aeronautical radionavigation service. Resolution **425 (Rev.WRC-19)** shall apply. (WRC-19)
5.328B	The use of the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of Nos. **9.12**, **9.12A** and **9.13**. Resolution **610 (WRC-03)** shall also apply; however, in the case of radionavigation-satellite service (space-to-space) networks and systems, Resolution **610 (WRC-03)** shall only apply to transmitting space stations. In accordance with No. **5.329A**, for systems and networks in the radionavigation-satellite service (space-to-space) in thebands 1 215-1 300 MHz and 1 559-1 610 MHz, the provisions of Nos. **9.7**, **9.12**, **9.12A** and **9.13** shall only apply with respect to other systems and networks in the radionavigation-satellite service (space-to-space). (WRC-07)
5.329	Use of the radionavigation-satellite service in the frequency band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. **5.331**. Furthermore, the use of the radionavigation-satellite service in the frequency band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. **5.43** shall not apply in respect of the radiolocation service. Resolution **608 (Rev.WRC-19)** shall apply. (WRC-19)
5.329A	Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on radionavigation-satellite service (space-to-Earth) systems or on other services operating in accordance with the Table of Frequency Allocations. (WRC-07)
5.330	*Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Nepal, Oman, Pakistan, Palestine*, the Philippines, Qatar, the Syrian Arab Republic, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-23)~~*Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, Djibouti,Egypt,the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, , Nepal, Oman ,Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Somalia, Sudan, South Sudan ,Chad, Togo and Yemen, the band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)~~
5.331	*Additional allocation:* in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Djibouti, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, Pakistan, Palestine*, the Kingdom of the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Türkiye, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, South Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Venezuela and Viet Nam, the frequency band 1 215-1 300 MHz is also allocated to

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	the radionavigation service on a primary basis. In Canada and the United States, the frequency band 1 240-1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-23) ~~*Additional allocation:* in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, Pakistan, the Kingdom of the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, South Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the frequency band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the frequency band 1 240- 1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-19)~~
5.332	In the band 1 215-1 260 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, the radionavigation-satellite service and other services allocated on a primary basis. (WRC-2000)
5.332A	Administrations authorizing operation of the amateur and amateur-satellite services in the frequency band 1 240-1 300 MHz, or portions thereof, shall ensure that the amateur and amateur-satellite services do not cause harmful interference to radionavigation- satellite service (space-to-Earth) receivers in accordance with No. **5.29** (see the most recent version of Recommendation ITU-R M.2164). The authorizing administration, upon receipt of a report of harmful interference caused by a station of the amateur or amateur-satellite services, shall take all necessary steps to rapidly eliminate such interference. (WRC-23)
5.333	SUP (WRC-97)
5.334	*Additional allocation:* in Canada and the United States, the band 1 350-1 370 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)
5.335	In Canada and the United States in the band 1 240-1 300 MHz, active spaceborne sensors in the earth exploration- satellite and space research services shall not cause interference to, claim protection from, or otherwise impose constraints on operation or development of the aeronautical radionavigation service. (WRC-97)
5.335A	In the band 1 260-1 300 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service and other services allocated by footnotes on a primary basis. (WRC-2000)
5.336	Not used.
5.337	The use of the bands 1 300-1 350 MHz, 2 700-2 900 MHz and 9 000-9 200 MHz by the aeronautical radionavigation service is restricted to ground-based radars and to associated airborne transponders which transmit only on frequencies in these bands and only when actuated by radars operating in the same band.
5.337A	The use of the band 1 300-1 350 MHz by earth stations in the radionavigation-satellite service and by stations in the radiolocation service shall not cause harmful interference to, nor constrain the operation and development of, the aeronautical-radionavigation service. (WRC-2000)

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5.338	In Kyrgyzstan, Slovakia, and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1 350-1 400 MHz. (WRC-12)
5.338A	In the frequency bands 1 350-1 400 MHz, 1 427-1 452 MHz, 22.55-23.55 GHz, 24.25-27.5 GHz, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution **750 (Rev.WRC-19)** applies. (WRC-19)
5.339	The bands 1 370-1 400 MHz, 2 640-2 655 MHz, 4 950-4 990 MHz and 15.20-15.35 GHz are also allocated to the space research (passive) and Earth exploration-satellite (passive) services on a secondary basis.
5.339A	SUP (WRC-07)
5.340	All emissions are prohibited in the following bands: 1 400-1 427 MHz, 2 690-2 700 MHz,except those provided for by No. **5.422,** 10.68-10.7 GHz, except those provided for by No. **5.483**, 15.35-15.4 GHz,except those provided for by No. **5.511**, 23.6-24 GHz, 31.3-31.5 GHz, 31.5-31.8 GHz, in Region 2, 48.94-49.04 GHz, from airborne stations 50.2-50.4 GHz[2], 52.6-54.25 GHz, 86-92 GHz, 100-102 GHz, 109.5-111.8 GHz, 114.25-116 GHz, 148.5-151.5 GHz, 164-167 GHz, 182-185 GHz, 190-191.8 GHz, 200-209 GHz, 226-231.5 GHz, 250-252 GHz. (WRC-03) [2] **5.340.1** The allocation to the Earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2-50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands. (WRC-97)
5.341	In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.
5.341A	In Region 1, the frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use b administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of these frequency bands by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. (WRC-15)
5.341B	In Region 2, the frequency band 1 427-1 518 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

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5.341C	The frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. The use of these frequency bands by the above administrations for the implementation of IMT in the frequency bands 1 429-1 452 MHz and 1 492-1 518 MHz is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service. This identification does not preclude the use of these frequency bands by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)
5.342	*Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Uzbekistan, Kyrgyzstan and Ukraine, the frequency band 1 429-1 535 MHz is also allocated to the aeronautical mobile service on a primary basis, exclusively for the purposes of aeronautical telemetry within the national territory. As of 1 April 2007, the use of the frequency band 1 452-1 492 MHz is subject to agreement between the administrations concerned. (WRC-15)
5.343	In Region 2, the use of the band 1 435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.
5.344	*Alternative allocation:* in the United States, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **5.343**).
5.345	Use of the frequency band 1 452-1 492 MHz by the broadcasting-satellite service, and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-19)**. (WRC-19)
5.346	In Algeria, Angola, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kenya, Kuwait, Lesotho, Lebanon, Liberia, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Palestine**, Qatar, Dem. Rep. of the Congo, Rwanda, Senegal, Seychelles, Somalia, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Zambia, and Zimbabwe, the frequency band 1 452-1 492 MHz is identified for use by administrations listed above wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-23)**. This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. See also Resolution **761 (Rev.WRC-19)**. (WRC-23)~~In Algeria, Angola, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kenya, Kuwait, Lesotho, Lebanon, Liberia, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Palestine**1, Qatar, Dem. Rep. of the Congo, Rwanda, Senegal, Seychelles, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Zambia, and Zimbabwe, the frequency band 1 452 1 492 MHz is identified for use by administrations listed above wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. See also Resolution **761 (WRC-19)**. (WRC-19)~~

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5.346A	The frequency band 1 452-1 492 MHz is identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-19)** and Resolution **761 (Rev.WRC-19)**. The use of this frequency band by the above administrations for the implementation of IMT is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)
5.347	(SUP - WRC-07)
5.347A	(SUP - WRC-07)
5.348	The use of the band 1 518-1 525 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from the stations in the fixed service. No. **5.43A** does not apply. (WRC-03)
5.348A	In the band 1 518-1 525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. **9.11A** for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be –150 dB(W/m2) in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix **5**. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan. No. **5.43A** does not apply. (WRC-03)
5.348B	In the band 1 518-1 525 MHz, stations in the mobile-satellite service shall not claim protection from aeronautical mobile telemetry stations in the mobile service in the territory of the United States (see Nos. **5.343** and **5.344**) and in the countries listed in No. **5.342**. No. **5.43A** does not apply. (WRC-03)
5.348C	(SUP - WRC-07)
5.349	*Different category of service:* in Saudi Arabia, Azerbaijan, Bahrain, Cameroon, Egypt, Iran (Islamic Republic of), Iraq, Israel, ~~Kazakhstan,~~ Kuwait, Lebanon, North Macedonia, Morocco, Qatar, Syrian Arab Republic, Kyrgyzstan, Turkmenistan and Yemen, the allocation of the frequency band 1 525-1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-~~19~~23)
5.350	*Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 1 525-1 530 MHz is also allocated to the aeronautical mobile service on a primary basis. (WRC-19)
5.351	The bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 626.5-1 645.5 MHz and 1 646.5-1 660.5 MHz shall not be used for feeder links of any service. In exceptional circumstances, however, an earth station at a specified fixed point in any of the mobile-satellite services may be authorized by an administration to communicate via space stations using these bands.
5.351A	For the use of the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-~~07~~23)** and **225 (Rev.WRC-~~07~~23)**. (WRC-~~07~~23)
5.352	SUP (WRC-97)

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5.352A	In the frequency band 1 525-1 530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile- satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in Algeria, Saudi Arabia, Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Viet Nam and Yemen notified prior to 1 April 1998. (WRC-19)
5.353	SUP (WRC-97)
5.353A	In applying the procedures of Section II of Article **9** to the mobile-satellite service in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222 (WRC-~~2000~~23)** shall apply.) (WRC-~~2000~~23)
5.354	The use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite services is subject to coordination under No. **9.11A**.
5.355	*Additional allocation:* in Bahrain, Bangladesh, Congo (Rep. of the), Djibouti, Egypt, Eritrea, Iraq, Israel, Kuwait, , Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis. (WRC-12)
5.356	The use of the band 1 544-1 545 MHz by the mobile-satellite service (space-to-Earth) is limited to distress and safety communications (see Article **31**).
5.357	Transmissions in the band 1 545-1 555 MHz from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical mobile (R) service are also authorized when such transmissions are used to extend or supplement the satellite-to-aircraft links.
5.357A	In applying the procedures of Section II of Article **9** to the mobile-satellite service in the frequency bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article **44**. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. The provisions of Resolution **222 (Rev.WRC-23)** shall apply. (WRC-23)~~In applying the procedures of Section II of Article **9** to the mobile-satellite service in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile- satellite (R) service providing transmission of messages with priority 1 to 6 in Article **44**. Aeronautical mobile-satellite(R) service communications with priority 1 to 6 in Article **44** shall have priority access and immediate availability, by pre- emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44**. Account shall be taken of the priority of safety-~~

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	~~related communications in the other mobile-satellite services. (The provisions of Resolution **222 (WRC-12)*** shall apply.) (WRC-12)~~ ~~* Note by the Secretariat: This Resolution was revised by WRC-07.~~
5.358	~~(SUP - WRC-97)~~
5.359	*Additional allocation:* in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Cameroon, the Russian Federation, Georgia, Guinea, Guinea-Bissau, Jordan, Kazakhstan, Kuwait, Lithuania, Mauritania, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Tajikistan, Tunisia and Turkmenistan, the frequency bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these frequency bands. (WRC-23)~~*Additional allocation:* in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Cameroon, the Russian Federation, Georgia, Guinea, Guinea Bissau, Jordan, Kazakhstan, Kuwait, Lithuania, Mauritania, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Tajikistan, Tunisia, Turkmenistan and Ukraine, the frequency bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these frequency bands. (WRC-19)~~
5.360 to **5.362**	~~(SUP - WRC-97)~~
5.362A	In the United States, in the bands 1 555-1 559 MHz and 1 656.5-1 660.5 MHz, the aeronautical mobile-satellite (R) service shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (WRC-97)
5.362B	~~(SUP - WRC-15)~~
5.362C	~~(SUP - WRC-15)~~
5.363	~~(SUP - WRC-07)~~

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5.364	The use of the band 1 610-1 626.5 MHz by the mobile-satellite service (Earth-to-space) and by the radiodetermination- satellite service (Earth-to-space) is subject to coordination under No. **9.11A**. A mobile earth station operating in either of the services in this band shall not produce a peak e.i.r.p. density in excess of -15 dB(W/4 kHz) in the part of the band used by systems operating in accordance with the provisions of No. **5.366** (to which No. **4.10** applies), unless otherwise agreed by the affected administrations. In the part of the band where such systems are not operating, the mean e.i.r.p. density of a mobile earth station shall not exceed –3 dB(W/4 kHz). Stations of the mobile-satellite service shall not claim protection from stations in the aeronautical radionavigation service, stations operating in accordance with the provisions of No. **5.366** and stations in the fixed service operating in accordance with the provisions of No. **5.359**. Administrations responsible for the coordination of mobile-satellite networks shall make all practicable efforts to ensure protection of stations operating in accordance with the provisions of No. **5.366**.
5.365	The use of the band 1 613.8-1 626.5 MHz by the mobile-satellite service (space-to-Earth) is subject to coordination under No. **9.11A**.
5.366	The band 1 610-1 626.5 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities. Such satellite use is subject to agreement obtained under No. **9.21**.
5.367	*Additional allocation*: The frequency bands 1 610-1 626.5 MHz is also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-12)
5.368	The provisions of No. **4.10** do not apply with respect to the radiodetermination-satellite and mobile-satellite services in the frequency band 1 610-1 626.5 MHz. However, No. **4.10** applies in the frequency band 1 610-1 626.5 MHz with respect to the aeronautical radionavigation-satellite service when operating in accordance with No. **5.366**, the aeronautical mobile-satellite (R) service when operating in accordance with No. **5.367**, and in the frequency bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz (Earth-to-space) (see *resolves* 5 of Resolution **365 (WRC-23)**) and 1 621.35-1 626.5 MHz with respect to the maritime mobile-satellite service when used for the global maritime distress and safety system (GMDSS). In applying the procedure of Section II of Article **9**, the provisions of No. **4.10** do not apply for the frequency bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz (Earth-to-space) (see *resolves* 5 of Resolution **365 (WRC-23)**) and 2 483.59-2 499.91 MHz (space-to-Earth) for the maritime mobile-satellite service when used for the GMDSS with satellite networks or systems for which complete coordination information has been received by the Radiocommunication Bureau before 20 November 2023. Resolution **365 (WRC-23)** applies. ~~The provisions of No. **4.10** do not apply with respect to the radiodetermination-satellite and mobile-satellite services in the frequency band 1 610-1 626.5 MHz. However, No. **4.10** applies in the frequency band 1 610-1 626.5 MHz with respect to the aeronautical radionavigation-satellite service when operating in accordance with No. **5.366**, the aeronautical mobile-satellite (R) service when operating in accordance with No. **5.367**, and in the frequency band 1 621.35-1 626.5 MHz with respect to the maritime mobile-satellite service when used for GMDSS. (WRC-19)~~
5.369	*Different category of service:* in Angola, Australia, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, Lebanon, Liberia, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, the Dem. Rep. of the Congo, Sudan, South Sudan ,Togo and Zambia, the allocation of the band 1 610-1 626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21** from countries not listed in this provision. (WRC-12)

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5.370	*Different category of service:* in Venezuela, the allocation to the radiodetermination-satellite service in the band 1 610- 1 626.5 MHz (Earth-to-space) is on a secondary basis.
5.371	*Additional allocation:* in Region 1, the bands 1 610-1 626.5 MHz (Earth-to-space) (space-to-Earth) is also allocated to the radiodetermination-satellite service on a secondary basis, subject to agreement obtained under No. **9.21**. (WRC 12)
5.372	Harmful interference shall not be caused to stations of the radio astronomy service using the frequency band 1 610.6- 1 613.8 MHz by stations of the radiodetermination-satellite and mobilesatellite services (No. **29.13** applies). The equivalent power flux-density (epfd) produced in the frequency band 1 610.6-1 613.8 MHz by all space stations of a non-geostationary-satellite system in the mobile-satellite service (space-to-Earth) operating in frequency band 1 613.8- 1 626.5 MHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, using the methodology given in Recommendation ITU-R M.1583-1, and the radio astronomy antenna pattern described in Recommendation ITU-R RA.1631-0. (WRC-19)
5.372A	The maritime mobile-satellite service in the frequency bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz (Earth-to-space) (see *resolves* 5 of Resolution **365 (WRC-23))** and 2 483.59-2 499.91 MHz (space-to-Earth) when they are used for the global maritime distress and safety system (GMDSS) is limited to the geostationarysatellite networks identified in Resolution **365 (WRC-23)** and their associated earth stations located within a service area from 75°E to 135°E longitude and from 10°N to 55°N latitude. Resolution **365 (WRC-23)** applies. (WRC-23)
5.373	Maritime mobile earth stations receiving in the frequency band 1 621.35-1 626.5 MHz shall not impose additional constraints on earth stations operating in the maritime mobile-satellite service or maritime earth stations of the radiodetermination-satellite service operating in accordance with the Radio Regulations in the frequency band 1 610-1621.35 MHz or on earth stations operating in the maritime mobile-satellite service operating in accordance with the Radio Regulations in the frequency band 1 626.5-1 660.5 MHz, unless otherwise agreed between the notifying administrations. (WRC-19)
5.373A	Maritime mobile earth stations receiving in the frequency band 1 621.35-1 626.5 MHz shall not impose constraints on the assignments of earth stations of the mobile-satellite service (Earth-to-space) and the radiodeterminationsatellite service (Earth-to-space) in the frequency band 1 621.35-1 626.5 MHz in networks for which complete coordination information has been received by the Radiocommunication Bureau before 28 October 2019. (WRC-19)
5.374	Mobile earth stations in the mobile-satellite service operating in the bands 1 631.5-1 634.5 MHz and 1 656.5-1 660 MHz shall not cause harmful interference to stations in the fixed service operating in the countries listed in No. **5.359**. (WRC- 97)
5.375	The use of the frequency band 1 645.5-1 646.5 MHz by the mobile-satellite service (Earth-to-space) and for inter-satellite links is limited to distress, urgency and safety communications (see Article **31**). (WRC-23) ~~The use of the band 1 645.5-1 646.5 MHz by the mobile-satellite service (Earth-to-space) and for inter-satellite links is limited to distress and safety communications (see Article **31**).~~
5.376	Transmissions in the band 1 646.5-1 656.5 MHz from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations, or between aircraft stations, are also authorized when such transmissions are used to extend or supplement the aircraft-to-satellite links.
5.376A	Mobile earth stations operating in the band 1 660-1 660.5 MHz shall not cause harmful interference to stations in the radio astronomy service. (WRC-97)

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5.377	(SUP - WRC-03)
5.378	Not used.
5.379	*Additional allocation:* in Bangladesh, India, Indonesia, Nigeria and Pakistan, the band 1 660.5-1 668.4 MHz is also allocated to the meteorological aids service on a secondary basis.
5.379A	Administrations are urged to give all practicable protection in the band 1 660.5-1 668.4 MHz for future research in radio astronomy, particularly by eliminating air-to-ground transmissions in the meteorological aids service in the band 1 664.4-1 668.4 MHz as soon as practicable.
5.379B	The use of the frequency band 1 668-1 675 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-23)
5.379C	In order to protect the radio astronomy service in the band 1 668-1 670 MHz, the aggregate power flux-density values produced by mobile earth stations in a network of the mobile-satellite service operating in this band shall not exceed – 181 dB(W/m2) in 10 MHz and -194 dB(W/m2) in any 20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2 000 s. (WRC-03)
5.379D	For sharing of the frequency band 1 668.4-1 675 MHz between the mobile-satellite service and the fixed and mobile services, Resolution **744 (Rev.WRC-23)** shall apply. (WRC-23)~~For sharing of the band 1 668.4-1 675 MHz between the mobile-satellite service and the fixed and mobile services, Resolution 744 (Rev.WRC-07) shall apply. (WRC-07)~~
5.379E	In the band 1 668.4-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to stations in the meteorological aids service in China, Iran (Islamic Republic of), Japan and Uzbekistan. In the band 1 668.4-1 675 MHz, administrations are urged not to implement new systems in the meteorological aids service and are encouraged to migrate existing meteorological aids service operations to other bands as soon as practicable. (WRC-03)
5.380	(SUP - WRC-07)
5.380A	In the band 1 670-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, existing earth stations in the meteorological-satellite service notified before 1 January 2004. Any new assignment to these earth stations in this band shall also be protected from harmful interference from stations in the mobile-satellite service. (WRC-07)
5.381	*Additional allocation:* in Afghanistan, , Cuba, India, Iran (Islamic Republic of) and Pakistan, the band 1 690-1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis, and in the Dem. People's Rep. of Korea the frequency band 1 690-1 700 MHz is also allocated to the fixed service on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-23)

