Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 681 | 11 March Maart | 2022 | No. 46032

PART 1 OF 5

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ISSN 1682-5845

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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* 2022

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

- **31 December 2021,** Friday for the issue of Friday **07 January 2022**
- **07 January,** Friday for the issue of Friday **14 January 2022**
- **14 January,** Friday for the issue of Friday **21 January 2022**
- **21 January,** Friday for the issue of Friday **28 January 2022**
- **28 January,** Friday for the issue of Friday **04 February 2022**
- **04 February,** Friday for the issue of Friday **11 February 2022**
- **11 February,** Friday for the issue of Friday **18 February 2022**
- **18 February,** Friday for the issue of Friday **25 February 2022**
- **25 February,** Friday for the issue of Friday **04 March 2022**
- **04 March,** Friday for the issue of Friday **11 March 2022**
- **11 March,** Friday for the issue of Friday **18 March 2022**
- **17 March,** Thursday for the issue of Friday **25 March 2022**
- **25 March,** Friday for the issue of Friday **01 April 2022**
- **01 April,** Friday for the issue of Friday **08 April 2022**
- **07 April,** Thursday for the issue of Thursday **14 April 2022**
- **13 April,** Wednesday for the issue of Friday **22 April 2022**
- **21 April,** Thursday for the issue of Friday **29 April 2022**
- **28 April,** Thursday for the issue of Friday **06 May 2022**
- **06 May,** Friday for the issue of Friday **13 May 2022**
- **13 May,** Friday for the issue of Friday **20 May 2022**
- **20 May,** Friday for the issue of Friday **27 May 2022**
- **27 May,** Friday for the issue of Friday **03 June 2022**
- **03 June,** Friday for the issue of Friday **10 June 2022**
- **09 June,** Thursday for the issue of Friday **17 June 2022**
- **17 June,** Friday for the issue of Friday **24 June 2022**
- **24 June,** Friday for the issue of Friday **01 July 2022**
- **01 July,** Friday for the issue of Friday **08 July 2022**
- **08 July,** Friday for the issue of Friday **15 July 2022**
- **15 July,** Friday for the issue of Friday **22 July 2022**
- **22 July,** Friday for the issue of Friday **29 July 2022**
- **29 July,** Friday for the issue of Friday **05 August 2022**
- **04 August,** Thursday for the issue of Friday **12 August 2022**
- **12 August,** Friday for the issue of Friday **19 August 2022**
- **19 August,** Friday for the issue of Friday **26 August 2022**
- **26 August,** Friday for the issue of Friday **02 September 2022**
- **02 September,** Friday for the issue of Friday **09 September 2022**
- **09 September,** Friday for the issue of Friday **16 September 2022**
- **16 September,** Friday for the issue of Friday **23 September 2022**
- **23 September,** Friday for the issue of Friday **30 September 2022**
- **30 September,** Friday for the issue of Friday **07 October 2022**
- **07 October,** Friday for the issue of Friday **14 October 2022**
- **14 October,** Friday for the issue of Friday **21 October 2022**
- **21 October,** Friday for the issue of Friday **28 October 2022**
- **28 October,** Friday for the issue of Friday **04 November 2022**
- **04 November,** Friday for the issue of Friday **11 November 2022**
- **11 November,** Friday for the issue of Friday **18 November 2022**
- **18 November,** Friday for the issue of Friday **25 November 2022**
- **25 November,** Friday for the issue of Friday **02 December 2022**
- **02 December,** Friday for the issue of Friday **09 December 2022**
- **08 December,** Thursday for the issue of Thursday **15 December 2022**
- **15 December,** Thursday for the issue of Friday **23 December 2022**
- **22 December,** Thursday for the issue of Friday **30 December 2022**

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.

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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.

Proof of publication

38. Copies of any of the *Government Gazette* or *Provincial Gazette* can be downloaded from the **Government Printing Works** website www.gpwonline.co.za free of charge, should a proof of publication be required.

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Physical Address:
Government Printing Works
149 Bosman Street
Pretoria

Postal Address:
Private Bag X85
Pretoria
0001

GPW Banking Details:
Bank: ABSA Bosman Street
Account No.: 405 7114 016
Branch Code: 632-005

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GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1854 **11 March 2022**

ANIMAL DISEASES ACT, 1984 (ACT NO. 35 OF 1984)

ANIMAL DISEASES REGULATIONS: PROPOSED AMENDMENT

I, Mrs AT Didiza, Minister of Agriculture, Land Reform and Rural Development hereby invite all interested institutions, organisations and individuals to submit written comments on the proposed African swine fever disease management strategy and to do so within 60 days from the date of publication of this Public Consultation Notice to the following address:

The Director
Directorate: Animal Health
Department of Agriculture, Land Reform and Rural Development
Private Bag X138
Pretoria
0001
Tel: +27 12 319 7520
Email: PetuniaM@dalrrd.gov.za
Delpen Building
Riviera
Pretoria

MRS AT DIDIZA, MP
Minister of Agriculture, Land Reform and Rural Development

PUBLIC CONSULTATION NOTICE:

PROPOSED AFRICAN SWINE FEVER DISEASE MANAGEMENT STRATEGY

African Swine Fever (ASF) is a serious disease of swine and can cause very high mortality rates in domestic pigs. It is caused by a virus and currently, there are no vaccines or treatments available to control the disease. ASF is a disease that is notifiable to the World Organisation for Animal Health (OIE) and has trade implications when reported. In the last decade ASF has spread through Eastern Europe and the Caucasus and recently to many countries in Asia. ASF is arguably one of the largest constraints for pig production in Africa. Although total eradication of the disease is not possible throughout South Africa, due to natural vectors and wildlife hosts maintaining the virus in the sylvatic cycle, the disease can be successfully controlled and eradicated in domestic pig production systems by eliminating contact with the virus.

ASF is a controlled disease in terms of the Animal Diseases Act, 1984 (Act 35 of 1984). The Animal Diseases Regulations prescribe control measures in the case of an outbreak of ASF. Historically an ASF controlled area was described in the Regulations, with specific additional control measures due to the presence of the sylvatic cycle of ASF (between warthogs and soft ticks) in this area.

This ASF situation in South Africa has however changed drastically since 2012, with domestic cycle outbreaks increasing in frequency and spreading to provinces never previously affected. The ASF disease management strategy document provides a brief introduction and background on the disease and the history in South Africa, followed by a description of the problems and challenges faced for the control of ASF in South Africa. It further lists the broad goals for control and prevention of ASF, where South Africa's Veterinary Services can assist and where broader interventions will be needed. In concludes with considerations for the revision of prescribed control measures for ASF.

Comments and inputs are invited on the content of the ASF disease management strategy. The document is available on the website: https://www.dalrrd.gov.za/Branches/Agricultural-Production-Health-Food-Safety/Animal-Health/information/dahpolicy or on request from PetuniaM@dalrrd.gov.za

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1855 **11 March 2022**

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994), AS AMENDED

Notice is hereby given in terms of section 11(1) of the Restitution of Land Rights Act, Act No. 22 of 1994 as amended, that Mr. Nesane Mmbengwa Alfred lodged a claim for restitution of land rights on the farms Msekwa 194 MT, Strathaird 173 MT, Keerweder 169 MT, Thiel 168 MT, Van Graan 167 MT, Garside 164 MT, Smokey 163 MT, Nicholson 165 MT, and Afton 171 MT situated within the Makhado Local Municipality, Vhembe District of the Limpopo. **The details of the property are as follows:**

FARM NAME	HECTARES	OWNER	TITLE DEED NO	ENCUMBRANCES	HOLDER
Remaining Extent of the farm Msekwa 194 MT	10683.4282	National Government of the Republic of South Africa	T12858/1948VNPTA T3570/2018	No information	No information
Portion 1 of the farm Msekwa 194 MT	121.8757	Makhado Municipality	T115177/2006PTA	No information	No information
Remaining Extent of the farm Strathaird 173 MT	910.1366	National Government of the Republic of South Africa	T23653/1949VNPTA T8332/2007PTA	I-19486/2000CVNPTA I-12922/2012CPTA	No information
Remaining Extent of the farm Keerweder 169 MT	2620.7581	National Government of the Republic of South Africa	T30117/1951VNPTA T8332/2007PTA	I-19465/2000CVNPTA I-12922/2012CPTA KG2/1989PCVNPTA K41/1944RMVNPTA	No information
Remaining Extent of the farm Thiel 168 MT	3007.3182	National Government of the Republic of South Africa	T97087/2015PTA	No information	No information
Remaining Extent of the farm Van Graan 167 MT	1401.7147	National Government of the Republic of South Africa	T95965/2015	No information	No information
Remaining Extent of the farm Garside 164 MT	464.1957	National Government of the Republic of South Africa	T42953/1980PTA T8332/2007PTA	I-12922/2012CPTA	No information
Portion 1 of the farm Garside 164 MT	476.8228	National Government of the Republic of South Africa	T42953/1980PTA T8332/2007PTA	I-12922/2012CPTA	No information
Remaining Extent of the farm Smokey 163 MT	1413.8788	National Government of the Republic of South Africa	T42953/1980PTA T8332/2007PTA	I-19451/2000CVNPTA I-12922/2012CPTA K290/1943RMVNPTA	No information

Remaining Extent of the farm Nicholson 165 MT	1132.2297	National Government of the Republic of South Africa	T96282/2015PTA	No information	No information
Remaining Extent of the farm Afton 171 MT	1056.4737	National Government of the Republic of South Africa	T24734/1949VNPTA T8332/2007PTA	I-19428/2000CVNPTA I-12922/2012CPTA K135/1944 RMVNPTA	No information

Take note that the Office of the Regional Land Claims Commissioner: Limpopo is investigating this claim. Any party that has an interest in the above-mentioned property is hereby invited to submit in writing, within **30** (thirty) days of publication of this notice, any comment, and/ or objection to this claim to the Regional Land Claims Commissioner at the addresses mentioned below, under reference number **KRP 1755.**

Further note that a meeting of all interested parties will be convened upon publication of this notice, for the purpose of information sharing and outlining of the Restitution process.

The office of the Regional Land Claims

Commissioner: Limpopo
Private Bag x9552
POLOKWANE
0700

Submission may also be delivered to:

13th Floor, 50-58 Thabakgolo
Nedbank Building
Landros Mare Street
POLOKWANE
0700

L H MAPHUTHA
REGIONAL LAND CLAIMS COMMISSIONER
DATE: 2022/02/22

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1856 **11 March 2022**

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994), AS AMENDED

Notice is hereby given in terms of section 11(1) of the Restitution of Land Rights Act, Act No. 22 of 1994 as amended, that Ms. Maluleke Mohlaba lodged a claim for restitution of land rights, on part of the farm Makuleke 6-MU, situated within the Vhembe District of the Limpopo. This land claim was lodged on the 12 October 1997. The area under claim is in Kruger National Park. The claimant lost right of land on 2.3 hectors within the farm Makuleke 6-MU. **Further details of the property under claim are as follows:**

FARM NAME	OWNER	EXTENT IN HECTARES	BONDS/ RESTRICTIVE CONDITIONS	HOLDER	TITLE DEED
A portion of the farm Makuleke 6-MU	Makuleke CPA	22733.6263 hectares (claimants lost land rights on 2.3 hectares)	N/A	N/A	T135289/1999P TA

Take further notice that the Office of the Regional Land Claims Commissioner: Limpopo is investigating this land claim. Any party that has an interest in the above-mentioned property is hereby invited to submit in writing within **30** days of publication of this notice, any comment, and/ or objection to the Regional Land Claims Commissioner at the addresses set out below under reference number **KRP 10065.**

Take further notice that a meeting of all interested parties will be convened upon publication of this notice, for the purpose of information sharing and outlining of the Restitution process.

The office of the Regional Land Claims Commissioner: Limpopo
Private Bag x9552
POLOKWANE
0700

Submission may also be delivered to:
13th – 15th Floor Thabakgolo Nedbank Building
50 -58 Landros Mare Street
POLOKWANE
0700

L H MARHUTHA
REGIONAL LAND CLAIMS COMMISSIONER
DATE: 2022/02/23

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1857 **11 March 2022**

NOTICE OF GAZETTE IN TERMS SECTION 11(1) OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 0F 1994) AS AMENDED,

Notice is hereby given in terms of Section 11(1) of the Restitution of Land Rights Act, Act No. 22 of 1994 as amended that a land claim for Restitution of Land Rights has been lodged on the part of the Remaining Extent of the farm Paswanes Location 257 MT, Vhembe District, Limpopo. The land claim was lodged on the 28th of September 1997

Details of Lodgement

KRP NO.	CLAIMANT	I.D NUMBER	CLAIMED PROPERTY
3687	Mabasa Mamaila Rose	601019 0619 083	Tshifudi

Preliminary investigations that was conducted by the Office of the Regional land Claims Commissioner: Limpopo indicates that the claimant was dispossessed of land rights from Tshifudi village. This village is located within the remaining Extent of Paswanes Location 257 MT

Detailed information of the property under claim is as follows:

Property	Current owner	Tittle Deed	Total Extent	Endorsements
R/E of of the farm Paswanes Location 257 MT	Provincial Government of the Northern Province	T7991/2001PTA	5251.5691 Ha (claimed area is 67.1578 ha)	None

All interested parties should take note that the office of the Regional Land Claims Commissioner: Limpopo is investigating this land claim. Any party that has an interest in the above-mentioned property is hereby invited to submit in writing within **30** days of publication of this notice, any comment, and / or objection to this land claim to the Office of the Regional Land Claims Commissioner: Limpopo at the addresses set out below under **KRP number 3687**

The Regional Land Claims Commissioner: Limpopo
Private Bag X9552
Polokwane
0700

Submissions can also be hand delivered to:
61 Biccard Street
Polokwane
0700

OR

13TH -15TH Floor Thabakgolo Nedbank Building
50 – 58 Landros Mare Street
Polokwane, 0700

MR L.H MAPHUTHA
REGIONAL LAND CLAIMS COMMISSIONER
DATE: 2022/02/23

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1858 **11 March 2022**

AMENDMENT OF GAZETTE NOTICE NUMBER 148 OF 2005 AND WITHDRAWAL OF GAZETTE NOTICE NUMBER 876 OF 2021

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994), AS AMENDED

Notice is hereby given in terms of Section 11A (4) of the Restitution of Land Rights Act, Act No. 22 of 1994 as amended that an amendment is hereby made to the Gazette Notice 148 of 2005, Government Gazette No. 27201 and withdrawal of Gazette Notice 876 of 2021, Government Gazette No. 45176. The amendment of this gazette is made to withdraw portions 1 (remaining extent) and 5 (remaining extent) of the farm Rietvly 276 LS situated in Makhado Local Municipality, Vhembe District of the Limpopo Province and to withdraw Gazette Notice 876 of 2021, Government Gazette No. 45176. The late Mr. Mahosi Masindi Andrew lodged a land claim as the representative of the Masagani Community on the 24th of October 1998.

Further investigations that were done by the Office of the Regional Land Claims Commissioner: Limpopo indicates that the claimants were dispossessed of land rights from portion 7 (remaining extent) of the farm Bergvliet 288 LS.

Incorrect properties to be withdrawn from notice number 148 of 2005:

PROPERTY	CURRENT OWNER	TITLE DEED	EXTENT (HECTARES)	ENDORSEMENTS/ENCUMBRANCES
Portion 1 (Remaining Extent) of the farm Rietvly 276 LS	Makhado Local Municipality	T63689/2003PTA G204/1917PTA	2289.3480 ha	K2033/1974SPTA K4036/1998SPTA VA1390/2018 VA3890/2017PTA VA4108/2006PTA VA4336/2003PTA
Portion 5 (Remaining Extent) of the farm Rietvly 276 LS	Mun Louis Trichardt	T17281/1983PTA	95.8267 ha	No details

Correct property under claim to be included in the gazette:

PROPERTY	CURRENT OWNER	TITLE DEED	EXTENT (HECTARES)	ENDORSEMENTS/ENCUMBRANCES
Portion 7 (Remaining Extent) of the farm Bergvliet 288 LS	Makhado Local Municipality	T63689/2003PTA G204/1917PTA	1144.1615 ha (Claimants lost rights on 245.1973 ha)	LG124/956-156/1-13/3 LG174/972-LS288-29/8

All interested parties should take note that the Officer of the Regional Land Claims Commissioner: Limpopo is investigating these land claims. Any party that has an interest in the above-mentioned properties is hereby invited to submit in writing within **30** days of publication of this notice, any comments, objections or information under reference number KRP 470 to:

The office of the Regional Land Claims Commissioner: Limpopo
Private Bag x9552
POLOKWANE
0700

Submission may also be delivered to:
13th Floor, 50-58 Thabakgolo Nedbank Building
50-58 Landros Mare Street
POLOKWANE
0700

L H MAPHUTHA
REGIONAL LAND CLAIMS COMMISSIONER
DATE: 2022/02/23

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1859 **11 March 2022**

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994), AS AMENDED

Notice is hereby given in terms of section 11(1) of the Restitution of Land Rights Act, Act No. 22 of 1994 as amended that the following 01 individual claimant have lodged claim for restitution of land rights on part of land that is located within the farm Lomondo 252 MT in **Thohoyandou-Malamulele** Local Municipality, Vhembe District of the Limpopo. This land claim was lodged before the cutoff date of 31st December 1998. The claimant is outlined in the table below:

No:	KRP NUMBER	SURNAME	NAMES	ID NUMBER
1	3507	Chauke	Mphephu Mhlaba	5011200671081

Preliminary investigations that were done by the Office of the Regional Land Claims Commissioner: Limpopo indicates that the claimant was dispossessed of land rights from Manamani village, located within the Remaining Extent of the farm Lomondo 252 MT. Detailed information of these farm is as indicated in the below table.

PROPERTY DESCRIPTION	OWNER	TITLE DEED	EXTENT	ENDORSEMENT/ BONDS	HOLDER
LOMONDO 252 MT					
REMAINING EXTENT	REPUBLIEK VAN SUID-AFRIKA	T97218/1997	15325.5973 H Only 4 Hectors claimed	MT,252-VN	NO DETAILS

All interested parties should take note that the Officer of the Regional Land Claims Commissioner: Limpopo is investigated this land claim. Any party that has an interest in the above-mentioned properties is hereby invited to submit in writing within **14** days of publication of this notice, any comments, objections or information under KRP number quoted on the table outlining the claimant as the reference number to: 3507

The Office of the Regional Land Claims Commissioner: Limpopo
Private Bag x9552
POLOKWANE
0700

Submission can also be delivered to:
First Floor, 96 Kagiso House
Corner Rissik & Schoeman Streets
POLOKWANE
0700

L H MAPHUTHA
REGIONAL LAND CLAIMS COMMISSIONER
DATE: 2022/02/23

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1860 **11 March 2022**

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994), AS AMENDED

Notice is hereby given in terms of Section 11 (1) of the Restitution of Land Rights Act, Act No. 22 of 1994 as amended Kgoshi David Phooko lodged a land claim on behalf of the Phooko Community on the 30th December 1998. The claim complied with the requirements contained in section 2 of the Restitution Act of 1994, as amended.

The claim was gazetted in the Government Gazetted No. 35667 under Notice No, 746 of 2012 on the farms Setali 122 LT, Rietvlei 130 LT, Paardekraal 135 LT,Bontfontein 136 LT and Koedoesfontein 113 LT and upon further investigation it was discovered that the farm Setali 131 LT was not included in the gazette. This land claim was lodged before the cut-off date of 31st December 1998. Investigations revealed that the Phooko Community were dispossessed of their rights in land on the claimed farms.

Detailed information of the farms is as indicated in the below table.

PROPERTY	CURRENT OWNER	TITLE DEED	EXTENT (HECTARES)	ENDORSEMENTS/ENCUMBRANCES
Setali 131 LT				
Remaining Extent	National Government of the Republic of South Africa	T33227/1964PTA T814/2013PTA	135.3478H	K1459/2000RMPTA
Portion 1	National Government of the Republic of South Africa	T33227/1964PTA T814/2013PTA	111.3491 H	K1460/2000RMPTA
Portion 2	National Government of the Republic of South Africa	T29638/1975PTA T61784/2010PTA	159.2450H	I-12922/2012CPTA K703/1973SPTA
Portion 3	National Government of the Republic of South Africa	T28821/1964PTA T61784/2010PTA	59.7345H	K1644/2000RMPTA I-9033/2000CLGPTA VA7342/2010PTA

All interested parties should take note that the Officer of the Regional Land Claims Commissioner: Limpopo is investigating these land claims. Any party that has an interest in the above-mentioned properties is hereby invited to submit in writing within **14** (fourteen) days of publication of this notice, any comments, objections or information under KRP 2484 to:

The office of the Regional Land Claims
Commissioner: Limpopo
Private Bag x9552
POLOKWANE
0700

Submission may also be delivered to:
First Floor, 61 Biccard Street
POLOKWANE
0700

Further note that the Regional Land Claims Commissioner reserves the right to amend this gazette notice in terms of Section 11 (A) of the Restitution of Land Rights Act (Act 22 of 1994), as amended, should it later be established that there are properties that have been inadvertently omitted or included.

MR. L.H.MAPHUTHA
REGIONAL LAND CLAIMS COMMISSIONER
DATE: 2022/02/28

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT No. 22 OF 1994), AS AMENDED

Notice is hereby given in terms of Section 11(1) of the Restitution of Land Rights Act, 1994 (Act No. 22 of 1994), as amended, that a claim for Restitution of Land Rights has been lodged on the properties in the Elias Motsoaledi local municipality.

The late Mahlangu Masuku Solomon lodged a land claim on the 09th December 1998 as the direct descendent. The land claim was lodged on the Portion 177, 178, 179 and 185 of the farm De Lagersdrift 178 JS and was allocated KRP: 345.

Property Description	Current owner of the property	Title Deed Number	Extent of property	Endorsements	Holder
Portion 177 (Remainder) of the farm De Lagersdrift 178 JS	1.Mohlala Kgadile 2. Mohlala Maphodi 3. Mohlala Madilete	T4302/2010PTA	254.6913 ha	VA439/2010PTA CONVERTED FROM PTA JS,178,177	MOHLALA ROSE MANTOTO - -
Portion 185 (Remaining Extent) of the farm De Lagersdrift 185 JS	National Government of the Republic of South Africa	T6154/1953PTA	800.0000 DUM	I-2922/2012CPTA I-8140/2006CPTA CONVERTED FROM PTA JS,178,185	- - - -
Portion 179 of the farm	National	T6154/1953PT	11.0349 ha	I-12922/2012CPTA I-8140/2006CPTA	- -

De Lagersdrift 178 JS	Government of the Republic of South Africa	A		CONVERTED FROM PTA JS,178,179	- -
Portion 178 of the farm De Lagersdrift 178 JS	No information	No information	No information	No information	No information

Take **Further Notice** that the office of the Regional Land claims Commissioner: Limpopo, Department of Rural Development and Land Reform has investigated this respective land claim. Any party that has an interest in the above-mentioned properties is hereby invited to submit in writing within **30 Days** of the publication of this notice, any comments or detailed objections on this Land Claim to the Regional Land Claims Commissioner: Limpopo, using the under-mentioned contact details and under reference number: **KRP 345.**

Office of the Regional Land Claims Commissioner: Limpopo
Private Bag X9552
POLOKWANE
0700
61 Biccard Street

Or

Submission may also be delivered at:

First Floor, Kagiso House 96A Schoeman Street (Corner Schoeman & Rissik Streets)

POLOKWANE

0700

HARRY MAPHUTHA
REGIONAL LAND CLAIMS COMMISSIONER
DATE: 2022/02/28

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1862 **11 March 2022**

LAND REFORM (LABOUR TENANTS) ACT, 1996 (ACT NO. 3 OF 1996)

Notice is hereby given, in terms of Section 17 (2) (c) of the Land Reform (Labour Tenants) Act, 1996 (Act No 3 of 1996) ("the LTA"), that an Application for acquisition of land was lodged with the Director General of the Department of Land Affairs by the Applicants, and in respect of the Property set out in the Schedule.

Any party who may have an interest in the above-mentioned Application is hereby invited to make written representations to the Director General, within 30 days from the publication of this Notice. The representations must be forwarded to:

The Director General
c/o Deputy Director: Tenure Reform Implementation
Department of Agriculture Land Reform and Rural Development
GERT SIBANDE REGINAL SHARED SERVICE CENTRE;
DIRECTORATE: TENURE REFORM IMPLEMENTATION; Private Bag X5020, Piet Retief, 2380; 91 Church Street, Piet Retief; Tel: 017 826 4363; Fax 017 826 4878; Web: www.dalrrd.gov.za

SCHEDULE

Applicants:

No.	Name and Surname	Identity Number
1	Fanyana John Kubeka	300207 5149 08 1
2	Vusi Isaac Malaza	770807 5236 08 4
3	Solomon Jabulani Maseko	460411 5348 08 3
4	Gaya Johannes Kubeka	370701 5123 08 3

Property:

No.	Property Description	Locality (District)	Current Title Deed No	Current Owner	Bonds and Restrictive Conditions (Interdicts)
1	PORTION 2(REMAINING EXTENT) OF THE FARM GROENVLEI 37 HS	LEKWA LOCAL MUNICIPALITY	T41990/1986	BOTHA JOHAN DEWALD	N/A

For **DIRECTOR-GENERAL: DEPARTMENT OF AGRICULTURE LAND REFORM AND RURAL DEVELOPMENT**

SIGNED BY: Sebitso Thoka

DEPUTY DIRECTOR: TENURE REFORM IMPLEMENTATION / LABOUR TENANTS

DULY AUTHORISED

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1863 **11 March 2022**

LAND REFORM (LABOUR TENANTS) ACT, 1996 (ACT NO. 3 OF 1996)

Notice is hereby given, in terms of Section 17 (2) (c) of the Land Reform (Labour Tenants) Act, 1996 (Act No 3 of 1996) ("the LTA"), that an Application for acquisition of land was lodged with the Director General of the Department of Land Affairs by the Applicants, and in respect of the Property set out in the Schedule.

Any party who may have an interest in the above-mentioned Application is hereby invited to make written representations to the Director General, within 30 days from the publication of this Notice. The representations must be forwarded to: **The Deputy Director: Tenure Systems Implementation, 23 Corner Henshall & Brander Streets, Nelspruit. File Reference: ET6/5/L**

SCHEDULE

Applicants:

No.	Name and Surname	Identity Number
1.	Magokae Refiloe Flora	540610 0524 085

Property:

No.	Property Description	Locality (District)	Current Title Deed No	Current Owner	Bonds and Restrictive Conditions (Interdicts)
1.	**PORTION 4 (REMAINING EXTENT) OF THE FARM BUFFELSKLOOF 382 ,REGISTRATION DIVISION K.T, MPUMALANGA PROVINCE.**	EHLANZENI	T6447/1989	MALAN PAUL MAARTEN	

For **DIRECTOR-GENERAL: DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM**
SIGNED BY: Clement Maseko
DEPUTY DIRECTOR: TENURE SYSTEMS IMPLEMENTATION / LABOUR TENANTS
DULY AUTHORISED

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1864 **11 March 2022**

LAND REFORM (LABOUR TENANTS) ACT, 1996 (ACT NO. 3 OF 1996)

Notice is hereby given, in terms of Section 17 (2) (c) of the Land Reform (Labour Tenants) Act, 1996 (Act No 3 of 1996) ("the LTA"), that an Application for acquisition of land was lodged with the Director General of the Department of Land Affairs by the Applicants, and in respect of the Property set out in the Schedule.

Any party who may have an interest in the above-mentioned Application is hereby invited to make written representations to the Director General, within 30 days from the publication of this Notice. The representations must be forwarded to:

The Director General
c/o Deputy Director: Tenure Reform Implementation
Department of Agriculture, Land Reform & Rural Development
Private Bag X9081, Ermelo, 2350; or 23 Taute Street, Ermelo
File Reference: ET6/5/SH L

SCHEDULE

Applicants:

No.	Name and Surname	Identity Number
1.	Thwala Mphendulwa Mkhonto	490708 5302 083
2.	Dhlamini Mpeleni Bethuel	340421 5183 089
3.	Hlatshwayo Celiwe Regina	731112 0407 089
4.	Hlatswayo Mthandeni Nunu	590620 5625 083
5.	Zwane Mbongeni Libios	540925 5397 083
6.	Nkosi Alfred Zwelenkosi	730617 5669 088

Property:

No.	Property Description	Locality (District)	Current Title Deed No	Current Owner	Bonds and Restrictive Conditions (Interdicts)
1.	Portion 7 (Remaining Extent) of the farm Marienthal 163 HT	Mkhondo	T12609/2008	**Mark Prigge Farming CC**	N/A

For **DIRECTOR-GENERAL: DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT**
SIGNED BY: _____
DEPUTY DIRECTOR: TENURE REFORM IMPLEMENTATION
DULY AUTHORISED

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1865 **11 March 2022**

LAND REFORM (LABOUR TENANTS) ACT, 1996 (ACT NO. 3 OF 1996)

Notice is hereby given, in terms of Section 17 (2) (c) of the Land Reform (Labour Tenants) Act, 1996 (Act No 3 of 1996) ("the LTA"), that an Application for acquisition of land was lodged with the Director General of the Department of Land Affairs by the Applicants, and in respect of the Property set out in the Schedule.