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5.382	*Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, North Macedonia, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Turkmenistan, Ukraine and Yemen, the allocation of the frequency band 1 690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**), ~~and in the Dem. People's Rep. of Korea, the allocation of the frequency band 1 690-1 700 MHz to the fixed service is on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-19)~~ (WRC-23)
5.383	Not used.
5.384	*Additional allocation:* in India, Indonesia and Japan, the band 1 700-1 710 MHz is also allocated to the space research service (space-to-Earth) on a primary basis. (WRC-97)
5.384A	The frequency bands 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz, or portions thereof, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of these by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)
5.385	*Additional allocation:* the band 1 718.8-1 722.2 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. (WRC-2000)
5.386	*Additional allocation:* the frequency band 1 750-1 850 MHz is also allocated to the space operation (Earth-to- space) and space research (Earth-to-space) services in Region 2 (except in Mexico), in Australia, Guam, India, Indonesia and Japan on a primary basis, subject to agreement obtained under No. **9.21**, having particular regard to troposcatter systems. (WRC-15)
5.387	*Additional allocation:* in Belarus, Georgia, Kyrgyzstan, Romania, Tajikistan and Turkmenistan, the frequency band 1 770-1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-23)~~*Additional allocation:* in Belarus, Georgia, Kazakhstan, Kyrgyzstan, Romania, Tajikistan and Turkmenistan, the band 1 770-1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-12)~~
5.388	The frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications (IMT). Such use does not preclude the use of these frequency bands by other services to which they are allocated. The frequency bands should be made available for IMT in accordance with Resolution **212 (Rev.WRC-23)** (see also Resolution **223 (Rev.WRC-23)**). (WRC-23)~~The frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications (IMT). Such use does not preclude the use of these frequency bands by other services to which they are allocated. The frequency bands should be made available for IMT in accordance with Resolution **212 (Rev.WRC-19)** (see also Resolution **223 (Rev.WRC-19)**). (WRC-19)~~
5.388A	The frequency bands 1 710-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and the frequency bands 1 710-1 980 MHz and 2 110-2 160 MHz in Region 2 are identified for the use by high altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). This identification does notpreclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **221 (Rev.WRC-23)** shall apply. HIBS shall not claim protection from

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	existing primary services. No. **5.43A** does not apply. Such use of HIBS in the frequency bands 1 710-1 785 MHz in Regions 1 and 2, and 1 710-1 815 MHz in Region 3 is limited to reception by HIBS, and in the frequency band 2 110-2 170 MHz is limited to transmission from HIBS. (WRC-23)~~In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000), in accordance with Resolution 221 (Rev.WRC-03)*. Their use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-03)~~
5.388B	(SUP - WRC-23)
5.389	Not used.
~~**5.388B**~~	~~In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, South Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT base station in neighbouring countries, in the frequency bands referred to in No. 5.388A, shall not exceed a co-channel power flux-density of −127 dB(W/(m2 · MHz)) at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-19)~~
5.389A	The use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (Rev.WRC-23)**. (WRC-23)~~The use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (Rev.WRC-2000)**. (WRC-07)~~
5.389B	The use of the frequency band 1 980-1 990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the fixed and mobile services in Argentina, Brazil, Canada, Chile, Ecuador, the United States, Honduras, Jamaica, Mexico, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay and Venezuela. (WRC-19)
5.389C	The use of the frequency bands 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (Rev.WRC-23)**. (WRC-23)~~The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (Rev.WRC-2000)**. (WRC-07)~~
5.389CD	(SUP - WRC-03)

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5.389E	The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz by the mobile-satellite service in Region 2 shall not cause harmful interference to or constrain the development of the fixed and mobile services in Regions 1 and 3.
5.389F	In Algeria, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syrian Arab Republic and Tunisia, the use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobilesatellite service shall neither cause harmful interference to the fixed and mobile services, ~~nor hamper the development of those services~~ brought into use prior to 1 January 2005, nor hamper the development of those services, nor shall the former service request protection from the latter services. ~~(WRC-19)~~ (WRC-23)
5.390	SUP (WRC-07)
5.391	In making assignments to the mobile service in the frequency bands 2 025-2 110 MHz and 2 200-2 290 MHz, administrations shall not introduce high-density mobile systems, as described in Recommendation ITU-R SA.1154-0, and shall take that Recommendation into account for the introduction of any other type of mobile system. (WRC-15)
5.392	Administrations are urged to take all practicable measures to ensure that space-to-space transmissions between two or more non-geostationary satellites, in the space research, space operations and Earth exploration-satellite services in the bands 2 025-2 110 MHz and 2 200-2 290 MHz, shall not impose any constraints on Earth-to-space, space-to-Earth and other space-to-space transmissions of those services and in those bands between geostationary and non- geostationary satellites.
5.392A	(SUP - WRC-07)
5.393	*Additional allocation:* in Canada, the United States and India, the frequency band 2 310-2 360 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial sound broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-19)**, with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz. Complementary terrestrial sound broadcasting stations shall be subject to bilateral coordination with neighbouring countries prior to their bringing into use. (WRC-19)
5.394	In the United States, the use of the frequency band 2 360-2 395 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the frequency band 2 360-2 400 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. (WRC-23) ~~In the United States, the use of the band 2 300-2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2 360-2 400 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. (WRC-07)~~
5.395	In France and Turkey, the use of the band 2 310-2 360 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service. (WRC-03)
5.396	SUP (WRC-19)
5.397	SUP (WRC-12)
5.398	In respect of the radiodetermination-satellite service in the band 2 483.5-2 500 MHz, the provisions of No. **4.10** do not apply

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5.398A	*Different category of service:* In Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, the band 2 483.5-2 500 MHz is allocated on a primary basis to the radiolocation service. The radiolocation stations in these countries shall not cause harmful interference to, or claim protection from, stations of the fixed, mobile and mobile-satellite services operating in accordance with the Radio Regulations in the frequency band 2 483.5-2 500 MHz. (WRC-12
5.399	Except for cases referred to in No. ~~**5.B118**~~, **5.401**, stations of the radiodetermination-satellite service operating in the frequency band 2 483.5-2 500 MHz for which notification information is received by the Bureau after 17 February 2012, and the service area of which includes Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, shall not cause harmful interference to, and shall not claim protection from stations of the radiolocation service operating in these countries in accordance with No. ~~**5.A118.**~~ **5.398A**. (WRC-12)
5.400	SUP (WRC-12)
5.401	In Angola, Australia, Bangladesh, China, Eritrea, Eswatini, Ethiopia, India, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, Dem. Rep. of the Congo, Sudan, Togo and Zambia, the frequency band 2 483.5-2 500 MHz was already allocated on a primary basis to the radiodetermination-satellite service before WRC-12, subject to agreement obtained under No. **9.21** from countries not listed in this provision. Systems in the radiodetermination-satellite service for which complete coordination information has been received by the Radiocommunication Bureau before 18 February 2012 will retain their regulatory status, as of the date of receipt of the coordination request information. (WRC-19)
5.402	The use of the band 2 483.5-2 500 MHz by the mobile-satellite and the radiodetermination-satellite services is subject to the coordination under No. **9.11A**. Administrations are urged to take all practicable steps to prevent harmful interference to the radio astronomy service from emissions in the 2 483.5-2 500 MHz band, especially those caused by second-harmonic radiation that would fall into the 4 990-5 000 MHz band allocated to the radio astronomy service worldwide.
5.403	Subject to agreement obtained under No. **9.21**, the band 2 520-2 535 MHz may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provisions of No. **9.11A** apply. (WRC-07)
5.404	*Additional allocation:* in India and Iran (Islamic Republic of), the band 2 500-2 516.5 MHz may also be used for the radiodetermination-satellite service (space-to-Earth) for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**
5.405	SUP (WRC-12)
5.406	Not used.
5.407	In the band 2 500-2 520 MHz, the power flux-density at the surface of the Earth from space stations operating in the mobile-satellite (space-to-Earth) service shall not exceed –152 dB(W/(m2 Ill 4 kHz)) in Argentina, unless otherwise agreed by the administrations concerned.
5.408	(SUP - WRC-2000)
5.409	(SUP - WRC-07)

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5.409A	The frequency band 2 500-2 690 MHz in Regions 1 and 2, and the frequency band 2 500-2 655 MHz in Region 3 are identified for use by high-altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **218 (WRC-23)** shall apply. HIBS shall not claim protection from existing primary services. No. **5.43A** does not apply. Such use of HIBS in the frequency bands 2 500-2 510 MHz in Regions 1 and 2, and 2 500-2 535 MHz in Region 3 is limited to reception byHIBS. (WRC-23)
5.410	The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. **9.21**. No. **9.21** does not apply to tropospheric scatter links situated entirely outside Region 1. Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in this band. When planning new tropospheric scatter radio-relay links in this band, all possible measures shall be taken to avoid directing the antennas of these links towards the geostationary-satellite orbit. (WRC-12)
5.412	*Alternative allocation:* in , Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)
5.413	In the design of systems in the broadcasting-satellite service in the bands between 2 500 MHz and 2 690 MHz, administrations are urged to take all necessary steps to protect the radio astronomy service in the band 2 690- 2 700 MHz.
5.414	The allocation of the frequency band 2 500-2 520 MHz to the mobile-satellite service (space-to-Earth) is subject to coordination under No. **9.11A**. (WRC-07)
5.414A	In Japan and India, the use of the bands 2 500-2 520 MHz and 2 520-2 535 MHz, under **No. 5.403**, by a satellite network in the mobile-satellite service (space-to-Earth) is limited to operation within national boundaries and subject to the application of No. 9.11A. The following pfd values shall be used as a threshold for coordination under **No. 9.11A**, for all conditions and for all methods of modulation, in an area of 1 000 km around the territory of the administration notifying the mobile-satellite service network: -136 dB(W/(m^2 · MHz)) for $0° \le \theta \le 5°$ $-136 + 0.55\,(\theta - 5)$ dB(W/(m^2 · MHz)) for $5° < \theta \le 25°$ -125 dB(W/(m^2 · MHz)) for $25° < \theta \le 90°$ where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. Outside this area Table 21-4 of Article 21 shall apply. Furthermore, the coordination thresholds in Table 5-2 of Annex 1 to Appendix 5 of the Radio Regulations (Edition of 2004), in conjunction with the applicable provisions of Articles 9 and 11 associated with No. 9.11A, shall apply to systems for which complete notification information has been received by the Radicommunication Bureau by 14 November 2007 and that have been brought into use by that date. (WRC-07)
5.415	The use of the bands 2 500-2 690 MHz in Region 2 and 2 500-2 535 MHz and 2 655-2 690 MHz in Region 3 by the fixed- satellite service is limited to national and regional systems, subject to agreement obtained under No. 9.21, giving particular attention to the broadcasting-satellite service in Region 1. (WRC-07)
5.415A	Additional allocation: in India and Japan, subject to agreement obtained under No. 9.21, the band 2 ~~515 2 535~~ 520-2 535 MHz may also be used for the aeronautical mobile-satellite service (space-to-Earth) for operation limited to within their national boundaries. –~~(WRC-2000)~~ (WRC-23)

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5.416	The use of the band 2 520-2 670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. **9.21**. The provisions of No. **9.19** shall be applied by administrations in this band in their bilateral and multilateral negotiations. (WRC-07)
5.417	~~SUP RC-0)~~ (SUP - WRC-2000)
5.417A	SUP (WRC-15)
5.417B	SUP (WRC-15)
5.417C	SUP (WRC-15)
5.417D	SUP (WRC-15)
5.418	*Additional allocation:* in India, the frequency band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-19)**. The provisions of No. **5.416** and Table **21-4** of Article **21** do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution **539 (Rev.WRC-19)**. Geostationary broadcasting-satellite service (sound) systems for which complete Appendix **4** coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the frequency band 2 630-2 655 MHz, and for which complete Appendix **4** coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation: -130 dB(W/(m^2 · MHz)) for $0^o \le \theta \le 5^o$ -130 + 0.4(θ - 5)dB(W/(m^2 · MHz)) for $5^o < \theta \le 25^o$ –-122 dB(W/(m^2 · MHz)) for $25^o < \theta \le 90^o$ where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value f −122 dB(W/(m2 · MHz)) shall be used as a threshold for coordination under No. **9.11** in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system. In addition, an administration listed in this provision shall not have simultaneously two frequency assignments, one under this provision and the other under No. **5.416** for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. (WRC-19)
5.418A	In certain Region 3 countries listed in No. **5.418**, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 2 June 2000, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for

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	which complete Appendix **4** coordination information, or notification information, is considered to have been received before 3 June 2000. (WRC-03)~~+B509~~
5.418B	Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418**, for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12**. (WRC-03)
5.418C	Use of the band 2 630-2 655 MHz by geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. **9.13** with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418** and No. **22.2** does not apply. (WRC-03)
5.419	The use of the frequency band 2 670-2 690 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-23). ~~When introducing systems of the mobile-satellite service in the band 2 670-2 690 MHz, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. **9.11A**. (WRC-07)~~
5.420	The band 2 655-2 670 MHz may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile- satellite, service for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**. The coordination under No. **9.11A** applies. (WRC-07)
5.420A	(SUP - WRC-07)
5.421	(SUP - WRC-03)
5.422	*Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Brunei Darussalam, Congo (Rep. of the), Côte d'Ivoire, Cuba, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Mauritania, , Mongolia, Montenegro, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-12)
5.423	In the band 2 700-2 900 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the aeronautical radionavigation service.
5.424	*Additional allocation:* in Canada, the band 2 850-2 900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.
5.424A	In the band 2 900-3 100 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the radionavigation service. (WRC-03)

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5.425	In the band 2 900-3 100 MHz, the use of the shipborne interrogator-transponder (SIT) system shall be confined to the sub-band 2 930 -2 950 MHz.
5.426	The use of the band 2 900-3 100 MHz by the aeronautical radionavigation service is limited to ground-based radars.
5.427	In the bands 2 900-3 100 MHz and 9 300-9 500 MHz, the response from radar transponders shall not be capable of being confused with the response from radar beacons (racons) and shall not cause interference to ship or aeronautical radars in the radionavigation service, having regard, however, to No. **4.9**.
5.428	*Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)
5.429	*Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Benin, Brunei Darussalam, Cambodia,Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lao P.D.R., Lebanon, Libya, Malaysia, Mongolia, Myanmar, New Zealand, Oman, Uganda, Pakistan, Palestine*, Qatar, the Syrian Arab Republic, the Dem. Rep.of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Thailand, Viet Nam and Yemen, the frequency band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. Mongolia, New Zealand and the countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-23)*~~*Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Benin, Brunei Darussalam, Cambodia, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, New Zealand, Oman, Uganda, Pakistan,Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Sudan and Yemen, the frequency band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. New Zealand and the countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-19)~~
5.429A	*Additional allocation: in Angola, Botswana, Burkina Faso, Burundi, Cabo Verde, Central African Republic, Comoros, Djibouti, Eritrea, Eswatini, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea,L esotho, Liberia, Madagascar, Malawi, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Palestine*, the Dem. Rep. of the Congo, Rwanda, Sao Tomé and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-23)*~~*Additional allocation*: in Angola, Benin, Botswana, Burkina Faso, Burundi, Djibouti, Eswatini, Ghana, Guinea, Guinea- Bissau, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-19)~~

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5.429B	In the following countries of Region 1: Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Comoros, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, Eritrea, Eswatini, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritius, Mauritania, Mongolia, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). The use of this frequency band shall be in accordance with Resolution **223 (Rev.WRC-23)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-23)~~In the following countries of Region 1 south of 30° parallel north: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, Eswatini, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). The use of this frequency band shall be in accordance with Resolution **223 (Rev.WRC-15)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)~~
5.429C	*Different category of service: in Argentina, Brazil, Cuba, the Dominican Republic, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3 300-3 400 MHz is allocated to the fixed service on a primary basis. Stations in the fixed service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-23)*~~*Different category of service*: in Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. In Argentina, Brazil, the Dominican Republic, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3 300-3 400 MHz is also allocated to the fixed service on a primary basis. Stations in the fixed and mobile services operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-19)~~

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5.429D	In Region 2, the use of the mobile, except aeronautical mobile, service in the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-23)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-23)~~In the following countries in Region 2: Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Guatemala, Mexico, Paraguay and Uruguay, the use of the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-15)**. This use in Argentina, Paraguay and Uruguay is subject to the application of **No.9.21**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)~~
5.429E	*Additional allocation*: in Papua New Guinea, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-15)
5.429F	In the following countries in Region 3: Cambodia, India, Indonesia, Lao P.D.R., Pakistan, the Philippines, Singapore and Viet Nam, the use of the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-23)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service. Before an administration brings into use a base or mobile station of an IMT system in this frequency band, it shall seek agreement under No. **9.21** with neighbouring countries to protect the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-23)~~In the following countries in Region 3: Cambodia, India, Indonesia, Lao P.D.R., Pakistan, the Philippines and Viet Nam, the use of the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-15)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service. Before an administration brings into use a base or mobile station of an IMT system in this frequency band, it shall seek agreement under No. **9.21** with neighbouring countries to protect the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)~~

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5.429G	Stations in the mobile, except aeronautical mobile, service operating in the frequency band 3 300-3 400 MHz in Region 2 shall not cause harmful interference to, or claim protection from, systems operating in theradiolocation service. (WRC-23)
5.430	*Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 3 300-3 400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)
5.430A	The allocation of the frequency band 3 400-3 600 MHz to the mobile, except aeronautical mobile, service is subject to agreement obtained under No. 9.21. This frequency band is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The provisions of Nos. 9.17 and 9.18 shall also apply in the coordination phase. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band, it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed -154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station) and with the assistance of the Bureau if so requested. In case of disagreement, calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004). (WRC-15)
5.431	*Additional allocation:* in Germany, the frequency band 3 400-3 475 MHz is also allocated to the amateur service on a secondary basis. (WRC-19)
5.431A	In Region 2, the allocation of the frequency band 3 400-3 500 MHz to the mobile, except aeronautical mobile, service on a primary basis is subject to agreement obtained under No. 9.21. (WRC-15)