Any party who may have an interest in the above-mentioned Application is hereby invited to make written representations to the Director General, within 30 days from the publication of this Notice. The representations must be forwarded to: **The Deputy Director: Tenure Systems Implementation, 23 Corner Henshall & Brander Streets, Nelspruit. File Reference: ET6/5/L**

SCHEDULE

Applicants:

No.	Name and Surname	Identity Number
1.	KABATHANDI HESSIE MTHIMUNYE	200703 0125 085
2.	BAEZANE SARAH MONATE	461103 0428 080

Property:

No.	Property Description	Locality (District)	Current Title Deed No	Current Owner	Bonds and Restrictive Conditions (Interdicts)
1.	PORTION 25 OF THE FARM KLIPRIVIER 73 ,REGISTRATION DIVISION J.T, MPUMALANGA PROVINCE.	EHLANZENI	T41538/2002	AQUIDUS ONDERNEMINGS CC	

For **DIRECTOR-GENERAL: DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM**
SIGNED BY: Clement Maseko
DEPUTY DIRECTOR: TENURE SYSTEMS IMPLEMENTATION / LABOUR TENANTS
DULY AUTHORISED

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1866 **11 March 2022**

LAND REFORM (LABOUR TENANTS) ACT, 1996 (ACT NO. 3 OF 1996)

Notice is hereby given, in terms of Section 17 (2) (c) of the Land Reform (Labour Tenants) Act, 1996 (Act No 3 of 1996) ("the LTA"), that an Application for acquisition of land was lodged with the Director General of the Department of Land Affairs by the Applicants, and in respect of the Property set out in the Schedule.

Any party who may have an interest in the above-mentioned Application is hereby invited to make written representations to the Director General, within 30 days from the publication of this Notice. The representations must be forwarded to:

The Director General
c/o Deputy Director: Tenure Systems Implementation
Department of Rural Development and Land Reform
23 Corner Henshall and Brander Street
Home Affairs Building 4th floor
Nelspruit
1200

SCHEDULE

Applicants:

No.	Name and Surname	Identity Number
01	KATRINA CLARAH MOTAU	500312 0626 089
02	LETSWALO KHULULANA SIMON	431028 5443 080
03	KUTHU PULENG SIMON	411004 5434 084

Property:

No.	Property Description	Locality (District)	Current Title Deed No	Current Owner	Bonds and Restrictive Conditions (Interdicts)
01	R/E OF PORTION 1 OF THE FARM UITWAAKFONTEIN 116 JT	THABA CHWEU	T21561/1987	JOHANNES NEL	NONE

For **DIRECTOR-GENERAL: DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM**
SIGNED BY: Clement Maseko
DEPUTY DIRECTOR: TENURE SYSTEMS IMPLEMENTATION / LABOUR TENANTS
DULY AUTHORISED

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1867 **11 March 2022**

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994)

Notice is hereby given in terms of Section 11(1) of the Restitution of Land Rights Act, 1994 (Act No. 22 of 1994 as amended), that claim/s for restitution of land rights on:

REF NO.	CLAIMANT	PROPERTY	LOT NUMBER	DISTRICT	CURRENT LAND OWNER	INTERESTED PARTIES
X 0130	Gladwin Mark Bloemstein	Lot No. 109 Nancefield, Kliptown	Lot No. 109 Nancefield, Kliptown	Johannesburg Metropolitan Municipality	Johannesburg Metropolitan Municipality	Department of Rural Development and Land Reform Johannesburg Metropolitan Municipality

has/have been submitted to the office of the Regional Land Claim Commission. The Commission on Restitution of Land Rights will investigate the claim in terms of the provisions of Rule 5 of the Rules Regarding Procedure of Commission Established in terms of section 16 of Restitution of Land Rights Act as amended. Any interested party on the claim is hereby invited to submit, representations in terms of section 11A of the Restitution of Land Rights Act No. 22 of 1994 as amended within 07 (seven) working days from the publication date of this notice, any comments/information may be send to:

MR. L.H. MAPHUTHA
The Regional Land Claims Commissioner
Gauteng Province
Private Bag X 03
ARCADIA
0007
TEL: (012) 310-6500/6620
FAX: (012) 323-2961

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NO. 1868 **11 March 2022**

GENERAL 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 by Mr. Samuel Mkuzelwa Nduli, which claim was published in terms of Section 11(1) of the Restitution of Land Rights Act, No. 22 of 1994 (as amended), hereinafter referred to as "the Act".

and

WHEREAS during investigation of the land claim in so far as it relates to the properties referred to below, the Regional Land Claims Commissioner, has 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 60 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. 1088, under Notice 32483 of 2009, dated 14th of August 2009, to the extent that it relates to the property 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. 1088 under Notice 32483 of 2009, dated 14th August 2009, relevant for this notice include the following:

Reference No: **Z 0035**

Claimant: **Mr. Samuel Mkuzelwa Nduli**

Property Description: **Schietpoort 507 JR**

Total extent: **N/A**

Owner: **N/A**

Date Submitted: **31 December 1998**

No.	Property Description	Extent Ha	Land Owner
1.	Schietpoort 507 JR	N/A	N/A

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 meet the criteria set out in Section 11(1) (b) of the Act; and/or

(b) The ascendants of the claimants did not have rights in land (as defined in the Act) on the property listed above.

Any party who may have an interest in the above-mentioned land claim is hereby invited to make representations, within 60 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
The Regional Land Claims Commissioner
Private Bag X 03
ARCADIA
0007
Tel: (012) 310-6500
Fax: (012) 323-2961

DEPARTMENT OF EMPLOYMENT AND LABOUR

NO. 1869 **11 March 2022**

NOTICE IN TERMS OF SECTION 62 (7) OF THE LABOUR RELATIONS ACT 66 OF 1995 (AS AMENDED)

PLEASE TAKE NOTICE THAT:

1. The trade union UAWU contends that the employees of Red Alert Cleaning And Security (Pty) Ltd t/a Cape Town Guarding (the employer) perform work associated with that of security officers whose services and terms and conditions are governed by PSIRA and the National Bargaining Council for the Private Security Sector and as such and that the employer ought to fall under the scope and control of the said Bargaining Council. The employer denied that its employees perform the duties as alleged and contend that they perform a non-security function..

2. It is the contention of the trade union UAWU that the employer is obliged to register/remain registered with the Nation Bargaining Council for the Private Security Sector and to apply the latter's terms and conditions of employment to its employees.

4. The CCMA is of the view that the question raised by this demarcation dispute is potentially of wider application in that there are a number of businesses that operate on the same basis as the applicant. These business may well be affected by the outcome of this application. These entities are entitled to make such representations to the CCMA as they deem prudent and the CCMA hereby invites written representations in relation to the issue in dispute from any interested party.

5. Written representations may be made within 21 calender days of the date of publication of this notice and should be clearly marked with the reference number **WECT 4341-21** and directed to:

   Contact: Mr Jimmy Loots (JimmyL@ccma.org.za)
   Tel: +2711 377 6991

Due to Covid-19 protocols and restrictions no hand delivery of written representations will be accepted.

DEPARTMENT OF HEALTH

NO. 1870 **11 March 2022**

DENTAL TECHNICIANS ACT, 1979

REGULATIONS RELATING TO THE REGISTRATION OF DENTAL LABORATORIES AND RELATED MATTERS: AMENDMENT

The Minister of Health has in terms of section 50(1)*(e)* of the Dental Technicians Act, 1979, and on the recommendation of the South African Dental Technicians Council, made the Regulations contained in the Schedule.

DR MJ. PHAAHLA, MP
MINISTER OF HEALTH
DATE: 21/02/2022

SCHEDULE

Definitions

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

"the Act" means the Dental Technicians Act, 19 of 1979; and

"the Regulations" means the Regulations relating to the Registration of Dental Laboratories and Related Matters, published under Government Notice No. R. 308 of 26 February 1982, as amended by Government Notices Nos. R. 1808 of 27 August 1982, R. 196 of 4 February 1983, R. 284 of 15 February 1985, R. 854 of 9 May 1986,

R. 668 of 3 April 1987, R. 2440 of 2 December 1988, R. 2914 of 14 December 1990, R. 3156 of 27 December 1991, R. 107 of 22 January 1993, R. 434 of 11 March 1994, R. 194 of 10 February 1995, R. 134 of 2 February 1996, R. 14 of 3 January 1997, R. 1717 of 19 December 1997, R. 1685 of 24 December 1998, R. 8 of 7 January 2000, R. 1363 of 15 December 2000, R. 1321 of 14 December 2001 and R. 1489 of 29 November 2002, R. 468 of 8 April 2004, R. 1380 of 3 December 2004, R 1233 of 23 December 2005, R. 119 of 16 February 2007, R. 151 of 8 February 2008, R. 182 of 3 March 2011, R. 1016 of 6 December 2011, R. 1079 of 19 December 2012, R. 355 of 12 May 2014, R. 729 of 17 June 2015,R 729 of June 2016, R. 206 of 08 March 2017 , R. 217 of 16 March 2018, R 524 of 01 April 2019 and R. 415 of 2020; R. NO. 341 of 19 April 2021.

Amendment of regulation 11 of the Regulations

2. Regulation 11 of the Regulations is amended substation for the following:

"Registration Fees

11. (1) The registration fees for the registration of a dental laboratory under section 30 of the Act is **R14,821-00**: Provided that if the ownership of a dental laboratory was changed or transferred in terms of section 30(6) of the Act, the registration fee payable for such a dental laboratory by the new owner shall be **R 11,114-00.**

(2) The registration fee for a dental laboratory which is moved by the owner(s) to new premises is **R1,856-00**: Provided that if the moving of such laboratory is due to factors beyond the control of the owner(s), such owner(s) shall pay only a registration fee of **R 1,586-00.**

(3) The registration fees referred to in sub-regulations (1) and (2) includes 15% value-added tax.".

Amendment of regulation 12 of the Regulations

3. Regulation 12 of the Regulations is hereby amended by substitution for the following:

"Annual Fees

12. (1) Every owner or partner or member of a dental laboratory must pay to the Council an amount of **R 7,697-00** as an annual fee for the period 1 March to 28 February of each financial year or part thereof.

(2) The amount referred to in sub-regulation (1) is due on 1 March of each year and is payable no later than 31 March of each year.".

Short title

4. These Regulations are called the Regulations Relating to the Registration of Dental Laboratories and Related Matters, 2022: Amendment.

DEPARTMENT OF HUMAN SETTLEMENTS

NO. 1871 **11 March 2022**

Nomination of Persons to serve as Members of the Ministerial Advisory Panel in Terms Of The Housing Act, 107 of 1997, As Amended.

This is a correction of *Notice 1557* published in *Government Gazette No. 45568 on 3 December 2021.*

1. Notice is hereby given in terms of the Housing Act, 107 of 1997, as Amended, that the Minister of Human Settlements invites nominations of persons to be appointed to serve as Members of the Ministerial Advisory Panel, to advise the Minister on matters relating to Human Settlements development.

2. Persons who are experienced, knowledgeable and skilled in the following fields, should be nominated; and such competencies be clearly reflected in their curriculum vitae:

   - Theoretical and/or practical knowledge in human settlements policy development.
   - Extensive knowledge in human settlements financing.
   - Engineering and/or Town and Regional Planning skills.
   - Mobilisation and organisational skills; and
   - Legal expertise

   Candidates for members of the panel must be of unquestionable integrity.

3. The following provisions of the Act have a bearing on the appointment of the members of the panel:

   5. (2) A panel shall consist of not more than six proper persons who have knowledge, qualifications or experience in the field of human settlements development.

(3) Members of a panel shall be appointed in accordance with procurement policy that is consistent with section 217 of the Constitution and must be appointed only after the Minister has through the media and by notice in the *Gazette* invited nominations of persons as candidates for the respective positions on the panel.

(4) A member of a panel is appointed for the period determined by the Minister at his or her appointment, and may, subject to subsection (3), be reappointed on the termination of that period.

(5) The Minister may at any time terminate the membership of a member of a panel for reasons which are just and fair.

(6) A member of a panel other than a person who is in the full-time employment of the State, is paid an allowance determined by the Minister with the approval of the Minister of Finance.

(7) A member of the panel ceases to be a member if -

(a) he or she resigns.

(b) his or her estate is sequestrated, or he or she applies for assistance contemplated in section 10(1)(c) of the Agricultural Credit Act, 1966;

(c) he or she becomes of unsound mind.

(d) he or she is convicted of an offence and sentenced to imprisonment without the option of a fine; and

(e) he or she becomes a member of Parliament, a provincial legislature, a municipal council, the Cabinet or the Executive Council of a Province.

4. A nomination must be accompanied by a comprehensive curriculum vitae of the nominee.

5. Nominations must be submitted to the Department of Human Settlements on or before **04 April 2022**.

(a) by posting it to the following address:
Department of Human Settlements
Private Bag X644

Pretoria
0001
[For Attention: Mr. N Chainee]

(b) by submitting it to:
Department of Human Settlements
Govan Mbeki House
240 Justice Mahomed Street
Sunnyside
Pretoria
0002
[For Attention: Mr. N. Chainee]

or

(c) by emailing it to:

Email: Neville.chainee@dhs.gov.za or
Email: Thomas.ramovha@dhs.gov.za

6. Enquiries may be directed to Mr N Chainee at 012 421 1603 or Dr T Ramovha at 079 510 2505.

7. **Individuals or organisations who have responded to the call for nominations published in December 2021 need not respond to this call.**

NB: Nominations for Women, Persons living with disability and Youth are encouraged. Correspondence will be limited to successful nominees.

MT KUBHAYI (MP)
MINISTER OF HUMAN SETTLEMENTS

DEPARTMENT OF SOCIAL DEVELOPMENT

NO. 1872 **11 March 2022**

REPUBLIC OF SOUTH AFRICA

OLDER PERSONS AMENDMENT BILL, 2022

(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 SOCIAL DEVELOPMENT)

[B — 2021]

GENERAL EXPLANATORY NOTE:

[ ] Words in bold type in square brackets indicate omissions from existing enactments.

_____ Words underlined with a solid line indicate insertions in existing enactments.

BILL

To amend the Older Persons Act, 2006, so as to insert new definitions; insert new provisions relating to the monitoring and evaluation of all services to older persons and for the removal of older persons to a temporary safe care without a court order; to tighten up the existing implementation and compliance measures; to effect some textual amendments for greater clarity and to provide for matters connected therewith.

BE IT ENACTED by the Parliament of the Republic of South Africa, as follows:—

Amendment of section 1 of Act 13 of 2006

1. Section 1 of the Older Persons Act, 2006 (Act No. 13 of 2006) (hereinafter referred to as the principal Act) is hereby amended—

(a) by the insertion of the following definition after the definition of "abuse":

"**'assisted living facility'** means a residential facility used for the provision of safe and accessible accommodation with access to care and support services to older persons that are partially independent,

with or without assistive devices and who need some form of supervision and assistance with their activities of daily living;";

(b) by the substitution for the definition of "care" of the following definition:

"'**care'** means physical, psychological, social, spiritual, nursing, first-aid or material assistance to an older person, and includes services aimed at promoting **[the]** and maintaining the comfort, quality of life and general well-being of an older person;";

(c) by the substitution for the definition of "caregiver" of the following definition:

"'**caregiver'** means any person who provides care and support services, whether at a community-based care facility, residential facility or similar facility and has been accredited with a National Qualifications Framework training qualification, appropriate for the care of older persons;";

(d) by the substitution for the definition of "Director-General" of the following definition:

"'**Director-General'** means the Director-General of the Department of Social Development;";

(e) by the insertion of the following definition after the definition of "Director-General":

"'**frail care facility'** means a residential facility that is used primarily for the care of frail older persons in need of 24-hour care services;";

(f) by the insertion of the following definitions after the definition of "home-based care":

"'**independent living facility'** means a residential facility used for the provisioning of safe and accessible accommodation to active older

persons, who are fully independent with or without assistive devices and who do not need assistance with their activities of daily living;

'inter-departmental structure' means a structure consisting of the Departments of Social Development, Health, Basic Education, Human Settlements, Water and Sanitation, Sport and Recreation, Arts and Culture, Cooperative Governance and Traditional Affairs, Justice and Correctional Services and South African Police Services, at national level and where applicable, provincial and local levels of government and may include any stakeholder;";

(g) by the substitution for the definition of "manager" of the following definition:

"**'manager'** means the person responsible for the day-to-day management of a residential facility or similar facility, an institution or any programme for the rendering of services to older persons;";

(h) by the substitution for the definition of "older person" of the following definition:

"**'older person'** means a person who **[, in the case of a male, is 65 years of age or older and, in the case of a female, is 60 years of age or older]** is 60 years of age or older;";

(i) by the substitution for the definition of "person" of the following definition:

"**'person'** includes a trust and for the purposes of the registration and operation of community-based care and support services, home-based care and residential facilities, means a juristic person or a trust only;";

(j) by the insertion of the following definition after the definition of "prescribed":

"**'private residential facility'** means a residential facility established or registered in terms of the Housing Development Schemes for Retired Persons Act, 1988 (Act No. 65 of 1988);";

(k) by the substitution for the definition of "rehabilitation" of the following definition:

"'**rehabilitation'** means a process by which an older person is enabled to reach and maintain his or her optimal physical, sensory, intellectual, psychiatric, spiritual or social functional levels, and includes measures to restore functions or compensate for the loss or absence of a function, but excludes medical care;";

(l) by the substitution for the definition of "residential facility" of the following definition:

"'**residential facility'** means a building or other structure that is used primarily for the **[purposes of providing]** 24-hour care, accommodation and **[of providing a 24-hour service]** for the provision of services to older persons in both public and private residential facilities and includes assisted-living, independent-living, frail care and similar facilities;"; and

(m) by the insertion of the following definitions after the definition of "social worker":

"'**stakeholder'** means a civil society organisation or a person in the public or private sector, that works with or has an interest in programmes or services rendered to older persons;";

'temporary safe care' means, in relation to older persons, a shelter or any other place where an older person is protected and safely accommodated, for a period not exceeding six months;".

Amendment of section 2 of Act 13 of 2006

2. Section 2 of the principal Act is hereby amended—

(a) by the substitution for paragraph *(b)* of the following paragraph:

"*(b)* recognise, maintain and protect the rights of older persons in terms of any laws and policies on vulnerability, ageing, disability, families and other applicable legislation;"; and

(b) by the substitution for paragraph *(e)* of the following paragraph:

"*(e)* prevent and combat the abuse of older persons.".

Amendment of section 3 of Act 13 of 2006

3. Section 3 of the principal Act is hereby amended—

(a) by the substitution for subsection (1) of the following subsection:

"(1) Subject to this Act allocating roles and responsibilities, the Act must be implemented by all organs of state and any other stakeholders rendering services **[to older persons in the national, provincial and, where applicable, local sphere of government]** in an integrated, co-ordinated and uniform manner.";

(b) by the substitution for subsection (2) of the following subsection:

"(2) Recognising that competing social and economic needs exist, such organs of state and stakeholders must take reasonable measures to the maximum extent of their available resources to achieve the realisation of the objects of this Act.";

(c) by the substitution for subsection (3) of the following subsection:

"(3) To achieve the implementation of this Act in the manner contemplated in subsections (1) and (2), all organs of state and stakeholders must co-operate in the development of a uniform approach aimed at co-ordinating and integrating the services delivered to older persons."; and

(d) by the addition of the following subsections after subsection (3):

"(4) There must be an inter-departmental structure to integrate, co-ordinate and monitor the effective implementation of this Act, as prescribed.

(5) The Office of the Premier in each province must, together with the provincial department of social development, facilitate and support the co-ordination and integration of provincial plans and the implementation of this Act, as may be prescribed.".

Amendment of section 4 of Act 13 of 2006

4. Section 4 of the principal Act is hereby amended by the substitution for subsection (2) of the following subsection:

"(2) All organs of state and all officials, employees and representatives of organs of state and stakeholders must respect, protect and promote the rights of older persons contained in this Act.".

Amendment of section 5 of Act 13 of 2006

5. Section 5 of the principal Act is hereby amended—

(a) by the substitution in subsection (1) for paragraph *(b)* of the following paragraph:

"*(b)* all proceedings, actions and decisions by any organ of state and stakeholders in any matter concerning an older person or older persons in general."; and

(b) by the addition of the following subsection after subsection (3):

"(4) Anyone dealing with an older person must take all the measures necessary, to eliminate harmful traditional practices including witchcraft accusations, which may affect the welfare, health, life and dignity of an older person.".

Insertion of sections 7A and 7B in Act 13 of 2006

6. The following sections are hereby inserted in the principal Act after section 7:

"**Responsibilities of older person**

7A. An older person may not be denied the right to—

(a) mentor and pass on knowledge and experience to a younger person;

(b) foster and facilitate inter-generational dialogue and solidarity within his or her family or community; and

(c) play a role in mediation and conflict resolution.

Protection of rights to property, inheritance and physical abuse of older person

7B. An older person has the right to protection against—

(a) any form of violence, sexual abuse and discrimination based on gender;

(b) abuse related to property and land rights; and

(c) abuse related to the right to inheritance."

Amendment of section 11 of Act 13 of 2006

7. Section 11 of the principal Act is hereby amended by the substitution in subsection (2) for paragraph *(c)* of the following paragraph:

"*(c)* information, education and counselling services, including HIV and AIDS, care for orphans, Alzheimer's, non-communicable chronic diseases, dementia and basic emergency care;".

Amendment of section 13 of Act 13 of 2006

8. Section 13 of the principal Act is hereby amended—

(a) by the insertion after subsection (1) of the following subsection:

"(1A) Only a juristic person or a trust may be registered to provide community-based care and support services to older persons.".

(b) by the substitution for subsection (2) of the following subsection:

"(2) The Minister must prescribe conditions for the registration of community-based care and support services, including application for registration, approval of registration, temporary registration or conditional registration, duration of registration, withdrawal and termination of registration, and any matter contemplated in subsection (4)."; and

(c) by the substitution for subsection (4) of the following subsection:

"(4) If the **[provider of a service]** service provider for any reason intends to **[stop providing the service]** terminate or suspend the provision of a service, or the Department for any reason intends to terminate or suspend the service provider from providing a service**, [the provider]** the service provider or the Department, as the case may be, must, prior to **[stopping]** the termination or suspension of the service in question—

(a) notify the Director-General or the manager of the service provider of the intention, reasons and the implications of such **[stoppage]** termination or suspension **[for]** on the affected older persons;

(b) inform the older persons affected of the intended **[stoppage]** termination or suspension of the service, and the reasons for the intended termination or suspension; and

(c) take reasonable steps to ensure that the older persons benefiting from the service are not adversely affected or put at risk and, where appropriate, are referred to **[a person]** an alternative registered facility or institution providing similar services.".

Amendment of section 14 of Act 13 of 2006

9. Section 14 of the principal Act is hereby amended—

(a) by the substitution for the heading of the following heading:

"**Persons providing home-based care and frail care**";

(b) by the substitution for subsection (1) of the following subsection:

"(1) Any person who provides home-based care and frail care must ensure that caregivers receive the prescribed training."; and

(c) by the substitution in subsection (3) for paragraph (a), of the following paragraph:

"(3) (a) The Minister must keep a register of all caregivers providing home-based care and frail care and must prescribe a code of conduct for such caregivers.".

Substitution of section 15 of Act 13 of 2006

10. The principal Act is hereby amended by the substitution for section 15 of the following section:

"Monitoring and evaluation of community-based care and support services

15. Subject to section 22 of the Act and to the extent to which that section is applicable, monitoring and evaluation of community-based care and support services may be implemented as prescribed.".

Amendment of section 17 of Act 13 of 2006

11. Section 17 of the principal Act is hereby amended—

(a) by the substitution for paragraphs *(i)* and *(j)* of the following paragraphs:

"*(i)* training of volunteer caregivers to deal with frail older persons; **[and]**

(j) sport and recreational activities **[.]**;"; and

(b) by the addition of the following paragraphs:

"*(k)* assisted-living which provides accommodation, care and support services for older persons who need specialised care; and

(l) independent-living which provides safe and accessible accommodation to active older persons."

Amendment of section 18 of Act 13 of 2006

12. Section 18 of the principal Act is hereby amended—

(a) by the substitution in subsection (1) for paragraph *(a)* of the following paragraph:

"*(a)* Subject to section 35, no person may operate a residential facility, including a private residential facility, assisted living facility or similar facility, unless such facility has been registered under this section."; and

(b) by the substitution for subsection (2) of the following subsection:

"(2) A juristic person **[who wishes]** or a trust wishing to operate a residential facility must, in the prescribed manner, apply to the Minister for registration thereof.".

Insertion of section 18A in Act 13 of 2006

13. The following section is hereby inserted in the principal Act after section 18:

"**Deregistration, closing and revocation of registration of residential or community-based facilities**

18A. (1) Notwithstanding the provisions of this section and any provision of this Act, a person designated by the Director-General may close down any unregistered or illegal community-based care or residential facility service or any similar service for older persons.

(2) A person designated by the Director-General may—

(a) in writing, direct any person operating an unregistered or illegal facility, to close down operations immediately within 24 hours;

(b) where necessary, enlist the assistance of the police to effect the closure;

(c) in instances where there is a material contravention of this Act by a registered community-based care service provider or residential facility operator, recommend to the Director-General that such community-based care service provider or residential facility, be deregistered and closed; and

(d) in instances where a person refuses to cooperate with, obstructs or misrepresents any fact to a social worker, health care provider, police official or an official exercising any reporting, enforcement and monitoring powers conferred by this Act, upon receipt of such information, recommend to the Director-General that the community-based care or residential facility concerned, be deregistered or that the registration of the community-based care or residential facility be revoked.

(3) If a person designated by the Director-General has directed that a community-based care or residential facility be closed down, deregistered or the registration of a community-based care or residential facility be revoked, such designated person must—

(a) notify the person in charge of the community-based care or residential facility, in writing, of the intention to deregister the facility or the intention to revoke the registration of such facility;

(b) afford the person in charge of the community-based care or residential facility an opportunity of no less than 30 days, to make written representations in respect of such closure, deregistration or revocation of registration;

(c) consider the representations made by the person in charge of the community-based care or residential facility with regard to such closure, deregistration or revocation of registration; and

(d) in writing, notify the person in charge of the community-based care or residential facility of the decision regarding the closure, deregistration or revocation of registration of the facility and measures to accommodate or relocate the beneficiaries of such services.".

Amendment of section 25 of Act 13 of 2006

14. Section 25 of the principal Act is hereby amended—

(a) by the deletion in subsection (5) of the word "or" at the end of paragraph *(g)*;

(b) by the substitution at the end of subsection (5)(*h*) for the full stop of the semicolon; and

(c) by the addition in subsection (5) of the following paragraphs:

"*(i)* has been or is being maltreated, abused, neglected or degraded by a care-giver, family member or any other person; or

(j) has been or is being accused of practising witchcraft or blamed by the community for inexplicable events.".

Insertion of sections 25A and 25B in Act 13 of 2006

15. The following sections are hereby inserted in the principal Act after section 25:

"**Removal of older person to temporary safe care**

25A. (1) A social worker or health care provider or a police official must, with the consent of an older person or authorised person in the event the older person is incapable of providing such consent, remove such older person and place that older person in temporary safe care without a court order, if there are reasonable grounds for believing—

(a) that the older person—

(i) is in need of care and protection as contemplated in section 25 (5) of the Act; and

(ii) needs immediate emergency protection;

(b) that the delay in obtaining a court order for the removal of an older person to temporary safe care may jeopardise the safety and well-being of the older person; and

(c) that the removal of the older person from his or her home environment is the best way to secure the safety and well-being of that older person.

(2) If a social worker or health care provider has removed an older person and placed the older person in temporary safe care as contemplated in subsection (1), the social worker or health care provider

must, in writing, report the matter to the relevant provincial department of social development and must—

(a) without delay, but within 24 hours, inform the family of the older person of such removal and the place where the older person has been moved to; and

(b) without delay, obtain a court order within 48 hours for the placement of the older person in temporary safe care.

(3) If a police official has removed an older person and placed the older person in temporary safe care as contemplated in subsection (1), the police official must—

(a) without delay but within 24 hours inform the family of the older person, in writing, of such removal; and

(b) without delay, but within 24 hours, notify the provincial department of social development, in writing, of the removal of the older person and of the place where the older person has been placed.

(4) Notwithstanding subsection (1), any person may apply to a court having jurisdiction to obtain an order authorising the removal of an older person to a temporary safe care in instances where there is no need for immediate removal.

(5) The placement of an older person into temporary safe care may be for any period not exceeding six months and every effort must be made by the Director-General to find a safe permanent placement.

(6) Misuse of a power referred to in subsection (1) by a social worker employed in terms of the Public Service Act, 1994 (Proclamation No.103 of 1994) or any other law or by a Non-Profit

Organisation, constitutes unprofessional or improper conduct as contemplated in section 27 (1) *(b)* of the Social Service Professions Act, 1978 (Act No. 110 of 1978) by that social worker.

(7) Misuse of a power referred to in subsection (1) by a police official constitutes grounds for disciplinary proceedings against such police official as contemplated in section 40 of the South African Police Service Act, 1995 (Act No. 68 of 1995).

(8) Misuse of a power referred to in subsection (1) by a health care worker constitutes grounds for disciplinary proceedings against such health care worker in accordance with section 23 of the Allied Health Professions Act, 1982 (Act No. 63 of 1982), section 3*(n)* of the Health Professions Act, 1974 (Act No. 56 of 1974), section 46 of the Nursing Act, 2005 (Act No. 33 of 2005), section 39 of the Pharmacy Act, 1974 (Act No. 53 of 1974) and section 35 of the Dental Technicians Act, 1979 (Act No. 19 of 1979), whichever Act is applicable.

(9) A person exercising a power or acting pursuant to this section is not liable to any person if he or she has acted or exercised that power in good faith.

Older person with disability and chronic illness

25B. (1) In any matter concerning an older person with a disability, due consideration must be given to—

(a) providing the older person with family care or special care as and when appropriate;

(b) making it possible for the older person to participate in social, cultural, religious and educational activities, recognising the special needs that the older person may have;

(c) providing the older person with conditions that ensure dignity, promote self-reliance and facilitate active participation in the community; and

(d) providing the older person and the care-giver with the necessary support services.

(2) In any matter concerning an older person with chronic illness, due consideration must be given to—

(a) providing the older person with family care or special care as and when appropriate;

(b) providing the older person with conditions that ensure dignity, promote self-reliance and facilitate active participation in the community; and

(c) providing the older person with the necessary support services.

(3) An older person with a disability or chronic illness has the right not to be subjected to medical, social, cultural or religious practices that are detrimental to his or her health, well-being or dignity.".

Amendment of section 26 of Act 13 of 2006

16. Section 26 of the principal Act is hereby amended—

(a) by the substitution for subsection (1) of the following subsection:

"(1) Any person who suspects that an older person has been abused or suffers from an abuse-related injury must immediately

notify the Director-General, a social worker or a police official or the manager, if applicable, of his or her suspicion."; and

(b) by the substitution in subsection (4) for paragraph *(a)* of the following paragraph:

"*(a)* the Director-General, social worker, police official or manager must, within 48 hours, investigate the matter and if the suspicion is substantiated by the investigation, section 25(4) applies with the necessary modifications;".

Amendment of section 28 of Act 13 of 2006

17. Section 28 of the principal Act is hereby amended—

(a) by the substitution in subsection (6) for paragraph *(b)* of the following paragraph:

"*(b)* refuses to furnish to a social worker or a health care provider any information in connection with the alleged abuse of an older person at his or her disposal which such officer requires for the purposes of an investigation referred to in subsection (3): Provided that—

(i) the law regarding privilege as applicable to a witness summoned to give evidence in a criminal case in a court of law applies in relation to the questioning of a person for purposes of that investigation: Provided further that such a person may not refuse to answer any question on the ground that the answer would tend to expose him or her to a criminal charge; and

(ii) evidence regarding any questions and answers for purposes of an investigation referred to in subsection (3) is not admissible in any criminal proceedings, except in criminal proceedings where the person concerned stands trial on a charge contemplated in section 319(3) of the Criminal Procedure Act, 1955 (Act No. 56 of 1955)."; and

(b) by the addition of the following subsection after subsection (6):

"(7) In every investigative or court proceedings, as the case may be, an older person may—

(a) in addition to legal assistance, be assisted by a social worker, an intermediary or any suitable person; and

(b) be allowed to testify or cross-examine through an intermediary or in-camera, in the language the older person understands.".

Amendment of section 30 of Act 13 of 2006

18. Section 30 of the principal Act is hereby amended—

(a) by the substitution in subsection (3) for paragraph *(a)* of the following paragraph:

"*(a)* "physical abuse" means any act or threat of physical violence towards an older person, including unlawful detention, medical sedation or shackling, deprivation of nutrition or medical care, neglect or exploitation of an older person in any manner;"; and

(b) by the addition of the following subsection after subsection (4):

"(5) A court clerk or registrar must, upon a court convicting a person as contemplated in subsection (4), forthwith provide the Minister with the details of the offender, conviction and sentence for the purposes of reporting in the register contemplated in section 31 of this Act.".

Amendment of section 31 of Act 13 of 2006

19. Section 31 of the principal Act is hereby amended by the addition of the following subsection after subsection (2):

"(3) An application to the Minister for the removal of a name from the register may be brought by any person, after the criminal record of the offender, whose name appears in the register, has been expunged in terms of sections 271A, 271B, 271C or 271D of the Criminal Procedure Act, 1977 (Act No. 51 of 1977).".

Amendment of section 33 of Act 13 of 2006

20. Section 33 of the principal Act is hereby amended by the substitution for paragraph *(a)* of the following paragraph:

"*(a)* section 12(2), 14(4), 18(1), 18(8), 18 (9), 19(4), 22(5)*(a)*, *(b)* or *(c)* or 28(6)*(a)* or *(b)* is liable to a fine or to imprisonment for a period not exceeding one year, or to both a fine and such imprisonment;".

Amendment of section 34 of Act 13 of 2006

21. Section 34 of the principal Act is hereby amended by the substitution for subsection (3) of the following subsection:

"(3) Any regulation made in terms of subsection (1) which affects the South African Police Service must be made after consultation with the **[Minister for Safety and Security]** Minister of Police.".

Short title and commencement

22. (1) This Act is called the Older Persons Amendment Act, 2021 and takes effect on a date fixed by the President by Proclamation in the *Gazette*.

(2) Different dates may, under subsection (1), be fixed in respect of different provisions of this Act.

MEMORANDUM ON THE OBJECTS OF THE OLDER PERSONS AMENDMENT BILL, 2022

1. BACKGROUND AND PURPOSE

The Older Persons Act, 2006 (Act No. 13 of 2006) ("principal Act") mandates that services to older persons should be rendered in a comprehensive, coordinated, integrated and standardised manner by all organs of state and other service providers. The Department, as the custodian and a lead department for the provision of services to older persons, has a responsibility of ensuring that the objectives of the principal Act are adhered to and that older persons receive services in accordance with the principal Act. The principal Act came into operation on 1 April 2010. Soon thereafter, a number of challenges in relation to the implementation of the principal Act have been experienced. Chief amongst these were the institutional, coordination mechanisms and compliance measures. Poor coordination and inter-sectoral collaborations impacted negatively on the provision of services to older persons. The purpose for the Older Persons Amendment Bill, 2022 ("Bill") is to ensure that older persons are provided with quality services and are afforded the necessary protection by society, including community-based and residential care facilities.

2. OBJECTS

The Bill seeks to insert new definitions, new provisions relating to the monitoring and evaluation of all services to older persons, makes provision for the removal of older persons to temporary safe care without a court order, to tighten up the existing implementation and compliance measures and to effect some textual amendments for greater clarity.

3. CLAUSE-BY-CLAUSE ANALYSIS

3.1 Clause 1

3.1.1 Clause 1 seeks to amend various definitions as well as the insertion of new definitions. It proposes the substitution of the definition of "older person" to include "a person who is 60 years of age or older". The proposed new definition ensures that all persons who are 60 years and older are equally entitled to the benefits and protection afforded to older persons in the principal Act, irrespective of gender. This is consistent with section 9(1) and 9(3) of the Constitution of the Republic of South Africa, 1996 ("Constitution"). Clause 1 introduces an "inter-departmental structure" to integrate, coordinate and monitor the effective implementation of the Act. The Bill proposes an amendment to the definition of "residential facility" to include private, public, independent-living, assisted-living and frail care facilities.

3.2 Clause 2

3.2.1 Clause 2 proposes an amendment to section 2 of the principal Act so as to protect the rights of older persons in conformity with the Constitution and domestic law, as well as to prevent abuse against older persons.

3.3 Clause 3

3.3.1 Clause 3 seeks to amend section 3 of the principal Act by making provision for the role of stakeholders over and above the organs of state and the inclusion of an inter-departmental structure to integrate, co-ordinate and monitor the effective implementation of the Act. It also seeks to provide for the Premiers in each province, together with the provincial department of social development, to facilitate and support

the co-ordination and integration of provincial plans and the implementation of the principal Act.

3.4 Clause 4

3.4.1 Clause 4 seeks to amend section 4 of the principal Act by making provision for the role of other stakeholders in the protection of the rights of older persons.

3.5 Clause 5

3.5.1 Clause 5 seeks to amend section 5 of the principal Act by the insertion of a new subsection (4) which provides that anyone dealing with an older person should take all the necessary precautions in order to eliminate harmful traditional practices against an older person.

3.6 Clause 6

3.6.1 Clause 6 seeks to amend section 7 of the principal Act by the insertion of sections 7A and 7B. The proposed new section 7A makes provision for the responsibilities of older persons, which include mentoring and passing on knowledge and experience to the younger generation, fostering and facilitating inter-generational dialogue and solidarity within their families and communities and playing a role in mediation and conflict resolution. The proposed new section 7B makes provision for the protection of rights of older persons to property, inheritance and physical abuse.

3.7 Clause 7

3.7.1 Clause 7 seeks to amend section 11 of the principal Act by providing that the Minister of Social Development, in collaboration with any other relevant Minister or member of the executive in a province, may make available any information, education or counselling services in relation to, amongst others, non-communicable chronic diseases.

3.8 Clause 8

3.8.1 Clause 8 proposes an amendment to section 13 of the principal Act. The proposed amendment provides that only a juristic person or a trust may be registered to provide community-based care and support services to older persons. Furthermore, clause 8 also proposes an amendment to section 13 of the principal Act by substituting the word "stop" with the words "terminate or suspend" in subsection (4). The proposed amendment deals with the termination or suspension of services by a service provider or the Department. Subsection (4) (*a*) to (*c*) provides that, in the event of termination by the Department or the service provider as the case may be, the Director-General or manager of the service provider must be notified, that the older person affected be notified and that reasonable steps should be taken to ensure that an affected older person is referred to an institution or facility providing a similar service.

3.9 Clause 9

3.9.1 Clause 9 seeks to amend section 14 of the principal Act. The proposed amendment provides that any person who provides home-based care and frail care must ensure that caregivers receive the prescribed training. Clause 9 also provides that the Minister must keep a register of all caregivers providing home-based care and frail care.

3.10 Clause 10

3.10.1 Clause 10 seeks to amend section 15 of the principal Act in order to provide for monitoring and evaluation of community-based care and support services and to empower the Minister to make regulations regarding the manner in which such may be conducted.

3.11 Clause 11

3.11.1 Clause 11 seeks to amend section 17 of the principal Act by the addition of 2 new paragraphs, (paragraph (*k*) and (*l*) respectively). The proposed amendment makes provision for "assisted-living" and "independent-living" as additional services which may be offered at residential facilities to older persons.

3.12 Clause 12

3.12.1 Clause 12 seeks to amend section 18 of the principal Act so as to include a private residential facility, assisted living facility or similar facility in the list of facilities that must be registered by the Department.

3.13 Clause 13

3.13.1 Clause 13 seeks to insert a new section 18A which makes provision for the deregistration, closing and revocation of the registration of residential or community-based facilities.

3.14 Clause 14

3.14.1 Clause 14 proposes an amendment to section 25 of the principal Act. The proposed amendment provides that an older person in need of care and protection includes a person who has been or is being maltreated, abused, neglected or degraded by a care-giver or family member or a person who has been accused of practicing witchcraft or blamed by the community for inexplicable events.

3.15 Clause 15

3.15.1 Clause 15 seeks to amend section 25 of the principal Act by the insertion of new sections 25A and 25B. The proposed new section 25A deals with the removal of an older person to temporary safe care without a court order and section 25B deals with older persons with disabilities and chronic illnesses. The proposed section 25A (1) (*a*) provides that an older person will be moved to a temporary safe care if there are reasonable grounds for believing that an older person is in need of care and protection and needs immediate emergency protection. The proposed new section 25A (2) (*a*) provides that if a social worker or health care worker has removed an older person and placed him or her in temporary safe care, the social worker or health care worker must report the matter to the relevant provincial department of social development. The proposed new section 25A (6), (7) and (8) makes provision for disciplinary proceedings against a social worker, health care worker or police official who misuses the power contemplated in the proposed new section 25A (1). The proposed new section 25B deals with older persons with disabilities and chronic illnesses.

3.16 Clause 16

3.16.1 Clause 16 seeks to amend section 26 of the principal Act in order to make provision for the inclusion of a social worker and a manager of a facility, over and above the Director

General and a police official as it relates to the reporting of a suspected injury to an older person.

3.17 Clause 17

3.17.1 Clause 17 seeks to amend section 28 of the principal Act which deals with the procedure for bringing an alleged abuser before a magistrate. The proposed amendment seeks to amend subsection (6)(*b*), which deals with the law of privilege applicable to a witness in a criminal case. The proposed amendment also deals with the admissibility of evidence in certain criminal proceedings involving older persons.

3.18 Clause 18

3.18.1 Clause 18 seeks to amend section 30 of the principal Act by extending the definition of physical abuse to include unlawful detention, medical sedation or shackling, deprivation of nutrition or medical care, neglect or exploitation of an older person in any manner. This clause also seeks to insert a new subsection (5) which empowers a clerk of the court or registrar to provide the Minister with the details of an offender, conviction and sentence for the purposes of adding such information to the register upon conviction and sentence.

3.19 Clause 19

3.19.1 Clause 19 proposes the amendment of section 31 of the principal Act by the insertion of subsection (3) which provides that an application to the Minister for the removal of a name from the register may be brought by any person after the criminal record of the offender whose name appears in the register has been expunged in accordance with the relevant provisions of the Criminal Procedure Act, 1977 (Act No. 51 of 1977).

3.20 Clause 20

3.20.1 Clause 20 seeks to amend section 33 of the principal Act by the addition of penalties to the existing list of penalties.

3.21 Clause 21

3.21.1 Clause 21 proposes an amendment to section 34 of the principal Act which deals with the Regulations. The proposed amendment provides that any regulation made in accordance with subsection (1), which affects the South African Police Service, must be made after consultation with the Minister of Police.

3.22 Clause 22

3.22.1 Clause 22 provides for the short title and commencement of the Bill.

4. **PERSONS OR BODIES CONSULTED**

4.1 The following national departments were consulted:

- Department of Justice and Constitutional Development
- Department of Health
- South African Local Government Association (SALGA)
- South African Police Service
- Department of International Relations and Cooperation
- Department of Energy
- Department of Transport
- Department of Sport and Recreation
- Department of Human Settlements

- Department of Basic Education
- Department of Cooperative Governance and Traditional Affairs
- Department of Arts and Culture
- South African Social Security Agency
- National Prosecuting Authority
- National Prosecuting Authority

4.2 The following provincial departments were consulted:

- Department of Social Development: North West Province
- Department of Social Development: Western Cape Province
- Office of the Premier: Mpumalanga

4.3 The following Chapter 9 Institution was consulted:

- South African Human Rights Commission (National Office)

4.4 The following institutes of higher learning were consulted:

- University of Limpopo
- University of Cape Town
- University of Pretoria

4.5 The following civil society organisations were consulted:

- South African Older Persons Forum
- Age-in–Action
- Help Age
- Alzheimers' South Africa
- FAMSA
- Action Against Elder Abuse South Africa

Eastern Cape

- Lukhanyiso MPC
- Grannies OAG
- Lindumsa Service Centre
- Ubuntu CC
- Dubana Old Age
- Zibambele Project
- Masizakhe
- Zibambele Older persons
- Nobubele
- Nompiliso
- Masimanyane
- Empilweni Home
- Elliot Old Age Home
- S.O.M
- Madeira Home
- Huis John Vorster
- Ithembalethu
- Huis Tarkastad Home
- Ons Tuiste
- Sterkstroom Service Centre
- Umthunzi Wokuphumla Old Age Home
- Cingela centre for the elderly
- Badisa Huis
- Age-in-Action
- Alzheimer's SA

- EC Older Persons Forum

Free State

- Boikhucho Old Age Home
- Boiketlong
- Botshabelo Haven
- Mabahloki Clara Home
- Sevendelaan Community Base Care
- Thabang Old Age Club
- Ratanang
- Bramfisher Service Centre
- Mooi Hawe
- MSCN
- Free State Care Forum
- Age-in-Action
- Alzheimer's SA
- FS Older Persons Forum

Gauteng

- Harmony Park home for the elderly
- Kome multi-purpose centre
- RAA
- NICDAM
- Age-in-Action
- FAMSA
- SAVF
- Alzheimers' SA

- GP Older Persons Forum

Kwa-Zulu Natal

- TAFTA
- Angerley Haven
- Trans-50 Association
- Ethekwini Municipality
- Maphumulo Municipality
- Msunduzi Municipality
- Ugu district Municipality
- Umgungundlovu District Municipality
- Ilembe Municipality
- Uthukela District Municipality
- Mandeni Municipality Umhlathuze Municipality
- Okhahlamba Municipality
- Kwadukuza Municipality
- Age-in-Action
- Alzheimer's SA
- KZN Older Persons Forum

Limpopo

- Lewensvruig Client Sentrum
- Alzheimer's SA
- Martha Hofmeyer Huis
- Mmatswele Old Age Care Centre
- Service Centre for the Aged
- Hlanganani-Malamulele

- Blouberu Bochum One-Stop Centre
- Botlokwa One-Stop Centre (Molemole)
- Golden Years Elderly Care
- Giyani Society for the Care of the Aged
- Aretsogeng Batsofe Project
- Mookgophong Society for the Aged
- Naboom Tuiste vir Bejaardes
- Cross Age
- Warmbad Rusoord
- Age in Action
- Limpopo Older Persons Forum

Mpumalanga

- Masibambaneni service centre
- Sikhulile Mhola LC
- Thandanani Mhluzi service centre
- Lydenburg Rusoord
- Wibank Society for the Aged
- Masisizane
- Ekukhanyeni assistance living
- Ebeneza Service Centre
- Dipaleseng
- Mpumalanga Older Persons Forum
- SAVF

Northern Cape

- Fatherhood Foundation

- Huis Namakwaland- Springbok
- NC Older Persons Forum
- Age-in-Action
- Alzheimer's SA

North West

- Age-in-Action
- NW Older Persons Forum
- Seroke Service Centre
- SASSA
- Thusotsile Service Centre
- Tswelopele Old Age
- SAVF

Western Cape

- Dimentia SA
- Institute of ageing
- HEAL
- STTOP
- Helderberg Society for The Aged
- Ikamva Labantu
- BADISA
- Cape Jewish Seniors
- Age in Action
- WC Older Persons Forum
- SAVF

4.6 Civil society organisations that submitted comments after gazetting:

- Action on Elder Abuse SA
- GERATEC: Western Cape
- SIFAR Samson Institute for Ageing Research Cape Town
- ACVV Cape Town
- Southern African Catholic Bishop's Conference: Western Cape
- Bellville Senior Centre: Western Cape
- BADISA: Western Cape
- RANDAID: GP
- Methodist Homes: GP
- NG Kerk Primrose Heuwel, Germiston
- Consult Age
- Alzheimer's SA: GP
- Help Age International: GP
- PADCA: KZN
- J Leslie Smith and Company Inc: KZN
- BADISA: Western Cape
- Huis Izak Van Tonder
- SAVF
- SAAHA
- Witbank Society for the Aged
- Interest Group for Retirement Villages
- Office of the Premier: Mpumalanga
- Verulam Day and Frail Care Centres

4.7 Organised Labour consulted:

- NEHAWU

4.8 Individuals consulted:

- Sana Bria2. Thomas Hlakudi
- Rev Jannie McDuling
- Nelly Machaba
- Robert Watson

5. FINANCIAL IMPLICATIONS FOR THE STATE

The Bill was costed in the 2017/2018 financial year, with two funding models recommended, one on maintaining the status quo and the other one based on the norms and standards. Each funding model has three funding options. The preferred funding model is the norms and standards, option 2 which is 41% allowing 114 993 older persons access to services. The total cost for option 2, is R2 663 220 000. Provinces will have to prioritise from the baseline due to current fiscal constraints.

6. PARLIAMENTARY PROCEDURE

6.1 The Department of Social Development and the State Law Advisers are of the opinion that the Bill must be dealt with in accordance with the procedure envisaged in section 76 of the Constitution.

6.2 The State Law Advisers are of the opinion that it is not necessary to refer the Bill to the National House of Traditional Leaders in terms of section 39(1)(*a*)(i) of the Traditional and Khoi-San Leadership Act, 2019 (Act No. 3 of 2019), since the Bill does not contain any provisions which directly affects customary law or the customs of traditional or Khoi-San communities.

DEPARTMENT OF WATER AND SANITATION

NO. 1873 **11 March 2022**

NATIONAL WATER ACT, 1998

PROPOSED WATER RESOURCE CLASSES AND RESOURCE QUALITY OBJECTIVES FOR THUKELA CATCHMENTS IN THE PONGOLA-MTAMVUNA WATER MANAGEMENT AREA

I, Senzo Mchunu, in my capacity as Minister of Water and Sanitation, and duly authorised in terms of section 13(4) of the National Water Act, 1998 (Act No. 36 of 1998), hereby publish for public comment, the notice on the proposed water resources classes and the associated resource quality objectives, in the Schedule hereto and intended to be issued in terms of section 13(1) of the National Water Act, 1998 (Act No. 36 of 1998).

Any person who wishes to submit written comments in connection with the proposed water resources classes and resource quality objectives is hereby invited to do so within 60 days from the date of publication hereof by -

(a) Posting such comments to the following address:
Department of Water and Sanitation
Private Bag X 313
Pretoria
0001

or

(b) Emailing such comments to the following address: Ms Lebogang Matlala
Email: matlalal@dws.gov.za

Comments must be addressed to the Director: Water Resource Classification and marked for the attention of Ms Lebogang Matlala. Comments received after the closing date shall not be considered.

MR SENZO MCHUNU
MINISTER OF WATER AND SANITATION
DATE: 21/01/2022

SCHEDULE
PROPOSED WATER RESOURCE CLASSES AND RESOURCE QUALITY OBJECTIVES FOR THUKELA CATCHMENTS IN THE PONGOLA-MTAMVUNA WATER MANAGEMENT AREA

1 DEFINITIONS

In this Schedule 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 -

"Class I water resource" means a water resource in which the configuration of ecological categories of the water resources within a catchment, results in an overall condition of that water resource that is minimally altered from its pre-development condition, and as defined in the Water Resource Classification System Regulations;

"Class II water resource" means a water resource in which the configuration of ecological categories of the water resources within a catchment, results in an overall condition of that water resource that is moderately altered from its pre-development condition and as defined in the Water Resource Classification System Regulations;

"Class III water resource" means a water resource in which the configuration of ecological categories of the water resources within a catchment, results in an overall condition of that water resource that is significantly altered from its pre-development condition and as defined in the Water Resource Classification System Regulations;

"Water Resource Classification System Regulations" means the Regulations for the Establishment of the Classification System, 2010 as prescribed in Government Notice No. R. 810 of 17 September 2010;

"Ecological category" means the ecological condition of that water resource in terms of the deviation of its biophysical components from a predevelopment condition;

"Ecological water requirements' in relation to a water resource, means the quantity and quality of water of that resource that is required to maintain the said water resource in its assigned ecological category;

"Integrated unit of analysis" means a water resource catchment that incorporates a socio-economic zone, but is defined by a watershed;

"Percentile" means the non-exceedance probability i.e., at the 95th percentile, 95 percent of values must be less than the value; and at 50th percentile 50, percent of values must be less than the value;

"Present ecological state" means the current health or integrity of various biological attributes of the resource, compared to the natural or close to natural reference conditions;

"Recommended ecological category" means a category indicating the ecological management target for a water resource based on the eco-classification that should be attained, where values range from Category A (unmodified, natural) to Category D (largely modified);

"Resource quality objectives" means descriptive qualitative statements and numerical values for the biological, physical, and chemical attributes of the significant water resources throughout the catchments;

"Resource unit" means a basic unit of a water resource to which Resource Quality Objectives will apply.

"Target ecological category" means the ultimate target to achieve a sustainable system both ecologically and economically, considering the present ecological state and recommended ecological category.

2 DESCRIPTION OF THE WATER RESOURCE

(1) The water resource classes and resource quality objectives are determined for all or part of every significant water resource within the Pongola-Mtamvuna Water Management Area as set out below:

Water Management Area: Pongola-Mtamvuna
Drainage Region: V Primary Drainage Region
River(s): Thukela System

(2) The date from which the resource quality objectives will apply shall be the date stipulated in the *Gazette* wherein the final approved resource quality objectives for the Thukela catchments in the Pongola-Mtamvuna Water Management Area will be published.

3 DETERMINATION OF THE CLASS OF WATER RESOURCE IN TERMS OF SECTION 13(1)*(a)* OF THE ACT

(1) The proposed water resource classes, which are in accordance with the Water Resource Classification System, for the Thukela catchments are as listed in Table 1 below according to the overall class per integrated unit of analysis; and as illustrated in Figure 1 below.

(2) The integrated units of analysis in the Thukela catchments are listed in Table 1 below and illustrated in Figure 2 below.

(3) A summary of the resource units and quaternary catchments are listed in Table 2 below and indicated in Figure 3 below.

(4) The summary of water resource classes per integrated unit of analysis and ecological categories for the Thukela catchments are as listed in Table 4 below.

Table 1: Proposed Water Resource classes for the Thukela catchments

Integrated Units of Analysis		Recommended Water Resource Class
Number	**Name**	
1	Upper Buffalo	III
2	Ngagane River	III
3	Middle Buffalo	III
4	Lower Buffalo	II
5	Blood River	III
6	Sundays River	III
7	Upper Mooi River	III
8	Lower Mooi River	III
9	Middle/Lower Bushman's River	III
10	Upper Thukela River	III
11	Klip River	III

Integrated Units of Analysis		Recommended Water Resource Class
Number	**Name**	
12	Middle Thukela River	III
13	Lower Thukela River	II
14	Escarpment	I
15	Thukela Estuary	II

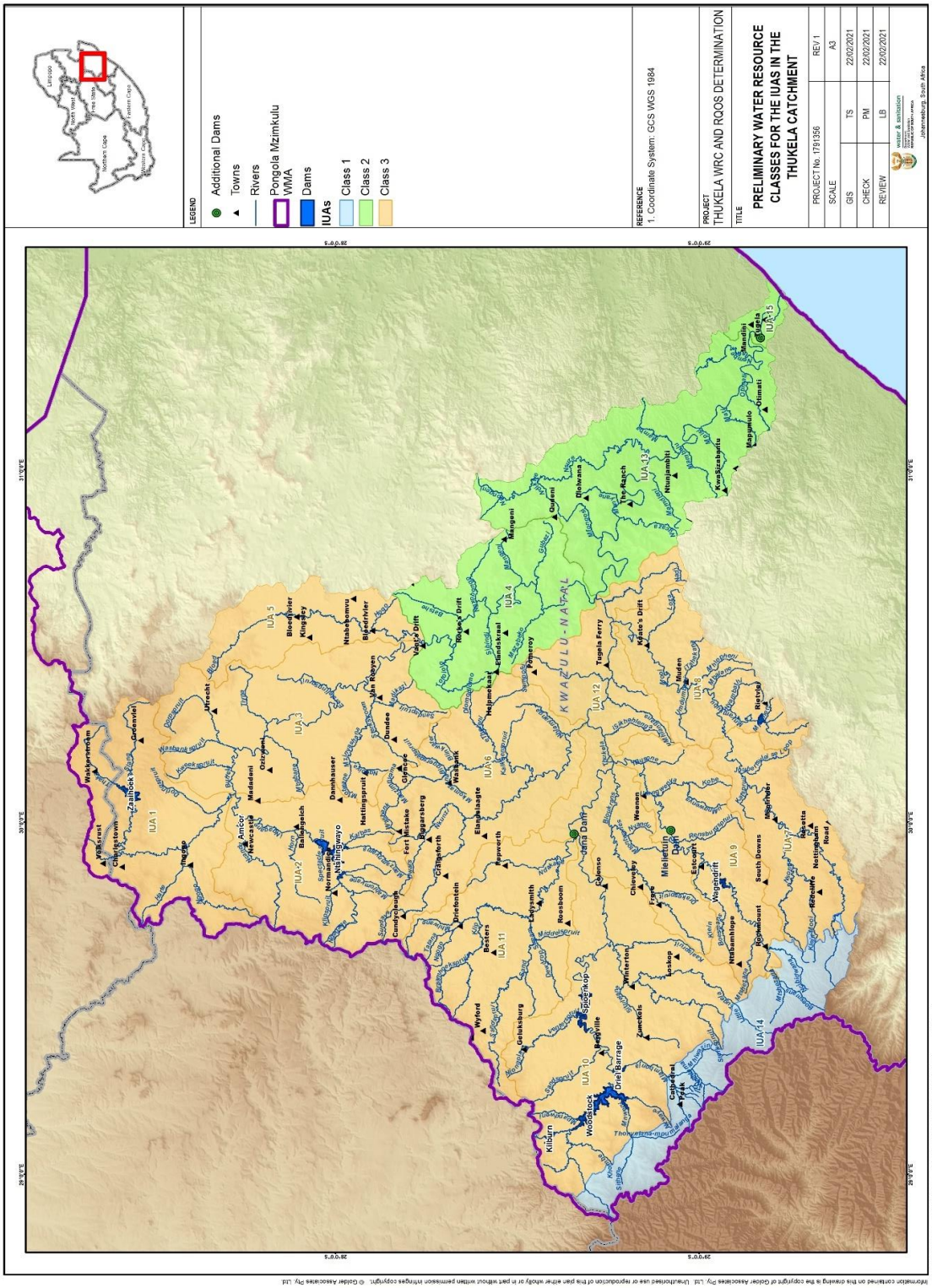

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Figure 1: Proposed Water Resource Classes for the Thukela catchments

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Table 1: Integrated Units of Analysis delineated for Thukela catchments

Integrated Unit of Analysis	Catchment area	Quaternary catchment
1	Upper Buffalo	V31A; V31B; V31C and V31D
2	Ngagane River	V31E; V31F; V31G; V31H; V31J; V31K
3	Middle Buffalo	V32A; V32B; V32C; V32D; V32E; V32F;
4	Lower Buffalo	V33A; V33B; V33C; V33D
5	Blood River	V32G; V32H
6	Sundays River	V60A; V60B; V60C; V60D; V60E; V60F
7	Upper Mooi River	V20A (lower portion); V20B (lower portion); V20C; V20D; V20E
8	Middle/Lower Mooi River	V20F; V20G; V20H; V20J
9	Middle/Lower Bushman's River	V70A (lower portion) V70C; V70D; V70E; V70F; V70G
10	Upper Thukela River	V11A (lower portion), V11C; V11D; V11E; V11F; V11H; V11J; V11K; V11L; V11M; 13A (lower reaches) V13B; V13C; V13D; V13E; V14A; V14B
11	Klip River	V12A; V12B; V12C; V12D; V12E; V12F; V12G
12	Middle Thukela River	V14C; V14D; V14E; V60G; V60H; V60J; V60K
13	Lower Thukela River	V40A; V40B; V40C; V40D; V40E; V50A; V50B; V50C; V50D (upper portion)
14	Escarpment	V20A (upper reaches); V20B (upper reaches); V70A (upper reaches); V70B; V13A (upper reaches); V11G; V11B; V11A (upper reaches)
15	Thukela Estuary and upstream Thukela reach	V50D