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5.431B	In Region 2, the frequency band 3 400-3 600 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a base or mobile station of an IMT system, it shall seek agreement under No. **9.21** with other administrations and ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed +154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service, including IMT systems, in the frequency band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15) (Edition of 2004). (WRC-15)
5.432	*Different category of service:* in Korea (Rep. of), Japan, Pakistan and the Dem.People's Rep. of Korea, the allocation of the frequency band 3 400-3 500 MHz to the mobile,except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-19)
5.432A	In Korea (Rep. of), Japan, Pakistan and the Dem. People's Rep. of Korea, the frequency band 3 400-3 500 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004). (WRC- 19)

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5.432B	*Different category of service:* in Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, India, Indonesia, Iran (Islamic Republic of), Malaysia, New Zealand, the Philippines, Singapore and Thailand, the frequency band 3 400-3 500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21** with other administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004). (WRC-19)
5.433	In Regions 2 and 3, in the band 3 400-3 600 MHz the radiolocation service is allocated on a primary basis. However, all administrations operating radiolocation systems in this band are urged to cease operations by 1985. Thereafter, administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.
5.433A	In Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, New Zealand, Pakistan, the Philippines, the Dem. People's Rep. of Korea and Singapore, the frequency band 3 500-3 600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m2 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 500-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations(Edition of 2004). (WRC-23)~~In Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, Korea (Rep. of), India, Indonesia, Iran (Islamic~~

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	~~Republic of), Japan, New Zealand, Pakistan, the Philippines and the Dem. People's Rep. of Korea, the frequency band 3 500-3 600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power fluxdensity (pfd) produced at 3 m above ground does not exceed –154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 500-3 600 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004). (WRC-19).~~
5.433B	In Angola, Botswana, Guinea, Lesotho, Malawi and South Sudan, the frequency band 3 600-3 700 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of the frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The conditions of No. **5.434A** shall apply. (WRC-23)
5.434	In Region 2, the frequency band 3 600-3 700 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to ensure the protection of the fixed-satellite service (space-to-Earth). (WRC-23)~~In Canada, Chile, Colombia, Costa Rica, El Salvador, the United States and Paraguay, the frequency band 3 600-3 700 MHz, or portions thereof, is identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a base or mobile station of an IMT system, it shall seek agreement under No. **9.21** with other administrations and ensure that the power flux–density (pfd) produced at 3 m above ground does not exceed –154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service, including IMT systems, in the frequency band 3 600-3 700 MHz shall not claim more protection from space stations

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	~~than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-19)~~
5.434A	The use of the frequency band 3 600-3 800 MHz by the mobile, except aeronautical mobile, service on a primary basis in Region 1 is subject to agreement obtained under No. **9.21** if the power flux-density (pfd) limit below is exceeded. The provisions of Nos. **9.17** and **9.18** shall also apply in the coordination phase. Before an administration in Region 1 brings into use a station in the mobile service in the frequency band 3 600-3 800 MHz, for the protection of stations in the fixed and fixed-satellite services, it shall ensure that the pfd produced at 3 m above ground does not exceed −154.5 dB(W/(m2 4 kHz)) for more than 20% of the time at the border of the territory of any other administration. Stations in the mobile service operating in the frequency band 3 600-3 800 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations. (WRC-23)
5.434B	In Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, Benin, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kazakhstan, Kenya, Kuwait, Lebanon, Liberia, Libya, Madagascar, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Uzbekistan, Palestine*, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, the frequency band 3 600-3 800 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of the frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The conditions of No. **5.434A** shall apply. (WRC-23)

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5.435	In Japan, in the band 3 620-3 700 MHz, the radiolocation service is excluded.
5.435A	*Different category of service:* In Angola, Botswana, Guinea, Lesotho, Malawi and South Sudan, the frequency band 3 700-3 800 MHz is allocated to the mobile service on a secondary basis. (WRC-23)
5.435B	In the Bahamas, Belize, Brazil, Canada, Colombia, Costa Rica, United States, Guatemala, the French overseas departments and communities in Region 2, Greenland, the overseas countries and territories within the Kingdom of the Netherlands in Region 2, Paraguay, Peru, Trinidad and Tobago and Uruguay, the frequency band 3 700-3 800 MHz is identified for use by any of these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to ensure the protection of the fixed-satellite service (space-to-Earth). (WRC-23)
5.436	Use of the frequency band 4 200-4 400 MHz by stations in the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **424 (Rev.WRC-23)**. (WRC-23)~~Use of the frequency band 4 200-4 400 MHz by stations in the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **424 (WRC-15)**. (WRC-15)~~
5.437	Passive sensing in the Earth exploration-satellite and space research services may be authorized in the frequency band 4 200-4 400 MHz on a secondary basis. (WRC-15)
5.438	Use of the frequency band 4 200-4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. (WRC-15)
5.439	*Additional allocation:* in Iran (Islamic Republic of), the band 4 200-4 400 MHz is also allocated to the fixed service on a secondary basis. (WRC-12)
5.440	The standard frequency and time signal-satellite service may be authorized to use the frequency 4 202 MHz for space- to-Earth transmissions and the frequency 6 427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of ± 2 MHz of these frequencies, subject to agreement obtained under No. **9.21**.
5.440A	In Region 2 (except Brazil, Cuba, French overseas departments and communities, Guatemala, Paraguay, Uruguay and Venezuela), and in Australia, the band 4 400-4

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	940 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. **1.83**). Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to, nor claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of these bands by other mobile service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-07)
5.441	The use of the bands 4 500-4 800 MHz (space-to-Earth), 6 725-7 025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2- 11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by geostationary-satellite systems in the fixed- satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7-10.95 GHz (space- to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed- satellite service and of the complete coordination or notification information, as appropriate, for the geostationary- satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)
5.441A	In Brazil, Paraguay and Uruguay, the frequency band 4 800-4 900 MHz, or portions thereof, is identified for the implementation of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained with neighbouring countries, and IMT stations shall not claim protection from stations of other applications of the mobile service. Such use shall be in accordance with Resolution **223 (Rev.WRC-19)**. (WRC-19)
5.441B	In Angola, Argentina, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Chile, China, Colombia, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gabon, Ghana, Guinea, Iran (Islamic Republic of), Iraq, Kazakhstan, Lao P.D.R., Lesotho, Liberia, Madagascar, Malawi, Mali, Mongolia, Namibia, Niger, Uganda, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, South Sudan, South Africa, Chad, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. **9.21** with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density (pfd) produced by this station does not exceed –155 dB(W/(m2 · l

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	MHz)) produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. Resolution **223 (Rev.WRC-23)** applies. (WRC-23)~~In Angola, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, China, Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gambia, Guinea, Iran (Islamic Republic of), Kazakhstan, Kenya, Lao P.D.R., Lesotho, Liberia, Malawi, Mauritius, Mongolia, Mozambique, Nigeria, Uganda, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, South Africa, Tanzania, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. 9.21 with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density (pfd) produced by this station does not exceed –155 dB(W/(m2 · 1 MHz)) produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. This pfd criterion is subject to review at WRC-23. Resolution 223 (Rev.WRC-19)~~ applies. ~~This identification shall be effective after WRC-19. (WRC-19)~~
5.442	In the frequency bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service. In Region 2 (except Brazil, Cuba, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), and in Australia, the frequency band 4 825-4 835 MHz is also allocated to the aeronautical mobile service, limited to aeronautical mobile telemetry for flight testing by aircraft stations. Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to the fixed service. (WRC-15)
5.443	Different category of service: in Argentina, Australia and Canada, the allocation of the bands 4 825-4 835 MHz and 4 950-4 990 MHz to the radio astronomy service is on a primary basis (see No. 5.33).
5.443A	SUP (WRC-0# 3)
5.443AA	In the frequency bands 5 000-5 030 MHz and 5 091-5 150 MHz, the aeronautical mobile-satellite (R) service is subject to agreement obtained under No. 9.21. The use of these bands by the aeronautical mobile-satellite (R) service is limited to internationally standardized aeronautical systems. (WRC-12)

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5.443B	In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the frequency band 5 030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the frequency band 5 010-5 030 MHz shall not exceed -124.5 dB(W/m2) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the frequency band 4 990-5 000 MHz, radionavigation-satellite service systems operating in the frequency band 5 010-5 030 MHz shall comply with the limits in the frequency band 4 990-5 000 MHz defined in Resolution **741 (Rev.WRC-15)**. (WRC-15)
5.443C	The use of the frequency band 5 030–5 091 MHz by the aeronautical mobile (R) service is limited to internationally standardized aeronautical systems. Unwanted emissions from the aeronautical mobile (R) service in the frequency band 5 030–5 091 MHz shall be limited to protect RNSS system downlinks in the adjacent 5 010–5 030 MHz band. Until such time that an appropriate value is established in a relevant ITU-R Recommendation, the e.i.r.p. density limit of –75 dBW/MHz in the frequency band 5 010–5 030 MHz for any AM(R)S station unwanted emission should be used. (WRC-12)
5.443D	In the frequency band 5 030-5 091 MHz, the aeronautical mobile-satellite (R) service is subject to coordination under No. **9.11A**. The use of this frequency band by the aeronautical mobile-satellite (R) service is limited to internationally standardized aeronautical systems. (WRC-12)
5.444	The frequency band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. In the frequency band 5 030-5 091 MHz, the requirements of this system shall have priority over other uses of this frequency band. For the use of the frequency band 5 091-5 150 MHz, No. **5.444A** and Resolution **114 (Rev.WRC-15)** apply. (WRC-15)
5.444A	The use of the allocation to the fixed-satellite service (Earth-to-space) in the frequency band 5 091-5 150 MHz is limited to feeder links of non-geostationary satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**. The use of the frequency band 5 091-5 150 MHz by feeder links of non-geostationary satellite systems in the mobile-satellite service shall be subject to application of Resolution **114 (Rev.WRC-15)**. Moreover, to ensure that the aeronautical radionavigation service is protected from harmful interference, coordination is required for feeder-link earth stations of the non-geostationary satellite systems in the mobile-satellite service which are separated by less than 450 km from the territory of an administration operating ground stations in the aeronautical radionavigation service. (WRC-15)
5.444B	The use of the frequency band 5 091-5 150 MHz by the aeronautical mobile service is limited to: – systems operating in the aeronautical mobile (R) service and in accordance with international aeronautical standards, limited to surface applications at airports. Such use shall be in accordance with Resolution **748 (Rev.WRC-19)**; – aeronautical telemetry transmissions from aircraft stations (see No. **1.83**) in accordance with Resolution **418 (Rev.WRC-19)**. (WRC-19)
5.445	Not used.

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5.446	*Additional allocation:* in the countries listed in No. **5.369**, the frequency band 5 150-5 216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**. In Region 2 (except in Mexico), the frequency band is also allocated to the radiodetermination-satellite service (space- to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in No. **5.369** and Bangladesh, the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the frequency bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz. The total power flux-density at the Earth's surface shall in no case exceed -159 dB(W/m2) in any 4 kHz band for all angles of arrival. (WRC-15)
5.446A	The use of the frequency bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile,except aeronautical mobile, service shall be in accordance with Resolution **229 (Rev.WRC-23)**. (WRC-23) ~~The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution **229 (Rev.WRC-19)**. (WRC-19)~~
5.446B	In the band 5 150-5 250 MHz, stations in the mobile service shall not claim protection from earth stations in the fixed- satellite service. No. **5.43A** does not apply to the mobile service with respect to fixed-satellite service earth stations. (WRC-03)
5.446C	Additional allocation: in Region 1 (except in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan, South Sudan and Tunisia), the frequency band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. 1.83), in accordance with Resolution 418 (Rev.WRC-19). These stations shall not claim protection from other stations operating in accordance with Article 5. No. 5.43A does not apply. (WRC-19)
5.446D	Additional allocation: in Brazil, the band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. 1.83), in accordance with Resolution 418 (Rev.WRC-19). (WRC-19)
5.447	Additional allocation: in Côte d'Ivoire, Egypt, Lebanon, the Syrian Arab Republic and Tunisia, the frequency band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. 9.21. In this case, the provisions of Resolution 229 (Rev.WRC-23) do not apply. (WRC-23) ~~*Additional allocation:* in Côte d'Ivoire, Egypt, Lebanon, the Syrian Arab Republic and Tunisia, the frequency band 5 150- 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **9.21**. In this case, the provisions of Resolution **229 (Rev.WRC-19)** do not apply. (WRC-19)~~
5.447A	The allocation to the fixed-satellite service (Earth-to-space) in the band 5 150-5 250 MHz is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.
5.447B	*Additional allocation*: the band 5 150-5 216 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. This allocation is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to provisions of No. **9.11A**. The power flux-density at the Earth's surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5 150-5 216 MHz shall in no case exceed –164 dB(W/m2) in any 4 kHz band for all angles of arrival.

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5.447C	Administrations responsible for fixed-satellite service networks in the band 5 150-5 250 MHz operated under Nos. **5.447A** and **5.447B** shall coordinate on an equal basis in accordance with No. **9.11A** with administrations responsible for non-geostationary-satellite networks operated under No. **5.446** and brought into use prior to 17 November 1995. Satellite networks operated under No. **5.446** brought into use after 17 November 1995 shall not claim protection from, and shall not cause harmful interference to, stations of the fixed-satellite service operated under Nos. **5.447A** and **5.447B**.
5.447D	The allocation of the band 5 250-5 255 MHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis. (WRC-97)
5.447E	Additional allocation: The frequency band 5 250-5 350 MHz is also allocated to the fixed service on a primary basis in the following countries in Region 3: Australia, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Papua New Guinea, the Philippines, Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam. The use of this frequency band by the fixed service is intended for the implementation of fixed wireless access systems and shall comply with Recommendation ITU-R F.1613-0. In addition, the fixed service shall not claim protection from the radiodetermination, Earth exploration-satellite (active) and space research (active) services, but the provisions of No. 5.43A do not apply to the fixed service with respect to the Earth exploration-satellite (active) and space research (active) services. After implementation of fixed wireless access systems in the fixed service with protection for the existing radiodetermination systems, no more stringent constraints should be imposed on the fixed wireless access systems by future radiodetermination implementations. (WRC-15)
5.447F	In the frequency band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). Theradio location service, the Earth exploration-satellite service (active) and the space research service (active) shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution **229 (Rev.WRC-23)**. (WRC-23)~~In the frequency band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). The radiolocation service, the Earth exploration-satellite service (active) and the space research service (active) shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution **229 (Rev.WRC-19)**. (WRC-19)~~
5.448	Additional allocation: in Kyrgyzstan, Romania and Turkmenistan, the frequency band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)
5.448A	The Earth exploration-satellite (active) and space research (active) services in the frequency band 5 250-5 350 MHz shall not claim protection from the radiolocation service. **No. 5.43A** does not apply. (WRC-03)
5.448B	The Earth exploration-satellite service (active) operating in the band 5 350-5 570 MHz and space research service (active) operating in the band 5 460-5 570 MHz shall not cause harmful interference to the aeronautical radionavigation service in the band 5 350-5 460 MHz, the radionavigation service in the band 5 460-5 470 MHz and the maritime radionavigation service in the band 5 470-5 570 MHz. (WRC-03)
5.448C	The space research service (active) operating in the band 5 350-5 460 MHz shall not cause harmful interference to nor claim protection from other services to which this band is allocated. (WRC-03
5.448D	In the frequency band 5 350-5 470 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the aeronautical radionavigation service operating in accordance with No. **5.449.** (WRC-03)

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5.449	The use of the band 5 350-5 470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.
5.450	*Additional allocation:* in Austria, Azerbaijan, Iran (Islamic Republic of), Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 5 470-5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)
5.450A	In the frequency band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. The radiodetermination services shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution **229 (Rev.WRC-23)**. (WRC-23)~~the frequency band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. The radiodetermination services shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution **229 (Rev.WRC-19)**. (WRC-19)~~
5.450B	In the frequency band 5 470-5 650 MHz, stations in the radiolocation service, except ground-based radars used for meteorological purposes in the band 5 600-5 650 MHz, shall not cause harmful interference to, nor claim protection from, radar systems in the maritime radionavigation service. (WRC-03)
5.451	Additional allocation: in the United Kingdom, the band 5470-5 850 MHz is also allocated to the land mobile service on a secondary basis. The power limits specified in Nos. **21.2, 21.3, 21.4** and **21.5** shall apply in the band 5 725-5 850 MHz.
5.452	Between 5 600 MHz and 5 650 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the maritime radionavigation service.
5.453	*Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Niger, Nigeria, Oman, Uganda, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sri Lanka, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the frequency band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution **229** (**Rev.WRC-23**) do not apply. In addition, in Afghanistan, Angola, Benin, Bhutan, Botswana, Burkina Faso, Burundi, Dem. Rep. of the Congo, Fiji, Ghana, Kiribati, Lesotho, Malawi, Maldives, Mauritius, Micronesia, Mongolia, Mozambique, Myanmar, Namibia, Nauru, New Zealand, Papua New Guinea, Rwanda, Solomon Islands, South Sudan, South Africa, Tonga, Vanuatu, Zambia and Zimbabwe, the frequency band 5 725-5 850 MHz is allocated to the fixed service on a primary basis, and stations operating in the fixed service shall not cause harmful interference to and shall not claim protection from other primary services in the frequency band. (WRC-23)
5.454	*Different category of service:* in Azerbaijan, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 5 670-5 725 MHz to the space research service is on a primary basis (see No. **5.33**). (WRC-12)
5.455	*Additional allocation:* in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-19)
5.456	SUP (WRC-15)

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5.457	In Australia, Burkina Faso, Cote d'Ivoire, Mali and Nigeria, the allocation to the fixed service in the bands 6 440-6 520 MHz (HAPS-to-ground direction) and 6 560-6 640 MHz (ground-to- HAPS direction) may also be used by gateway links for high-altitude platform stations (HAPS) within the territory of these countries. Such use is limited to operation in HAPS gateway links and shall not cause harmful interference to, and shall not claim protection from, existing services, and shall be in compliance with Resolution **150 (WRC-12)**. Existing services shall not be constrained in future development by HAPS gateway links. The use of HAPS gateway links in these bands requires explicit agreement with other administrations whose territories are located within 1 000 kilometres from the border of an administration intending to use the HAPS gateway links. (WRC-12)
5.457A	~~In~~ In the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution **902 (Rev.WRC-23)**. In the frequency band 5 925-6 425 MHz, earth stations located on board vessels and communicating with space stations of the fixed-satellite service may employ transmit antennas with minimum diameter of 1.2 m and operate without prior agreement of any administration if located at least 330 km away from the low-water mark as officially recognized by the coastal State. All other provisions of Resolution **902 (Rev.WRC-23)** shall apply. (WRC-23)~~the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution **902 (WRC-03)**. In the frequency band 5 925-6 425 MHz, earth stations located on board vessels and communicating with space stations of the fixed-satellite service may employ transmit antennas with minimum diameter of 1.2 m and operate without prior agreement of any administration if located at least 330 km away from the low-water mark as officially recognized by the coastal State. All other provisions of Resolution **902 (WRC-03)** shall apply. (WRC-15)~~
5.457B	~~In~~ In the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution **902 (Rev.WRC-23)** in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Jordan, Kuwait, Libya, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution **902 (Rev.WRC-23)**. (WRC-23)~~the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution **902 (WRC-03)** in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Jordan, Kuwait, Libya, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution **902 (WRC-03)**. (WRC-15)~~
5.457C	In Region 2 (except Brazil, Cuba, French overseas departments and communities, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), the frequency band 5 925-6 700 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. **1.83**). Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to, or claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of this frequency band by other mobile service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-15)

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5.457D	In Cambodia, Lao P.D.R. and the Maldives, the frequency band 6 425-7 025 MHz is identified for the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **220 (WRC-23)** applies. (WRC-23)
5.457E	The frequency bands 6 425-7 125 MHz in Region 1 and 7 025-7 125 MHz in Region 3 are identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **220 (WRC-23)** applies. The frequency bands are also used for the implementation of wireless access systems (WAS), including radio local area networks (RLANs). (WRC-23)
5.457F	In Brazil and Mexico, the frequency band 6 425-7 125 MHz is identified for the terrestrial component of International Mobile Telecommunications (IMT). The use of this frequency band for the implementation of IMT is subject to seeking agreement under No. **9.21** with neighbouring countries. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **220 (WRC-23)** applies. The frequency band is also used for the implementation of wireless access systems (WAS), including radio local area networks (RLANs). (WRC-23)
5.458	In the band 6 425-7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075-7 250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6 425-7 025 MHz and 7 075-7 250 MHz.
5.458A	In making assignments in the band 6 700-7 075 MHz to space stations of the fixed-satellite service, administrations are urged to take all practicable steps to protect spectral line observations of the radio astronomy service in the band 6 650- 6 675.2 MHz from harmful interference from unwanted emissions.
5.458B	The space-to-Earth allocation to the fixed-satellite service in the band 6 700-7 075 MHz is limited to feeder links for non- geostationary satellite systems of the mobile-satellite service and is subject to coordination under No. **9.11A**. The use of the band 6 700-7 075 MHz (space-to-Earth) by feeder links for non-geostationary satellite systems in the mobile- satellite service is not subject to No. **22.2**.
5.458C	SUP (WRC-15)
5.459	*Additional allocation:* in the Russian Federation, the frequency bands 7 100-7 155 MHz and 7 190-7 235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under **No.9.21**. In the frequency band 7 190-7 235 MHz, with respect to the Earth exploration satellite service (Earth-to-space), **No. 9.21** does not apply. (WRC-15)
5.460	No emissions from space research service (Earth-to-space) systems intended for deep space shall be effected in the frequency band 7 190-7 235 MHz. Geostationary satellites in the space research service operating in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No. **5.43A** does not apply. (WRC-15)

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5.460A	The use of the frequency band 7 190-7 250 MHz (Earth-to-space) by the Earth exploration-satellite service shall be limited to tracking, telemetry and command for the operation of spacecraft. Space stations operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7 190-7 250 MHz shall not claim protection from existing and future stations in the fixed and mobile services, and No. **5.43A** does not apply. No. **9.17** applies. Additionally, to ensure protection of the existing and future deployment of fixed and mobile services, the location of earth stations supporting spacecraft in the Earth exploration-satellite service in non-geostationary orbits or geostationary orbit shall maintain a separation distance of at least 10 km and 50 km, respectively, from the respective border(s) of neighbouring countries, unless a shorter distance is otherwise agreed between the corresponding administrations. (WRC-15)
5.460B	Space stations on the geostationary orbit operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the space research service, and No. **5.43A** does not apply. (WRC-15)
5.461	~~*Additional allocation:*~~ *Additional allocation:* the frequency bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**, with the exception that No. **9.21** shall not apply to the geostationary-satellite networks in the mobile-satellite service for which complete coordination information is received by the Bureau as of 1 January 2025 with respect to nongeostationary-satellite systems for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025. Non-geostationary-satellite systems for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025 shall not cause unacceptable interference to and shall not claim protection from geostationary- satellite networks in the mobile-satellite service operating in accordance with these Regulations. No. **5.43A** does not apply. (WRC-23)~~the bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**.~~
5.461A	The use of the band 7 450-7 550 MHz by the meteorological-satellite service (space-to-Earth) is limited to geostationary- satellite systems. ~~Non-geostationary meteorological-satellite systems in this band notified before 30 November 1997 may continue to operate on a primary basis until the end of their lifetime. (WRC-97)~~ (WRC-23)
5.461AA	The use of the frequency band 7 375-7 750 MHz by the maritime mobile-satellite service is limited to geostationary- satellite networks. (WRC-15)
5.461AB	In the frequency band 7 375-7 750 MHz, earth stations in the maritime mobile-satellite service shall not claim protection from, nor constrain the use and development of, stations in the fixed and mobile, except aeronautical mobile, services. No. **5.43A** does not apply. (WRC-15)
5.461AC	In the frequency band 7 375-7 750 MHz, non-geostationary-satellite systems operating in the fixed-satellite service for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025 shall not cause unacceptable interference to and shall not claim protection from geostationary-satellite networks in the maritime mobile-satellite service operating in accordance with these Regulations. No. **5.43A** does not apply. (WRC-23)
5.461B	The use of the band 7 750-7 900 MHz by the meteorological-satellite service (space-to-Earth) is limited to non- geostationary satellite systems. (WRC-12)
5.462	SUP (WRC-97)
5.462A	In Regions 1 and 3 (except for Japan), in the band 8 025-8 400 MHz, the Earth

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	exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following provisional values for angles of arrival (θ), without the consent of the affected administration: -135 dB(W/m^2) in a 4 kHz band for $0^o \leq \theta < 5^o$ $-135 + 0.5\,(\theta - 5)$ dB(W/m^2) in a 4 kHz for $5^o \leq \theta < 25^o$

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	band −125 dB(W/m^2) in a 1 MHz band for 25º ≤ θ ≤ 90º (WRC-12)
5.463	Aircraft stations are not permitted to transmit in the band 8025-8 400 MHz. (WRC-97)
5.464	SUP - WRC-97)
5.465	In the space research service, the use of the band 8 400-8 450 MHz is limited to deep space.
5.466	*Different category of service:* in , Singapore and Sri Lanka, the allocation of the band 8 400-8 500 MHz to the space research service is on a secondary basis (see No. 5.32). (WRC-12)
5.467	(SUP - WRC-03)
5.468	*Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Sudan, Chad, Togo, Tunisia and Yemen, the frequency band 8 500-8 750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-19)
5.469	~~*Additional allocation:*~~ *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Lithuania, Uzbekistan, Poland, Kyrgyzstan, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis. (WRC-23)~~in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Lithuania, Mongolia, Uzbekistan, Poland, Kyrgyzstan, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis. (WRC-12)~~
5.469A	In the band 8 550-8 650 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radiolocation service. (WRC-97)
5.470	The use of the band 8 750-8 850 MHz by the aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8 800 MHz.
5.471	Additional allocation: in Algeria, Germany, Bahrain, Belgium, China, Egypt, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, the Netherlands, Qatar and Sudan, the frequency bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore- based radars only. (WRC-15)
5.472	In the bands 8 850-9 000 MHz and 9 200-9 225 MHz, the maritime radionavigation service is limited to shore-based radars.

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5.473	*Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. ~~(WRC-07)~~ (WRC-19)
5.473A	In the band 9 000-9 200 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, systems identified in No. **5.337** operating in the aeronautical radionavigation service, or radar systems in the maritime radionavigation service operating in this band on a primary basis in the countries listed in No. **5.471**. (WRC-07) ~~*Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. (WRC-19)~~
5.474	In the band 9 200-9 500 MHz, search and rescue transponders (SART) may be used, having due regard to the appropriate ITU-R Recommendation (see also Article **31**).
5.474A	The use of the frequency bands 9 200-9 300 MHz and 9 900-10 400 MHz by the Earth exploration-satellite service (active) is limited to systems requiring necessary bandwidth greater than 600 MHz that cannot be fully accommodated within the frequency band 9 300-9 900 MHz. Such use is subject to agreement to be obtained under No. **9.21** from Algeria, Saudi Arabia, Bahrain, Egypt, Indonesia, Iran (Islamic Republic of), Lebanon and Tunisia. An administration that has not replied under No. 9.52 is considered as not having agreed to the coordination request. In this case, the notifying administration of the satellite system operating in the Earth exploration-satellite service (active) may request the assistance of the Bureau under Sub-Section IID of Article 9. (WRC-15)
5.474B	Stations operating in the Earth exploration-satellite (active) service shall comply with Recommendation ITU-R RS.2066- 0. (WRC-15)
5.474C	Stations operating in the Earth exploration-satellite (active) service shall comply with Recommendation ITU-R RS.2065- 0. (WRC-15)
5.474D	Stations in the Earth exploration-satellite service (active) shall not cause harmful interference to, or claim protection from, stations of the maritime radionavigation and radiolocation services in the frequency band 9 200-9 300 MHz, the radionavigation and radiolocation services in the frequency band 9 900-10 000 MHz and the radiolocation service in the frequency band 10.0-10.4 GHz. (WRC-15)
5.475	The use of the band 9 300-9 500 MHz by the aeronautical radionavigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9 300-9 320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. (WRC-07)
5.475A	The use of the band 9 300-9 500 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 300 MHz that cannot be fully accommodated within the 9 500-9 800 MHz band. (WRC-07)
5.475B	In the band 9 300-9 500 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, radars operating in the radionavigation service in conformity with the Radio Regulations. Ground-based radars used for meteorological purposes have priority over other radiolocation uses. (WRC-07)
5.476	SUP (WRC-07)
5.476A	In the band 9 300-9 800 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from, stations of the radionavigation and radiolocation services. (WRC-07)

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5.477	*Different category of service:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Trinidad and Tobago, and Yemen, the allocation of the frequency band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. **5.33**). (WRC-15)
5.478	*Additional allocation:* in Azerbaijan, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the frequency band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)
5.478A	The use of the band 9 800-9 900 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 500 MHz that cannot be fully accommodated within the 9 300-9 800 MHz band. (WRC-07)
5.478B	In the band 9 800-9 900 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from stations of the fixed service to which this band is allocated on a secondary basis. (WRC-07)
5.479	The band 9 975-10 025 MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars.
5.480	~~*Additional allocation:*~~ *Additional allocation:* in Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, El Salvador, Ecuador, Guatemala, Honduras, Jamaica, Mexico, Paraguay, the overseas countries and territories within the Kingdom of the Netherlands in Region 2, Peru, Suriname and Uruguay, the frequency band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. In Venezuela, the frequency band 10-10.45 GHz is also allocated to the fixed service on a primary basis. (WRC-23)~~in Argentina, Brazil, Chile, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Paraguay, the overseas countries and territories within the Kingdom of the Netherlands in Region 2, Peru and Uruguay, the frequency band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. In Colombia, Costa Rica, Mexico and Venezuela, the frequency band 10-10.45 GHz is also allocated to the fixed service on a primary basis. (WRC-19)~~
5.480A	In the following countries in Region 2: Brazil, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, Guatemala, Jamaica, Mexico, Paraguay, Peru and Uruguay, the frequency band 10-10.5 GHz is identified for the implementation of the terrestrial component of International Mobile Telecommunications (IMT). The implementation of this identification in Mexico is subject to seeking agreement with the United States under No. 9.21. The use of the frequency band 10-10.5 GHz by IMT stations in the mobile service shall not claim protection from systems in the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution 219 (WRC-23) applies. (WRC-23)
5.481	~~*Additional allocation:*~~ *Additional allocation*: in Algeria, Germany, Angola, Brazil, China, Colombia, Costa Rica, Côte d'Ivoire, Cuba, Djibouti, the Dominican Republic, Egypt, El Salvador, Ecuador, Spain, Guatemala, Hungary, Jamaica, Japan, Kenya, Morocco, Mexico, Nigeria, Oman, Uzbekistan, Pakistan, Palestine*, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania, Somalia, Suriname, Tunisia and Uruguay, the frequency band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-23)~~in Algeria, Germany, Angola, Brazil, China, Côte d'Ivoire, Egypt, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Pakistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania, Tunisia and Uruguay, the frequency band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. In Costa Rica,~~

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	~~the frequency band 10.45-10.5 GHz is also allocated to the fixed service on a primary basis. (WRC-19)~~
5.482	In the band 10.6–10.68 GHz, the power delivered to the antenna of stations of the fixed and mobile, except aeronautical mobile, services shall not exceed –3 dBW. This limit may be exceeded, subject to agreement obtained under No. **9.21**. However, in Algeria, Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Egypt, United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Jordan, Libyan Arab Jamahiriya, Kazakhstan, Kuwait, Lebanon, Morocco, Mauritania, Moldova, Nigeria, Oman, Uzbekistan, Pakistan, Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, Singapore, Tajikistan, Tunisia, Turkmenistan and Viet Nam, this restriction on the fixed and mobile, except aeronautical mobile, service is not applicable. (WRC-07)
5.482A	For sharing of the band 10.6-10.68 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile, except aeronautical mobile, services, Resolution 751 (WRC-07) applies. (WRC-07)
5.483	*Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, China Colombia, Korea (Rep. of), Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of) Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Qatar, Kyrgyzstan, the Dem People's Rep. of Korea, Tajikistan, Turkmenistan and Yemen, the frequency band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-19)
5.484	In Region 1, the use of the band 10.7-11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.
5.484A	The use of the frequency bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7- 12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.3-17.7 GHz (space-to-Earth) in Region 2, 17.8-18.6 GHz (space-to- Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a nongeostationary- satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellites systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. In Region 2, No. **22.2** shall continue to apply in the frequency band 17.3-17.7 GHz. (WRC-23)~~The use of the bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service~~

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	~~is subject to application of the provisions of No. 9.12 for coordination with other non-geostationary satellite systems in the fixed satellite service. Non geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary satellite networks in the fixed satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary satellite systems in the fixed satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non geostationary- satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)~~
5.484B	Resolution **155 (WRC-15)** shall apply. (WRC-15)
5.485	In Region 2, in the band 11.7-12.2 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.
5.486	*Different category of service:* in the United States, the allocation of the frequency band 11.7-12.1 GHz to the fixed service is on a secondary basis (see No. 5.32). (WRC-15)
5.487	In the band 11.7-12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to, or claim protection from, broadcasting-satellite stations operating in accordance with the Regions 1 and 3 Plan in Appendix **30**. (WRC-03)
5.487A	*Additional allocation:* in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. **9.12** for coordination with other non- geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed- satellite service and of the complete coordination or notification information, as appropriate, for the geostationary- satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-03)
5.488	The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to application of the provisions of No. **9.14** for coordination with stations of terrestrial services in Regions 1, 2 and 3. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **30**. (WRC-03)
5.489	*Additional allocation:* in Peru, the band 12.1-12.2 GHz is also allocated to the fixed service on a primary basis.

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5.490	In Region 2, in the band 12.2-12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in conformity with the broadcasting-satellite Plan for Region 2 contained in Appendix **30**.
5.491	(SUP - WRC-03)
5.492	Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List in Appendix **30** may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference, or require more protection from interference, than the broadcasting-satellite service transmissions operating in conformity with the Plan or the List, as appropriate. (WRC-2000)
5.493	The broadcasting-satellite service in the band 12.5-12.75 GHz in Region 3 is limited to a power flux-density not exceeding –111 dB(W/(m2 ⋅ 27 MHz)) for all conditions and for all methods of modulation at the edge of the service area. (WRC-97)
5.494	~~*Additional allocation:*~~ *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Oman, Palestine*, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-23)~~in Algeria, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Oman, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)~~
5.495	*Additional allocation:* in Greece, Monaco, Montenegro, Uganda and Tunisia, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-19)
5.496	*Additional allocation:* in Austria, Azerbaijan, Kyrgyzstan and Turkmenistan, the band 12.5-12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite service earth stations of countries in Region 1 other than those listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed in this footnote. The power flux-density limit at the Earth's surface given in Table **21-4** of Article **21**, for the fixed-satellite service shall apply on the territory of the countries listed in this footnote. (WRC-2000)
5.496A	The frequency band 12.75-13.25 GHz (Earth-to-space) may be used by earth stations in motion, limited to earth stations on aircraft and vessels, communicating with geostationary space stations in the fixed-satellite service. Resolution **121 (WRC-23)** shall apply. (WRC-23)
5.497	The use of the band 13.25-13.4 GHz by the aeronautical radionavigation service is limited to Doppler navigation aids.
5.498	SUP (WRC-97)

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5.498A	The Earth exploration-satellite (active) and space research (active) services operating in the band 13.25-13.4 GHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service. (WRC-97)
5.499	*Additional allocation:* in Bangladesh, and India , the band 13.25-14 GHz is also allocated to the fixed service on a primary basis. In Pakistan, the band 13.25-13.75 GHz is allocated to the fixed service on a primary basis. (WRC 12)
5.499A	The use of the frequency band 13.4-13.65 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary- satellite systems and is subject to agreement obtained under No. **9.21** with respect to satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary-satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015. (WRC-15)
5.499B	Administrations shall not preclude the deployment and operation of transmitting earth stations in the standard frequency and time signal-satellite service (Earth-to-space) allocated on a secondary basis in the frequency band 13.4-13.65 GHz due to the primary allocation to FSS (space-to-Earth). (WRC-15)
5.499C	The allocation of the frequency band 13.4-13.65 GHz to the space research service on a primary basis is limited to: – satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary-satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015, – active spaceborne sensors, – satellite systems operating in the space research service (space-to-Earth) to relay data from space stations in the geostationary-satellite orbit to associated earth stations. Other uses of the frequency band by the space research service are on a secondary basis. (WRC-15)
5.499D	In the frequency band 13.4-13.65 GHz, satellite systems in the space research service (space-to-Earth) and/or the space research service (space-to-space) shall not cause harmful interference to, nor claim protection from, stations in the fixed, mobile, radiolocation and Earth exploration-satellite (active) services. (WRC-15)
5.499E	In the frequency band 13.4-13.65 GHz, geostationary-satellite networks in the fixed-satellite service (space-to- Earth) shall not claim protection from space stations in the Earth exploration-satellite service (active) operating in accordance with these Regulations, and No. **5.43A** does not apply. The provisions of No. **22.2** do not apply to the Earth exploration- satellite service (active) with respect to the fixed-satellite service (space-to-Earth) in this frequency band. (WRC-15)
5.500	~~*Additional allocation:*~~ *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Djibouti, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Morocco, Mauritania, Niger, Nigeria, Oman, Qatar, the Syrian Arab Republic, Singapore, Somalia, Sudan, South Sudan, Chad and Tunisia, the frequency band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. In Pakistan, the frequency band 13.4-13.75 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-23)~~in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Morocco, Mauritania, Niger, Nigeria, Oman, Qatar, the Syrian Arab Republic, Singapore, Sudan, South Sudan, Chad and Tunisia, the frequency band 13.4-14 GHz is also allocated to the fixed and mobile services on a~~