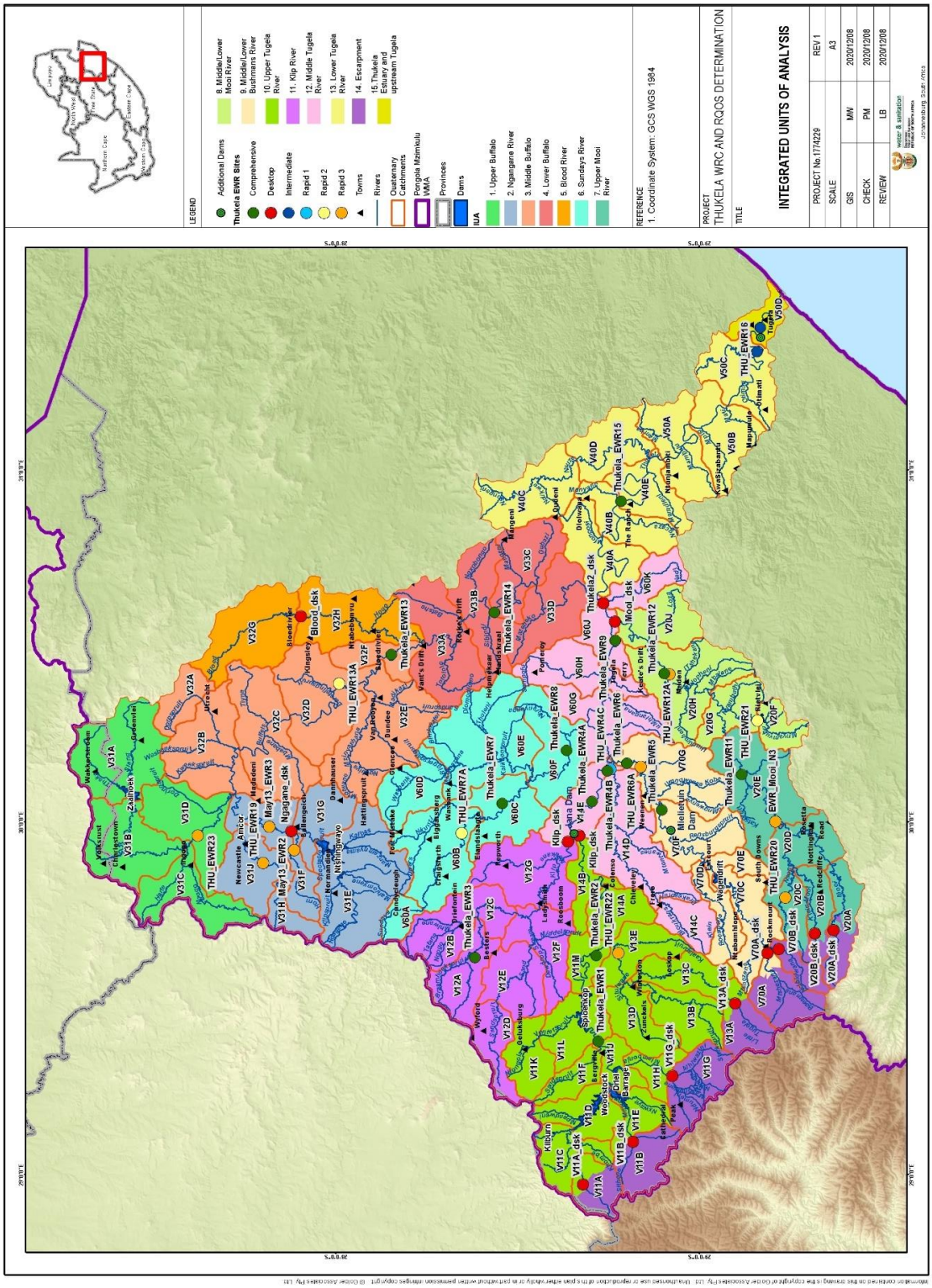

Figure 2: Integrated Units of Analysis delineated for the Thukela catchments

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Table 2: Resource Units delineated for the Thukela catchments

RU Number	Resource Unit (Description)	Quaternary catchment
IUA 1: Upper Buffalo River		
1.1	Wetland resource unit: Wakkerstroom	V31A
1.2	Zaaihoek Dam	V31A
1.3	Buffalo and Slang	V31B
1.4	Ngogo and Harte to confluence with Buffalo	V31C
1.5	Doringspruit catchment	V31D
1.6	Buffalo to confluence to Ngagane	V31C, D
IUA 2: Ngagane River		
2.1	Upper Ngagane to Ntshingwayo Dam	V31E
2.2	Ntshingwayo Dam	V31E
2.3	Horn to confluence with Ngagane	V31F
2.4	Ncandu to confluence with Ngagane	V31H, J
2.5	Ngagane from Ntshingwayo Dam to confluence with Buffalo	V31G, K
IUA 3: Middle Buffalo River		
3.1	Dorps (including Kweek and Wasbankspruit) to confluence with Buffalo	V32A, B
3.2	Tiyna, Eersteling	V32C, D
3.3	Mbabane	V32C
3.4	Mzinyashana including Sterkstroom and Sandspruit	V32 E
3.5	Buffalo from Ngagane to Blood River confluence	V32B, C, D, E, F
IUA: 4: Lower Buffalo River		
4.1	Totololo, Batshe, Sibindi, Ngxobongo, Mangeni, Gubazi, Mazabeko catchments	V33A, B, C, D
4.2	Buffalo from Blood to Thukela confluence	V33A, B, C, D
IUA 5: Blood River		
5.1	Wetland RU: Blood River	V32G
5.2	Blood River from outlet of V32G to confluence with the Buffalo River	V32H
IUA 6: Sundays River		
6.1	Nkunzi to confluence with Sundays	V60B
6.2	Sundays from source to confluence with Wasbank	V60A, B, C
6.3	Wasbank to confluence with Sundays	V60D, E
6.4	Sundays from Wasbank to Thukela confluence, including Nhlanyanga	V60F
IUA 7: Upper Mooi River		
7.1	Klein - Mooi from source to Mooi confluence	V20B (lower portion), D
7.2	Nsonge tributary catchment	V20C
7.3	Mooi upstream of Spring Grove Dam	V20A (lower portion), D (upper)
7.4	Spring Grove Dam/ Mearns Weir	V20D
7.5a	Downstream Spring Grove Dam to outlet of V20G (*Current before Umkomaas transfer)*	V20D (lower), E, G
7.5b	Downstream Spring Grove Dam to outlet of V20G *(long term, after Umkomaas transfer is implemented and transfers out of the system are reduced*)	
7.6	Joubertsvlei to confluence with Mooi	V20E
IUA 8: Middle/ Lower Mooi River		
8.1	Mnyamvubu upstream Craigieburn Dam	V20F
8.2	Craigieburn Dam	V20F
8.3	Mnyamvubu downstream dam to confluence with Mooi	V20G

RU Number	Resource Unit (Description)	Quaternary catchment
8.4	Mooi to Mnyamvubu confluence	V20G (upper part)
8.5	Mbalane, Mhlopeni, Tshekana, Tshekana, Umdumbeni, Loza catchments	V20H, J
8.6	Mooi from Mnyamvubu to Thukela confluence	V20G, H, J
IUA 9: Middle/ Lower Bushman's River		
9.1	Mtshezana, Boesmans, Ncibidwana tributary catchments up to Wagendrift Dam	V70A (lower portion), B, C
9.2	Wagendrift Dam	V70C
9.3	Little Bushman's to confluence with Bushman's	V70D
9.4	Bushman's from Wagendrift Dam to confluence with Rensburgspruit downstream of Estcourt	V70E, F (upper part)
9.5a	Bushman's from Rensburgspruit confluence to outlet of V70F	V70F (lower)
9.5b	Bushman's from outlet of V70Fto confluence with Thukela	V70G
IUA 10: Upper Thukela River		
10.1	Thukela, Putterill, Majaneni, Khombe tributary catchments	V11A (lower portion), C, D
10.2	Mweni tributary catchment	V11E
10.3	Woodstock Dam	V11D, E
10.4	Sandspruit tributary catchment	V11F
10.5	Mlambonja and tributaries	V11H
10.6	Tugela between Driel and Spioenkop Dam	V11J, L
10.7	Njongola, Venterspruit tributary catchments	V11K, L
10.8	Spioenkop Dam	V11L
10.9	Spioenkop Dam to Little Thukela confluence	V11M
10.10	Sterkspruit, Situlwane tributary catchment	V13B, D
10.11	Little Tugela from IUA14 outlet to confluence with Thukela River	V13A (lower portion), C, E
10.12	Tugela from Little Tugela confluence to proposed Jana Dam/ Klip confluence	V14A, B
IUA 11: Klip River		
11.1	Sandspruit and triburtaries	V12D, E and F
11.2	Klip, Braamhoek, Tatana, Ngoga, Mhlwane, catchments	V12A, B, C,
11.3	Klip from Ladysmith to confluence with Thukela	V12G
IUA 12: Middle Thukela River		
12.1	Bloukrans, Drake, Mtontwanes, Nyandu tributary catchments	V14C, D
12.2	Thukela From Klip confluence to Bushman's confluence	V14E
12.3	Sikhehlenga, Sampofu, Nadi tributary catchments	V60G, H, K
12.4	Thukela from Bushman's confluence to d/s Mooi confluence	V60G, H, J, K
IUA 13: Lower Thukela River		
13.1	Mfongosi, Ngcaza, Manyane tributary catchments	V40A, B
13.2	Thukela from d/s Mooi confluence to Middeldrift transfer	V40A, B
13.3	Nsuze from source to confluence with Thukela	V40C, D
13.4	Mamba, Mambulu, Mpisi, Mati, Nembe, Otimati, Mandeni tributary catchments	V50A, B, C
13.5	Thukela from Middeldrift to Mandini Transfer (Mngeni) weir in V50D	V40E, V50A, B, C, D (upper reach)
IUA 14: Escarpment		
14.1	Upper reaches of Thukela River	V11A
14.2	Thukela from source to confluence of Sithene and Thonyelana Rivers (Sithene River; Thonyelana-mpumalanga River)	V11B
14.3	Source to confluence of Mlambonja and Mhlwazini Rivers (Mlambonja River (upper); Mhlwazini River; Ndedema River; Ndumeni River; Thuthumi River)	V11G
14.4	Upper reaches of Little Thukela River	V13A

RU Number	Resource Unit (Description)	Quaternary catchment
14.5	Upper reaches of Boesmans River	V70A
14.6	Ncibidwana source to outlet of V70B	V70B
14.7	Upper reaches of Mooi River	V20A
14.8	Upper reaches of Little Mooi River	V20B
IUA 15: Thukela Estuary		
15.1	Thukela from Mandini Transfer (Mngeni) weir to upstream Estuary, including Mandini Stream	V50D (upper portion)
15.2	Estuary (8.5 km upstream)	V50D

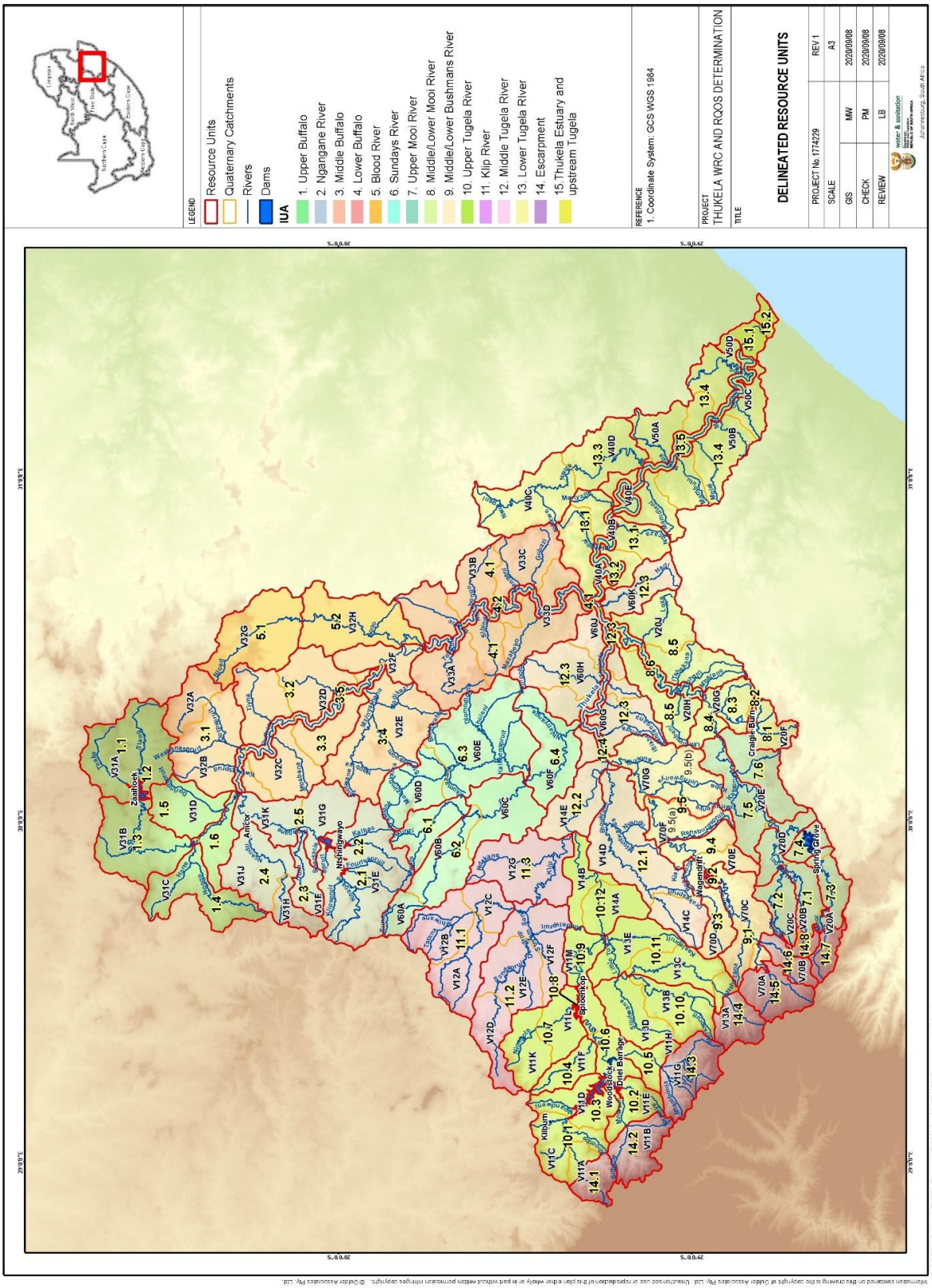

Figure 3: Resource Units of the Thukela catchment

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Table 4: Summary of Water Resource Classes per Integrated Unit of Analysis and Ecological Categories – Thukela catchments

IUA	Proposed Water Resource Class	Node Name	Quaternary Catchment	Resource Unit	River Name	Ecological Category to be maintained	Mean Annual Runoff (million m^3/a)	EWR as % of natural Mean annual run-off
1: Upper Buffalo River	**III**	W1	V31A	**1.1**	Wetland resource unit: Wakkerstroom	B	-	-
		-	V31A	**1.2**	Zaaihoek Dam	-	-	-
		R1 (Desktop)	V31B	**1.3**	Buffalo and Slang rivers	C	-	-
		R2	V31C	**1.4**	Ngogo and Harte to confluence with Buffalo	-	-	-
		R3	V31D	**1.5**	Doringspruit River	-	-	-
		THU_EWR23	V31D	**1.6**	Buffalo to confluence to Ngagane	C	221.96	31.75%
2: Ngagane River	**III**	R5 (Desktop)	V31E	**2.1**	Upper Ngagane to Ntshingwayo Dam	C	-	-
		-	V31E	**2.2**	Ntshingwayo Dam	-	-	-
		May13_EWR2	V31F	**2.3**	Ngagane River	C	160.12	33.65%
		THU_EWR19	V31J	**2.4**	Ncandu River	B/C	50.83	29.36%
		May13_EWR3	V31K	**2.5**	Ngagane River	C/D	160.12	23.93%
3: Middle Buffalo River	**III**	R9	V32A, B	**3.1**	Dorps (including Kweek and Wasbankspruit) to confluence with Buffalo	-	-	-
		R10	V32D	**3.2**	Tiyna, Eerstelingsfontein	-	-	-
			V32C	**3.3**	Mbabane	-	-	-
		-	V32E	**3.4**	Mzinyashana including Sterkstroom and Sandspruit	-	-	-
		Thukela_EWR13	V32F	**3.5**	Middle Buffalo River	C/D	695.05	19.01%
4: Lower Buffalo River	**II**	R12	V33A, B, C, D	**4.1**	Totololo, Batshe, Sibindi, Ngxobongo, Mangeni, Gubazi, Mazabeko catchments	-	-	-
		Thukela_EWR14	V33A, B, C, D	**4.2**	Lower Buffalo River	C	831.09	23.24%
5: Blood River	**III**	W2	V32G	**5.1**	Wetland RU: Blood River	-	-	-
		R15 (Blood_dsk)	V32H	**5.2**	Blood River	C	94.71	21.36%
6: Sundays River	**III**	THU_EWR7A	V60B	**6.1**	Upper Sundays River	C	50.69	28.90%
		Thukela_EWR7	V60C	**6.2**	Upper Sundays River	C/D	90.28	33.17%

IUA	Proposed Water Resource Class	Node Name	Quaternary Catchment	Resource Unit	River Name	Ecological Category to be maintained	Mean Annual Runoff (million m^3/a)	EWR as % of natural Mean annual run-off
		R16 (Desktop)	V60D, E	**6.3**	Wasbank to confluence with Sundays	C/D	-	-
		Thukela_EWR8	V60F	**6.4**	Lower Sundays River	D	197.03	19.55%
7: Upper Mooi River	**III**	R19 (Desktop)	V20B (lower portion), D	**7.1**	Klein - Mooi from source to Mooi confluence	C	-	-
		THU_EWR20	V20C	**7.2**	Nsonge River	B/C	27.13	28.99%
		R22 (Desktop)	V20A (lower portion), D (upper)	**7.3**	Mooi upstream of Spring Grove Dam	C	-	-
		-	V20D	**7.4**	Spring Grove Dam/ Mearns Weir	-	-	-
		Thukela_EWR11	V20E	**7.5 a**	Mooi River (Short- term)	C/D	301.14	26.63%
				7.5b	Mooi River (Long term)	B/C		40.06%
		-	V20E	**7.6**	Joubertsvlei to confluence with Mooi	-	-	-
8: Middle/ Lower Mooi River	**III**	R23	V20F	**8.1**	Mnyamvubu upstream Craigieburn Dam	-	-	-
		-	V20F	**8.2**	Craigieburn Dam	-	-	-
		THU_EWR21	V20G	**8.3**	Mnyamvubu River	C	31.71	22.10%
		R25	V20G (upper part)	**8.4**	Mooi to Mnyamvubu confluence	-	-	-
		R26	V20H, J	**8.5**	Mbalane, Mhlopeni, Tshekana, Tshekana, Umdumbeni, Loza catchments	-	-	-
		THU_EWR12A	V20H	**8.6**	Mooi River	C	361.85	31.57%
9: Middle/ Lower Bushman's River	**III**	R27	V70A (lower portion), B, C	**9.1**	Mtshezana, Boesmans, Ncibidwana tributary catchments up to Wagendrift Dam	-	-	-
		-	V70C	**9.2**	Wagendrift Dam	-	-	-
		R28	V70D	**9.3**	Little Bushman's to confluence with Bushman's	-	-	-
		R29	V70E, F (upper part)	**9.4**	Bushman's from Wagendrift Dam to confluence with Rensburgspruit downstream of Estcourt	-	-	-
		Thukela_EWR5	V70F (lower)	**9.5a**	Middle Bushman's River	C	281.45	39.03%

IUA	Proposed Water Resource Class	Node Name	Quaternary Catchment	Resource Unit	River Name	Ecological Category to be maintained	Mean Annual Runoff (million m^3/a)	EWR as % of natural Mean annual run-off
		THU_EWR6A	V70G	**9.5b**	Lower Bushman's River	C/D	298.37	40.62%
10: Upper Thukela River	**III**	R30	V11A (lower portion), C, D	**10.1**	Thukela, Putterill, Majaneni, Khombe tributary catchments	-	-	-
		R31	V11E	**10.2**	Mweni tributary catchment	-	-	-
		-	V11D, E	**10.3**	Woodstock Dam	-	-	-
		R32	V11F	**10.4**	Sandspruit tributary catchment	-	-	-
		R33	V11H	**10.5**	Mlambonja and tributaries	-	-	-
		Thukela_EWR1	V11J	**10.6**	Upper Thukela River	D	705.42	17.31%
		R35	V11K, L	**10.7**	Njongola, Venterspruit tributary catchments	-	-	-
		-	V11L	**10.8**	Spioenkop Dam	-	-	-
		Thukela_EWR2	V11M	**10.9**	Upper Thukela River	C/D	798.4	27.37%
		R37	V13B, D	**10.10**	Sterkspruit, Situlwane tributary catchment	-	-	-
		Thukela_EWR3	V13 E	**10.11**	Little Thukela River	C/D	285.2	24.71%
		Thukela1_dsk	V14B	**10.12**	Thukela River	C/D	1145.20	39.37%
11: Klip River	**III**	R40	V12D, E and F	**11.1**	Sandspruit and triburtaries	-	-	-
		THU_EWR22	V12A, B, C,	**11.2**	Klip River	C	52.44	25.31%
		R42 (Klip_dsk)	V12G	**11.3**	Klip River	C	253.09	25.43%
12: Middle Thukela River	**III**	R43	V14C, D	**12.1**	Bloukrans, Drake, Mtontwanes, Nyandu tributary catchments	-	-	-
		Thukela_EWR4B	V14E	**12.2**	Middle Thukela River	C	1423.83	25.09%
		R45	V60G, H, K	**12.3**	Sikhehlenga, Sampofu, Nadi tributary catchments	-	-	-
		Thukela_EWR9	V60J	**12.4**	Middle Thukela River	D	2050.76	20.26%
13: Lower Thukela River	**II**	R47	V40A, B	**13.1**	Mfongosi, Ngcaza, Manyane tributary catchments	-	-	-
		Thukela_EWR15	V40A, B	**13.2**	Lower Thukela River	C	3424.00	22.59%
		R49	V40C, D	**13.3**	Nsuze from source to confluence with Thukela	-	-	-

IUA	Proposed Water Resource Class	Node Name	Quaternary Catchment	Resource Unit	River Name	Ecological Category to be maintained	Mean Annual Runoff (million m^3/a)	EWR as % of natural Mean annual run-off
		R51	V50A, B, C	**13.4**	Mamba, Mambulu, Mpisi, Mati, Nembe, Otimati, Mandeni tributary catchments	-	-	-
		THU_EWR16	V50C	**13.5**	Lower Thukela River	C	3679.97	37.83%
14: Escarpment	**I**	R52 (V11A_dsk)	V11A	**14.1**	Upper Thukela River	B	66.90	-
		R53 (V11B_dsk)	V11B	**14.2**	Mnweni River	B	142.69	-
		R54 (V11G_dsk)	V11G	**14.3**	Mlambonja River	B	191.99	-
		R55 (V13A_dsk)	V13A	**14.4**	Little Thukela River	B	82.32	-
		R56 (V70A_dsk)	V70A	**14.5**	Upper Bushman's River	B	113.46	-
		R57 (V70B_dsk)	V70B	**14.6**	Nsibidwana River	B	44.16	-
		R58 (V20A_dsk)	V20A	**14.7**	Upper Mooi River	B	42.90	-
		R 59 (V20B_dsk)	V20B	**14.8**	Little Mooi River (upper)	B/C	10.32	-
15: Thukela Estuary	**II**	THU_EWR17	V50D	**15.1**	Lower Thukela River	C	3690.53	37.38%
		-	V50D	**15.2**	Estuary (8.5 km upstream)	C	-	-

RESOURCE UNITS SELECTED WITH PROPOSED RESOURCE QUALITY OBJECTIVES

Table 3 provides

(i) the listed Integrated Unit of Analysis in the Thukela catchments for which Resource Quality Objectives are proposed;

(ii) the selected Water Resources (Rivers, Wetlands, Dams and Groundwater) for which Resource Quality Objectives are proposed and

(iii) reference to subsequent tables that list the proposed Resource Quality Objectives per selected sub-components (quantity, quality, habitat, biota or groundwater) per Resource Unit.

(2) Resource quality objectives for rivers and dams within the Thukela catchments are within the integrated unit of analysis as specified and set out in Tables 6 to 20 below.

(3) Resource quality objectives for priority wetland clusters and systems in selected resource units in the Thukela catchments are as set out in Table 21 below.

(4) Resource quality objectives for groundwater in priority Groundwater Resource Units are as specified and set out in Tables 22 to 36 below.

(5) Resource quality objectives for Thukela Estuary are as set out in Table 37 below.

Table 3: Integrated Unit of Analysis and Resource Units with the indicated sub-components of water resources for which Resource Quality Objectives are proposed

Integrated Unit of Analysis	Resource Unit	RIVERS				DAMS				List of applicable tables with proposed Resource Quality Objectives (RQOs)	Ground Water tables with proposed RQOs	Wetlands tables with proposed RQOs	Estuary table with proposed RQOs
		Quantity	Quality	Habitat	Biota	Quantity	Quality	Habitat	Biota				
1: Upper Buffalo River	1.1	X	X		X					Table 6 (Rivers and Dams)	Table 22 (Groundwater)	Table 21 (Wetlands)	
	1.2					X	X			Table 6 (Rivers and Dams)			
	1.3	X	X	X	X					Table 6 (Rivers and Dams)			
	1.6	X	X	X	X					Table 6 (Rivers and Dams)			
2: Ngagane River	2.1	X	X	X	X					Table 7 (Rivers and Dams)	Table 23 (Groundwater)		
	2.2					X	X	X	X	Table 7 (Rivers and Dams)			
	2.3	X	X	X	X					Table 7 (Rivers and Dams)			
	2.4	X	X	X	X					Table 7 (Rivers and Dams)			
	2.5	X	X	X	X					Table 7 (Rivers and Dams)			
3: Middle Buffalo River	3.1		X							Table 8 (Rivers and Dams)	Table 24 (Groundwater)	Table 21 (Wetlands)	
	3.2		X							Table 8 (Rivers and Dams)			
	3.4		X							Table 8 (Rivers and Dams)			
	3.5	X	X	X	X					Table 8 (Rivers and Dams)			

Integrated Unit of Analysis	Resource Unit	RIVERS				DAMS				List of applicable tables with proposed Resource Quality Objectives (RQOs)	Ground Water tables with proposed RQOs	Wetlands tables with proposed RQOs	Estuary table with proposed RQOs
		Quantity	Quality	Habitat	Biota	Quantity	Quality	Habitat	Biota				
4: Lower Buffalo River	**4.2**	X	X	X	X					Table 9 (Rivers and Dams)	Table 25 (Groundwater)		
5: Blood River	**5.1**		X		X					Table 10 (Rivers and Dams)	Table 26 (Groundwater)	Table 21 (Wetlands)	
	5.2	X	X	X	X					Table 10 (Rivers and Dams)		Table 21 (Wetlands)	
6: Sundays River	**6.1**	X	X	X	X					Table 11 (Rivers and Dams)	Table 27 (Groundwater)		
	6.2	X	X	X	X					Table 11 (Rivers and Dams)		Table 21 (Wetlands)	
	6.3	X	X	X	X					Table 11 (Rivers and Dams)		Table 21 (Wetlands)	
	6.4	X	X	X	X					Table 11 (Rivers and Dams)			
7: Upper Mooi River	**7.1**	X	X	X	X					Table 12 (Rivers and Dams)	Table 28 (Groundwater)	Table 21 (Wetlands)	
	7.2	X	X	X	X					Table 12 (Rivers and Dams)			
	7.3	X	X	X	X					Table 12 (Rivers and Dams)		Table 21 (Wetlands)	
	7.4	X	X		X					Table 12 (Rivers and Dams)			
	7.5 a	X	X	X	X					Table 12 (Rivers and Dams)			
	7.5b	X	X	X	X					Table 12 (Rivers and Dams)			
	7.6		X		X					Table 12 (Rivers and Dams)			
8: Middle/ Lower Mooi River	**8.1**										Table 29 (Groundwater)	Table 21 (Wetlands)	
	8.2					X	X		X	Table 13 (Rivers and Dams)			
	8.3	X	X	X	X					Table 13 (Rivers and Dams)			
	8.6	X	X	X	X					Table 13 (Rivers and Dams)			

Integrated Unit of Analysis	Resource Unit	RIVERS				DAMS				List of applicable tables with proposed Resource Quality Objectives (RQOs)	Ground Water tables with proposed RQOs	Wetlands tables with proposed RQOs	Estuary table with proposed RQOs
		Quantity	Quality	Habitat	Biota	Quantity	Quality	Habitat	Biota				
9: Middle/ Lower Bushman's River	9.2					X	X		X	Table 14 (Rivers and Dams)	Table 30 (Groundwater)		
	9.3		X	X	X					Table 14 (Rivers and Dams)		Table 21 (Wetlands)	
	9.4		X							Table 14 (Rivers and Dams)			
	9.5a	X	X	X	X					Table 14 (Rivers and Dams)			
	9.5b	X	X	X	X					Table 14 (Rivers and Dams)			
10: Upper Thukela River	10.1		X	X	X					Table 15 (Rivers and Dams)	Table 31 (Groundwater)		
	10.4		X	X	X					Table 15 (Rivers and Dams)			
	10.8					X	X		X	Table 15 (Rivers and Dams)			
	10.9	X	X	X	X					Table 15 (Rivers and Dams)			
	10.10		X	X	X					Table 15 (Rivers and Dams)			
	10.11	X	X	X	X					Table 15 (Rivers and Dams)			
	10.12	X	X	X	X					Table 15 (Rivers and Dams)			
11: Klip River	11.1		X	X	X					Table 16 (Rivers and Dams)	Table 32 (Groundwater)		
	11.2	X	X	X	X					Table 16 (Rivers and Dams)			
	11.3	X	X	X	X					Table 16 (Rivers and Dams)			
12: Middle Thukela River	12.2	X		X	X					Table 17 (Rivers and Dams)	Table 33 (Groundwater)		
	12.4	X	X	X	X					Table 17 (Rivers and Dams)			
	13.2	X	X	X	X					Table 18 (Rivers and Dams)			

Integrated Unit of Analysis	Resource Unit	RIVERS				DAMS				List of applicable tables with proposed Resource Quality Objectives (RQOs)	Ground Water tables with proposed RQOs	Wetlands tables with proposed RQOs	Estuary table with proposed RQOs
		Quantity	Quality	Habitat	Biota	Quantity	Quality	Habitat	Biota				
13: Lower Thukela River	**13.5**	X	X	X	X					Table 18 (Rivers and Dams)	Table 34 (Groundwater)		
14: Escarpment	**14.1**	X								Table 19 (Rivers and Dams)	Table 35 (Groundwater)		
	14.2	X								Table 19 (Rivers and Dams)			
	14.3	X								Table 19 (Rivers and Dams)			
	14.4	X								Table 19 (Rivers and Dams)			
	14.5	X								Table 19 (Rivers and Dams)			
	14.6	X								Table 19 (Rivers and Dams)			
	14.7	X								Table 19 (Rivers and Dams)		Table 21 (Wetlands)	
	14.8	X								Table 19 (Rivers and Dams)		Table 21 (Wetlands)	
15: Thukela Estuary	**15.1**		X	X	X					Table 20 (Rives and Dams)	Table 36 (Groundwater)		
	15.2												Table 37 (Estuary)

NOTE: Where applicable the Resource Quality Objectives in the tables below are supported by Numerical Limits.

Table 6: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 1: UPPER BUFFALO RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
IUA 1: UPPER BUFFALO RIVER	**III**	Wetland resource unit: Wakkerstroom **V31A**	1.1	Quantity	Low flows	EWR maintenance low and drought flows: Slang River at V3R003 in V31A NMAR = 97.065 x10^{6}m^3 TEC=B category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows - specifically required for wetlands upstream of the Zaaihoek Dam (V3R003) Monitoring of flows at V3R003		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
								Oct	0.221	0.007
								Nov	0.418	0.081
								Dec	0.610	0.075
								Jan	0.83	0.180
								Feb	1.069	0.231
								Mar	0.812	0.176
								Apr	0.576	0.127
								May	0.319	0.004
								Jun	0.185	0.039
								Jul	0.142	0.036
								Aug	0.121	0.032
								Sep	0.137	0.035
				Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the present ecological state (PES B)	Orthophosphate as P	≤0.01 mg/L (50th percentile)		
							Total Inorganic Nitrogen (TIN)	≤0.5 mg/L (50th percentile)		
					Salts	Total Dissolved Solids needs to be maintained to support aquatic ecosystem and sustain the present ecological state (PES B)	Total Dissolved Solids	≤120 mg/L (95th percentile)		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL		
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained in a PES B ecological category.	*Barbus (Enteromius) anoplus* (BANO) *Amphilius natalensis* (ANAT) *Anguilla mossambica* (AMOS)	During survey in all flow habitat classes all species present. BANO and ANAT ≥ 5 individuals per species		
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained within a B ecological category or improved upon.	Baetidae 2 sp Perlidae Tricorythidae Hydropsychidae 1 sp Leptoceridae Ancyidae Psephenidae	At least 2 biotopes sampled: assemblages to be ≥ A abundances		
					Diatoms	Ecological water quality should be maintained as *good quality*	Specific Pollution Sensitivity Index (SPI)	SPI: ≥15 PTV: 20 to < 40%		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
							Percentage pollution tolerant values (%PTV)	
		Zaaihoek Dam **V31A**	1.2	Quantity	Dam level	Update and review operating rules to sustain optimal dam levels to support users and downstream aquatic ecosystem. The dam level must be managed to protect ecosystem function as well as downstream users.	Minimal operating level required in the dam.	
				Quality	Nutrients	Nutrient levels must be maintained to sustain good water quality state and ecological condition. Impacts must be limited to prevent deterioration.	Orthophosphate (PO_4^-) as Phosphorus	≤0.01 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤0.5 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain good water quality state and ecological condition.	Total Dissolved Solids	≤120 mg/L (95th percentile)
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
						Maintain baseline clarity	Turbidity	Must not deviate more than 10% from background levels
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
		Buffalo and Slang **V31B**	1.3	Quantity	Low flows	EWR maintenance low and drought flows: Buffalo River at outlet of V31B NMAR = 161.44 x10^{6}m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows required for the upstream Buffalo River	
								Maintenance Low flows (m^3/s) / Drought Low flows (m^3/s)
								Oct: 0.404 / 0.075
								Nov: 0.698 / 0.127
								Dec: 0.991 / 0.123
								Jan: 1.367 / 0.467
								Feb: 1.764 / 0.488
								Mar: 1.353 / 0.373
								Apr: 0.972 / 0.278
								May: 0.565 / 0.078
								Jun: 0.346 / 0.085
								Jul: 0.275 / 0.086
								Aug: 0.243 / 0.078
								Sep: 0.404 / 0.075
				Quality	Nutrients	Nutrient levels must be improved to sustain the aquatic ecosystem health and to meet the prescribed ecological state	Orthophosphate (PO_4^-) as Phosphorus	≤0.5 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1 mg/L (50th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Salts	Salinity levels must be maintained or improved to support downstream users.	Total Dissolved Solids	≤350 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL (95th percentile)
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
					Toxics	Ammonia concentration should not be a threat to human or ecological health	Ammonia as N	≤0.0725 mg/L
				Habitat	Instream	Natural flow pattern must be maintained in C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Index of Habitat Integrity (IHI and IHAS)	IHI ≥C Ecological Category (60 – 79%) IHAS to be *good* habitat availability (>65%)
					Riparian habitat	The riparian vegetation must be maintained at VEGRAI ≥ C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRIA ≥C Ecological Category (>60%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained in a PES C ecological category.	*Barbus (Enteromius) anoplus* (BANO) *Amphilius natalensis* (ANAT) *Anguilla mossambica* (AMOS) *Labeo rubromaculatus* (LRUB)	During survey in all flow habitat classes all species present. BANO and ANAT ≥ 5 individuals per species. LRUB habitat requirement – deep pools and fast deep flow class.
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained within a C ecological category or improved upon.	Baetidae 2 sp Perlidae Heptageniidae Hydropsychidae 2 sp Elmidae Leptophlebidae	At least 2 biotopes sampled: assemblages to be ≥ B abundances
					Diatoms	Ecological water quality should be maintained as *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 -14 PTV: 20 to < 40%
		Buffalo to confluence with Ngagane **V31C, V31D**	**1.6**	Quantity	Low flows	EWR maintenance low and drought flows: Buffalo River at the EWR site THU_EWR23 (-27.6221, 29.9617) in V31D NMAR = 221.96 x10^{6}m^3	Maintenance and drought flows required for the Buffalo River	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	0.563	0.107
Nov	0.952	0.170

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
		(THU_EWR23)				TEC=C category The maintenance low flows and drought flows must be attained to support the upstream and downstream aquatic ecosystem to the Ngagane River confluence.		Dec	1.342	0.167
								Jan	1.866	0.641
								Feb	2.412	0.648
								Mar	1.854	0.518
								Apr	1.335	0.382
								May	0.784	0.146
								Jun	0.484	0.128
								Jul	0.386	0.121
								Aug	0.342	0.114
								Sep	0.386	0.143
				Quality	Nutrients	Nutrient levels must be maintained or improved to sustain the aquatic ecosystem health and to meet the prescribed ecological state (C ecological category)	Orthophosphate (PO_4^-) as Phosphorus	≤1 mg/L (50th percentile)		
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤350 mg/L (95th percentile)		
					Salts	Salinity levels must be maintained or improved to support downstream users.	Total Dissolved Solids	≤80mg/L (95th percentile)		
							Sulphate	≤30mg/L (95th percentile)		
							Chloride	6.5 (5th percentile) and 9.0 (95th percentile)		
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	≤120 mg/l as $CaCO_3$		
						Alkalinity should be maintained at acceptable levels to support downstream users.	Alkalinity as mg/l $CaCO_3$	≤ 0.105 milligrams/litre (mg/l) (95th percentile)		
					Toxics	The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health.	Aluminium (Al)	≤ 0.15 milligrams/litre (mg/l) (95th percentile)		
							Manganese (Mn)	≤ 0.0012 milligrams/litre (mg/l) (95th percentile)		
							Cadmium (Cd)	≤ 0.1 milligrams/litre (mg/l) (95th percentile)		
							Iron (Fe)	≤ 0.0095 milligrams/litre (mg/l) (95th percentile)		
							Lead (Pb) hard	≤ 0.0073 milligrams/litre (mg/l) (95th percentile)		
							Copper (Cu) hard	≤ 0.07 milligrams/litre (mg/l) (95th percentile)		
							Nickel (Ni)	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)		
							Ammonia (as N)	Instream Habitat Integrity (class D) ≥D Ecological Category (40 – 59%) Riparian Integrity - Class ≥B Ecological Category (80 – 90%)		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
								IHAS to be *good* habitat availability (>65%)
				Habitat	Instream	Natural flow pattern must be maintained in C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Index of Habitat Integrity (IHI and IHAS)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60%)
					Riparian habitat	The riparian vegetation must be maintained at VEGRAI ≥ C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Vegetation Response Assessment Index (VEGRAI)	During survey in all flow habitat classes all species present. BANO, BPAL, BPAU – habitat indicators; and ANAT ≥ 5 individuals per species FRAI EC: C (60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained in a PES C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Amphilius natalensis* (ANAT) *Anguilla mossambica* (AMOS) *Labeo rubromaculatus* (LRUB) *Barbus (Enteromius) pallidus* (BPAL) *Barbus (Enteromius) paludinosus* (BPAU)	3 biotopes sampled; assemblages to be ≥ B abundances. SASS 5 scores: 120 – 200 ASPT score: 5.5 – 6.5 MIRAI EC: C (60 – 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained within a C ecological category or improved upon.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 sp Atyidae Hydracarina Heptageniidae Leptophlebiidae Ecnomidae Elmidae Tricorythidae	SPI: 12-14 PTV: < 20%
					Diatoms	Ecological water quality should be maintained as *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%

Table 7: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 2: NGAGANE

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
IUA 2: NGAGANE	III		Upper Ngagane to Ntshingwayo Dam **V31E**	**2.1**	Quantity	Low flows	EWR maintenance low and drought flows: Ngagane River at Klipspruit confluence in V31E NMAR = 32.089 x10^{6}m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows required for the wetlands and Ngagane River upstream of the Chelmsford Dam (V3R001)		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
									Oct	0.054	0.020
									Nov	0.082	0.014
									Dec	0.112	0.009
									Jan	0.168	0.074
									Feb	0.229	0.100
									Mar	0.189	0.083
									Apr	0.139	0.062
									May	0.082	0.037
									Jun	0.051	0.023
									Jul	0.037	0.018
									Aug	0.054	0.020
									Sep	0.082	0.014
					Quality	Nutrients	Nutrient levels must be maintained or improved to sustain the aquatic ecosystem health and to meet the prescribed ecological state (C ecological category)	Ortho-phosphate (PO_4^-) as Phosphorus	≤ 0.05 mg/L (50th percentile)		
								Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤ 1 mg/L (50th percentile)		
						Salts	Salinity concentration must be maintained or improved to support downstream users.	Total Dissolved Solids	≤ 350 mg/L (95th percentile)		
						System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)		
					Habitat	Instream	Natural flow pattern must be maintained in C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class A/B) Ecological Category (80 – 100%) Riparian Integrity - Class ≥C Ecological Category (60 – 79%) IHAS to be *adquate* habitat availability (>55 - 65%)		
						Riparian habitat	The riparian vegetation must be maintained at VEGRAI ≥ C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60%)		

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Biota	Fish	Flow and water quality sensitive Fish species to be maintained in a PES C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Amphilius natalensis* (ANAT) *Labeo rubromaculatus* (LRUB) *Barbus (Enteromius) pallidus* (BPAL) *Barbus (Enteromius) paludinosus* (BPAU)	During survey in all flow habitat classes all species present. BANO, BPAL, BPAU – habitat indicators; and ANAT ≥ 5 individuals per species FRAI EC: C (60 - 79%)
						Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained within a C ecological category or improved upon.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Atyidae Heptageniidae Leptophlebiidae Hydropsychidae >1 spp	At least 2 biotopes sampled; assemblages to be ≥ B abundances MIRAI EC: C (60 – 79%)
						Diatoms	Ecological water quality should be maintained as *good quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 15 - 17 PTV: 20 to <40%
			Ntshingwayo Dam **V31E**	**2.2**	Quantity	Dam level	Update and review operating rules to sustain optimal dam levels to support users and downstream aquatic ecosystem. The dam level must be managed to protect ecosystem function as well as downstream users.	Minimal operating level required in the dam.	
					Quality	Nutrients	Concentration of total nitrate must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system or better. Good current state to be maintained. Prevent algal blooms.	Total Inorganic Nitrogen (TIN)	≤1.0 mg/L (50th percentile)
								Ortho-phosphate (PO_4^-) as Phosphorus	≤0.05 mg/L (50th percentile)
						Salts	The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users.	Total Dissolved Solids	≤120 mg/L (95th percentile)

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
							Good current state to be maintained.				
						System variables	pH must be maintained within the prescribed range.	pH	6.5 (5th percentile) and 9.0 (95th percentile)		
							Maintain system to ensure increase in clarity	Turbidity	≥0.4 m 5th percentile		
						Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming Units per 100 mL		
					Habitat	Riparian vegetation Health	To manage the water resource for maintenance of aquatic ecosystem diversity (instream, biotic and semi-aquatic species, riparian zones). Conserve, maintain, rehabilitate, and establish artificial shoreline and riparian zones. The natural riparian zone should be preserved as far as possible, including removing alien invasives, to ensure necessary habitat.	80% riparian vegetation cover	Riparian zone vegetation survey at least every three years.		
					Biota	Mammals	Habitat must be maintained to support the Red List species.	Oribi (*Ourebia ourebia*)			
						Birds	Habitat must be maintained to support the Red List species.	Southern Bald Ibis (*Geronticus calvus*) Grey Crowned Crane (*Balearica regulorum*) Blue Crane (*Anthropoides paradiseus*) African Marsh Harrier (*Circus ranivorus*) Corned Crake (*Crex crex*) African Grass Owl (*Tito capensis*) Secretarybird (*Sagittarius serpentarius*) Whitebellied Korhaan (*Eupodotis senegalensis*) Ground Woodpecker (*Geocolapts olivaceus*)			
			Horn to confluence with Ngagane **V31**	**2.3**	Quantity	Low flows	EWR maintenance low and drought flows: Horn River at the EWR site May13_EWR2 (-27.888, 29.921) in V31F NMAR = 21.61 x10^{6}m^3 TEC=C category	Maintenance and drought flows required for the Horn River Monitoring of flows at V3H009		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
									Oct	0.086	0.01
									Nov	0.134	0.009
									Dec	0.183	0.009
									Jan	0.272	0.047

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
			(May 13_EWR 2)				The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.		Feb	0.362	0.063
									Mar	0.295	0.051
									Apr	0.209	0.037
									May	0.117	0.021
									Jun	0.069	0.013
									Jul	0.053	0.01
									Aug	0.05	0.01
									Sep	0.061	0.011
					Quality	Nutrients	Nutrient levels must be improved to sustain the aquatic ecosystem health and to meet the prescribed ecological state (C category)	Ortho-phosphate (PO_4^-) as Phosphorus	≤ 0.02 mg/L (50th percentile)		
								Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)		
						Salts	Instream salinity must be improved to meet the recommended ecological category and the water quality requirements of the water users. Land based impacts and discharges must be controlled and managed to protect the resource.	Total Dissolved Solids	≤ 350 mg/L (95th percentile)		
								Sulphate	≤ 165mg/L (95th percentile)		
								Chloride	≤ 120 mg/L (95th percentile)		
						System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)		
						Toxics	The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)		
								Aluminium (Al)	≤ 0.105 milligrams/litre (mg/l) (95th percentile)		
								Manganese (Mn)	≤ 0.15 milligrams/litre (mg/l) (95th percentile)		
								Iron (Fe)	≤ 0.1 milligrams/litre (mg/l) (95th percentile)		
								Lead (Pb) hard	≤ 0.0095 milligrams/litre (mg/l) (95th percentile)		
								Copper (Cu) hard	≤ 0.0073 milligrams/litre (mg/l) (95th percentile)		
								Nickel (Ni)	≤ 0.07 milligrams/litre (mg/l) (95th percentile)		
								Cobalt (Co)	≤ 0.05 milligrams/litre (mg/l) (95th percentile)		
								Zinc (Zn)	≤ 0.002 milligrams/litre (mg/l) (95th percentile)		
								Atrazine	≤0.078 milligrams/litre (mg/l)		
								Mancozeb	≤0.009 milligrams/litre (mg/l)		
								Glyphosate	≤0.7 milligrams/litre (mg/l)		

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL (95th percentile)
					Habitat	Instream	Natural flow pattern must be maintained in B/C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class B/C) Ecological Category (60 – 90%) Riparian Integrity - Class ≥A/B Ecological Category (80 – 100%) IHAS to be *good* habitat availability (>65%)
						Riparian habitat	The riparian vegetation must be maintained at VEGRAI ≥ C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60%)
					Biota	Fish	Flow and water quality sensitive Fish species to be maintained or improved to a PES C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Amphilius natalensis* (ANAT) *Anguilla mossambica* (AMOS) *Labeo rubromaculatus* (LRUB) *Barbus (Enteromius) pallidus* (BPAL) *Labeobarbus natalensis* (BNAT)	During survey in all flow habitat classes all species present. BANO, BPAL – habitat indicators; and ANAT ≥ 5 individuals per species FRAI EC: C (60 - 79%)
						Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained within a C ecological category or improved upon.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Leptophlebiidae Tricorythidae Leptoceridae Perlidae Hydropsychidae >2spp	3 biotopes sampled; assemblages to be ≥ B abundances; SASS 5 scores: ≥213 ASPT score: ≥7.2 MIRAI EC: C (60 – 79%)
						Diatoms	Ecological water quality should be maintained as *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12-14 PTV: 20 to < 40%

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
			Ncandu to confluence with Ngagane **V31H, V31J** **(EWR 19)**	**2.4**	Quantity	Low flows	EWR maintenance low and drought flows: Ncandu River at the EWR site THU_EWR19 (-27.8017, 29.8840) in V31J NMAR = 50.83 x10^6m^3 TEC=B/C category The maintenance low flows and drought flows must be attained to support the upstream and downstream aquatic ecosystem of the Ncandu River.	Maintenance and drought flows required for the Ncandu River		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
									Oct	0.151	0.023
									Nov	0.238	0.02
									Dec	0.327	0.02
									Jan	0.488	0.128
									Feb	0.651	0.170
									Mar	0.529	0.139
									Apr	0.373	0.099
									May	0.208	0.057
									Jun	0.120	0.034
									Jul	0.091	0.027
									Aug	0.087	0.026
									Sep	0.105	0.029
					Quality	Nutrients	Nutrient levels must be improved to sustain the aquatic ecosystem health and to meet the ecological state	Orthophosphate (PO_4^-) as Phosphorus	≤0.05 mg/L (50th percentile)		
								Total Inorganic Nitrogen (TIN$^-$) as Nitrogen	≤1 mg/L (50th percentile)		
						Salts	Instream salinity must be maintained or improved upon to support the aquatic ecosystem and the water quality requirements of the water users	Total Dissolved Solids	≤350 mg/L (95th percentile)		
							In-stream quality must be maintained	Sulphate	≤ 165mg/L (95th percentile)		
							In-stream quality must be maintained	Chloride	≤ 120mg/L (95th percentile)		
						System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)		
						Toxics	The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)		
								Aluminium (Al)	≤ 0.105 milligrams/litre (mg/l) (95th percentile)		
								Manganese (Mn)	≤ 0.15 milligrams/litre (mg/l) (95th percentile)		
								Cadmium (Cd)	≤ 0.0012 milligrams/litre (mg/l) (95th percentile)		
								Iron (Fe)	≤ 0.1 milligrams/litre (mg/l) (95th percentile)		
								Lead (Pb) hard	≤ 0.0095 milligrams/litre (mg/l) (95th percentile)		

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
								Copper (Cu) hard	≤ 0.0073 milligrams/litre (mg/l) (95th percentile)
								Nickel (Ni)	≤ 0.07 milligrams/litre (mg/l) (95th percentile)
								Cobalt (Co)	≤ 0.05 milligrams/litre (mg/l) (95th percentile)
								Zinc (Zn)	≤ 0.002 milligrams/litre (mg/l) (95th percentile)
								Atrazine	≤0.078 milligrams/litre (mg/l)
								Mancozeb	≤0.009 milligrams/litre (mg/l)
								Glyphosate	≤0.7 milligrams/litre (mg/l)
								Benzene	≤0.01 milligrams/litre (mg/l) (95th percentile)
								Toluene	≤0.7 milligrams/litre (mg/l) (95th percentile)
								Oil and grease	2.5 mg/l
						Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL (95th percentile)
					Habitat	Instream	Natural flow pattern must be maintained in B Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class B) Ecological Category (80 – 90%) Riparian Integrity - Class ≥B Ecological Category (80 – 90%) IHAS to be *good* habitat availability (>65%)
						Riparian habitat	The riparian vegetation must be maintained at VEGRAI ≥ C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60%)
					Biota	Fish	Flow and water quality sensitive Fish species to be maintained or improved to a PES B/C ecological category.	Fish Response Assessment Index (FRAI). *Amphilius natalensis* (ANAT) *Anguilla mossambica* (AMOS) *Labeo rubromaculatus* (LRUB) *Barbus (Enteromius) paludinosus* (BPAU) *Labeobarbus natalensis* (BNAT) *Barbus (Enteromius) viviparus* (BVIV)	During survey in all flow habitat classes all species present. BVIV, BNAT, BPAU – habitat indicators; and ANAT ≥ 5 individuals per species FRAI EC: B/C (70 - 89%)
						Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained.	Macroinvertebrate Response Assessment Index (MIRAI)	3 biotopes sampled; assemblages to be ≥ B abundances;

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
							Macroinvertebrate assemblages must be maintained within a B/C ecological category or improved upon.	and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Heptageniidae Leptophlebiidae Tricorythidae Leptoceridae Perlidae Hydropsychidae >1spp Elmidae Psephenidae Dixidae	SASS 5 scores: ≥190 ASPT score: ≥6.0 MIRAI EC: B/C (70 – 89%)		
						Diatoms	Ecological water quality should be maintained as *good quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 15 - 17 PTV: < 20%		
			Ngagane from Ntshingwayo Dam to confluence with Buffalo **V31G, V31K** **(May 13_EWR 3)**	**2.5**	Quantity	Low flows	EWR maintenance low and drought flows: Ngagane River at the EWR site May13_EWR3 (-27.819, 29.987) in V31K NMAR = 160.12 x10^6m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the upstream and downstream aquatic ecosystem of the Ngagane River to the confluence with the Buffalo River.	Maintenance and drought flows required for the Ngagane River		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
									Oct	0.366	0.091
									Nov	0.560	0.068
									Dec	0.762	0.051
									Jan	1.138	0.527
									Feb	1.541	0.711
									Mar	1.269	0.587
									Apr	0.928	0.433
									May	0.539	0.202
									Jun	0.326	0.112
									Jul	0.243	0.123
									Aug	0.234	0.119
									Sep	0.273	0.111
						Freshets	EWR freshets to be released from Chelmsford Dam (V3R001) and Horn River	Freshets required for the Ngagane River		Freshet (m^3/s)	Days
									Nov	10.0	2
									Dec	12.0	2
									Jan	15.0	2
									Feb	20.0	2
									Mar	10.0	2
					Quality	Nutrients	Nutrient levels must be improved to sustain the aquatic ecosystem health and to meet the prescribed ecological state (C ecological category)	Orthophosphate (PO_4^-) as Phosphorus	≤0.05 mg/L (50th percentile)		
								Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤ 2.0 mg/L (50th percentile)		

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						Salts	Salinity concentrations must be maintained or improved to support downstream users.	Total Dissolved Solids	≤350 mg/L (95th percentile)
						System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
						Toxics	The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
								Aluminium (Al)	≤ 0.105 milligrams/litre (mg/l) (95th percentile)
								Cadmium (Cd) soft	≤ 0.0012 milligrams/litre (mg/l) (95th percentile)
								Manganese (Mn)	≤ 0.15 milligrams/litre (mg/l) (95th percentile)
								Iron (Fe)	≤ 0.1 milligrams/litre (mg/l) (95th percentile)
								Lead (Pb) hard	≤ 0.0095 milligrams/litre (mg/l) (95th percentile)
								Copper (Cu) hard	≤ 0.0073 milligrams/litre (mg/l) (95th percentile)
								Nickel (Ni)	≤ 0.07 milligrams/litre (mg/l) (95th percentile)
								Cobalt (Co)	≤ 0.05 milligrams/litre (mg/l) (95th percentile)
								Zinc (Zn)	≤ 0.002 milligrams/litre (mg/l) (95th percentile)
								Atrazine	≤0.078 milligrams/litre (mg/l)
								Mancozeb	≤0.009 milligrams/litre (mg/l)
								Glyphosate	≤0.7 milligrams/litre (mg/l)
								Oil and grease	2.5 mg/l
							Hydrocarbons	Benzene	≤0.01 milligrams/litre (mg/l) (95th percentile)
								Toluene	≤0.7 milligrams/litre (mg/l) (95th percentile)
						Pathogens	Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*
					Habitat	Instream	Natural flow pattern must be maintained in C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C) Ecological Category (60 – 79%) Riparian Integrity - Class ≥B Ecological Category (80 – 90%) IHAS to be *good* habitat availability (>65%)

IUA	Class		River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						Riparian habitat	The riparian vegetation must be maintained at VEGRAI ≥ C Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60%)
						Fish	Flow and water quality sensitive Fish species to be maintained or improved to a PES C/D ecological category.	Fish Response Assessment Index (FRAI) *Amphilius natalensis* (ANAT) *Barbus (Enteromius) paludinosus* (BPAU) *Labeobarbus natalensis* (BNAT) *Barbus (Enteromius) pallidus* (BPAL) *Barbus (Enteromius) anoplus* (BANO)	During survey in all flow habitat classes all species present. BNAT, BPAL and BANO – 2 of 3 spp present as habitat indicators; and ANAT ≥ 3 individuals per species FRAI EC: C/D (60 - 79%)
						Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained within a C/D ecological category or improved upon.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Heptageniidae Leptophlebiidae Tricorythidae Leptoceridae Hydropsychidae >1spp Elmidae Economidae	3 biotopes sampled; assemblages to be ≥ B abundances; SASS 5 scores: ≥213 ASPT score: ≥7.2 MIRAI EC: C/D (50 – 79%)
						Diatoms	Ecological water quality should be maintained as *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%

Table 8: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis IUA 3: MIDDLE BUFFALO RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
IUA 3: MIDDLE BUFFALO RIVER	**III**	Dorps (including Kweek and Wasbankspruit) to confluence with Buffalo River **V32A, B**	**3.1**	Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the ecological state (B ecological category)	Ortho-phosphate (PO_4^-) as Phosphorus	≤ 0.02 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤ 1.0 mg/L (50th percentile)
					Salts	Salinity levels must be maintained to support aquatic ecosystem and sustain the ecological state (B ecological category)	Total Dissolved Solids	≤200 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL (95th percentile)
		Tiyna, Eersteling-Quaternary catchment **V32C, D**	**3.2**	Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the present ecological state (B ecological category)	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.02 mg/L (50th percentile)
							Total Inorganic Nitrogen (NO_3) as Nitrogen	≤ 1.0 milligrams/litre (50th percentile)
					Salts	Salinity levels must be maintained to support aquatic ecosystem and sustain the present ecological state (B ecological category)	Total Dissolved Solids	≤200 mg/L (95th percentile)
							Sulphate	≤ 165mg/L (95th percentile)
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
						Maintain baseline status	Turbidity	A 10% variation from background concentration. Limits must be determined.
				Biota	Diatoms	Ecological water quality should be maintained as *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%
		Mzinyashana including Sterkstroom and Sandspruit **V32E**	**3.4**	Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the ecological state (B ecological category)	Orthophosphate (PO_4^-) as Phosphorus	≤ 0.02 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤ 1.0 mg/L (50th percentile)
					Salts	Salinity levels must be maintained to support aquatic ecosystem and sustain the ecological state (B ecological category)	Total Dissolved Solids	≤200 mg/L (95th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL (95th percentile)
		Buffalo from Ngagane to Blood River confluence **V32B, V32C, V32D, V32E and V32F** **(EWR 13)**	**3.5**	Quantity	Low flows	EWR maintenance low and drought flows: Buffalo River at the EWR site Thukela_EWR13 (-28.153, 30.476) in V32F NMAR = 695.05 x10^6m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the upstream and downstream aquatic ecosystem to Blood River confluence.	Maintenance and drought flows required for the upstream and downstream Buffalo River Monitoring of flows at V3H010	
								Maintenance Low flows (m^3/s) / Drought Low flows (m^3/s)
								Oct: 0.86 / 0.418
								Nov: 1.304 / 0.482
								Dec: 1.765 / 0.418
								Jan: 2.531 / 1.493
								Feb: 3.276 / 1.928
								Mar: 2.63 / 1.55
								Apr: 1.925 / 1.141
								May: 1.184 / 0.709
								Jun: 0.757 / 0.461
								Jul: 0.603 / 0.371
								Aug: 0.563 / 0.348
								Sep: 0.647 / 0.397
				Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the ecological state (ecological category C/D)	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.1 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to support aquatic ecosystem and sustain the ecological state (ecological category C/D)	Total Dissolved Solids	≤350 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
				Habitat	Instream	Natural flow pattern must be improved to a C/D Ecological Category. Alien invasive (*Eucalyptus* spp, exotic *Acacia* spp) controls must be implemented, maintained and/ improved.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C/D) Ecological Category (50 – 79%) Riparian Integrity - Class ≥C/D Ecological Category (50 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be maintained at VEGRAI ≥ C/D Ecological Category. Alien invasive controls must be implemented, maintained and/ improved.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C/D Ecological Category (>50 - 79%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained or improved to a PES C/D ecological category.	Fish Response Assessment Index (FRAI) *Labeo rubromaculatus* (LRUB) *Barbus (Enteromius) paludinosus* (BPAU) *Labeobarbus natalensis* (BNAT) *Barbus (Enteromius) pallidus* (BPAL) *Barbus (Enteromius) anoplus* (BANO)	During survey in all flow habitat classes all species present. BNAT, BPAL and BANO – 2 of 3 spp present as habitat indicators; and LRUB ≥ 3 individuals per species. FRAI EC: C/D (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be improved to a C/D ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Hydropsychidae >1spp Elmidae Hydracarina	3 biotopes sampled; assemblages to be ≥ B abundances; SASS 5 scores: 77 - 180 ASPT score: 5.5 – 7.0 MIRAI EC: C/D (50 – 79%)
					Diatoms	Ecological water quality should be improved to *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%