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	~~primary basis. In Pakistan, the frequency band 13.4-13.75 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)~~
5.501	~~*Additional allocation:*~~ *Additional allocation:* in Hungary, Japan, Kyrgyzstan, Romania and Turkmenistan, the frequency band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-23)~~in Azerbaijan, Hungary, Japan, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 13.4- 14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-12)~~
5.501A	The allocation of the frequency band 13.65-13.75 GHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the frequency band by the space research service are on a secondary basis. (WRC-15)
5.501B	In the band 13.4-13.75 GHz, the Earth exploration-satellite (active) and space research (active) services shall not cause harmful interference to, or constrain the use and development of, the radiolocation service. (WRC-97)
5.502	In the band 13.75-14 GHz, an earth station of a geostationary fixed-satellite service network shall have a minimum antenna diameter of 1.2 m and an earth station of a non-geostationary fixed-satellite service system shall have a minimum antenna diameter of 4.5 m. In addition, the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW for elevation angles above 2° and 65 dBW at lower angles. Before an administration brings into use an earth station in a geostationary-satellite network in the fixed-satellite service in this band with an antenna diameter smaller than 4.5 m, it shall ensure that the power flux-density produced by this earth station does not exceed: – –115 dB(W/(m^2 · 10 MHz)) for more than 1% of the time produced at 36 m above sea level at the low water mark, as officially recognized by the coastal State; – –115 dB(W/(m^2 · 10 MHz)) for more than 1% of the time produced 3 m above ground at the border of the territory of an administration deploying or planning to deploy land mobile radars in this band, unless prior agreement has been obtained. For earth stations within the fixed-satellite service having an antenna diameter greater than or equal to 4.5 m, the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. (WRC-03)
5.503	In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band: – in the band 13.77-13.78 GHz, the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed: i) 4.7D + 28 dB(W/40 kHz), where D is the fixed-satellite service earth station antenna diameter (m) for antenna

	diameters equal to or greater than 1.2 m and less than 4.5 m; ii) 49.2 + 20 log(*D*/4.5) dB(W/40 kHz), where *D* is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 4.5 m and less than 31.9 m; iii) 66.2 dB(W/40 kHz) for any fixed-satellite service earth station for antenna diameters (m) equal to or greater than 31.9 m; iv) 56.2 dB(W/4 kHz) for narrow-band (less than 40 kHz of necessary bandwidth) fixed-satellite service earth station emissions from any fixed-satellite service earth station having an antenna diameter of 4.5 m or greater; – the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz. Automatic power control may be used to increase the e.i.r.p. density in these frequency ranges to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. meeting the above limits in clear-sky conditions. (WRC-03)
5.503A	(SUP - WRC-03)
5.504	The use of the band 14-14.3 GHz by the radionavigation service shall be such as to provide sufficient protection to space stations of the fixed-satellite service.
5.504A	In the band 14-14.5 GHz, aircraft earth stations in the secondary aeronautical mobile-satellite service may also communicate with space stations in the fixed-satellite service. The provisions of Nos. **5.29**, **5.30** and **5.31** apply. (WRC- 03)
5.504B	Aircraft earth stations operating in the aeronautical mobile-satellite service in the frequency band 14-14.5 GHz shall comply with the provisions of Annex 1, Part C of Recommendation ITU-R M.1643-0, with respect to any radio astronomy station performing observations in the 14.47-14.5 GHz frequency band located on the territory of Spain, France, India, Italy, the United Kingdom and South Africa. (WRC-15)
5.504C	In the frequency band 14-14.25 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Côte d'Ivoire, Egypt, Guinea, India, Iran (Islamic Republic of), Kuwait, Nigeria, Oman, the Syrian Arab Republic and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-15)
5.505	*Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Botswana, Brunei, Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Viet Nam and Yemen, the frequency band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-19)

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5.506	The band 14-14.5 GHz may be used, within the fixed-satellite service (Earth-to-space), for feeder links for the broadcasting-satellite service, subject to coordination with other networks in the fixed-satellite service. Such use of feeder links is reserved for countries outside Europe.
5.506A	In the frequency band 14-14.5 GHz, ship earth stations with an equivalent isotropically radiated power (e.i.r.p.) greater than 21 dBW shall operate under the same conditions as earth stations located on board vessels, as provided in Resolution **902 (Rev.WRC-23)**. This footnote shall not apply to ship earth stations for which the complete Appendix **4** information has been received by the Bureau prior to 5 July 2003. (WRC-23)~~In the band 14-14.5 GHz, ship earth stations with an e.i.r.p. greater than 21 dBW shall operate under the same conditions as earth stations located on board vessels, as provided in Resolution **902 (WRC-03)**. This footnote shall not apply to ship earth stations for which the complete Appendix **4** information has been received by the Bureau prior to 5 July 2003. (WRC-03)~~
5.506B	Earth stations located on board vessels communicating with space stations in the fixed-satellite service may operate in the frequency band 14-14.5 GHz without the need for prior agreement from Cyprus and Malta, within the minimum distance given in Resolution **902 (Rev.WRC-23)** from these countries. (WRC-23)~~Earth stations located on board vessels communicating with space stations in the fixed satellite service may operate in the frequency band 14-14.5 GHz without the need for prior agreement from Cyprus and Malta, within the minimum distance given in Resolution 902 (WRC-03) from these countries. (WRC-15)~~
5.507	Not used.
5.508	~~*Additional allocation*~~*Additional allocation: in Germany, Italy, Libya, North Macedonia and the United Kingdom, the frequency band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-23)*~~in Germany, France, Italy, Libya, North Macedonia and the United Kingdom, the frequency band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-19)~~
5.508A	~~In~~ In the frequency band 14.25-14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, China, Côte d'Ivoire, Egypt, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-23)~~the frequency band 14.25-14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, China, Côte d'Ivoire, Egypt, France, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**.(WRC-15)~~
5.509	SUP (WRC-07)
5.509A	In the frequency band 14.3-14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Morocco, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom, Sri Lanka, Tunisia and Viet Nam by any aircraft earth station in the aeronautical mobile-satellite service

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	shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-23)~~In the frequency band 14.3-14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, France, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Morocco, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom, Sri Lanka, Tunisia and Viet Nam by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-15)~~
5.509B	The use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution **163 (WRC-15)** and 14.5-14.8 GHz in countries listed in Resolution **164 (WRC-15)** by the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service is limited to geostationary-satellites. (WRC-15)
5.509C	For the use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution 163 (WRC-15) and 14.5-14.8 GHz in countries listed in Resolution 164 (WRC-15) by the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service, the fixed-satellite service earth stations shall have a minimum antenna diameter of 6 m and a maximum power spectral density of -44.5 dBW/Hz at the input of the antenna. The earth stations shall be notified at known locations on land. (WRC-15)
5.509D	Before an administration brings into use an earth station in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service in the frequency bands 14.5-14.75 GHz (in countries listed in Resolution 163 (WRC-15)) and 14.5-14.8 GHz (in countries listed in Resolution 164 (WRC-15)), it shall ensure that the power flux-density produced by this earth station does not exceed -151.5 dB(W/(m2 · 4 kHz)) produced at all altitudes from 0 m to 19 000 m above sea level at 22 km seaward from all coasts, defined as the low-water mark, as officially recognized by each coastal State. (WRC-15)
5.509E	In the frequency bands 14.50-14.75 GHz in countries listed in Resolution **163 (WRC-15)** and 14.50-14.8 GHz in countries listed in Resolution **164 (WRC-15)**, the location of earth stations in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service shall maintain a separation distance of at least 500 km from the border(s) of other countries unless shorter distances are explicitly agreed by those administrations. No. **9.17** does not apply. When applying this provision, administrations should consider the relevant parts of these Regulations and the latest relevant ITU-R Recommendations. (WRC-15)
5.509F	In the frequency bands 14.50-14.75 GHz in countries listed in Resolution 163 (WRC-15) and 14.50-14.8 GHz in countries listed in Resolution 164 (WRC-15), earth stations in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service shall not constrain the future deployment of the fixed and mobile services. (WRC-15)
5.509G	The frequency band 14.5-14.8 GHz is also allocated to the space research service on a primary basis. However, such use is limited to the satellite systems operating in the space research service (Earth-to-space) to relay data to space stations in the geostationary-satellite orbit from associated earth stations. Stations in the space research service shall not cause harmful interference to, or claim protection from, stations in the fixed and mobile services and in the fixed satellite service limited to feeder links for the broadcasting-satellite service and associated space operations functions using the guardbands under Appendix 30A and feeder links for the

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	broadcasting-satellite service in Region 2. Other uses of this frequency band by the space research service are on a secondary basis. (WRC-15)
5.510	Except for use in accordance with Resolution **163 (WRC-15)** and Resolution **164 (WRC-15)**, the use of the frequency band 14.5-14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe. Uses other than feeder links for the broadcasting-satellite service are not authorized in Regions 1 and 2 in the frequency band 14.75-14.8 GHz. (WRC-15)
5.510A	The allocation of the frequency band 14.8-15.35 GHz to the space research service on a primary basis is limited to satellite systems operating in the space-to-space, space-to-Earth and Earth-to-space directions at distances from the Earth of less than 2 × 106 km in accordance with Resolution **678 (WRC-23)**. Other uses of the frequency band by the space research service are on a secondary basis. The use of the frequency band 14.8-15.35 GHz by the space research service (space-to-Earth) (Earth-to-space) is on a secondary basis with respect to the terrestrial services in Algeria, Saudi Arabia, Bahrain, Korea (Rep. of), Egypt, the United Arab Emirates, the United States, India, Iraq, Japan, Kuwait, Libya, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Tunisia and Yemen. (WRC-23)
5.511	*Additional allocation:* in Saudi Arabia, Bahrain, Cameroon, Djibouti, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, Kuwait, Lebanon, Oman, Pakistan, Qatar, the Syrian Arab Republic and Somalia, the frequency band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-23)~~in Saudi Arabia, Bahrain, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, , Kuwait, Lebanon, Pakistan, Qatar, the Syrian Arab R epublic and Somalia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)~~
5.511A	Use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **9.11A**. (WRC-15)
5.511B	(SUP - WRC-97)
5.511C	Stations operating in the aeronautical radionavigation service shall limit the effective e.i.r.p. in accordance with Recommendation ITU-R S.1340-0. The minimum coordination distance required to protect the aeronautical radionavigation stations (No. 4.10 applies) from harmful interference from feeder-link earth stations and the maximum e.i.r.p. transmitted towards the local horizontal plane by a feeder-link earth station shall be in accordance with Recommendation ITU-R S.1340-0. (WRC-15)
5.511D	~~SUP (WRC-12)~~ (SUP - WRC-15)
5.511E	In the frequency band 15.4-15.7 GHz, stations operating in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the aeronautical radionavigation service. (WRC-12)
5.511F	In order to protect the radio astronomy service in the frequency band 15.35–15.4 GHz, radiolocation stations operating in the frequency band 15.4–15.7 GHz shall not exceed the power flux-density level of –156 dB(W/m2) in a 50 MHz bandwidth in the frequency band 15.35–15.4 GHz, at any radio

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	astronomy observatory site for more than 2 per cent of the time. (WRC-12)
5.511G	Stations in the aeronautical mobile (OR) service operating in the frequency band 15.41-15.7 GHz shall not cause harmful interference to the radio astronomy service operating in the frequency band 15.35-15.4 GHz. The aggregat epower flux-density (pfd) received from stations in the aeronautical mobile (OR) service operating in the frequency band 15.41-15.7 GHz at any radio astronomy station operating in the frequency band 15.35-15.4 GHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, unless specifically agreed by the affected administration(s). (WRC-23)
5.511H	*Additional allocation*: in Indonesia, the frequency band 15.41-15.7 GHz is also allocated to the aeronautical mobile (OR) service on a secondary basis. Stations in the aeronautical mobile (OR) service operating in the frequency band 15.41-15.7 GHz shall not cause harmful interference to the radio astronomy service operating in the frequency band 15.35-15.4 GHz. The aggregate power flux-density (pfd) received from stations in the aeronautical mobile (OR) service operating in the frequency band 15.41-15.7 GHz at any radio astronomy station operating in the frequency band 15.35-15.4 GHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, unless specifically agreed by the affected administration(s). (WRC-23)
5.512	*Additional allocation:* in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Congo (Rep. of the), Egypt, El Salvador, the United Arab Emirates, Eritrea, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Montenegro, Nepal, Nicaragua, Niger, Oman, Pakistan, Qatar, Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)
5.513	*Additional allocation:* in Israel, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from or cause harmful interference to services operating in accordance with the Table in countries other than those included in No. **5.512**.
5.513A	Spaceborne active sensors operating in the band 17.2-17.3 GHz shall not cause harmful interference to, or constrain the development of, the radiolocation and other services allocated on a primary basis. (WRC-97)
5.514	~~*Additional allocation:*~~ *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Cameroon, Djibouti, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kuwait, Libya, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Somalia, Sudan and South Sudan, the frequency band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **21.3** and **21.5** shall apply. (WRC-23)~~in Algeria, Saudi Arabia, Bahrain, Bangladesh, Cameroon, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kuwait, Libya, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Sudan and South Sudan, the frequency band 17.3–17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **21.3** and **21.5** shall apply. (WRC-15)~~
5.515	In the band 17.3-17.8 GHz, sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service shall also be in accordance with the provisions of § 1 of Annex 4 of Appendix **30A**.
5.515A	In addition to the need to comply with the coordination criteria in Annex 4 to Appendix **30A**, under assumed free-space propagation conditions, the power flux-density of an assignment in the

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	fixed-satellite service (space to-Earth) of a geostationary-satellite network in the frequency band 17.3-17.7 GHz in Region 2 shall not exceed the value of -98 dB(W/(m2 · 27 MHz)) at points in the geostationary-satellite orbit with geocentric orbital separation angles between 152.6° and 162.6°. (WRC-23)
5.515B	In the frequency band 17.3-17.7 GHz, the use of the fixed-satellite service (space-to-Earth) by geostationary-satellite space stations in Region 2 shall not cause harmful interference to space station receivers nor claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix **30A** in all three Regions, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. The notifying administration for the fixed-satellite service (space-to-Earth), when submitting Appendix **4** information elements, shall provide a firm, objective, actionable, measurable and enforceable commitment that, in the event of harmful interference being reported to space station receivers in Appendix **30A**, it shall take immediate action to eliminate the interference or reduce it to an acceptable level. (WRC-23)
5.516	The use of the band 17.3-18.1 GHz by geostationary-satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites. For the use of the band 17.3-17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2-12.7 GHz, see Article **11**. The use of the bands 17.3-18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8-18.1 GHz (Earth-to-space) in Region 2 by non-geostationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed- satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)
5.516A	In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Region 1 shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix **30A**, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. (WRC-03)
5.516B	The following bands are identified for use by high-density applications in the fixed-satellite service: 17.3-17.7 GHz (space-to-Earth) in Region 1, 18.3-19.3 GHz (space-to-Earth) in Region 2, 19.7-20.2 GHz (space-to-Earth) in all Regions, 39.5-40 GHz (space-to-Earth) in Region 1, 40-40.5 GHz (space-to-Earth) in all Regions, 40.5-42

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	GHz (space-to-Earth) in Region 2, 47.5-47.9 GHz (space-to-Earth) in Region 1, 48.2-48.54 GHz (space-to-Earth) in Region 1 49.44-50.2 GHz (space-to-Earth) in Region 1, and 27.5-27.82 GHz (Earth-to-space) in Region 1, 28.35-28.45 GHz (Earth-to-space) in Region 2, 28.45-28.94 GHz (Earth-to-space) in all Regions, 28.94-29.1 GHz (Earth-to-space) in Region 2 and 3, 29.25-29.46 GHz (Earth-to-space) in Region 2, 29.46-30 GHz (Earth-to-space) in all Regions, 48.2-50.2 GHz (Earth-to-space) in Region 2. This identification does not preclude the use of these frequency bands by other fixed-satellite service applications or by other services to which these frequency bands are allocated on a co-primary basis and does not establish priority in these Radio Regulations among users of the frequency bands. Administrations should take this into account when considering regulatory provisions in relation to these frequency bands. See Resolution **143 (Rev.WRC-19)**. (WRC-19)
5.517	In Region 2, use of the fixed-satellite (space-to-Earth) service in the frequency band 17.3-17.8 GHz shall not cause harmful interference to nor claim protection from assignments in the broadcasting-satellite service operating in conformity with the Radio Regulations. (WRC-23)~~In Region 2, use of the fixed satellite (space to Earth) service in the band 17.7-17.8 GHz shall not cause harmful interference to nor claim protection from assignments in the broadcasting satellite service operating in conformity with the Radio Regulations. (WRC-07)~~
5.517A	The operation of earth stations in motion communicating with geostationary fixed-satellite service space stations within the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) shall be subject to the application of Resolution **169 (Rev.WRC-23)**. (WRC-23)~~The operation of earth stations in motion communicating with geostationary fixed satellite service space stations within the frequency bands 17.7-19.7 GHz (space to Earth) and 27.5-29.5 GHz (Earth to space) shall be subject to the application of Resolution **169 (WRC-19)**. (WRC-19)~~
5.517B	The operation of aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) shall be subject to the application of Resolution **123 (WRC-23)**.
5.518	SUP (WRC-07)
5.519	*Additional allocation:* the bands 18-18.3 GHz in Region 2 and 18.1-18.4 GHz in Regions 1 and 3 are also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Their use is limited to geostationary satellites. (WRC-07)
5.520	The use of the band 18.1-18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of geostationary-satellite systems in the broadcasting-satellite service. (WRC-2000)

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5.521	*Alternative allocation: in the United Arab Emirates, the frequency band 18.1-18.4 GHz is allocated to thefixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. **5.33**). The provisions of No. **5.519** also apply. (WRC-23)*~~*Alternative allocation:* in the United Arab Emirates and Greece, the frequency band 18.1-18.4 GHz is allocated to the fixed, fixed satellite (space-to-Earth) and mobile services on a primary basis (see No. **5.33**). The provisions of No. **5.519** also apply. (WRC-15)~~
5.521A	For use of the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz, or parts thereof, by space stations in the inter-satellite service, Resolution **679 (WRC-23)** shall apply. Such use is limited to space research, space operation and/or Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space. When using these frequencies, administrations shall ensure that this inter-satellite service is used only for the aforementioned purposes and is not subject to coordination under No. **9.11A**. For use of the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz, 27.5-29.1 GHz and 29.5-30 GHz by space stations, the allocation is limited to inter-satellite links between non-geostationary satellites or between non-geostationary satellites and geostationary satellites. For use of the frequency band 29.1-29.5 GHz by space stations, the allocation is limited to inter-satellite links between non-geostationary satellites and geostationary satellites. No. **4.10** does not apply. (WRC-23)
5.522	SUP (WRC-2000)
5.522A	The emissions of the fixed service and the fixed-satellite service in the band 18.6-18.8 GHz are limited to the values given in Nos. **21.5A** and **21.16.2**, respectively. (WRC-2000)
5.522B	The use of the band 18.6-18.8 GHz by the fixed-satellite service is limited to geostationary systems and systems with an orbit of apogee greater than 20 000 km. (WRC-2000)
5.522C	In the band 18.6-18.8 GHz, in Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, Libya ~~Arab Jamahiriya~~, Jordan, Lebanon, Morocco, Oman, Qatar, the Syrian Arab Republic, Tunisia and Yemen, fixed-service systems in operation at the date of entry into force of the Final Acts of WRC-2000 are not subject to the limits of No. **21.5A**. (WRC-2000)
5.523	SUP (WRC-2000)
5.523A	The use of the bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) by geostationary and non- geostationary fixed-satellite service networks is subject to the application of the provisions of No. **9.11A** and No. **22.2** does not apply. ~~Administrations having geostationary-satellite networks under coordination prior to 18 November 1995 shall cooperate to the maximum extent possible to coordinate pursuant to No. **9.11A** with non-geostationary-satellite networks for which notification information has been received by the Bureau prior to that date, with a view to reaching results acceptable to all the parties concerned.~~ Non-geostationary-satellite networks shall not cause unacceptable interference to geostationary fixed-satellite service networks for which complete Appendix **4** notification information is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)
5.523B	The use of the band 19.3-19.6 GHz (Earth-to-space) by the fixed-satellite service is limited to feeder links for non- geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. **9.11A**, and No. **22.2** does not apply.
5.523C	No. **22.2** shall continue to apply in the bands 19.3-19.6 GHz and 29.1-29.4 GHz, between feeder links of non- geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix **4** coordination information, or notification information, is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)

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5.523D	The use of the band 19.3-19.7 GHz (space-to-Earth) by geostationary fixed-satellite service systems and by feeder links for non-geostationary-satellite systems in the mobile-satellite service is subject to the application of the provisions of No. 9.11A, but not subject to the provisions of No. 22.2. The use of this band for other non-geostationary fixed-satellite service systems, or for the cases indicated in Nos. 5.523C and 5.523E, is not subject to the provisions of No. 9.11A and shall continue to be subject to Articles 9 (except No. 9.11A) and 11 procedures, and to the provisions of No. 22.2. (WRC-97)
5.523DA	In order to protect feeder links of non-geostationary networks in the mobile-satellite service in the frequency band 19.3-19.7 GHz, the power flux-density values produced at the surface of the Earth for all angles of arrival by a space station in the inter-satellite service operating in this band in accordance with Resolution **679 (WRC-23)** shall not exceed −140 dB(W/m2) in any 1 MHz within 150 km of any of the above feeder-link earth stations recorded in the Master International Frequency Register. (WRC-23)
5.523E	No. **22.2** shall continue to apply in the bands 19.6-19.7 GHz and 29.4-29.5 GHz, between feeder links of non- geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix **4** coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997. (WRC-97)
5.524	~~*Additional allocation:*~~ *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Costa Rica, Djibouti, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Palestine*, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Togo and Tunisia, the frequency band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the frequency band 19.7- 21.2 GHz and of space stations in the mobile-satellite service in the frequency band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter frequency band. (WRC-23)~~in Afghanistan, Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Togo and Tunisia, the frequency band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the frequency band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the frequency band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter frequency band. (WRC-15)
5.525	In order to facilitate interregional coordination between networks in the mobile-satellite and fixed-satellite services, carriers in the mobile-satellite service that are most susceptible to interference shall, to the extent practicable, be located in the higher parts of the bands 19.7-20.2 GHz and 29.5-30 GHz.
5.526	In the bands 19.7-20.2 GHz and 29.5-30 GHz in Region 2, and in the bands 20.1-20.2 GHz and 29.9-30 GHz in Regions 1 and 3, networks which are both in the fixed-satellite service and in the mobile-satellite service may include links between earth stations at specified or unspecified points or while in motion, through one or more satellites for point- to-point and point-to-multipoint communications.

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5.527	In the bands 19.7-20.2 GHz and 29.5-30 GHz, the provisions of No. **4.10** do not apply with respect to the mobile-satellite service.
5.527A	The operation of earth stations in motion communicating with the FSS is subject to Resolution **156 (Rev.WRC-23)**. (WRC-23)~~The operation of earth stations in motion communicating with the FSS is subject to Resolution **156 (WRC-15)**. (WRC-15)~~
5.528	The allocation to the mobile-satellite service is intended for use by networks which use narrow spot-beam antennas and other advanced technology at the space stations. Administrations operating systems in the mobile-satellite service in the band 19.7-20.1 GHz in Region 2 and in the band 20.1-20.2 GHz shall take all practicable steps to ensure the continued availability of these bands for administrations operating fixed and mobile systems in accordance with the provisions of No. **5.524**.
5.529	The use of the bands 19.7-20.1 GHz and 29.5-29.9 GHz by the mobile-satellite service in Region 2 is limited to satellite networks which are both in the fixed-satellite service and in the mobile-satellite service as described in No. **5.526**.
5.529A	In the frequency bands 20.2-21.2 GHz and 30-31 GHz, non-geostationary-satellite systems for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025 shall not cause unacceptable interference to and shall not claim protection from geostationary-satellite networks in the mobile-satellite service operating in accordance with these Regulations. No. **5.43A** does not apply. (WRC-23)
5.530	SUP (WRC-12)
5.530A	Unless otherwise agreed between the administrations concerned, any station in the fixed or mobile services of an administration shall not produce a power flux-density in excess of -120.4 dB(W/(m2 · MHz)) at 3 m above the ground of any point of the territory of any other administration in Regions 1 and 3 for more than 20% of the time. In conducting the calculations, administrations should use the most recent version of Recommendation ITU-R P.452 (see also the most recent version of Recommendation ITU-R BO.1898). (WRC-15)
5.530B	In the band 21.4-22 GHz, in order to facilitate the development of the broadcasting satellite service, administrations in Regions 1 and 3 are encouraged not to deploy stations in the mobile service and are encouraged to limit the deployment of stations in the fixed service to point to-point links. (WRC-12)
5.530C	SUP (WRC-15)
5.530D	SUP (WRC-19)
5.530E	The allocation to the fixed service in the frequency band 21.4-22 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS-to-ground direction, and shall be in accordance with the provisions of Resolution **165 (Rev.WRC-23)**. (WRC-23)~~The allocation to the fixed service in the frequency band 21.4-22 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS-to-ground direction, and shall be in accordance with the provisions of Resolution **165 (WRC-19)**. (WRC-19)~~
5.531	*Additional allocation:* in Japan, the band 21.4-22 GHz is also allocated to the broadcasting service on a primary basis.
5.531A	The use of the aeronautical mobile (OR) service in the frequency band 22-22.2 GHz is limited to non-safety applications. (WRC-23)

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5.531B	Aircraft stations in the aeronautical mobile (OR) service operating in the frequency band 22-22.2 GHz are subject to agreement obtained under No. **9.21** with respect to the fixed service and shall not cause harmful interference to, nor claim protection from, the fixed service. The following power flux-density values shall be used as a threshold for coordination under No. **9.21**: −110 dB(W/(m2 · MHz)) for 0° ≤ θ ≤ 12.6° 2.86 θ − 146 dB(W/(m2 · MHz)) for 12.6° < θ ≤ 15° 0.87 θ − 116 dB(W/(m2 · MHz)) for 15° < θ ≤ 30° 0.067 θ − 92 dB(W/(m2 · MHz)) for 30° < θ ≤ 90° where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. This criterion should be applied at the border of the territory of another administration for any aircraft station located at an altitude of up to 15 km above the ground. In conducting the calculations, the most recent version of RecommendationITU-R P.525 should be used. (WRC-23)
5.531C	Stations in the aeronautical mobile (OR) service operating in the frequency band 22-22.2 GHz shall not cause harmful interference to the radio astronomy service operating in the frequency band 22.21-22.5 GHz. The aggregate power flux-density (pfd) received from these stations at any radio astronomy station operating in the frequency band 22.21-22.5 GHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, unless specifically agreed by the affected administration(s). (WRC-23)
5.531D	The use of the aeronautical mobile (OR) service in the frequency band 22-22.2 GHz outside national boundaries shall not cause harmful interference to, or claim protection from, services in other countries operating in accordance with the Table of Frequency Allocations. (WRC-23)
5.531E	*Alternative allocation*: in Brunei Darussalam, Iran (Islamic Republic of), Malaysia, Singapore and Thailand, the frequency band 22–22.2 GHz is allocated to the mobile, except aeronautical mobile (R), service on a primary basis. The use of the service is limited to non-safety applications within national boundaries. The use of the aeronautical mobile (OR) service in the frequency band 22–22.2 GHz shall not cause harmful interference to, or claim protection from, services in other countries operating in accordance with the Table of Frequency Allocations. Furthermore, stations in the aeronautical mobile (OR) service operating in the frequency band 22–22.2 GHz shall not cause harmful interference to the radio astronomy service operating in the frequency band 22.21–22.5 GHz in other countries in accordance with the Table of Frequency Allocations. The aggregate power flux-density (pfd) received from these stations at any radio astronomy station operating in the frequency band 22.21–22.5 GHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, unless specifically agreed by the affected administration(s). In order to protect stations of the Earth exploration-satellite service (passive) operating in the frequency band 22.21–22.5 GHz, the unwanted equivalent isotropically radiated power (e.i.r.p.) of stations operating in the aeronautical mobile (OR) service shall not exceed −23 dBW in

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	any 100 MHz band in the frequency band 22.21–22.5 GHz. Aircraft stations in the aeronautical mobile (OR) service operating in the frequency band 22–22.2 GHz are subject to agreement obtained under No. **9.21** with respect to the fixed service and shall not cause harmful interference to, nor claim protection from, the fixed service. The following pfd values shall be used as a threshold for coordination under No. **9.21**: −110 dB(W/(m2 · MHz)) for 0° ≤ θ ≤ 12.6° 2.86 θ – 146 dB(W/(m2 · MHz)) for 12.6° < θ ≤ 15° 0.87 θ – 116 dB(W/(m2 · MHz)) for 15° < θ ≤ 30° 0.067 θ – 92 dB(W/(m2 · MHz)) for 30° < θ ≤ 90° where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. This criterion should be applied at the border of the territory of another administration for any aircraft station located at an altitude of up to 15 km above the ground. In conducting the calculations, the most recent version of Recommendation ITU-R P.525 should be used. (WRC-23)
5.531F	In order to protect stations of the Earth exploration-satellite service (passive) operating in the frequency band 22.21–22.5 GHz, the unwanted equivalent isotropically radiated power (e.i.r.p.) of stations operating in the aeronautical mobile (OR) service shall not exceed –23 dBW in any 100 MHz band in the frequency band 22.21–22.5 GHz. (WRC-23)
5.532	The use of the band 22.21-22.5 GHz by the Earth exploration-satellite (passive) and space research (passive) services shall not impose constraints upon the fixed and mobile, except aeronautical mobile, services.
5.532A	The location of earth stations in the space research service shall maintain a separation distance of at least 54 km from the respective border(s) of neighbouring countries to protect the existing and future deployment of fixed and mobile services unless a shorter distance is otherwise agreed between the corresponding administrations. Nos. **9.17** and **9.18** do not apply. (WRC 12)
5.532AA	The allocation to the fixed service in the frequency band 24.25-25.25 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS to- ground direction and shall be in accordance with the provisions of Resolution **166 (Rev.WRC-23)**. (WRC-23)~~The allocation to the fixed service in the frequency band 24.25-25.25 GHz is identified for use in Region 2 by high- altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed- service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS to- ground direction and shall be in accordance with the provisions of Resolution 166 (WRC-19). (WRC-19)~~
5.532AB	The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in theRadio Regulati ons. Resolution **242 (Rev.WRC-23)** applies. (WRC-23)~~The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any~~

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	~~application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **242 (WRC-19)** applies. (WRC-19)~~
5.532B	Use of the band 24.65-25.25 GHz in Region 1 and the band 24.65-24.75 GHz in Region 3 by the fixed-satellite service (Earth-to-space) is limited to earth stations using a minimum antenna diameter of 4.5m. (WRC-12)
5.533	The inter-satellite service shall not claim protection from harmful interference from airport surface detection equipment stations of the radionavigation service.
5.534	SUP (WRC-03)
5.534A	The allocation to the fixed service in the frequency band 25.25-27.5 GHz is identified in Region 2 for use by high-altitude platform stations (HAPS) in accordance with the provisions of Resolution **166 (Rev.WRC-23)**. Such use of the fixed-service allocation by HAPS shall be limited to the ground-to-HAPS direction in the frequency band 25.25- 27.0 GHz and to the HAPS-to-ground direction in the frequency band 27.0-27.5 GHz. Furthermore, the use of the frequency band 25.5-27.0 GHz by HAPS shall be limited to gateway links. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. (WRC-23)~~The allocation to the fixed service in the frequency band 25.25-27.5 GHz is identified in Region 2 for use by high-altitude platform stations (HAPS) in accordance with the provisions of Resolution **166 (WRC-19)**. Such use of the fixed-service allocation by HAPS shall be limited to the ground-to-HAPS direction in the frequency band 25.25-27.0 GHz and to the HAPS-to-ground direction in the frequency band 27.0-27.5 GHz. Furthermore, the use of the frequency band 25.5-27.0 GHz by HAPS shall be limited to gateway links. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. (WRC-19)~~
5.535	In the band 24.75-25.25 GHz, feeder links to stations of the broadcasting-satellite service shall have priority over other uses in the fixed-satellite service (Earth-to-space). Such other uses shall protect and shall not claim protection from existing and future operating feeder-link networks to such broadcasting satellite stations.
5.535A	The use of the band 29.1-29.5 GHz (Earth-to-space) by the fixed-satellite service is limited to geostationary-satellite systems and feeder links to non-geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. **22.2**, except as indicated in Nos. **5.523C** and **5.523E** where such use is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles **9** (except No. **9.11A**) and **11** procedures, and to the provisions of No. **22.2**. (WRC-97)
5.536	Use of the 25.25-27.5 GHz band by the inter-satellite service is limited to space research and Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space.
5.536A	Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recen version of Recommendation ITU-R SA.1862. Resolution **242 (Rev.WRC-23)** applies. (WRC-23)~~Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service~~

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	~~should be operated taking into account the most recent version of Recommendation ITU-R SA.1862. Resolution **242 (WRC-19)** applies. (WRC-19)~~
5.536B	In Algeria, Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Türkiye, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Slovenia, Somalia, Sudan, Sweden, Tanzania, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. Resolution **242 (Rev.WRC-23)** applies. (WRC-23)~~In Algeria, Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Slovenia, Sudan, Sweden, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. Resolution **242 (WRC-19)** applies. (WRC-19)~~
5.536C	In Algeria, Saudi Arabia, Bahrain, Botswana, Brazil, Cameroon, Comoros, Cuba, Djibouti, Egypt, United Arab Emirates, Estonia, Finland, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lithuania, Malaysia, Morocco, Nigeria, Oman, Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Tanzania, Tunisia, Uruguay, Zambia and Zimbabwe, earth stations operating in the space research service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-12)
5.537	Space services using non-geostationary satellites operating in the inter-satellite service in the band 27-27.5 GHz are exempt from the provisions of No. **22.2**.
5.537A	In Bhutan, Cameroon, China, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.9- 28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to- ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (Rev.WRC-19)**. (WRC-19)
5.538	*Additional allocation:* the bands 27.500-27.501 GHz and 29.999-30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for the beacon transmissions intended for up-link power control. Such space- to-Earth transmissions shall not exceed an equivalent isotropically radiated power (e.i.r.p.) of ±10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit. (WRC-07)
5.539	The band 27.5-30 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service.

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5.540	*Additional allocation:* the band 27.501-29.999 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis for beacon transmissions intended for up-link power control.
5.541	In the band 28.5-30 GHz, the earth exploration-satellite service is limited to the transfer of data between stations and not to the primary collection of information by means of active or passive sensors.
5.541A	Feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed- satellite service operating in the band 29.1-29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which Appendix **4** coordination information is considered as having been received by the Bureau after 17 May 1996 and until they are changed by a future competent world radiocommunication conference. Administrations submitting Appendix **4** information for coordination before this date are encouraged to utilize these techniques to the extent practicable. (WRC-2000)
5.542	~~*Additional allocation:*~~ *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Oman, Pakistan, Palestine*, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, South Sudan, Sri Lanka and Chad, the frequency band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **21.3** and **21.5** shall apply. (WRC-23)~~in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Oman, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, South Sudan Sri Lanka and Chad, the band 29.5 31 GH to the fixed and mobile services on a secondary basis. The power limits specified in Nos. 21.3 and 21.5 shall apply. (WRC 12)z is also allocated~~
5.543	The band 29.95-30 GHz may be used for space-to-space links in the Earth exploration-satellite service for telemetry, tracking, and control purposes, on a secondary basis.
5.543A	SUP (WRC-19)
5.543B	The allocation to the fixed service in the frequency band 31-31.3 GHz is identified for worldwide use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **167 (Rev.WRC-23)**. (WRC-23)~~The allocation to the fixed service in the frequency band 31-31.3 GHz is identified for worldwide use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **167 (WRC-19)**. (WRC-19)~~
5.544	In the band 31-31.3 GHz the power flux-density limits specified in Article **21**, Table **21-4** shall apply to the space research service.

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5.545	*Different category of service:* in Armenia, Georgia, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. **5.33**). ~~(WRC-07)~~ (WRC-12)
5.546	*Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Djibouti, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Türkiye, Kyrgyzstan,Romania, the United Kingdom, Somalia, South Africa, Tajikistan and Turkmenistan, the allocation of the frequency band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33). (WRC-23)~~*Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Oman, Uzbekistan, Poland, the Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the frequency band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**). (WRC-19)~~
5.547	The frequency bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service. Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**),administrations should further take into account potential constraints to high-density applications in the fixed service, asappropriate. (WRC-23)~~The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolution **75 (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-07)~~
5.547A	Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8-33.4 GHz band, taking into account the operational needs of the airborne radar systems. (WRC-2000)
5.547B	*Alternative allocation*: in the United States, the band 31.8-32 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-97)
5.547C	*Alternative allocation*: in the United States, the band 32-32.3 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-03)
5.547D	Alternative allocation: in the United States, the band 32.3-33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis. (WRC-97)
5.547E	*Alternative allocation*: in the United States, the band 33-33.4 GHz is allocated to the radionavigation service on a primary basis. (WRC-97)
5.548	In designing systems for the inter-satellite service in the frequency band 32.3-33 GHz, for the radionavigation service in the frequency band 32-33 GHz, and for the space research service (deep space) in the frequency band 31.8-32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707 (Rev.WRC-23)**). (WRC-23)~~In designing systems for the inter-satellite service in the band 32.3-33 GHz, for the radionavigation service in the band~~

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	~~32-33 GHz, and for the space research service (deep space) in the band 31.8-32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707**). (WRC-03)~~
5.549	*Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, , Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, South Sudan Sri Lanka, Togo, Tunisia and Yemen, the band 33.4-36 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)
5.549A	In the band 35.5-36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed -73.3 dB(W/m2) in this band. (WRC-03)
5.550	*Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, , Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 34.7-35.2 GHz to the space research service is on a primary basis (see No. 5.33). (WRC-12)
5.550A	For sharing of the band 36-37 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile services, Resolution **752 (WRC-07)** shall apply. (WRC-07)
5.550B	The frequency band 37-43.5 GHz, or portions thereof, is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Because of the potential deployment of FSS earth stations within the frequency range 37.5-42.5 GHz and high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz in Region 1, 40-40.5 GHz in all Regions and 40.5-42 GHz in Region 2 (see No. **5.516B**), administrations should further take into account potential constraints to IMT in these frequency bands, as appropriate. Resolution **243 (Rev.WRC-23)** applies. (WRC-23)~~The frequency band 37-43.5 GHz, or portions thereof, is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Because of the potential deployment of FSS earth stations within the frequency range 37.5-42.5 GHz and high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz in Region 1, 40-40.5 GHz in all Regions and 40.5-42 GHz in Region 2 (see No. **5.516B**), administrations should further take into account potential constraints to IMT in these frequency bands, as appropriate. Resolution **243 (WRC-19)** applies. (WRC-19)~~
5.550C	The use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth- to-space) and 50.4-51.4 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to the application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service but not with non-geostationary-satellite systems in other services. Resolution **770 (WRC- 19) shall also apply, and No. 22.2** shall continue to apply. (WRC-19)