Table 9: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 4: LOWER BUFFALO RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
IUA 4: LOWER BUFFALO RIVER	**II**	Buffalo from Blood to Thukela confluence **V33A, V33B, V33C and V33D** **(EWR 14)**	**4.2**	Quantity	Low flows	EWR maintenance low and drought flows: Buffalo River at the EWR site Thukela_EWR14(-28.437, 30.595) in V33B NMAR = 831.09 x10^6m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the upstream and downstream aquatic ecosystem to Thukela River confluence.	Maintenance and drought flows required for the upstream and downstream Buffalo River		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
								Oct	1.600	0.400
								Nov	1.900	0.400
								Dec	2.700	0.400
								Jan	4.400	0.800
								Feb	5.947	1.200
								Mar	4.700	0.950
								Apr	3.300	0.900
								May	2.100	0.600
								Jun	1.670	0.500
								Jul	1.320	0.400
								Aug	1.230	0.400
								Sep	1.440	0.400
				Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the present ecological state (C/D ecological category)	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.1 mg/L (50th percentile)		
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)		
					Salts	Salinity concentrations must be be maintained to support aquatic ecosystem and sustain the present ecological state (C/D ecological category)	Total Dissolved Solids	≤350 mg/L (95th percentile)		
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)		
						Baseline clarity must be maintained.	Turbidity	A 10% variation from background concentration. Limits must be determined.		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL		
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to a C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C) Ecological Category (60 – 79%) Riparian Integrity - Class ≥C Ecological Category (60 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to a PES C ecological category.	Fish Response Assessment Index (FRAI) *Labeobarbus natalensis* (BNAT) *Labeo molybdinus* (LMOL) *Barbus (Enteromius) anoplus* (BANO)	Ensure all flow habitat classes are present for the following species: BNAT, BANO – 2 of 3 spp present as habitat indicators; and LMOL ≥ 3 individuals per species. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained and/or improved to a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Atyidae Baetidae >2 spp Tricorythidae Heptageniidae Hydropsychidae >1spp Elmidae	At least 2 biotopes sampled; assemblages to be ≥ B abundances; MIRAI EC: C (60 – 79%)
					Diatoms	Ecological water quality should be improved to *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%

Table 10: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 5: BLOOD RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
IUA5: BLOOD RIVER	**III**	Wetland RU: Blood River **V32G**	**5.1**	Quality	Nutrients	Nutrient levels must be maintained to support aquatic ecosystem and sustain the present ecological state (B ecological category)	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.02 mg/L (50th percentile)
							Total Inornanic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to support aquatic ecosystem and sustain the present ecological state (B ecological category)	Total Dissolved Solids	≤200 mg/L (95th percentile)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained in a PES B ecological category.	*Barbus (Enteromius) anoplus* (BANO) *Amphilius natalensis* (ANAT) *Anguilla mossambica* (AMOS)	During survey in all flow habitat classes all species present. BANO and ANAT ≥ 5 individuals per species
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained within a B ecological category or improved upon.	Baetidae 2 sp Perlidae Tricorythidae Hydropsychidae 1 sp Leptoceridae Ancyidae Psephenidae	At least 2 biotopes sampled; assemblages to be ≥ A abundances
					Diatoms	Ecological water quality should be maintained as *good quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	≥15 20 to < 40%
		Blood River from outlet of V32G to confluence with the **V32H** Buffalo River **V32H**	**5.2**	Quantity	Low flows	EWR maintenance low and drought flows: Blood River at the outlet of V32H NMAR = 94.71 x$10^6$$m^3$ TEC=C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows required for the upstream Blood River	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	0.240	0.088
Nov	0.343	0.081
Dec	0.434	0.049
Jan	0.613	0.361
Feb	0.782	0.487
Mar	0.625	0.415
Apr	0.459	0.296
May	0.295	0.156
Jun	0.209	0.105
Jul	0.172	0.091
Aug	0.164	0.091
Sep	0.195	0.091

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to support aquatic ecosystem and sustain the ecological state	Total Dissolved Solids	≤350 mg/L (95th percentile)
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
				Habitat	Instream	Natural flow pattern must be maintained in a C Ecological Category	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C) Ecological Category (60 – 79%) Riparian Integrity - Class ≥C Ecological Category (60 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to a PES C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeo rubromaculatus* (LRUB) *Labeobarbus natalensis* (BNAT) *Tilapia sparrmanii* (TSPA)	Ensure all flow habitat classes are present for the following species: BNAT, BANO and TSPA – 2 of 3 spp present as habitat indicators; and LRUB ≥ 3 individuals per species. FRAI EC: C (60 - 79%
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained and/or improved to a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Atyidae Baetidae >1 spp Tricorythidae Heptageniidae Perlidae Pyralida Hydropsychidae >1spp Elmidae Psephenidae	3 biotopes to be sampled; assemblages to be A to B abundances; MIRAI EC: C (60 – 79%)
					Diatoms	Ecological water quality should be improved to *moderate quality*	Specific Pollution Sensitivity Index (SPI)	SPI: 12 - 14 PTV: 20 to <40%

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
							Percentage pollution tolerant values (%PTV)	

Table 11: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 6: SUNDAYS RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
IUA 6: SUNDAYS RIVER	**III**	Nkunzi to confluence with Sundays **V60B**	**6.1**	Quantity	Low flows	EWR maintenance low and drought flows: Nkunzi River at confluence with Sundays River in V60B NMAR = 24.94 x10^6m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows required for the Nkunzi River upstream of the Sundays River confluence		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
								Oct	0.068	0.030
								Nov	0.091	0.040
								Dec	0.100	0.030
								Jan	0.145	0.061
								Feb	0.191	0.08
								Mar	0.158	0.067
								Apr	0.137	0.058
								May	0.106	0.046
								Jun	0.086	0.038
								Jul	0.070	0.031
								Aug	0.063	0.028
								Sep	0.065	0.029
				Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state (C ecological category)	Orthophosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)		
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)		
					Salts	Salinity concentrations must be maintained to support aquatic ecosystem and sustain the ecological state (C ecological category)	Total Dissolved Solids	≤350 mg/L (95th percentile)		
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)		
						Baseline clarity must be maintained.	Turbidity	A 10% variation from background concentration. Limits must be determined.		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL		
				Habitat	Instream	Natural flow pattern must be maintained in a C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C) Ecological Category (60 – 79%)		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
								Riparian Integrity - Class ≥C Ecological Category (60 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. Exotic *Acacia* spp to be removed, and high bank erosion managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to a PES C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeo rubromaculatus* (LRUB) *Labeobarbus natalensis* (BNAT) *Tilapia sparrmanii* (TSPA) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO and TSPA – 2 of 3 spp present as habitat indicators; and LRUB ≥ 3 individuals per species. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages must be maintained and/or improved to a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Tricorythidae Heptageniidae Hydropsychidae 2spp Economidae Psephenidae	3 biotopes to be sampled; assemblages to be A to B abundances; MIRAI EC: C (60 – 79%)
					Diatoms	Ecological water quality should be improved to *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%
		Sundays from source to confluence with Wasbank **V60A, V60B, V60C** **(Thukela_ EWR 7)**	**6.2**	Quantity	Low flows	EWR maintenance low and drought flows: Sundays River at the EWR site Thukela_EWR7 (-28.458, 30.053) in V60C NMAR = 90.26 x10^{6}m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows required for the Sundays River Monitoring of flows at V6H004	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	0.180	0.120
Nov	0.240	0.140
Dec	0.350	0.105
Jan	0.500	0.220
Feb	0.700	0.280
Mar	0.520	0.240
Apr	0.350	0.210
May	0.260	0.160
Jun	0.200	0.140

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Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
Contact Centre Tel: 012-748 6200. eMail: info.egazette@gpw.gov.za
Publications: Tel: (012) 748 6053, 748 6061, 748 6065

Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 681 | 11 March Maart | 2022 | No. 46032

PART 2 OF 5

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ISSN 1682-5845

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
								Jul	0.160	0.120
								Aug	0.150	0.120
								Sep	0.160	0.110
				Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)		
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)		
					Salts	Salinity concentrations must be maintained to support aquatic ecosystem and sustain the ecological state	Total Dissolved Solids	≤200 mg/L (95th percentile)		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL		
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)		
						Baseline clarity must be maintained.	Turbidity	A 10% variation from background concentration. Limits must be determined.		
				Habitat	Instream	Natural flow pattern must be improved to a C/D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C) Ecological Category (60 – 79%) Riparian Integrity - Class ≥C/D Ecological Category (60 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)		
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C/D Ecological Category. Exotic *Acacia* spp to be removed, and high bank erosion managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C/D Ecological Category (>60 - 79%)		
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)C/D ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeo rubromaculatus* (LRUB) *Labeobarbus natalensis* (BNAT) *Tilapia sparrmanii* (TSPA) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO and TSPA – 2 of 3 spp present as habitat indicators; and LRUB ≥ 3 individuals. FRAI EC: C (60 - 75%)		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained at a C/D ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Heptageniidae Hydropsychidae 2spp Elmidae Hydracarina Leptophlebiiidae Aeshnidae Athericidae	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: 117 - 180 ASPT score: 5.6 – 6.5 MIRAI EC to be maintained: C (60 - 79%)
					Diatoms	Ecological water quality should be maintained at a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%
		Wasbank to confluence with Sundays **V60D, V60E**	**6.3**	Quantity	Low flows	EWR maintenance low and drought flows: Wasbank River at the confluence with the Sundays River in V60E NMAR = 78.33 x10^{6}m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem of the Wasbank River.	Maintenance and drought flows required for the Wasbank River	
								Maintenance Low flows (m^3/s) / Drought Low flows (m^3/s)
								Oct: 0.189 / 0.085
								Nov: 0.260 / 0.073
								Dec: 0.301 / 0.051
								Jan: 0.434 / 0.265
								Feb: 0.527 / 0.321
								Mar: 0.420 / 0.257
								Apr: 0.327 / 0.201
								May: 0.219 / 0.099
								Jun: 0.160 / 0.082
								Jul: 0.132 / 0.084
								Aug: 0.132 / 0.084
								Sep: 0.161 / 0.102
				Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the target ecological state (TEC C/D)	Orthophosphate as P	≤0.01 mg/L (50th percentile)
							Total Inorganic Nitrogen as TIN	≤0.5 mg/L (50th percentile)
					Salts	Salinity concentrations must be reduced to support aquatic ecosystem and the requirements of downstream users and sustain the ecological state.	Total Dissolved Solids	≤ 500 mg/L (95th percentile)
							Sulphate	≤ 250 mg/L (95th percentile)
							Chloride	≤ 120 mg/L (95th percentile)
					System variables	pH range must be maintained within limits specified to support the	pH range	6.5 (5th percentile) and 9.0 (95th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						aquatic ecosystem and water user requirements.		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxins should not be toxic to aquatic organisms and a threat to human health.	Aluminium (Al)	≤ 0.105 milligrams/litre (mg/l) (95th percentile)
							Manganese (Mn)	≤ 0.15 milligrams/litre (mg/l) (95th percentile)
							Cadmium (Cd) soft	≤ 0.0012 milligrams/litre (mg/l) (95th percentile)
							Iron (Fe)	≤ 0.1 milligrams/litre (mg/l) (95th percentile)
							Lead (Pb) hard	≤ 0.0095 milligrams/litre (mg/l) (95th percentile)
							Copper (Cu) hard	≤ 0.0073 milligrams/litre (mg/l) (95th percentile)
							Cobalt (Co)	≤ 0.05 milligrams/litre (mg/l) (95th percentile)
							Nickel (Ni)	≤ 0.07 milligrams/litre (mg/l) (95th percentile)
							Zinc (Zn)	≤ 0.002 milligrams/litre (mg/l) (95th percentile)
				Habitat	Instream	Natural flow pattern must be maintained or improved to a C/D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C/D) Ecological Category (55 – 70%) Riparian Integrity - Class ≥C/D Ecological Category (55 – 70%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C/D Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C/D Ecological Category (>55 - 70%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)C/D ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Tilapia sparrmanii* (TSPA)	Ensure all flow habitat classes are present for the following species: BNAT, BANO and TSPA – 2 of 3 spp. present as habitat indicators FRAI EC: C/D (55 - 70%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained at a C/D ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Heptageniidae Hydropsychidae 2spp Elmidae Leptophlebiiidae Trichorythidae Lestidae Psephenidae	Atleast 2 biotopes to be sampled; assemblages to be A to B abundances; SASS 5 score: ≥80 - 100 ASPT score: ≥4.5 MIRAI EC: C/D (55 - 70%)
					Diatoms	Ecological water quality should be maintained at a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%
		Sundays from Wasbank to Thukela confluence, including Nhlanyanga **V60F**	**6.4**	Quantity	Low flows	EWR maintenance low and drought flows: Sundays River at the EWR site Thukela_EWR8 (-28.636, 30.204) in V60F NMAR = 197.03 x10^{6}m^3 TEC=D category The maintenance low flows and drought flows must be attained to support the upstream and downstream aquatic ecosystem of the lower Sundays River to the confluence with the Thukela River.	Maintenance and drought flows required for the lower Sundays River	
								Maintenance / Drought Low flows (m^3/s) / Low flows (m^3/s) Oct 0.220 / 0.200 Nov 0.400 / 0.250 Dec 0.530 / 0.180 Jan 0.670 / 0.470 Feb 0.800 / 0.585 Mar 0.680 / 0.480 Apr 0.600 / 0.400 May 0.390 / 0.250 Jun 0.230 / 0.170 Jul 0.190 / 0.140 Aug 0.180 / 0.140 Sep 0.200 / 0.170
				Quality	System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
						Baseline clarity must be maintained.	Turbidity	A 10% variation from background concentration. Limits must be determined.
						Instream salinity must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Electrical Conductivity	≤ 55 milliSiemens/metre (mS/m) (95th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeo rubromaculatus* (LRUB) *Labeobarbus natalensis* (BNAT) *Tilapia sparrmanii* (TSPA) *Labeo molybdinus* (LMOL)	Ensure all flow habitat classes are present for the following species: BNAT, BANO and TSPA – 2 of 3 spp present as habitat indicators; and LRUB and/ or LMOL ≥ 3 individuals per spp. FRAI EC: C (60 - 75%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained or improved to aTarget Ecological Category (TEC)C ecological category.	South African Scoring System Version 5 (SASS5) (not measured within this RU but to be achieved) Macroinvertebrate Response Assessment Index (MIRAI) Baetidae 2 spp Heptageniidae Hydropsychidae 2spp Leptophlebiiidae Tricorythidae	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be maintained at a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%

Table 12: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis IUA 7: UPPER MOOI RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
IUA 7: UPPER MOOI RIVER	III	Klein - Mooi from source to Mooi confluence V20B (lower portion), V20D	7.1	Quantity	Low flows	EWR maintenance low and drought flows: Little Mooi River at confluence with Mooi River in V20D NMAR = 124.85 x10^{6}m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows required for the Little Mooi River upstream of the Mooi River confluence Monitoring of flows at V2H006		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
								Oct	0.374	0.293
								Nov	0.496	0.375
								Dec	0.619	0.466
								Jan	0.83	0.614
								Feb	0.985	0.727
								Mar	0.881	0.650
								Apr	0.718	0.536
								May	0.519	0.396
								Jun	0.395	0.309
								Jul	0.338	0.268
								Aug	0.318	0.254
								Sep	0.352	0.278
				Quality	Nutrients	Nutrient levels must be maintained to support the aquatic ecosystem and sustain the ecological state	Orthophosphate (PO_4^-) as Phosphorus	≤0.01 mg/L (50th percentile)		
							Total Inornanic Nitrogen (TIN$^-$) as Nitrogen	≤0.5 mg/L (50th percentile)		
					Salts	Salinity concentrations must be maintained to support good water quality condition and sustain ecological state.	Total Dissolved Solids	≤ 120 mg/L (95th percentile)		
					System variables	pH must be maintained within the prescribed range	pH	6.5 (5th percentile) and 9.0 (95th percentile)		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL		
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)		
							Atrazine	≤0.078 milligrams/litre (mg/l)		
							Mancozeb	≤0.009 milligrams/litre (mg/l)		
							Glyphosate	≤0.7 milligrams/litre (mg/l)		
				Habitat	Instream	Natural flow pattern must be maintained or improved to a C Ecological Category.	IHI and IHAS	Instream and Riparian Habitat Integrity to be improved to a C (60 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)		
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI ≥C Ecological Category (>60 - 79%)		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained at a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Heptageniidae Hydropsychidae 2spp Leptophlebiiidae Trichorythidae Psephenidae Perlidae Oligoneuridae Polymitarcyidae Prosopistomatidae Pyralidae	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be maintained at a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%
		Nsonge tributary catchment **V20C** **(THU_EWR 20)**	**7.2**	Quantity	Low flows	EWR maintenance low and drought flows: Nsonge River at the EWR site THU_EWR20 (-29.2377, 29.7853) in V20C NMAR = 27.136 x10^6m^3 TEC=B/C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows required for the Nsonge River Monitoring of flows at V2H007	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	0.109	0.063
Nov	0.148	0.082
Dec	0.188	0.102
Jan	0.253	0.134
Feb	0.302	0.159
Mar	0.271	0.143
Apr	0.219	0.118
May	0.155	0.086
Jun	0.115	0.066
Jul	0.097	0.057
Aug	0.090	0.054
Sep	0.101	0.060

				Quality	Nutrients	Nutrient levels must be maintained to support aquatic ecosystem and good water quality condition	Orthophosphate (PO_4^-) as Phosphorus	≤0.01 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤0.5 mg/L (50th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Salts	Salinity concentrations must be maintained to sustain good water quality state and ecological condition.	Total Dissolved Solids	≤120 mg/L (95th percentile)
					System variables	pH must be maintained within the prescribed range	pH	6.5 (5th percentile) and 9.0 (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
							Glyphosate	≤0.7 milligrams/litre (mg/l)
				Habitat	Instream	Natural flow pattern must be improved to a B/C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class B/C) Ecological Category (75 - 85%) Riparian Integrity - Class B Ecological Category (80 – 90%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ B/C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI B/C Ecological Category (75 - 85%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be improved to aTarget Ecological Category (TEC)C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Leptophlebiiidae Trichorythidae	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: 90 - 220 ASPT: 6.4 – 7.5 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be maintained at a *good quality*	Specific Pollution Sensitivity Index (SPI)	SPI: 15 - 17 PTV: <20%

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
							Percentage pollution tolerant values (%PTV)	
		Mooi upstream of Spring Grove Dam **V20A (lower portion), V20D (upper)**	**7.3**	Quantity	Low flows	EWR maintenance low and drought flows: Mooi River upstream of Spring Grove Dam in V20D NMAR = 92.98 x10^6m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem of the Mooi River.	Maintenance and drought flows required for the Mooi River Monitoring of flows at V2H005	
								Maintenance Low flows (m^3/s) / Drought Low flows (m^3/s)
								Oct: 0.265 / 0.227
								Nov: 0.361 / 0.188
								Dec: 0.461 / 0.329
								Jan: 0.609 / 0.496
								Feb: 0.743 / 0.602
								Mar: 0.689 / 0.558
								Apr: 0.595 / 0.486
								May: 0.378 / 0.315
								Jun: 0.258 / 0.216
								Jul: 0.211 / 0.14
								Aug: 0.201 / 0.134
								Sep: 0.225 / 0.173
				Quality	Nutrients	Nutrient levels must be maintained to support aquatic ecosystem and good water quality condition, and sustain ecological integrity	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.01 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN$^-$) as Nitrogen	≤0.5 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain good water quality state and ecological condition.	Total Dissolved Solids	≤120 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
							Glyphosate	≤0.7 milligrams/litre (mg/l)
				Habitat	Instream	Natural flow pattern must be improved to a C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C) Ecological Category (60 - 79%) Riparian Integrity - Class C Ecological Category (60 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Biota	Birds	Habitat to be maintained for Red List Species for foraging, migration, and nesting.	Cape Vulture (*Gyps coprotheres*) Grey Crowned Crane (*Balearica regulorum*) Blue Crane (*Anthopoides paradiseus*) Denham's Bustard (*Neotis denhami*) Bearded Vulture (*Gypaetus barbatus*) Crowned Eagle (*Stephanoaetus coronatus)*	
					Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to maintain or improved to aTarget Ecological Category (TEC)of a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Leptophlebiidae Trichorythidae Heptageniidae Hydropsychidae 2spp.	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be maintained at a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%
		Spring Grove Dam/ Means Weir **V20D**	**7.4**	Quantity	Dam level	Update and review operating rules to sustain optimal dam levels to support users and downstream aquatic ecosystem. The dam level must be managed to protect ecosystem function as well as downstream users.	Minimal operating level required in the dam.	
				Quality	Nutrients	Concentration of total nitrate must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as an oligo-mesotrophic system.	Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤0.5 mg/L (50th percentile)
							Ortho-phosphate (PO_4^-) as Phosphorus	≤0.01 mg/L (50th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Salts	The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. Good current state to be maintained.	Total Dissolved Solids	≤100 mg/L (95th percentile)
					System variables	The water must be acceptable for recreational use.	pH	6.5 – 9.0 (5th and 95th percentile)
						Increased clarity with reading.	Turbidity	≥0.4 m (5th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
				Biota	Periphyton/ phytplankton	The Chl-*a* concentrations must be maintained in as an oligo-mesotrophic system. Aesthetic quality of the dam must be managed by control of phytoplankton/periphyton growth.	Chl *a*	11-20µg/L (50th percentile)
		Downstream Spring Grove Dam to outlet of V20G **V20D (lower) and V20E, portion of V20G (Thukela_ EWR 11)** (*Note: *Current before Umkomaas transfer*)	**7.5 (a)***	Quantity	Low flows	EWR maintenance low and drought flows: Mooi River at the EWR site Thukela_EWR11 (-29.116, 30.135) in V20G NMAR = 301.14 x10^{6}m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem of the Mooi River to the confluence with the Mnyamvubu River.	Maintenance and drought flows required for the Mooi River in the short term until the uMWP-1 transfer to the Mooi/ Mngeni is in operation, then TEC=B/C requirements for compliance Monitoring of flows at V2H004	

	Maintenance low flows (m^3/s)	Drought flows (m^3/s)
Oct	0.898	0.350
Nov	1.054	0.440
Dec	1.270	0.650
Jan	1.578	0.800
Feb	1.982	0.960
Mar	1.847	0.900
Apr	1.741	0.720
May	1.359	0.600
Jun	1.112	0.450
Jul	0.944	0.350
Aug	0.850	0.250
Sep	0.878	0.280

| | | High flows | EWR freshets/ floods to be released from Spring Grove Dam | Freshets/ floods required for the Mooi River
Monitoring of flows at V2H004 | |

	Freshet (m^3/s)	Days	Flood (m^3/s)	Days
Nov	6	2		
Dec	6	2	15	3
Jan	15	3	20	3
Feb	6	2	30	6
Mar	15	3	14	3

				Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the target ecological state (TEC C/D)	Orthophosphate as P	≤0.01 mg/L (50th percentile)
							Total Inorganic Nitrogen as TIN	≤0.5 mg/L (50th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Salts		Total Dissolved Solids	≤350 mg/L (95th percentile)
					System variables		pH	6.5 - 9
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
				Habitat	Instream	Natural flow pattern must be maintained or improved to a C/D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C/D) Ecological Category (55 - 70%) Riparian Integrity - Class C/D Ecological Category (55 – 70%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C/D Ecological Category.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C/D Ecological Category (55 - 70%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)C/D ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo molybdinus* (LMOL)	Ensure all flow habitat classes are present for the following species: BNAT, BANO FRAI EC: C/D (55 - 70%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to maintain or improved to aTarget Ecological Category (TEC)of a C/D ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Leptophlebiiidae Heptageniidae Hydropsychidae 2spp Elmidae	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥80 - 100 ASPT score: ≥4.5 MIRAI EC: C/D (55 – 70%)
					Diatoms	Ecological water quality should be maintained at a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 to <40%
		Downstream Spring Grove Dam to outlet of V20G	**7.5 (b)****	Quantity	Low flows	EWR maintenance low and drought flows: Mooi River at the EWR site Thukela_EWR11 (-29.116,	Maintenance and drought flows required for the Mooi River in the medium to long term when the uMWP-1 transfer to the Mooi/	

	Maintenance low flows (m^3/s)	Drought flows (m^3/s)
Oct	1.539	0.350

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
		V20D (lower) and V20E, portion of V20G **(Thukela_ EWR 11)** (*Note: **long term, after Umkomaas transfer is implemented and transfers out of the system are reduced*)				30.135) in V20G NMAR = 301.14 x10^{6}m^3 TEC=B/C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem of the Mooi River to the confluence with the Mnyamvubu River.	Mngeni is operational Monitoring of flows at V2H004	Nov 1.835 0.440 Dec 2.260 0.650 Jan 2.858 0.800 Feb 4.554 1.208 Mar 3.379 0.900 Apr 3.166 0.720 May 2.433 0.600 Jun 1.947 0.450 Jul 1.627 0.350 Aug 1.446 0.250 Sep 1.494 0.280
					High Flows	EWR freshets/ floods to be released from Spring Grove Dam	Freshets/ floods required for the Mooi River Monitoring of flows at V2H004	Freshet (m^3/s) / Days / Flood (m^3/s) / Days Oct 6 2 Nov 6 2 Dec 15 3 25 3 Jan 21 3 25 3 Feb 15 3 35 6 Mar 15 3 25 3 Apr 6 2
				Quality	Nutrients	Instream concentration of nutrients as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN$^-$) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Instream salinity levels as specified must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤250 mg/L (95th percentile)
					System variables	pH must be maintained within the prescribed range	pH	6.5 (5th percentile) and 9.0 (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
				Habitat	Instream	Natural flow pattern must be improved to aTarget Ecological Category (TEC)of a B/C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class B/C) Ecological Category (75 - 85%) Riparian Integrity - Class B/C Ecological Category (75 – 85%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
								IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ B/C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI B/C Ecological Category (60 - 90%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)B/C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Anguilla mossambica* (AMOS) *Anguilla bengalensis* (ALAB) *Barbus (Enteromius) viviparus* (BVIV) *Labeo rubromaculatus* (LRUB) *Labeo molybdinus* (LMOL) *Barbus (Enteromius) pallidus* (BPAL)	Ensure all flow habitat classes are present for the following species: BNAT, BANO, BVIV, BPAL – 3 of the 4 vegetation/ cover representatives. 1 of following AMOS, ALAB, LRUB as flow dependent and depth class representatives. FRAI EC: B/C (75- 85%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to maintain or improved to aTarget Ecological Category (TEC)of a B/C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Leptophlebiiidae Trichorythidae Heptageniidae Hydropsychidae 2spp Elmidae Psephenidae Perlidae Oligoneuridae	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥150 ASPT score: ≥5.5 MIRAI EC: B/C (75 - 85%)
					Diatoms	Ecological water quality should be improved to a *good quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 15 - 17 PTV: <20%
		Joubertsvlei to confluence with Mooi **V20E**	**7.6**	Quality	Nutrients	Nutrient levels attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.02 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to support water user	Total Dissolved Solids	≤ 195 mg/L (95th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						requirements and sustain the ecological state		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
							Glyphosate	≤0.7 milligrams/litre (mg/l)
				Biota	Diatoms	Ecological water quality should be maintained as *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 8 - 10 PTV: 40 - 60%