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5.550CA	Non-geostationary-satellite systems in the fixed-satellite service operating with an apogee altitude above 407 km and below 2 000 km in the frequency band 37.5-38 GHz shall not exceed an unwanted emission e.i.r.p. density of -21 dB(W/100 MHz) per space station for angles greater than 65.0° from nadir relative to the space station in the fixedsatellite service in the frequency band 36-37 GHz in order to protect the Earth exploration-satellite service (passive) operating in the latter frequency band. (WRC-23)
5.550D	The allocation to the fixed service in the frequency band 38-39.5 GHz is identified for worldwide use by administrations wishing to implement high-altitude platform stations (HAPS). In the HAPS-to-ground direction, the HAPS ground station shall not claim protection from stations in the fixed, mobile and fixed-satellite services; and No. **5.43A** does not apply. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Furthermore, the development of the fixed-satellite, fixed and mobile services shall not be unduly constrained by HAPS. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **168 (Rev.WRC-23)**. (WRC-23) ~~The allocation to the fixed service in the frequency band 38-39.5 GHz is identified for worldwide use by administrations wishing to implement high-altitude platform stations (HAPS). In the HAPS-to-ground direction, the HAPS ground station shall not claim protection from stations in the fixed, mobile and fixed-satellite services; and No. **5.43A** does not apply. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Furthermore, the development of the fixed-satellite, fixed and mobile services shall not be unduly constrained by HAPS. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **168 (WRC-19).** (WRC-19)~~
5.550E	The use of the frequency bands 39.5-40 GHz and 40-40.5 GHz by non-geostationary-satellite systems in the mobile- satellite service (space-to-Earth) and by non-geostationary-satellite systems in the fixed-satellite service (space-to- Earth) is subject to the application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite and mobile-satellite services but not with non-geostationary-satellite systems in other services. No. **22.2** shall continue to apply for non-geostationary-satellite-systems. (WRC-19)
5.551	(SUP - WRC-97)
5.551A	(SUP - WRC-03)
5.551AA	(SUP - WRC-03)
5.551B	SUP (WRC-2000)
5.551C	SUP (WRC-2000)
5.551D	SUP (WRC-2000)
5.551E	SUP (WRC-2000)
5.551F	*Different category of service*: in Japan, the allocation of the band 41.5-42.5 GHz to the mobile service is on a primary basis (see No. **5.33**). (WRC-97)
5.551G	SUP (WRC-03)
5.551H	The equivalent power flux-density (epfd) produced in the frequency band 42.5-43.5 GHz by all space stations in any non-geostationary-satellite system in the fixed-satellite service (space-to-Earth), or in the broadcasting-satellite service operating in the frequency band 42-42.5 GHz, shall not exceed the following values at the site of

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	any radio astronomy station for more than 2% of the time: – 230 dB(W/m^2) in 1 GHz and –246 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and – 209 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station. These epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586-1 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631-0 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θ*min* of the radiotelescope (for which a default value of 5° should be adopted in the absence of notified information). These values shall apply at any radio astronomy station that either: – was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or – was notified before the date of receipt of the complete Appendix **4** information for coordination or notification, as appropriate, for the space station to which the limits apply. Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. ~~(WRC-15)~~ (WRC-23)
5.551I	The power flux-density in the band 42.5-43.5 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth), or the broadcasting-satellite service operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station: – 137 dB(W/m^2) in 1 GHz and –153 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and – 116 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station. These values shall apply at the site of any radio astronomy station that either: – was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or – was notified before the date of receipt of the complete Appendix **4** information for coordination or notification, as appropriate, for the space station to which the limits apply. Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)

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5.552	The allocation of the spectrum for the fixed-satellite service in the bands 42.5-43.5 GHz and 47.2-50.2 GHz for Earth-to- space transmission is greater than that in the band 37.5-39.5 GHz for space-to-Earth transmission in order to accommodate feeder links to broadcasting satellites. Administrations are urged to take all practicable steps to reserve the band 47.2-49.2 GHz for feeder links for the broadcasting-satellite service operating in the band 40.5-42.5 GHz.
5.552A	The allocation to the fixed service in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for use by high- altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz by HAPS shall be in accordance with the provisions of Resolution **122 (Rev.WRC-19)**. (WRC-19)
5.553	In the bands 43.5-47 GHz and 66-71 GHz, stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **5.43**). (WRC-2000)
5.553A	In Algeria, Angola, Bahrain, Belarus, Benin, Botswana, Brazil, Burkina Faso, Cabo Verde, Korea (Rep. of), Côte d'Ivoire, Croatia, Djibouti, Egypt, United Arab Emirates, Estonia, Eswatini, Gabon, Gambia, Ghana, Greece, Guinea, Guinea-Bissau, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lesotho, Latvia, Liberia, Lithuania, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Senegal, Seychelles, Sierra Leone, Slovenia, Somalia, Sudan, South Africa, Sweden, Tanzania, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 45.5-47 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT), taking into account No. **5.553**. With respect to the aeronautical mobile service and radionavigation service, the use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations and shall not cause harmful interference to, or claim protection from these services. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **244 (Rev.WRC-23**) applies. (WRC-23)~~In Algeria, Angola, Bahrain, Belarus, Benin, Botswana, Brazil, Burkina Faso, Cabo Verde, Korea (Rep. of), Côte d'Ivoire, Croatia, United Arab Emirates, Estonia, Eswatini, Gabon, Gambia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lesotho, Latvia, Liberia, Lithuania, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Senegal, Seychelles, Sierra Leone, Slovenia, Sudan, South Africa, Sweden, Tanzania, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 45.5-47 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT), taking into account No. **5.553**. With respect to the aeronautical mobile service and radionavigation service, the use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations and shall not cause harmful interference to, or claim protection from these services. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **244 (WRC-19**) applies. (WRC-19)~~

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5.553B	In Region 2 and Algeria, Angola, Saudi Arabia, Australia, Bahrain, Benin, Botswana, Burkina Faso,Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malaysia, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone,Singapore, Slovenia, Somalia, Sudan, South Sudan, South Africa, Sweden, Tanzania, Chad, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. Resolution **243 (Rev.WRC-23)** applies. (WRC-23)~~In Region 2 and Algeria, Angola, Saudi Arabia, Australia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malaysia, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Singapore, Slovenia, Somalia, Sudan, South Sudan, South Africa, Sweden, Tanzania, Chad, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. Resolution **243 (WRC-19)** applies.~~
5.554	In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, 123-130 GHz, 191.8-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service. (WRC-2000)
5.554A	The use of the bands 47.5-47.9 GHz, 48.2-48.54 GHz and 49.44-50.2 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary satellites. (WRC-03)
5.555	*Additional allocation:* the band 48.94-49.04 GHz is also allocated to the radio astronomy service on a primary basis. (WRC-2000)
5.555A	SUP (WRC-03)
5.555B	The power flux-density in the band 48.94-49.04 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth) operating in the bands 48.2-48.54 GHz and 49.44-50.2 GHz shall not exceed –151.8 dB(W/m2) in any 500 kHz band at the site of any radio astronomy station. (WRC-03)
5.555C	The use of the frequency band 51.4-52.4 GHz by the fixed-satellite service (Earth-to-space) is limited to geostationary- satellite networks. The earth stations shall be limited to gateway earth stations with a minimum antenna diameter of 2.4 metres. (WRC-19)
5.556	In the bands 51.4-54.25 GHz, 58.2-59 GHz and 64-65 GHz, radio astronomy observations may be carried out under national arrangements. (WRC-2000)
5.556A	Use of the bands 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all

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	methods of modulation, shall not exceed –147 dB(W/(m2 Ill 100 MHz)) for all angles of arrival. (WRC-97)
5.556B	*Additional allocation:* in Japan, the band 54.25-55.78 GHz is also allocated to the mobile service on a primary basis for low-density use. (WRC-97)
5.557	*Additional allocation:* in Japan, the band 55.78-58.2 GHz is also allocated to the radiolocation service on a primary basis. (WRC-97)
5.557A	In the band 55.78-56.26 GHz, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered by a transmitter to the antenna of a fixed service station is limited to – 26 dB(W/MHz). (WRC-2000)
5.558	In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, 122.25-123 GHz, 130-134 GHz, 167-174.8 GHz and 191.8-200 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter- satellite service (see **No. 5.43**). (WRC-2000)
5.558A	Use of the band 56.9-57 GHz by inter-satellite systems is limited to links between satellites in geostationary-satellite orbit and to transmissions from non-geostationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geostationary-satellite orbit, the single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed –147 dB(W/(m2 Ill 100 MHz)) for all angles of arrival. (WRC-97)
5.559	In the band 59-64 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **5.43**). (WRC-2000)
5.559A	SUP (WRC-07)
5.559AA	The frequency band 66-71 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which this frequency band is allocated and does not establish priority in the Radio Regulations. Resolution **241 (Rev.WRC-23)** applies. (WRC-23)~~The frequency band 66-71 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which this frequency band is allocated and does not establish priority in the Radio Regulations. Resolution **241 (WRC-19)** applies. (WRC-19)~~
5.559B	The use of the frequency band 77.5-78 GHz by the radiolocation service shall be limited to short-range radar for ground-based applications, including automotive radars. The technical characteristics of these radars are provided in the most recent version of Recommendation ITU-R M.2057. The provisions of No. **4.10** do not apply. (WRC-15)
5.560	In the band 78-79 GHz radars located on space stations may be operated on a primary basis in the Earth exploration- satellite service and in the space research service.
5.561	In the band 74-76 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite service operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service. (WRC-2000)
5.561A	The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis. (WRC-2000)

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5.561B	In Japan, use of the band 84-86 GHz, by the fixed-satellite service (Earth-to-space) is limited to feeder links in the broadcasting-satellite service using the geostationary-satellite orbit. (WRC-2000)
5.562	The use of the band 94-94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars. (WRC-97)
5.562A	In the bands 94-94.1 GHz and 130-134 GHz, transmissions from space stations of the Earth exploration-satellite service (active) that are directed into the main beam of a radio astronomy antenna have the potential to damage some radio astronomy receivers. Space agencies operating the transmitters and the radio astronomy stations concerned should mutually plan their operations so as to avoid such occurrences to the maximum extent possible. (WRC-2000)
5.562B	In the bands 105-109.5 GHz, 111.8-114.25 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only. (WRC-19)
5.562C	Use of the band 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed –148 dB(W/(m2 · MHz)) for all angles of arrival. (WRC-2000)
5.562D	Additional allocation: In Korea (Rep. of), the frequency bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3- 174 GHz are also allocated to the radio astronomy service on a primary basis. Radio astronomy stations in Korea (Rep. of) operating in the frequency bands referred to in this footnote shall not claim protection from, or constrain the use and development of, services in other countries operating in accordance with the Radio Regulations. (WRC-15)
5.562E	The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz. (WRC-2000)
5.562F	SUP (WRC-19)
5.562G	SUP (WRC-19)
5.562H	Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary- satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed–144 dB(W/(m2 · MHz)) for all angles of arrival. (WRC-2000)
5.563	SUP (WRC-03)
5.563A	In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents. (WRC-2000)
5.563AA	In the frequency band 235-238 GHz, stations in the Earth exploration-satellite service (passive) shall not claim protection from stations in the fixed and mobile services. (WRC-23)
5.563B	The band 237.9-238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only. (WRC-2000)
5.564	SUP (WRC-2000)

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5.564A	For the operation of fixed and land mobile service applications in frequency bands in the range 275-450 GHz:The frequency bands 275-296 GHz, 306-313 GHz, 318-333 GHz and 356-450 GHz are identified for use by administrations for the implementation of land mobile and fixed service applications, where no specific conditions are necessary to protect Earth exploration-satellite service (passive) applications.The frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz may only be used by fixed and land mobile service applications when specific conditions to ensure the protection of Earth exploration-satellite service (passive) applications are determined in accordance with Resolution **731 (Rev.WRC-23)**. In those portions of the frequency range 275-450 GHz where radio astronomy applications are used, specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis, in accordance with Resolution **731 (Rev.WRC-23)**. The use of the above-mentioned frequency bands by land mobile and fixed service applications does not preclude use by, and does not establish priority over, any other applications of radio services in the range of 275-450 GHz. (WRC-23)~~For the operation of fixed and land mobile service applications in frequency bands in the range 275-450 GHz: The frequency bands 275-296 GHz, 306-313 GHz, 318-333 GHz and 356-450 GHz are identified for use by administrations for the implementation of land mobile and fixed service applications, where no specific conditions are necessary to protect Earth exploration-satellite service (passive) applications.~~ ~~The frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz may only be used by fixed and land mobile service applications when specific conditions to ensure the protection of Earth exploration-satellite service (passive) applications are determined in accordance with Resolution **731 (Rev.WRC-19)**.~~ ~~In those portions of the frequency range 275-450 GHz where radio astronomy applications are used, specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis in accordance with Resolution **731 (Rev.WRC-19)**.~~ ~~The use of the above-mentioned frequency bands by land mobile and fixed service applications does not preclude use by, and does not establish priority over, any other applications of radio services in the range of 275-450 GHz. (WRC-19)~~
5.565	The following frequency bands in the range 275-1 000 GHz are identified for use by administrations for passive service applications: – radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz; – Earth exploration-satellite service (passive) and space research service (passive): 275-286 GHz, 296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz, 416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz, 634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-776 GHz, 823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz, 968-973 GHz and 985-990 GHz. The use of the range 275-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1 000 GHz range available for active service applications are urged to take all practicable steps to protect these passive services from harmful interference until the

ITU Footnotes

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	date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range. All frequencies in the range 1 000-3 000 GHz may be used by both active and passive services. (WRC-12)

ITU Footnotes

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8 LIST OF FREQUENCY BANDS USED FOR MARITIME SERVICES

Frequency Band	Frequency Used	Services
505-526.5 kHz	518 kHz	[Transmission of ~~Maritime Safety Information~~ MSI(Appendix 15 of ITU RR)[21] (Meteorological, navigational and other urgent information)
2 173.5-2 190.5 kHz	2 182 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	2 187 kHz	DSC Watchkeeping (Article 31) (Appendix 15 of ITU RR)
4 063-4 438 kHz		(Appendix 17)[22]
		(Appendix 17)
	4 125 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	4 207.5 kHz	DSC watchkeeping (Article 31) (Appendix 15 of ITU RR)
	4 369 kHz	(Appendix 17)
	4 375 kHz	Transmission of meteorological bulletins; notices to navigators; (Appendix 17)
	4 417 kHz	Coast Station duplex transmission of Channel 421.
6 200-6 525 kHz	6 203 kHz	(Appendix 17)
	6 215 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	6 312 kHz	DSC watchkeeping (Article 31) (Appendix 15 of ITU RR)
	6 504 kHz	(Appendix 17)
8 195-8 815 kHz	8 207 kHz	(Appendix 17)
	8 216 kHz	(Appendix 17)
	8 255 kHz	(Appendix 17)
	8 291 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	8 731 kHz	(Appendix 17)
	8 740 kHz	Transmission of meteorological bulletins; notices to navigators; (Appendix 17)

[21] Only distress and safety communications are provided, with MSI and Medical Assistance at sea. All MF/HF public correspondence ceased as it was no longer commercially viable and sustainable. Other technologies accommodate this type of communications. (Satellite, GSM, Trunked radio networks, etc.).

[22] Public Correspondence facilities with effect from 1 September 2014 has been discontinued.

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Frequency Band	Frequency Used	Services
12 230-13 200 kHz	8 779 kHz	(Appendix 17)
	8 414.5 kHz	DSC watchkeeping (Article 31)
	12 254 kHz	(Appendix 17)
	12 290 kHz	(Appendix 17)
	12 299 kHz	(Appendix 17)
	12 359 kHz	(Appendix 17)
	12 577 kHz	DSC watchkeeping (Article 31) (Appendix 15 of ITU RR)
	13 101 kHz	(Appendix 17)
	13 146 kHz	Transmission of meteorological bulletins; notices to navigators; (Appendix 17)
16 360-17 410 kHz	16 381 kHz	(Appendix 17)
	16 420 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	16 456 kHz	(Appendix 17)
	16 537 kHz	(Appendix 17)
	16 804.5 kHz	DSC watchkeeping (Appendix 15 of ITU RR)
	17 263 kHz	(Appendix 17)
	17 338 kHz	(Appendix 17)

Frequency Band as per NRFP	Frequency Used	Services
154-156.4875 MHz	Several channels used within this range in accordance with Appendix 18 of the ITU RR **Channel 2006 – 160.900 MHz**	APPENDIX 18 Channel 2006 allocated for Man Overboard Devices used for search and rescue operations. New AIS technologies.
156.7875-156.8125 MHz	Channel 16 in accordance with Appendix 18 of the ITU RR **156.7750** **156.8250**	**Appendix 18.** **Mobile Satellite Earth to Space for long range AIS broadcasts (ship stations)**
156.8375-162.0250 MHz	Several channels used within this range in accordance with Appendix 18 of the ITU RR	

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	Channel 28 in accordance with Appendix 18 of the ITU RR	**APPENDIX 18** services allocated: Coast Station Analogue Maritime Safety Information (MSI) transmissions using Simplex configurations - 01 to 05; and 60 to 65. Priority to digital transmissions as per Footnote w) from 1 January 2017. Protection of Channel 70 for DSC and Channel 16 distress communications, AIS1 (161.975MHz) and AIS2 (162.025) for navigational safety

Short Title

This document shall be called the "*National Radio Frequency Plan 2024~~4~~5"*

Repeals

1. The National Radio Frequency Plan 2021~~18~~ …

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9 REFERENCE INFORMATION SOURCES

ITU documents

- SM.2015: Methods for determining national long-term strategies for spectrum utilization
- Report ITU-R SM.2012-6 (06/2018)
- Final Acts from WRC-2023~~19~~
- Report ITU-R M.2290-0 (12/2013) Future spectrum requirements estimate for terrestrial IMT
- Report ITU-R M.2078, "Estimated Spectrum Bandwidth Requirements for the Future Development of IMT-2000 and IMT-Advanced," 2006
- The Radio Regulations from 2016
- The Radio Regulations from 2020
- The Radio Regulations 2024

The Authority ~~ICASA~~ ~~Published~~ ~~&~~published similar Documents

- SABRE I
- SABRE II
- SATFA 1997
- NRFP 2010
- NRFP 2013
- NRFP 2018
- NRFP 2021
- ~~CRASA/SADC Radio Frequency Spectrum Allocation Plan 2020.~~
- ECA and associated documents
- The ~~ICASA~~ Frequency Migration Plan 2013
- The ~~ICASA~~ Frequency Migration Plan 2019
- The Frequency Migration Plan 2019.
-
- Reference RFSAPs will be included in the NRFP2025 ~~RFSAP's will be included in the NRFP~~ .
- IMT RoadMap 2014
- ~~ICASA Radio Frequency Migration Plans~~
- IMT Roadmaps ~~RoadMap~~ 2019

~~**Software Used during the project**~~

- ~~RR5 ITU software for extraction of Radio Regulation Navigation Tool version 5.0.4.0 RR 2020 Edition~~
- ~~Own developed software for SA NRFP comparison exercise~~

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NON-GOVERNMENTAL ORGANIZATION

NOTICE 3586 OF 2025

Please take note that the Oranjevrijstaat Boervolk, being an International recognized "Volk"(nation),with its with its own international recognized territorial land as determined by the Bloemfontein Convention of 1854,hereby restore her status as on 30 May 1902 and that, from now on the Boervolk of the Orange Freestate will manage her own affairs as a souvereign folk(nation)and without interference from inside or outside the Boerfolk and or its territorial land and that the Orange Freestate Boervolk hereby takes back into her possession the office of the " Volksraad "of the Republic of the Orange Freestate and hereby takes back the office of the State President and acting State President of the Republic of the Orange Freestate as well as the acting Volksraad and Executive Committee as determined by the Constitution of the Republic of the Orange Freestate with the exclusive purpose to restore the Orange Freestate Boervolk's own determination within their international recognized territorial land as described in the Bloemfontein Convention of 1854 and in accordance with resolution 1514 of the United Nations of 1960 and 1992 on a peaceful manner with acknowledgement to other nations and their sovereign rights.