Table 4: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 8 – MIDDLE/ LOWER MOOI RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit		
IUA 8: Middle/ Lower Mooi River	**III**	Craigieburn Dam **V20F**	**8.2**	Quantity	Dam level	Update and review operating rules to sustain optimal dam levels to support users and downstream aquatic ecosystem. The dam level must be managed to protect ecosystem function as well as downstream users.	Minimal operating level required in the dam.			
				Quality	Nutrients	The nutrients levels must be maintained to sustain ecosystem health and the water quality requirements of water users. The dam must be maintained as an oligo-mesotrophic system	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.02 mg/L (50th percentile)		
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)		
					Salts	The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users.	Total Dissolved Solids	≤195 mg/L (95th percentile)		
					System variables	The water must be acceptable for recreational use.	pH	6.5 (5th percentile) and 9.0 (95th percentile)		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL		
				Biota	Periphyton/ phytplankton	The Chl-*a* concentrations must be maintained in a mesotrophic state.	Chl *a*	11-20µg/L 50th percentile		
		Mnyamvubu downstream	**8.3**	Quantity	Low flows	EWR maintenance low and drought flows: Mnyamvubu River at the EWR site	Maintenance and drought flows required for the Mnyamvubu River downstream Craigieburn Dam.		Maintenance low flows (m^3/s)	Drought flows (m^3/s)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit		
		dam to confluence with Mooi **V20G (THU_EWR 21)**				THU_EWR21 (-29.1610, 30.2884) in V20G NMAR = 31.71 x10^{6}m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the downstream aquatic ecosystem to the Mooi River confluence.	Monitoring of flows at V2H016	Oct	0.101	0.052
								Nov	0.126	0.064
								Dec	0.15	0.075
								Jan	0.189	0.094
								Feb	0.224	0.111
								Mar	0.207	0.103
								Apr	0.178	0.089
								May	0.116	0.06
								Jun	0.084	0.044
								Jul	0.07	0.037
								Aug	0.069	0.037
								Sep	0.085	0.045
				Quality	Nutrients	Nutrient levels must be maintained to support aquatic ecosystem and the good water quality condition. Water quality deterioration must be prevented.	Ortho-phosphate as P	≤0.01 mg/L (50th percentile)		
							Total Inorganic Nitrogen as TIN	≤0.5 mg/L (50th percentile)		
					Salts	Salinity concentrations must be maintained to sustain good water quality state and ecological condition.	Total Dissolved Solids	≤120 mg/L (95th percentile)		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL		
				Habitat	Instream	Natural flow pattern must be maintained to aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C) Ecological Category (60 - 79%) Riparian Integrity - Class B Ecological Category (80 – 90%) IHAS to be *good* habitat availability (> 65%)		
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Anguilla mossambica* (AMOS) *Labeo molybdinus* (LMOL) *Barbus (Enteromius) pallidus* (BPAL) *Tilapia sparrmanii* (TSPA)	Ensure all flow habitat classes are present for the following species: BNAT, BANO, BVIV, BPAL – 3 of the 4 vegetation/ cover representatives. 1 of following AMOS, ALAB, LRUB as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained in aTarget Ecological Category (TEC)of a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Leptophlebiiidae Trichorythidae Hydropsychidae >2spp Atydae Hydracarina	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be improved to a *good quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 15 - 17 PTV: <20%
		Mooi from Mnyamvubu to Thukela confluence **V20H, J (THU_EWR 12A)**	**8.6**	Quantity	Low flows	EWR maintenance low and drought flows: Mooi River at the EWR site THU_EWR12A (-29.9193, 30.4189) in V20H NMAR = 361.85 x10^{6}m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the downstream aquatic ecosystem of the Mooi River to the confluence with the Thukela River.	Maintenance and drought flows required for the Mooi River Monitoring of flows at V2H008	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	1.647	0.849
Nov	2.095	0.914
Dec	2.586	1.287
Jan	3.48	1.704
Feb	4.196	2.046
Mar	3.819	1.862
Apr	3.266	1.607
May	2.233	1.122
Jun	1.621	0.839
Jul	1.351	0.711
Aug	1.284	0.679
Sep	1.503	0.784

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit				
					High Flows	EWR freshets/ floods to be released from Spring Grove and Craigieburn Dams	Freshets/ floods required for the Mooi River Monitoring of flows at V2H008		Freshet (m^3/s)	Days	Flood (m^3/s)	Days
								Sep	6	2		
								Oct	8	2		
								Nov	8	2		
								Dec	8	2	20	3
								Jan	15	3	33	3
								Feb	15	2	40	6
								Mar	15	3	20	3
								Apr	8	2		
				Quality	Nutrients	Instream levels of nutrients must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.02 mg/L (50th percentile)				
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)				
					Salts	Salinity concentrations must be attained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤350 mg/L (95th percentile)				
					System variables	The water must be acceptable for recreational use.	pH	6.5 (5th percentile) and 9.0 (95th percentile)				
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Atrazine	≤0.078 milligrams/litre (mg/l)				
							Mancozeb	≤0.009 milligrams/litre (mg/l)				
							Glyphosate	≤0.7 milligrams/litre (mg/l)				
				Habitat	Instream	Natural flow pattern must be improved to aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C) Ecological Category (60 - 79%) Riparian Integrity - Class C Ecological Category (60 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)				
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)				

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Labeobarbus natalensis* (BNAT) *Barbus (Enteromius) viviparus* (BVIV) *Clarias gariepinus* (CGAR) *Labeo molybdinus* (LMOL) *Barbus (Enteromius) pallidus* (BPAL) *Tilapia sparrmanii* (TSPA) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BVIV, BPAL and TSPA – 3 of the 4 vegetation/ cover representatives. 1 of following AMOS, and LMOL as flow dependent and depth class representatives. FRAI EC: C (65 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained or improved to aTarget Ecological Category (TEC)of a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Leptophlebiiidae Atydae Aeshnidae Hydropsychidae >2spp	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: 124 - 200 ASPT score: 5.4 - 7.5 MIRAI EC: C (60 – 79%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%

Table 5: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 9: MIDDLE/ LOWER BUSHMAN'S RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit
IUA 9: MIDDLE/ LOWER	**III**	Wagendrift Dam **V70C**	**9.2**	Quantity	Dam level	Update and review operating rules to sustain optimal dam levels to support users and downstream aquatic ecosystem. The dam level must be managed to protect ecosystem function as well as downstream users.	Minimal operating level required in the dam.	
				Quality	Nutrients	Nutrients levels must be maintained to sustain ecosystem	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.01 mg/L (50th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit
						health and the water quality requirements of water users. The dam must be maintained as a mesotrophic system or better.	Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
				Biota	Periphyton/ phytplankton	The Chl-*a* concentrations must be maintained in a mesotrophic state.	Chlorophyll-*a*	11-20µg/L 50th percentile
		Little Bushman's to confluence with Bushman's **V70D**	**9.3**	Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state. Improvement in levels is required.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to support aquatic ecosystem and sustain the ecological state	Total Dissolved Solids	≤300 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
				Habitat	Instream	Natural flow pattern must be maintained or improved to aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and riparian Habitat Integrity to be a Class C Ecological Category (60 - 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO – 5 specimens of each. AMOS, 1 -2 specimens as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained or improved to aTarget Ecological Category (TEC)of a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Leptophlebiiidae Hydropsychidae 2spp Heptageniidae Elmidae	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%
		Bushman's from Wagendrift Dam to confluence with Rens-burgspruit downstream of Estcourt **V70E, V70F, (Upper portion) V70G**	**9.4**	Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state. Improvement in levels is required.	Orthophosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to support aquatic ecosystem and sustain the ecological state	Total Dissolved Solids	≤350 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
							Glyphosate	≤0.7 milligrams/litre (mg/l)
		Bushman's from Rensburgspruit Dam to outlet of V70F **V70F (lower)**	**9.5 (a)**	Quantity	Low flows	EWR maintenance low and drought flows: Bushman's River at the EWR site Thukela_EWR5 (-28.897, 30.035) in V70F NMAR = 281.45 x10^6m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the Bushman's River downstream	Maintenance and drought flows required for the Bushman's River	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	0.959	0.472
Nov	1.204	0.544
Dec	1.496	0.710
Jan	1.881	0.881
Feb	2.315	1.078
Mar	2.154	1.002
Apr	2.006	0.938
May	1.495	0.71
Jun	1.144	0.556

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit				
		(Thukela_EWR 5)				of Wagendrift Dam to the EWR site.		Jul	0.895		0.444	
								Aug	0.800		0.402	
								Sep	0.849		0.425	
					High Flows	EWR freshets/ floods to be released from Wagendrift Dam (short terms and Mielietuin Dam (long term)	Freshets/ floods required for the Bushman's River Monitoring of flows at V7H020		Freshet (m^3/s)	Days	Flood (m^3/s)	days
								Oct	6	3		
								Nov	16	3		
								Dec	18	4	20	4
								Jan	20	4	25	4
								Feb	16	3	40	6
								Mar	16	3	20	5
				Quality	Nutrients	Nutrient levels must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)				
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)				
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤350 mg/L (95th percentile)				
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)				
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL				
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)				
							Atrazine	≤0.078 milligrams/litre (mg/l)				
							Mancozeb	≤0.009 milligrams/litre (mg/l)				
							Glyphosate	≤0.7 milligrams/litre (mg/l)				
				Habitat	Instream	Natural flow pattern must be improved to aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and riparian Habitat Integrity to be maintained or improved as a Class C Ecological Category (60 - 79%) IHAS to be *adequate* habitat availability (55 - 65%)				
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)				

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) – *Barbus (Enteromius) trimaculatus* (BTRI) *Barbus (Enteromius) viviparus* (BVIV) *Anguilla mossambica* (AMOS) *Labeo rubromaculatus* (LRUB) *Tilapia sparrmanii* (TSPA)	Ensure all flow habitat classes are present for the following species: BNAT, BVIV, BANO and TSPA – 3 of the 4 vegetation/ cover representatives. 1 of following AMOS, and LRUB as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained or improved to aTarget Ecological Category (TEC)of a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Leptophlebiiidae Heptageniidae Hydropsychidae 2spp Perlidae* Elmidae* Trichorythidae*	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%
		Bushman's from outlet of V70F to confluence with Thukela **V70G** **(THU_EWR 6A)**	**9.5 (b)**	Quantity	Low flows	EWR maintenance low and drought flows: Bushman's River at the EWR site THU_EWR6A (-28.8483, 30.1496) in V70G NMAR = 298.37 x10^6m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the downstream aquatic ecosystem of the Bushman's River to the confluence with the Thukela River.	Maintenance and drought flows required for the lower Bushman's River	

	Maintenance low flows (m^3/s)	Drought flows (m^3/s)
Oct	1.816	0.488
Nov	2.246	0.565
Dec	2.759	0.728
Jan	3.473	0.910
Feb	4.238	1.108
Mar	3.931	1.027
Apr	3.665	0.96
May	2.747	0.725
Jun	2.121	0.567
Jul	1.682	0.454
Aug	1.519	0.413

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit
								Sep 1.625 0.440
					High Flows	EWR freshets/ floods to be released from Wagendrift Dam (short terms and Mielietuin Dam (long term)	Freshets/ floods required for the Bushman's River Monitoring of flows at V7H020	
								Freshet (m^3/s) / Days / Flood (m^3/s) / days
								Sep 4 2
								Oct 6 3
								Nov 10 3
								Dec 10 3 20 4
								Jan 20 3 35 4
								Feb 20 4 40 6
				Quality	Nutrients	Nutrient levels must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤350 mg/L (95th percentile)
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Ammonia s N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
							Glyphosate	≤0.7 milligrams/litre (mg/l)
				Habitat	Instream	Natural flow pattern must be improved to aTarget Ecological Category (TEC)of C/D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity (class C/D) Ecological Category (55 - 70%) Riparian Integrity - Class C/D Ecological Category (55 – 70%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C/D Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C/D Ecological Category (55 - 70%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C/D ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Barbus (Enteromius) trimaculatus* (BTRI) *Barbus (Enteromius) viviparus* (BVIV) *Clarias gariepinus* (CGAR) *Labeo molybdinus* (LMOL) *Barbus (Enteromius) pallidus* (BPAL) *Tilapia sparrmanii* (TSPA) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BVIV, BPAL and TSPA – 3 of the 4 vegetation/ cover representatives. 1 of following AMOS, and LMOL as flow dependent and depth class representatives. FRAI EC: C/D (55 - 70%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C/D ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Leptophlebiidae Heptageniidae Hydropsychidae 2spp	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: 80 - 180 ASPT score: 5.7 - 7.5 MIRAI EC: C/D (55 - 70%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%

Table 6: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 10: UPPER THUKELA RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
IUA 10: UPPER THUKELA	**III**	Thukela, Putterill, Majaneni, Khombe tributary catchments	**10.1**	Quality	Nutrients	Nutrient levels must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Orthophosphate (PO_4^-) as Phosphorus	≤0.1 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
		V11A (lower portion), V11C, V11D				Instream salinity levels must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Electrical Conductivity	≤ 55 milli Siemens/metre (mS/m) (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
							Glyphosate	≤0.7 milligrams/litre (mg/l)
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of B/C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and riparian Habitat Integrity to be maintained or improved to Class B/C Ecological Category (75 – 85%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ B/C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI B/C Ecological Category (75 - 85%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a B/C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Amphilius natalensis* (ANAT) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo rubromaculatus* (LRUB)	Ensure all flow habitat classes are present for the following species: ANAT, BANO and BNAT – 2 of the 3 vegetation/ cover representatives. 1 of the following AMOS, mature BNAT and LRUB as flow dependent and depth class representatives. FRAI EC: B/C (75 - 85%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a B/C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae 2 spp Leptophlebiiidae Heptageniidae Hydropsychidae 2spp Psephidae	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS5: ≥150 ASPT: ≥15.5 MIRAI EC: B/C (75 - 85%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%
		Woodstock Dam **V11D, V11E**	**10.3**	Quantity	Dam level	Update and review operating rules to sustain optimal dam levels to support users and downstream aquatic ecosystem. The dam level must be managed to protect ecosystem function as well as downstream users.	Minimal operating level required in the dam.	
				Quality	Nutrients	Concentration of nutrients must be maintained to sustain ecosystem health and the water quality requirements of water users.	Total Inorganic Nitrogen as TIN	≤0.7 mg/L (50th percentile))
							Ortho-phosphate as P	≤0.010 mg/L (50th percentile)
					Salts	The salinity in the dam must be maintained to support ecosystem health and the water quality requirements of the downstream users. The good water quality condition must be maintained.	Total Dissolved Solids	≤100 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
				Biota	Periphyton/ phytplankton	The dam must be maintained as mesotrophic system	Chlorophyll-a	11-20µg/L 50th percentile
		Sandspruit tributary catchment **V11F**	**10.4**	Quality	Nutrients	Nutrient levels must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Orthophosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤350 mg/L (95th percentile)
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
							Glyphosate	≤0.7 milligrams/litre (mg/l)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved in a Class C Ecological Category (60 - 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Amphilius natalensis* (ANAT) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT)	Ensure all flow habitat classes are present for the following species: ANAT, BANO and BNAT – 2 of the 3 vegetation/ cover representatives. 1 of the following AMOS and mature BNAT as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C ecological category.	SASS5 (not measured within this RU but to be achieved) MIRAI Baetidae 2 spp Leptophlebiiidae Heptageniidae Hydropsychidae 2spp Elmidae	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%
		Spioenkop Dam **V11L**	**10.8**	Quantity	Dam level	Update and review operating rules to sustain optimal dam levels to support users and downstream aquatic ecosystem. The dam level must be managed to protect ecosystem function as well as downstream users.	Minimal operating level required in the dam.	
				Quality	Nutrients	Concentration of nutrients must be maintained to sustain ecosystem	Total Inorgfanic Nitrogen (TIN^-) as Nitrogen	≤0.7 mg/L (50th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						health and the water quality requirements of water users. The good water condition must be protected.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.01 mg/L (50th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
				Biota	Periphyton/ phytplankton	The dam must be maintained as mesotrophic system	Chlorophyll-a	11-20µg/L 50th percentile
		Spioenkop Dam to Little Thukela confluence **V11M** **(EWR 2)**	**10.9**	Quantity	Low flows	Base flow pattern must be maintained for drought and maintenance flows	Base Flow	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	1.800	0.560
Nov	2.200	0.750
Dec	3.200	1.000
Jan	3.600	1.400
Feb	4.200	2.000
Mar	4.000	1.850
Apr	3.800	1.600
May	3.000	1.200
Jun	2.500	0.900
Jul	2.000	0.650
Aug	1.800	0.520
Sep	1.800	0.510

High Flows — EWR freshets/ floods to be released from Spioenkop Dam — Freshets/ floods required for the Thukela River Monitoring of flows at V1H057

	Freshet (m^3/s)	Days	Flood (m^3/s)	days
Sep	7	3		
Oct	7	3		
Nov	10	5		
Dec	15	5	30	5
Jan	24	5	35	6
Feb	30	5	35	7
Mar	20	5	25	6
Apr	7	3		

	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Quality	Nutrients	Nutrient levels must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.02 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
							Glyphosate	≤0.7 milligrams/litre (mg/l)
				Habitat	Instream	Natural flow pattern must be improved to aTarget Ecological Category (TEC)of C/D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved to a Class C/D Ecological Category (55 - 70%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C/D Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C/D Ecological Category (55 - 70%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C/D ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo rubromaculatus* (LRUB) *Oreochromis mossambicus* (OMOS)	Ensure all flow habitat classes are present for the following species: BNAT, BANO and OMOS – 2 of the 3 vegetation/ cover representatives. 1 of the following AMOS, and LRUB as flow dependent and depth class representatives. FRAI EC: C/D (55 - 70%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C/D ecological category.	SASS 5 (not measured within this RU but to be achieved) MIRAI Baetidae 2 spp Leptophlebiiidae Heptageniidae Hydropsychidae 2spp	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥80 - 100 ASPT score: ≥4.5 MIRAI EC: C/D (55 - 70%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%
		Sterkspruit, Situlwane tributary catchment **V13B, V13D**	**10.10**	Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state.	Orthophosphate (PO_4^-) as Phosphorus	≤0.02 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤1.0 mg/L (50th percentile)
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
							Glyphosate	≤0.7 milligrams/litre (mg/l)		
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of B/C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity must be maintained and/or improved to a Class B/C Ecological Category (75 - 85%) IHAS to be *adequate* habitat availability (55 - 65%)		
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ B/C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI B/C Ecological Category (75 - 85%)		
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a B/C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Clarias gariepinus* (CGAR) *Labeo rubromaculatus* (LRUB) *Oreochromis mossambicus* (OMOS) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO, OMOS and ANAT – 3 of the 4 vegetation/ cover representatives. 2 of the following AMOS, mature BNAT and LRUB as flow dependent and depth class representatives. FRAI EC: B/C (75 - 85%)		
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a B/C ecological category.	SASS 5 (not measured within this RU but to be achieved) MIRAI Baetidae >2 spp Leptophlebiiidae Heptageniidae Tricorythidae Hydropsychidae 2spp Elmidae Psepheniidae Dixidae	3 biotopes to be sampled; assemblages to be A to B abundances; SASS 5 score: ≥150 ASPT score: ≥5.5 MIRAI EC: B/C (75 - 85%)		
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%		
		Little Tugela from IUA14	**10.11**	Quantity	Low flows	EWR maintenance low and drought flows: Little Thukela River at the EWR	Maintenance and drought flows required for the Little Thukela River		Maintenance low flows (m^3/s)	Drought flows (m^3/s)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
		outlet to confluence with Thukela River **V13A (lower portion), V13C, V13E** **(EWR 3)**				site Thukela_EWR3 (-28.383, 29.616) in V13E NMAR = 285.20 x10^{6}m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem of the Little Thukela River.		Oct	0.510	0.200
								Nov	0.700	0.300
								Dec	0.970	0.400
								Jan	1.400	0.930
								Feb	1.920	1.300
								Mar	1.830	1.230
								Apr	1.500	1.030
								May	1.100	0.700
								Jun	0.750	0.400
								Jul	0.550	0.200
								Aug	0.450	0.150
								Sep	0.450	0.150
				Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state. Deterioration must be prevented	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.0158 mg/L (50th percentile)		
							Total Inorganic Nitrogen (TIN$^-$) as Nitrogen	≤2.0 mg/L (50th percentile)		
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Improvement in salinity levels is required.	Total Dissolved Solids	≤350 mg/L (95th percentile)		
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)		
							Atrazine	≤0.078 milligrams/litre (mg/l)		
							Mancozeb	≤0.009 milligrams/litre (mg/l)		
							Glyphosate	≤0.7 milligrams/litre (mg/l)		
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of C/D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved to a Class C/D) Ecological Category (55 - 70%) IHAS to be *adequate* habitat availability (55 - 65%)		
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C/D Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C/D Ecological Category (55 - 70%)		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C/D ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo rubromaculatus* (LRUB) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO and ANAT – 2 of the 3 vegetation/ cover representatives. 1 of the following AMOS, mature BNAT and LMOL as flow dependent and depth class representatives. FRAI EC: C/D (55 - 70%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C/D ecological category.	SASS 5 (not measured within this RU but to be achieved) MIRAI Baetidae >2 spp Leptophlebiiidae Heptageniidae Oligoneuridae Tricorythidae Hydropsychidae 1spp Polycentropodidae Elmidae Psephenidae	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥80 - 100 ASPT score: ≥4.5 MIRAI EC: C/D (55 - 70%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%
		Tugela from Little Tugela confluence to proposed Jana Dam/ Klip River confluence **V14A, V14B**	**10.12**	Quantity	Low flows	EWR maintenance low and drought flows: Thukela River at the confluence of the Klip River in V14B NMAR = 1145.20 x10^6m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem to the Thukela River.	Maintenance and drought flows required for the Thukela River Monitoring of flows at V1H001	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	2.274	0.883
Nov	2.949	1.131
Dec	3.784	1.435
Jan	5.260	1.974
Feb	7.202	2.690
Mar	6.744	2.517
Apr	5.892	2.207
May	4.350	1.641
Jun	3.288	1.255
Jul	2.538	0.979
Aug	2.157	0.840
Sep	2.155	0.841

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Quality	Nutrients	Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the present ecological state (PES B)	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.10 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Total Dissolved Solids needs to be maintained to support aquatic ecosystem and sustain the present ecological state (PES B)	Total Dissolved Solids	≤350 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Atrazine	≤0.078 milligrams/litre (mg/l)
							Mancozeb	≤0.009 milligrams/litre (mg/l)
							Glyphosate	≤0.7 milligrams/litre (mg/l)
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of C/D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved to a Class C/D) Ecological Category (55 - 70%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C/D Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C/D Ecological Category (55 - 70%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C/D ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo rubromaculatus* (LRUB) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO and ANAT – 2 of the 3 vegetation/ cover representatives. 1 of the following AMOS, mature BNAT and LRUB as flow dependent and depth class representatives. FRAI EC: C/D (55 - 70%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained.	SASS5 (not measured within this RU but to be achieved) MIRAI	At least 2 biotopes sampled; assemblages to be A to B abundances;

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C/D ecological category.	Baetidae >2 spp Leptophlebiiidae Heptageniidae Oligoneuridae Tricorythidae Hydropsychidae 1spp Polycentropodidae Elmidae Psephenidae	SASS 5 score: ≥80 - 100 ASPT score: ≥4.5 MIRAI EC: C/D (55 - 70%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%

Table 7: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 11: KLIP RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
IUA 11: KLIP RIVER	**III**	Sandspruit and tributaries **V12D, V12E and V12F**	**11.1**	Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state. Deterioration must be prevented	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤350 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of C/D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved to a Class C/D) Ecological Category (55 - 70%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C/D Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C/D Ecological Category (55 - 70%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C/D ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo rubromaculatus* (LRUB) *Clarias gariepinus* (CGAR) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO, CGAR (juvenile) and ANAT – 3 of the 4 vegetation/ cover representatives. 2 of the following AMOS, mature BNAT and LRUB as flow dependent and depth class representatives. FRAI EC: C/D (55 - 70%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C/D ecological category.	SASS 5 (not measured within this RU but to be achieved) MIRAI Baetidae 2 spp Leptophlebiidae Heptageniidae Tricorythidae Elmidae	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥80 - 100 ASPT score: ≥4.5 MIRAI EC: C/D (55 - 70%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%
		Klip, Braamhoek, Tatana, Ngoga, Mhlwane, catchments **V12A, V12B, V12C** **(THU_EWR 22)**	**11.2**	Quantity	Low flows	EWR maintenance low and drought flows: Klip River at the EWR site THU_EWR22 (-28.3952, 29.7197) in V12A NMAR = 52.44 x10^{6}m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the upstream and downstream aquatic ecosystem of the Klip River.	Maintenance and drought flows required for the Klip River.	

	Maintenance low flows (m^3/s)	Drought flows (m^3/s)
Oct	0.129	0.050
Nov	0.180	0.028
Dec	0.227	0.012
Jan	0.376	0.146
Feb	0.529	0.298
Mar	0.407	0.231
Apr	0.294	0.152
May	0.174	0.055
Jun	0.114	0.044
Jul	0.089	0.047
Aug	0.087	0.047

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
								Sep 0.113 0.043
				Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state. Deterioration must be prevented.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤350 mg/L (95th percentile)
				Habitat	Instream	Natural flow pattern must be maintained at aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity to be maintained in a Class C Ecological Category (60 - 79%) Riparian Habitat Integrity to be improved to a Class C Ecological Category (60 – 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo rubromaculatus* (LRUB) *Clarias gariepinus* (CGAR) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, ANAT, BANO and juvenile CGAR – 3 of the 4 vegetation/ cover representatives. 2 of the following AMOS, mature BNAT, mature CGAR and LRUB as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5)	3 biotopes sampled; assemblages to be A to B abundances;

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C/D ecological category.	Hydracarina Perlidae Baetidae > 2 sp Heptageniidae Leptophlebiidae Aeshnidae Crambidae Ecnomidae Elmidae Psephenidae	SASS 5 score: 213 - 220 ASPT score: 5.9 - 7.5 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%
		Klip from Ladysmith to confluence with Thukela **V12G**	**11.3**	Quantity	Low flows	EWR maintenance low and drought flows: Klip River at the confluence with the Thukela River in V12G NMAR = 253.09 x$10^6$$m^3$ TEC=C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem of the Klip River.	Maintenance and drought flows required for the Klip River.	
								Maintenance Low flows (m^3/s) / Drought Low flows (m^3/s)
								Oct: 0.623 / 0.240
								Nov: 0.868 / 0.132
								Dec: 1.103 / 0.078
								Jan: 1.816 / 0.733
								Feb: 2.534 / 1.384
								Mar: 1.986 / 1.088
								Apr: 1.435 / 0.736
								May: 0.844 / 0.270
								Jun: 0.550 / 0.228
								Jul: 0.430 / 0.228
								Aug: 0.422 / 0.239
								Sep: 0.547 / 0.207
				Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state. Improvement in levels are required	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met. Improvement in salinity levels required.	Total Dissolved Solids	≤500 mg/L (95th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health.	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
							Aluminium (Al)	≤ 0.105 milligrams/litre (mg/l) (95th percentile)
							Cadmium (Cd) soft	≤ 0.0012 milligrams/litre (mg/l) (95th percentile)
							Manganese (Mn)	≤ 0.15 milligrams/litre (mg/l) (95th percentile)
							Iron (Fe)	≤ 0.1 milligrams/litre (mg/l) (95th percentile)
							Lead (Pb) hard	≤ 0.0095 milligrams/litre (mg/l) (95th percentile)
							Copper (Cu) hard	≤ 0.0073 milligrams/litre (mg/l) (95th percentile)
							Nickel (Ni)	≤ 0.07 milligrams/litre (mg/l) (95th percentile)
							Cobalt (Co)	≤ 0.05 milligrams/litre (mg/l) (95th percentile)
							Zinc (Zn)	≤ 0.002 milligrams/litre (mg/l) (95th percentile)
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved in a Class C Ecological Category (60 - 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo rubromaculatus* (LRUB) *Clarias gariepinus* (CGAR) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BANO, ANAT and juvenile CGAR – 3 of the 4 vegetation/ cover representatives. 2of following AMOS, mature CGAR, mature BNAT and LRUB as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C ecological category.	SASS5 (not measured within this RU but to be achieved) MIRAI Baetidae 2 spp Leptophlebiiidae Heptageniidae Hydropsychidae 2spp Elmidae	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%

Table 8: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 12: MIDDLE THUKELA RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
IUA 12: MIDDLE THUKELA RIVER	**III**	Thukela From Klip confluence to Bushman's confluence **V14E** **(Thukela_**	**12.2**	Quantity	Low flows	EWR maintenance low and drought flows: Thukela River at the EWR site Thukela_EWR4B (-28.747, 30.145) in V14E NMAR = 1 423.83 x10^{6}m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the Thukela River	Maintenance and drought flows required for the Thukela River		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
								Oct	2.278	2.100
								Nov	3.023	2.261
								Dec	3.914	2.065
								Jan	5.650	4.294
								Feb	7.750	5.842
								Mar	7.001	5.277
								Apr	5.949	4.518
								May	4.272	3.292

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure				
		EWR 4B)				downstream of Klip River to the confluence with the Bushman's River.		Jun	3.123		2.462	
								Jul	2.388		2.000	
								Aug	2.042		2.000	
								Sep	2.121		2.000	
					High Flows	EWR freshets/ floods from Spioenkop Dam and Klip River in the short and medium term and to be released from Jana Dam in the long term	Freshets/ floods required for the Thukela River		Freshet (m^3/s)	Days	Flood (m^3/s)	Days
								Sep	15	4		
								Oct	15	4		
								Nov	55	4	90	6
								Dec	55	4	90	6
								Jan	90	6	120	7
								Feb	55	4	250	8
								Mar	55	4	90	6
				Habitat	Instream	Natural flow pattern must be improved to aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream Habitat Integrity to be improved to a Class C) Ecological Category (60 - 79%) Riparian Habitat Integrity to be maintained in a Class C Ecological Category (60 – 79%) IHAS to be *good* habitat availability (>65%)				
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)				
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Amphilius natalensis* (ANAT) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo molybdinus* (LMOL) *Labeo rubromaculatus* (LRUB) *Clarias gariepinus* (CGAR) *Barbus (Enteromius) trimaculatus* (BTRI) *Barbus (Enteromius) viviparus* (BVIV) *Pseudocrenilabrus philander* (PPHI)	Ensure all flow habitat classes are present for the following species: BNAT, BVIV, BANO, BTRI and PPHI – 4 of the 5 vegetation/ cover representatives. 4 of the following AMOS, ANAT, mature BNAT, CGAR, LRUB and LMOL as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)				