Take further notice that the the Orange Freestate Boervolk herewith choose as domicilium citandi et executandi for serving of notices, process documents, pleadings and general notices, the Farm Rio, portion 1 of the farm Sterkfontein 213,R702 Bloemfontein, coordinates

Enquiries can also be sent to navrae@oranjevrijstaat.com

Thus done and signed at Bloemfontein on 15 October 2025

WA Rossouw

Volk representative

(Afrikaans text signed)

NIE-REGERINGSORGANISASIE

KENNISGEWING 3586 VAN 2025

Geliewe kennis te neem dat die Oranjevrijstaat Boervolk,synde ‘n Internasionaal erkende soewereine volk met eie grondgebied soos uiteengesit in die Bloemfonteinse konvensie van 1854 hiermee sy status herstel soos dit was op 30 Mei 1902 en dat die Boervolk van die Oranjevrijstaat hierna sy eie sake verder sal hanteer as n soewereine volk en sonder inmenging van binne en/of buite die Boervolk en/of sy grondgebied en dat die Oranjevrijstaat Boervolk hiermee herbesit neem van die ampte van Staatspresident,waarnemende Staatspresidente van die Oranjevrijstaat en OranjevrijstaatVolksraad en ampte van Uitvoerende gesag soos uiteengesit in die Constitutie van van die Republiek van die Oranjevrijstaat met die uitsluitlike doel om die Oranjevrijstaat Boervolk te lei na totale en algehele selfbeskikking oor hulleself binne hul internasionale erkende grondgebied soos omskryf in die Bloemfonteinse Konvensie van 1854 en in ooreenstemming met die bepalings van resolusie 1514 van die Verenigde Nasies 1960,op ‘n vreedsame wyse met respek en erkenning aan alle ander volke en hulle soewereine regte.

Geliewe verder kennis te neem dat die Oranjevrijstaat Boervolk hiermee kies as Domicilium Citandi et Executandi vir die betekening van kennisgewings,prosesstukke,pleitstukke algemene korrespondensie en dies meer,die plaas Rio, gedeelte 1 van die plaas Sterkfontein 213, R702 Bloemfontein koordinate

Navrae kan ook gerig word aan navrae@oranjevrijstaat.com

Gedoen en geteken te Bloemfontein op 15 Oktober 2025.



WA Rossouw

Volksverteenwoordiger

DEPARTMENT OF TRADE, INDUSTRY AND COMPETITION

NOTICE 3587 OF 2025

COMPETITION TRIBUNAL
NOTIFICATION OF DECISION TO APPROVE MERGER

The Competition Tribunal gives notice in terms of rules 34(b)(ii) and 35(5)(b)(ii) of the "Rules for the conduct of proceedings in the Competition Tribunal" as published in Government Gazette No. 22025 of 01 February 2001 that it approved the following mergers:

Case No.	Acquiring Firm	Target Firm	Date of Order	Decision
LM031May25	Glencore Operation South Africa (Pty) Ltd	GOSA	06/10/2025	Approved
LM037Jun25	VCAP1 Alliance (Pty) Ltd (VCAP1)	Cellair (Pty) Ltd	07/10/2025	Approved
LM033May25	South African Reserve Bank	South African Bankers Services Company	07/10/2025	Approved
LM056Jul25	CFAO Mobility (Pty) Ltd	Marble Gold (Pty) Ltd	08/10/2025	Approved
LM072Aug25	Sedgeley Solar Group (Pty) Ltd	Sedgeley Solar Management (Pty) Ltd	09/10/2025	Approved
LM054Jul25	Bidvest Services (Pty) Ltd	Aquatico Capital (Pty) Ltd and Aquatico Investments (Pty) Ltd	09/10/2025	Approved

The Chairperson Competition Tribunal

DEPARTMENT OF TRADE, INDUSTRY AND COMPETITION

NOTICE 3588 OF 2025

COMPETITION TRIBUNAL

NOTIFICATION OF COMPLAINT REFERRAL
The Competition Tribunal gives notice in terms of Section 51(3) & (4) of the Competition Act 89 of 1998 as amended, that it received the c COVCR074Jul20omplaint referrals listed below. The complaint(s) alleges that the respondent(s) engaged in a prohibited practice in contravention of the Competition Act 89 of 1998.

Case No.	Complainant	Respondent	Date received	Sections of the Act
CR106Oct25	Competition Commission	Johannesburg Stock Exchange Ltd	02/10/2025	8(c); 8(1)(c)

The Chairperson
Competition Tribunal

DEPARTMENT OF TRADE, INDUSTRY AND COMPETITION

NOTICE 3589 OF 2025

INTERNATIONAL TRADE ADMINISTRATION COMMISSION OF SOUTH AFRICA

NOTICE OF THE COMMISSION'S INTENTION TO AMEND REPORT NO. 648: ANTI-DUMPING DUTY ON STAINLESS STEEL SINKS ORIGINATING IN OR IMPORTED FROM THE PEOPLE'S REPUBLIC OF CHINA AND MALAYSIA

The International Trade Administration Commission of South Africa ("the Commission") hereby gives notice in terms of the International Trade Administration Act, 2002 (Act No. 71 of 2002), and the Amended Anti-Dumping Regulations, of its intention to amend its final determination as set out in Report No. 648 in respect of the anti-dumping duty applicable to stainless steel sinks originating in or imported from the People's Republic of China ("PRC").

In Report No. 648, stainless steel sinks originating in or imported from the PRC were subjected to an anti-dumping duty of 221% *ad valorem*, excluding those manufactured or exported by **Foshan Taijing Chuanger Metal Products Co., Ltd** (formerly Taijing Chuanger Metal Products Co., Ltd).

Based on new information before the Commission, it appears that Foshan Taijing Chuanger Metal Products Co., Ltd no longer manufactures the subject product. Accordingly, the Commission intends to recommend to the Minister of Trade, Industry and Competition that the exclusion from the anti-dumping duty granted to Foshan Taijing Chuanger Metal Products Co., Ltd be revoked and that the company be subjected to the residual anti-dumping duty applicable to all other producers of stainless-steel sinks from the PRC.

The Commission is therefore considering that the current wording of the anti-dumping duty be amended as follows:

Current wording: *Tariff subheading 7324.10 – Sinks of stainless steel (excluding those manufactured or exported by Foshan Taijing Chuanger Metal Products Co., Ltd), originating in or imported from the PRC – 221%.*

Proposed amendment: *Tariff subheading 7324.10 – Sinks of stainless steel, originating in or imported from the PRC – 221%.*

Interested parties are hereby invited to submit comments on the Commission's intention within **14 days** of the publication of this notice.

Submissions must be made in writing and may be forwarded to:

Physical Address	**Postal Address**
The Senior Manager: Trade Remedies II	The Senior Manager
International Trade Administration Commission	Trade Remedies II
Block E – The DTI Campus	Private Bag X753
77 Mentjies Street	PRETORIA
SUNNYSIDE	0001
PRETORIA	SOUTH AFRICA
SOUTH AFRICA	

Should you have any queries, please do not hesitate to contact the investigating officers, Ms Portia Chuma at email address: pchuma@itac.org.za or Ms Azwitamisi Mathada at email address: amathada@itac.org.za.

DEPARTMENT OF TRANSPORT

NOTICE 3590 OF 2025

NOTICE 2045 OF 2023
AIR SERVICE LICENSING ACT, 1990 (ACT NO.115 OF 1990)
APPLICATION FOR THE GRANT OR AMENDMENT OF DOMESTIC AIR SERVICE LICENCE

Pursuant to the provisions of section 15 (1) (b) of Act No. 115 of 1990 and Regulation 8 of the Domestic Air Regulations,1991, it is hereby notified for general information that the application detail of which appear in the appendix, will be considered by the Air Service Licensing Council. Representation in accordance with section 15 (3) of the Act No.115 of 1990 in support of, or in position, an application, should reach the Air Service Licensing Council. Department of Transport, Private Bag X 193, Pretoria, 0001 or by email to: TshivhaZ@dot.gov.za within 21 days of date of the publication thereof.

APPENDIX I (New Applications) (A)

Full name and trade name of the applicant. (B) Full business or residential address of the applicant. (C) Class of license applied for. (D) Type of air service to which application applies. (E) Category of aircraft to which application applies.

Le Rubis Transport (Pty) Ltd t/a Le Rubis Air (B) 153 Sinorich Drive, Grootfontein Country Estate, Pretoria. (C) Class II. (D) Type N1 & N2 (E) Category A2

Aerial Dynamix (Pty) Ltd t/a **Aerial Dynamix** (B) 455 Upper Seaview Road, Chelsea, Port Elizabeth, Eastern Cape. (C) Class III. (D) Type G2, G3, G4, G5, G6, G7, G8, G10, G13 & G16 (UAS operations including pipeline and powerline inspections, traffic observation and security. (E) Category A4

INTERNATIONAL AIR SERVICE ACT, (ACT NO.60 OF 1993)
GRANT /AMENDMENT OF INTERNATIONAL AIR SERVICE LICENSE

Pursuant to the provisions of section 17 (12) of Act No.60 of 1993 and Regulation 15 (1) and 15 (2) of the International Air Regulations,1994, it is hereby notified for general information that the applications, detail of which appear in the Schedules hereto, will be considered by the International Air Services Council (Council) representation in accordance with section 16(3) of the Act No. 60 of 1993 and regulation 25(1) of International Air Services Regulation, 1994, against or in favour of an application, should reach the Chairman of the International Air Services Council at Department of Transport, Private Bag X 193, Pretoria, 0001 or by email to: internatonalcouncil@dot.gov.za/ TshivhaZ@dot.gov.za within 28 days of the publication hereof. It must be stated whether the party or parties making such representation is / are prepared to be represent or represented at the possible hearing of the application.

APPENDIX I

(A) Full name, surname and trade name of the applicant. (B) Full business or residential address of the applicant. (C) Class of licence applied for. (D) Type of International Air Service to which application pertains. (E) Category or kind of aircraft to which application pertains. (F) Airport from and the airport to which flights will be undertaken. (G) Area to be served. (H) Frequency of flight.

A) **Le Rubis Transport (Pty) Ltd t/a Le Rubis Air**: (B) 153 Sinorich Drive, Grootfontein Country Estate, Pretoria. (C) Class II (D) Type N1, N2, N3 &N4. (E) Category A2 (F) Grand Central (G) Africa & Europe.

APPENDIX II (Amendment Application)

A) Airlink (PTY) Limited t/a Airlink (B)#3 Greenstone Hill Office Park, Emerald Boulevard, Greenstone Hill, Modderfontein. (C) **Class I (I/S073).** (D) Type S1. (E) Category A1. (F) Amendment Application due to addition of route: Lanseria International Airport-Robert Gabriel Mugabe International Airport Harare Zimbabwe- 14 return flights; Lanseria International Airport Johannesburg-Joshua Mqabuko Nkomo International Airport Bulawayo Zimbabwe- 7 return flights per week; Cape Town International Airport, Cape Town- Abeid Amani Karume International Airport. Zanzibar, Tanzania- 7 return flights per week.

BOARD NOTICE 848 OF 2025

SOUTH AFRICAN NURSING COUNCIL
SUID-AFRIKAANSE RAAD OP VERPLEGING
Nursing Act, 2005 (Act No. 33 of 2005)

DEPARTMENT OF HEALTH
DEPARTMENT VAN GESONDHEID

MARCH - MAY 2024

South African Nursing Council
Regulating nursing, advocating for the public

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NOTICE IN TERMS OF SECTION 4 (1) (h) REGARDING DETAILS OF PERSONS AGAINST WHOM DISCIPLINARY ACTION WAS TAKEN IN TERMS OF THE NURSING ACT

NO	CASE NO.	NAMES	SANC REF. NUMBER	NURSE' CATEGORY S	TYPE OF CASE	SENTENCE	EFFECTIVE & EXPIRY DATE
1.	111/11/P	Zanele Linky Dlamini	15022668	Registered General Nurse	Medication Care	effectively suspension Twelve months'	September 2024 to September 2025
2.	32/22/P	Estabra Nonkazimulo Mdakane	13984570	Registered General Nurse	Medication Care	effectively suspension Twelve months'	September 2024 to September 2025
3.	34/22/P	Manisha Singh	14557268	Registered Nurse (General, Psychiatric & Community) and Midwife Clinical Nurse. Science, Health Assessment ,Treatment	Medication Care	effectively suspension Thirty-six months'	September 2024 to September 2027
4.	08/23/P	Keagile Rantlhwatlhwa	15857949	Registered Nurse (General, Psychiatric & Community) and Midwife	Acted beyond the Scope of Practice	effectively suspension Twelve months'	November 2024 to November 2025

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5.	52/22/P	Dimakatso Selinah Motshegoa	13307905	Registered Nurse (General, Psychiatric & Community) and Midwife Post-basic Midwifery and Neonatal Nursing Science	Maternity	effectively suspension three months'	November 2024 to January 2025
		Betty Thandiwe Mahlangu	12821005	Registered General Nurse Psychiatric Nurse Midwife Nursing Administration Nursing Education Community Nursing Science Clinical Nurs.Science,Health Assessment,Treatmen Post-Basic ZCommunity Nursing Science - Occupational health		Effectively suspension six months'	November 2024 to April 2025
6.	83/21/P	Nonina Portia Diphoko	15332091	Registered Nurse (General, Psychiatric & Community) and Midwife Post-Basic Midwifery and Neonatal Nursing Science	Maternity	Fined Fifty thousand Rand	November 2024 to November 2027

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7.	09/21/P	Busisiwe Portia Moropa	15455835	Registered Nurse (General, Psychiatric & Community) and Midwife	Poor Nursing Care	Effectively suspension three months' Further the balance be suspended for twenty-four months	November 2024 to January 2025
		Ailwei Netshiendeulu	15950298	Enrolled Nurse		Twenty-four months' suspension which was further suspended for a period of thirty-six months on condition that she is not found guilty of improper or disgraceful conduct during the period of suspension.	November 2024 to November 2026
		Nkosinathi Mndeni Mantengu	15207913	Enrolled Nurse		Twenty-four months' suspension which was further suspended for a period of thirty-six months on condition that she is not found guilty of improper or disgraceful conduct during the period of suspension.	November 2024 to November 2026
		Sister Sasavona Khosa	14839005	Enrolled Nursing Auxiliary		Cautioned and Reprimanded	

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		Livhuwani Velma Nesengani	16240269	Enrolled Nursing Auxiliary		Cautioned and Reprimanded	
8.	40/22/P	Rudzani Prudence Siphali	16309684	Registered Nurse (General, Psychiatric & Community) and Midwife	Maternity	Twenty-four months' suspension which was further suspended for a period of thirty-six months on condition that she is not found guilty of improper or disgraceful conduct during the period of suspension.	November 2024 to November 2026

STATISTICAL REPORT

Table 1: CASES PER PROVINCE

TYPE OF CASE	GP	LP	EL	WC	KZN	TOTAL
Theft	1	-	-	-	-	1
Maternity	3	-	-	-	-	3
Poor Nursing Care	1	-	-	-	-	1
Acted Beyond the Scope of Practice	1	-	-	-	-	1
Medication	-	-	-	-	2	2

Table 2: TYPE OF CASES PER NURSE CATEGORY

TYPE OF CASE	RN	RN&A	RN&M	EN	ENA	TOTAL
Theft	1	-	-	-	-	1
Maternity	-	-	4	-	-	4
Poor Nursing Care	-	-	1	2	1	4
Acted Beyond the Scope of Practice	-	-	1	-	-	1
Medication	-	-	2	-	-	2

Table 3: TYPE OF SENTENCE PER NURSE CATEGORY

TYPE OF SENTENCE	RN	RN&A	RN&M	EN	ENA	TOTAL
Suspension further suspended	-	-	-	2		2
Effective Suspension	2	-	6	-	-	8
Caution and Reprimand	-	-	-	-	2	2
Permanent Removal	-	-	-	-	-	0
Fine	-	-	1	-	-	1
TOTAL	2	0	7	2	2	13

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BOARD NOTICE 849 OF 2025

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NOTICE OF CORRECTION

Dear Registered Persons and Stakeholders,

Please be advised that Government Gazette No. 52691, Vol. 719, dated 16 May 2025, which includes the document titled Guideline Scope of Services and Professional Fees (relating to the Scope of Services and Tariff of Fees for persons registered in terms of the Engineering Profession Act, 46 of 2000), contains an error on the contents page.

Page 133, item 4.2.9 was incorrectly published as: "**Error Bookmark Not Defined**."

We regret this oversight and sincerely apologise for any inconvenience it may have caused.

The correct version of page 133 is provided below and should replace the erroneous version in the gazetted document.

*Mr TC Madikane | ***Dr PC Msomi | Mr P Sekholo | Mr ML Meder | Mr T Selebogo | Ms PF Sibiya | Ms P Mazibuko | Ms SN Shozi
**Ms M Maidi | ***Ms KC Maelane | Mr DL Cawdry | Ms S Sullman | Prof D Lokhat | Mr J George | Mr Havenga | Dr S Kabane
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*President | ** Vice President | *** Chairpersons

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BOARD NOTICE 850 OF 2025

BEFORE THE DISCIPLINARY TRIBUNAL OF THE ENGINEERING COUNCIL OF SOUTH AFRICA HELD AT JOHANNESBURG ON 18 SEPTEMBER 2025 VIA MS TEAMS

In the matter between:

Engineering Council of South Africa (Complainant)

And

Paul De Fin
Registration number 200670047 (Respondent)

Publication in terms of section 32(5) of the Engineering Profession Act, 46 of 2000 ("The Act") of the finding and sanction imposed by a Disciplinary Tribunal at a disciplinary hearing, into the alleged improper conduct of a registered person.

NATURE OF CONTRAVETION

Guilty of contravention of Rule 3.1(a) and Rule 3.3(a) of the Rules of the Code of Conduct for Registered Persons promulgated under Board Notice 41 of 2017, Government Gazette number 40961 of 17 March 2021.

SANCTION

1. The Parties entered into a settlement agreement under the following terms:

2. Respondent agrees to pay a fine in the amount of R40 000 (Forty Thousand Rands Only) to the Council, of which R20 000 (Twenty Thousand Rands Only) of the fine shall be suspended for a period of 5 years, subject to compliance with the terms of this agreement.; and

3. The payable portion of the fine in the amount of R20 000 shall be paid to the Council within a period of 60 days from the date upon which this agreement is approved by the Disciplinary Tribunal (i.e. on or before 17 November 2025); and

4. The suspended portion of the fine in the amount of R20 000 shall be payable to the Council if, within 5 years of this agreement, the Respondent is found guilty of further improper conduct in terms of the Council's Code of Conduct, Rules of Conduct, Provisions of the EPA or any other rule, regulation, notice, directive, guideline, policy, instruction, determination, or requirements issued by the Council under the auspices of the EPA, and/or, the respondent fails to comply with any of the remaining terms and conditions of the settlement agreement.

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