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Atyidae Baetidae > 2 sp Heptageniidae Leptophlebiidae Chlorocyphidae Crambidae Elmidae	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: 145 - 200 ASPT score: 6.0 – 7.6 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be maintained as *good quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 15 - 17 PTV: < 20%
		Thukela from Bushman's confluence to d/s Mooi confluence **V60G, V60H, V60J, V60K** **(EWR 9)**	**12.4**	Quantity	Low flows	EWR maintenance low and drought flows: Thukela River at the EWR site Thukela_EWR9 (-28.769, 30.515) in V60J NMAR = 2 050.76 x10^6m^3 TEC=D category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the Thukela River from the Bushman's River to the Mooi River confluence.	Maintenance and drought flows required for the Thukela River Monitoring of flows at V6H002	
								Maintenance Low flows (m^3/s) / Drought Low flows (m^3/s)
								Oct: 2.800 / 1.400
								Nov: 3.500 / 1.700
								Dec: 3.800 / 2.200
								Jan: 4.800 / 3.100
								Feb: 6.200 / 4.000
								Mar: 5.800 / 3.600
								Apr: 4.900 / 3.200
								May: 4.700 / 2.200
								Jun: 3.500 / 1.500
								Jul: 2.750 / 1.300
								Aug: 2.450 / 1.200
								Sep: 2.600 / 1 200
				Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state.	Orthophosphate (PO_4^-) as Phosphorus	≤0.1 mg/L (50th percentile)
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤500 mg/L (95th percentile)
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of D Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved in a Class D Ecological Category (40 - 59%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ D Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI D Ecological Category (40 - 59%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a D ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Amphilius natalensis* (ANAT) *Barbus (Enteromius) anoplus* (BANO) *Labeobarbus natalensis* (BNAT) *Labeo molybdinus* (LMOL) *Clarias gariepinus* (CGAR) *Barbus (Enteromius) trimaculatus* (BTRI) *Tilapia sparrmanii* (TSPA)	Ensure all flow habitat classes are present for the following species: BNAT, BTRI, juvenile CGAR and TSPA – 3 of the 4 vegetation/ cover representatives. 1 of following AMOS, mature CGAR and LMOL as flow dependent and depth class representatives. FRAI EC: D (40 - 59%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a D ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Leptophlebiidae Heptageniidae Elmidae Psephenidae	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥60 ASPT score: ≥4.0 MIRAI EC: D (40 - 59%)
					Diatoms	Ecological water quality should be maintained as *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%

Table 9: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 13: LOWER THUKELA RIVER

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
IUA 13: LOWER THUKELA RIVER	**II**	Thukela from d/s Mooi confluence to Middeldrift transfer **V40A, V40B** **(Thukela_ EWR 15)**	**13.2**	Quantity	Low flows	Base flow pattern must be maintained for drought and maintenance flows	Base Flow		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
								Oct	9.100	3.200
								Nov	10.500	4.500
								Dec	14.500	5.500
								Jan	19.000	8.500
								Feb	25.000	10.500
								Mar	21.500	9.200
								Apr	19.000	8.800
								May	14.300	6.500
								Jun	10.400	4.200
								Jul	8.300	3.000
								Aug	7.400	2.000
								Sep	8.100	2.100
				Quality	Nutrients	Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state.	Ortho-phosphate (PO_4^-) as Phosphorus	≤0.058 mg/L (50th percentile)		
							Total Inorganic Nitrogen (TIN^-) as Nitrogen	≤2.0 mg/L (50th percentile)		
					Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤350 mg/L (95th percentile)		
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL		
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH range	6.5 (5th percentile) and 9.0 (95th percentile)		
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health	Ammonia as N	≤ 0.0725 milligrams/litre (mg/l) (95th percentile)		
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to aTarget Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved in a Class C Ecological Category (60 - 79%)		

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
								IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Labeobarbus natalensis* (BNAT) *Barbus (Enteromius) trimaculatus* (BTRI) *Barbus (Enteromius) viviparus* (BVIV) *Clarias gariepinus* (CGAR) *Labeo molybdinus* (LMOL) *Tilapia sparrmanii* (TSPA) *Amphilius natalensis* (ANAT)	Ensure all flow habitat classes are present for the following species: BNAT, BVIV, juvenile CGAR, and TSPA – 3 of the 4 vegetation/ cover representatives. 1 of the following AMOS, CGAR and LMOL as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C/D ecological category.	SASS5 (not measured within this RU but to be achieved) MIRAI Baetidae 2 spp Leptophlebiidae Heptageniidae Perlidae Elmidae Psephenidae Hydropsychidae 2spp	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
		Thukela from Middeldrift to Mandini Transfer (Mhgeni) weir in V50D **V40E, V50A,**	**13.5**	Quantity	Low flows	EWR maintenance low and drought flows: Thukela River at the EWR site THU_EWR16 (-29.1603, 31.3373) in V50C NMAR = 3 679.97 x10^{6}m^3 TEC=C category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the Thukela River	Maintenance and drought flows required for the Thukela River	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	13.845	6.918
Nov	18.278	6.547
Dec	22.633	9.517
Jan	30.119	16.111
Feb	39.352	20.914
Mar	36.166	19.209
Apr	31.073	16.623
May	21.173	11.528
Jun	14.859	8.316

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
		V59B, V50C, V50D (upper reach) **(THU_EWR 16)**				downstream of Middledrift to the Estuary.		Jul 11.874 6.764 Aug 10.805 6.217 Sep 11.964 5.610
					High Flows	EWR freshets/ floods for the lower reaches of the Thukela River	Freshets/ floods required for the Thukela River. Additional to the freshets specified in the table, large annual floods of 450m^3/s for 6 day duration in Dec, Jan and Feb are also required.	Freshet (m^3/s) / Days / Flood (m^3/s) / days Sep 60 5 Oct 60 5 Nov 60 5 250 8 Dec 60 5 120 5 Jan 60 5 250 8 Feb 60 5 250 8 Mar 60 5 250 8 Apr 60 5
				Quality	Salts	Salinity concentrations must be maintained to sustain aquatic ecosystem health and user requirements and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤350 mg/L (95th percentile)
				Habitat	Instream	Natural flow pattern must be maintained and/or improved to a Target Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be maintained and/or improved in a Class C Ecological Category (60 - 79%) IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to aTarget Ecological Category (TEC)of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla mossambica* (AMOS) *Labeobarbus natalensis* (BNAT) *Barbus (Enteromius) trimaculatus* (BTRI) *Clarias gariepinus* (CGAR) *Labeo molybdinus* (LMOL) *Labeo rubromaculatus* (LRUB)	Ensure all flow habitat classes are present for the following species: BNAT, BTRI and juvenile CGAR – 2 of the 3 vegetation/ cover representatives. 2of the following AMOS, LRUB and LMOL as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget Ecological Category (TEC)of a C/D ecological category.	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Baetidae >2 spp Heptageniidae Perlidae Oligoneuridae Tricorythidae Prosopistomatidae Elmidae Hydropsychidae 2spp	At least 2 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: ≥120 ASPT score: ≥4.8 MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%

Table 10: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 14: ESCARPMENT

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
IUA 14: ESCARPMENT	**I**	Upper reaches of Thukela River **V11A**	**14.1**	Quantity	Low flows, freshets and floods	EWR maintenance low and drought flows: Little Thukela River in V13A NMAR = 82.32 x10^6m^3 TEC=B category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the upper Little Thukela River	Maintenance and drought flows required for the Little Thukela River. The natural flooding regime should be maintained as the upstream river is part of the SWSA		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
								Oct	0.345	0.109
								Nov	0.451	0.144
								Dec	0.574	0.159
								Jan	0.786	0.239
								Feb	1.076	0.321
								Mar	1.013	0.302
								Apr	0.901	0.272
								May	0.719	0.221
								Jun	0.565	0.180
								Jul	0.426	0.141
								Aug	0.345	0.119
								Sep	0.33	0.116

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
		Thukela from source to confluence of Sithene and Thonyelana Rivers (Sithene River; Thonyelana-mpumalanga River) **V11B**	**14.2**	Quantity	Low flows, freshets and floods	EWR maintenance low and drought flows: Mnweni River in V11B NMAR = 142.69 x10^{6}m^3 TEC=B category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the Mnweni River	Maintenance and drought flows required for the Mnweni River. The natural flooding regime should be maintained as the upstream river is part of the SWSA		Maintenance Low flows (m^3/s	Drought Low flows (m^3/s)
								Oct	0.736	0.233
								Nov	0.962	0.307
								Dec	1.224	0.340
								Jan	1.676	0.511
								Feb	2.294	0.685
								Mar	2.162	0.643
								Apr	1.922	0.580
								May	1.534	0.472
								Jun	1.206	0.384
								Jul	0.908	0.301
								Aug	0.737	0.254
								Sep	0.703	0.247
		Source to confluence of Mlambonja and Mhlwazini Rivers (Mlambonja River (upper); Mhlwazini River; Ndedema River; Ndumeni River; Thuthumi River) **V11G**	**14.3**	Quantity	Low flows, freshets and floods	EWR maintenance low and drought flows: Mlambonja River in V11G NMAR = 191.99 x10^{6}m^3 TEC=B category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the upper Mlambonja River	Maintenance and drought flows required for the Mlambonja River. The natural flooding regime should be maintained as the upstream river is part of the SWSA		Maintenance Low flows (m^3/s	Drought Low flows (m^3/s)
								Oct	0.944	0.316
								Nov	1.287	0.313
								Dec	1.684	0.319
								Jan	2.260	0.687
								Feb	3.052	0.911
								Mar	2.928	0.87
								Apr	2.625	0.789
								May	2.043	0.628
								Jun	1.541	0.492
								Jul	1.134	0.378
								Aug	0.926	0.321
								Sep	0.890	0.313
		Upper reaches of Little Thukela River	**14.4**	Quantity	Low flows, freshets and floods	EWR maintenance low and drought flows: Little Thukela River in V13A NMAR = 82.32 x10^{6}m^3 TEC=B category	Maintenance and drought flows required for the Little Thukela River. The natural flooding regime should be maintained as the upstream river is part of the SWSA		Maintenance Low flows (m^3/s	Drought Low flows (m^3/s)
								Oct	0.323	0.119
								Nov	0.449	0.115

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
		V11B				The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the upper Little Thukela River		Dec	0.628	0.115
								Jan	0.910	0.318
								Feb	1.288	0.442
								Mar	1.240	0.423
								Apr	1.048	0.363
								May	0.705	0.252
								Jun	0.487	0.183
								Jul	0.361	0.142
								Aug	0.301	0.123
								Sep	0.299	0.123
		Upper reaches of Boesmans River **V70A**	**14.5**	Quantity	Low flows, freshets and floods	EWR maintenance low and drought flows: Bushman's River in V70A NMAR = 113.46 x10^{6}m^3 TEC=B category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the upper Bushman's River	Maintenance and drought flows required for the Bushman's River. The natural flooding regime should be maintained as the upstream river is part of the SWSA		Maintenance Low flows (m^3/s	Drought Low flows (m^3/s)
								Oct	0.591	0.171
								Nov	0.778	0.206
								Dec	0.994	0.34
								Jan	1.258	0.419
								Feb	1.562	0.515
								Mar	1.461	0.480
								Apr	1.355	0.450
								May	0.987	0.337
								Jun	0.724	0.26
								Jul	0.547	0.205
								Aug	0.477	0.184
								Sep	0.504	0.194
		Ncibidwana source to outlet of V70B **V70B**	**14.6**	Quantity	Low flows, freshets and floods	EWR maintenance low and drought flows: Ncibidwana River in V70B NMAR = 44.16 x10^{6}m^3 TEC=B category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the upper Ncibidwana River	Maintenance and drought flows required for the Ncibidwana River. The natural flooding regime should be maintained as the upstream river is part of the SWSA		Maintenance Low flows (m^3/s	Drought Low flows (m^3/s)
								Oct	0.230	0.066
								Nov	0.303	0.080
								Dec	0.387	0.132
								Jan	0.490	0.163
								Feb	0.608	0.200
								Mar	0.569	0.187
								Apr	0.527	0.175

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure		
								May	0.384	0.131
								Jun	0.282	0.101
								Jul	0.213	0.080
								Aug	0.186	0.072
								Sep	0.196	0.075
		Upper reaches of Mooi River **V20A**	**14.7**	Quantity	Low flows, freshets and floods	EWR maintenance low and drought flows: Mooi River in V20A NMAR = 42.90 x10^{6}m^3 TEC=B category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the upper Mooi River	Maintenance and drought flows required for the Mooi River. The natural flooding regime should be maintained as the upstream river is part of the SWSA		Maintenance Low flows (m^3/s	Drought Low flows (m^3/s)
								Oct	0.203	0.079
								Nov	0.283	0.087
								Dec	0.368	0.132
								Jan	0.492	0.172
								Feb	0.603	0.209
								Mar	0.559	0.193
								Apr	0.48	0.168
								May	0.298	0.109
								Jun	0.196	0.077
								Jul	0.157	0.064
								Aug	0.149	0.062
								Sep	0.169	0.068
		Upper reaches of Little Mooi River **V20B**	**14.8**	Quantity	Low flows, freshets and floods	EWR maintenance low and drought flows: Little Mooi River in V20B NMAR = 10.32 x10^{6}m^3 TEC=B/C category The maintenance low flows and drought flows must be attained to support the aquatic ecosystem of the upper Little Mooi River	Maintenance and drought flows required for the Little Mooi River. The natural flooding regime should be maintained as the upstream river is part of the SWSA		Maintenance Low flows (m^3/s	Drought Low flows (m^3/s)
								Oct	0.041	0.019
								Nov	0.056	0.025
								Dec	0.071	0.031
								Jan	0.096	0.041
								Feb	0.115	0.048
								Mar	0.103	0.043
								Apr	0.083	0.036
								May	0.059	0.026
								Jun	0.044	0.02
								Jul	0.037	0.017
								Aug	0.034	0.016
								Sep	0.038	0.018

Table 11: Resource Quality Objectives for RIVERS AND DAMS in priority Resource Units in the Integrated Unit of Analysis 15: THUKELA ESTUARY

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
IUA 15: THUKELA ESTUARY	**II**	Thukela from Mandini Transfer (Mngeni) weir to upstream Estuary, including Mandini Stream **V50D (Upper Portions Quaternary catchment V50D)** **(EWR 16)**	**15.1**	Quality	Nutrients	Nutrient levels must be maintained to the support estuarine ecosystem and sustain the ecological state	Orthophosphate (PO_4^-) as Phosphorus	≤0.1 mg/L (50th percentile) Thukela River
								≤0.1 mg/L (50th percentile) Mandini Stream
							Total Inorganic Nitrogen (TIN) as Nitrogen	≤2.0 mg/L (50th percentile)
					Salts	Salinity concentrations must be maintained to sustain estuarine ecosystem and ensure the prescribed ecological category is met.	Total Dissolved Solids	≤500 mg/L (95th percentile)
							Chloride	≤175 mg/L (95th percentile) Mandini Stream
							Sodium	≤115 mg/L (95th percentile) Mandini Stream
					Pathogens	The presence of pathogens should not pose a risk to human health	*Escherichia coli*	≤130 Colony forming counts per 100 mL
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH	6.5 – 8.9 with <5% of measurements outside of this during a given year
						Water clarity to be maintained to support the estuarine ecosystem.	Turbidity	Turbidity should be < 20 NTU or >25cm
						Temperature ranges must be maintained to support aquatic biota	Temperature	17°C (10th percentile) and 30°C (90th percentile) with <5% of measurements outside of this range within a given year
						Dissolved oxygen concentration must be maintained to support the aquatic and estuarine ecosystem	Dissolved oxygen	≥ 6mg/l
					Toxics	The concentrations of toxicants must not pose a risk to aquatic organisms and to human health	Ammonia as N	≤ 0.1 milligrams/litre (mg/l) (95th percentile)
							Aluminium (Al)	≤ 0.105 milligrams/litre (mg/l) (95th percentile)
							Manganese (Mn)	≤ 0.15 milligrams/litre (mg/l) (95th percentile)
							Iron (Fe)	≤ 0.1 milligrams/litre (mg/l) (95th percentile)
							Lead (Pb) hard	≤ 0.0095 milligrams/litre (mg/l) (95th percentile)
							Copper (Cu) hard	≤ 0.0073 milligrams/litre (mg/l) (95th percentile)

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
							Nickel (Ni)	≤ 0.07 milligrams/litre (mg/l) (95th percentile)
							Cobalt (Co)	≤ 0.05 milligrams/litre (mg/l) (95th percentile)
							Zinc (Zn)	≤ 0.002 milligrams/litre (mg/l) (95th percentile)
				Habitat	Instream	Natural flow pattern must be improved and/or maintained at a Target Ecological Category (TEC)of C Ecological Category.	Index of Habitat Integrity (IHI and IHAS)	Instream and Riparian Habitat Integrity to be improved and/or maintained in a Class C Ecological Category (60 - 79%) Riparian Habitat Integrity IHAS to be *adequate* habitat availability (55 - 65%)
					Riparian habitat	The riparian vegetation must be improved and/or maintained at VEGRAI ≥ C Ecological Category. High erosion rate to be managed.	Vegetation Response Assessment Index (VEGRAI)	VEGRAI survey every 5 years. VEGRAI C Ecological Category (60 - 79%)
				Biota	Fish	Flow and water quality sensitive Fish species to be maintained and/or improved to a Target Ecological Category (TEC) of a C ecological category.	Fish Response Assessment Index (FRAI) *Anguilla spp.* *Glossogobius spp.* *Awaous aeneofuscus* (AAEN) *Barbus (Enteromius) trimaculatus (*BTRI) *Labeobarbus natalensis (*BNAT) *Labeo molybdinus* (LMOL) *Labeo rubromaculatus* (LRUB) *Oreochromis mossambicus (*OMOS)	Two distinct areas in this reach – the upper more freshwater dominated, the lower more an estuarine habitat where marine spp. can be present. Ensure all flow habitat classes are present for the following species: *Glossogobius spp.,* BNAT, BTRI and juvenile OMOS – 3 of the 4 vegetation/ cover representatives. 2 of the following *Anguilla spp.* (elvers), mature BNAT, LMOL and LRUB as flow dependent and depth class representatives. FRAI EC: C (60 - 79%)
					Aquatic invertebrates	Flow and water quality sensitive macroinvertebrate assemblages to be maintained. Macroinvertebrate assemblages to be maintained for aTarget	Macroinvertebrate Response Assessment Index (MIRAI) and South African Scoring System Version 5 (SASS5) Perlidae	3 biotopes sampled; assemblages to be A to B abundances; SASS 5 score: 100 - 120 ASPT score: 5.5 - 6.5

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
						Ecological Category (TEC)of a C ecological category.	Baetidae > 2 sp Heptageniidae Leptophlebiidae Oligoneuridae Prosopistomatidae Elmidae Hydropsychidae 2spp	MIRAI EC: C (60 - 79%)
					Diatoms	Ecological water quality should be improved to a *moderate quality*	Specific Pollution Sensitivity Index (SPI) Percentage pollution tolerant values (%PTV)	SPI: 12 - 14 PTV: 20 - < 40%

Table 12: Resource Quality Objectives for PRIORITY WETLAND CLUSTERS AND SYSTEMS in selected Resource Units in the THUKELA CATCHMENTS

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria		
IUA 1: UPPER BUFFALO RIVER	1.1 and marginally into 1.2	Wakkerstroom	Quantity	River RQO applies EWR maintenance low and drought flows: Slang River at V3R003 in V31A NMAR = 97.065 x10^{6}m3 TEC=B category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem. A constant baseflow must be maintained that ensures that the system remains perennial, and the peatland is permanently saturated.	Maintenance and drought flows - specifically required for wetlands upstream of the Zaaihoek Dam (V3R003). Monitoring of flows at V3R003.		Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
						Oct	0.221	0.007
						Nov	0.418	0.081
						Dec	0.610	0.075
						Jan	0.83	0.180
						Feb	1.069	0.231
						Mar	0.812	0.176
						Apr	0.576	0.127
						May	0.319	0.004
						Jun	0.185	0.039
						Jul	0.142	0.036
						Aug	0.121	0.032
						Sep	0.137	0.035
				Maintain a minimum water level to ensure the peat remains saturated.	Water level.	Peat must remain fully saturated.		
			Quality	River RQO applies Nutrient levels should not deteriorate and should support	Ortho-phosphate as P Total Inorganic Nitrogen (TIN)	≤0.01 mg/L (50th percentile) ≤0.5 mg/L (50th percentile)		

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
				aquatic ecosystem and sustain the present ecological state (PES B). Total Dissolved Solids needs to be maintained to support aquatic ecosystem and sustain the present ecological state (PES B). The presence of pathogens should not pose a risk to human health.	Total Dissolved Solids *Escherichia coli*	≤120 mg/L (95th percentile) ≤130 Colony forming counts per 100 mL
			Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 70%
				Peat depth and humification should be constant over time.	Peat depth and humification – determine using an appropriate sampling and analysis method at selected points in the wetland to determine depth and humification of the peat. Determine baseline and repeat every 5 years.	Less than 10% reduction in peat profile depth and quality/humification from the baseline measurements at each sampling site.
			Biota	Overall diversity and populations of aquatic/wetland dependent bird species must be maintained.	SABAP 2 reporting rates for aquatic/wetland dependent Red Data bird species: • White-Winged Flufftail • Grey Crowned Crane • African Marsh Harrier • African Grass Owl • Blue Crane • Maccoa Duck • Greater Flamingo • Lesser Flamingo • Half-Collared Kingfisher • Greater Painted Snipe	Over the next 5 years the reporting rate for each species must not decline from the SABAP2 reporting rates (as at 15 April 2021): • White-Winged Flufftail (~0.3%) • Grey Crowned Crane (~59.6%) • African Marsh Harrier (~49.1%) • African Grass Owl (~0.5%) • Blue Crane (~12.2%) • Maccoa Duck (~1.6%) • Greater Flamingo (~1.1%) • Lesser Flamingo (~0.3%) • Half-Collared Kingfisher (~4.5%) • Greater Painted Snipe (~0.1%)

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
					Verify from monitoring records and recorded sightings from available avifaunal reporting data. Report on this every year.	
	1.1	Groenvlei	Quantity	The relationship between the extent, depth and frequency of flooding to rainfall in the catchment must be maintained.	Floods are necessary to inundate the floodplain thereby providing the wetting regime and sediment required for supporting the floodplain morphology and ecosystem, including vegetation. Measure water level at selected points in the floodplain to monitor frequency, depth and extent of flooding. Establish/determine a historical relationship between rainfall and flooding extent by using suitable remote imagery coinciding with larger rainfall events. Compare the ratio of rainfall to flooding going forward against the historical relationship. Repeat annually.	The relationship between the extent, depth and frequency of flooding to rainfall in the catchment must not on average indicate a negative trend (reduction in flooding extent in relation to rainfall events).
				River RQO applies EWR maintenance low and drought flows: Slang River at V3R003 in V31A NMAR = 97.065 x10^{6}m3 TEC=B category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows - specifically required for wetlands upstream of the Zaaihoek Dam (V3R003). Monitoring of flows at V3R003.	
			Quality	River RQO applies Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the present ecological state (PES B). Total Dissolved Solids needs to be maintained to support aquatic ecosystem and sustain the present ecological state (PES B).	Ortho-phosphate as P Total Inorganic Nitrogen (TIN) Total Dissolved Solids	≤0.01 mg/L (50th percentile) ≤0.5 mg/L (50th percentile) ≤120 mg/L (95th percentile)

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	0.221	0.007
Nov	0.418	0.081
Dec	0.610	0.075
Jan	0.83	0.180
Feb	1.069	0.231
Mar	0.812	0.176
Apr	0.576	0.127
May	0.319	0.004
Jun	0.185	0.039
Jul	0.142	0.036
Aug	0.121	0.032
Sep	0.137	0.035

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
				The presence of pathogens should not pose a risk to human health.	*Escherichia coli*	≤130 Colony forming counts per 100 mL
			Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 70%
IUA 3: MIDDLE BUFFALO RIVER	3.1 and marginally into 3.5	Boschoffsvlei	Quantity	The relationship between the extent, depth, and frequency of flooding to rainfall in the catchment must be maintained.	Floods are necessary to inundate the floodplain thereby providing the wetting regime and sediment required for supporting the floodplain morphology and ecosystem, including vegetation. Measure water level at selected points in the floodplain to monitor frequency, depth, and extent of flooding. Establish/ determine a historical relationship between rainfall and flooding extent by using suitable remote imagery coinciding with larger rainfall events. Compare the ratio of rainfall to flooding going forward against the historical relationship. Repeat annually.	The relationship between the extent, depth, and frequency of flooding to rainfall in the catchment must not on average indicate a negative trend (reduction in flooding extent in relation to rainfall events).
			Quality	River RQO applies Nutrient levels should not deteriorate and should support aquatic ecosystem and sustain the ecological state (B ecological category). Salinity levels must be maintained to support aquatic ecosystem and	Ortho-phosphate (PO_4^-) as Phosphorus Total Inorganic Nitrogen (TIN^-) as Nitrogen Total Dissolved Solids	≤ 0.02 mg/L (50th percentile) ≤ 1.0 mg/L (50th percentile) ≤200 mg/L (95th percentile)

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
				sustain the ecological state (B ecological category). The presence of pathogens should not pose a risk to human health.	*Escherichia coli*	≤130 Colony forming counts per 100 mL (95th percentile)
			Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 75%
		Boschoffsvlei pan complex	Quantity	The relationship between the extent, depth and frequency of inundation to local rainfall must be maintained.	Water quantity impacts must be managed so as not to undermine the ecological value of the pans. In particular, abstraction or artificial water inputs should be limited in the pans so that the depth and duration of inundation is maintained within the normal range for high, average and low rainfall years. Map the inundation extent at the end of the summer season (end of April) to establish/determine a relationship between antecedent summer rainfall (September to April) and inundation extent using suitable remote imagery. Compare the ratio of rainfall to inundation extent going forward. Repeat annually.	The relationship between the extent, depth and frequency of inundation to local rainfall must not on average indicate a negative trend (reduction in inundation extent in relation to antecedent summer rainfall [September to April]).
			Quality	Water quality impacts to the pan systems must be restricted to ensure that the water and sediment chemistry remain within an acceptable normal range (anion and cation concentration to pan volume relationship) for the	pH, Electrical Conductivity, TDS, Total Alkalinity as CaCO3, Sodium, Calcium, Magnesium, Sulphate, Iron, Chloride, Potassium, Magnesium, Manganese, Aluminium, Phosphorous, Silica, Fluoride Ammonia, Nitrate and Fluoride.	Maintain the water chemistry pan type applicable for each pan.

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
				particular water chemistry pan type applicable to each pan.	Sample February every year and February and July every 3 years.	
			Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 85% for each pan.
IUA 5: BLOOD RIVER	5.1 and marginally into 3.1	Upper Blood River	Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken of latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 90% for the northern cluster and above 80% for the southern cluster.
	5.1 and 5.2	Blood River Vlei	Quantity	Existing water inputs to the wetland from its catchment must be maintained, with no increase in direct abstraction from the wetland.	Extent of dams and Surface Flow Reduction (SFR) activities (e.g. irrigated cultivation, plantations, etc.).	No increase from current extent of dams and SFR activities within the catchment.
				The relationship between the extent, depth and frequency of flooding to rainfall in the catchment must be maintained.	Floods are necessary to inundate the floodplain thereby providing the wetting regime and sediment required for supporting the floodplain morphology and ecosystem, including vegetation.	The relationship between the extent, depth and frequency of flooding to rainfall in the catchment must not on average indicate a negative trend (reduction in flooding extent in relation to rainfall events).

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
					Measure water level at selected points in the floodplain to monitor frequency, depth and extent of flooding. Establish/determine a historical relationship between rainfall and flooding extent by using suitable remote imagery coinciding with larger rainfall events. Compare the ratio of rainfall to flooding going forward against the historical relationship. Repeat annually.	
			Quality	River RQO applies Nutrient levels must be maintained to support aquatic ecosystem and sustain the present ecological state (B ecological category). Salinity concentrations must be maintained to support aquatic ecosystem and sustain the present ecological state (B ecological category).	Ortho-phosphate (PO_4^-) as Phosphorus Total Inorganic Nitrogen (TIN-) as Nitrogen Total Dissolved Solids	≤0.02 mg/L (50th percentile) ≤1.0 mg/L (50th percentile) ≤200 mg/L (95th percentile)
			Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 70% north of R34 crossing and PES score above 55% south of R34 crossing.
IUA 6: SUNDAYS RIVER	6.2	Boschbergvlei	Quantity	The relationship between the extent, depth and frequency of flooding to rainfall in the catchment must be maintained.	Floods are necessary to inundate the floodplain thereby providing the wetting regime and sediment required for supporting the floodplain morphology and ecosystem, including vegetation. Measure water level at selected points in the floodplain to monitor frequency, depth and	The relationship between the extent, depth and frequency of flooding to rainfall in the catchment must not on average indicate a negative trend (reduction in flooding extent in relation to rainfall events).

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
					extent of flooding. Establish/ determine a historical relationship between rainfall and flooding extent by using suitable remote imagery coinciding with larger rainfall events. Compare the ratio of rainfall to flooding going forward against the historical relationship. Repeat annually.	
				River RQO applies EWR maintenance low and drought flows: Sundays River at the EWR site Thukela_EWR7 (-28.458, 30.053) in V60C NMAR = 90.26 x10^{6}m^3 TEC=C/D category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Maintenance and drought flows required for the Sundays River. Monitoring of flows at V6H004.	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	0.180	0.120
Nov	0.240	0.140
Dec	0.350	0.105
Jan	0.500	0.220
Feb	0.700	0.280
Mar	0.520	0.240
Apr	0.350	0.210
May	0.260	0.160
Jun	0.200	0.140
Jul	0.160	0.120
Aug	0.150	0.120
Sep	0.160	0.110

			Quality	River RQO applies Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state. Salinity concentrations must be maintained to support aquatic ecosystem and sustain the ecological state. The presence of pathogens should not pose a risk to human health. pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	Ortho-phosphate (PO_4^-) as Phosphorus Total Inorganic Nitrogen (TIN^-) as Nitrogen Total Dissolved Solids *Escherichia coli* pH range Turbidity	≤0.058 mg/L (50th percentile) ≤1.0 mg/L (50th percentile) ≤200 mg/L (95th percentile) ≤130 Colony forming counts per 100 mL 6.5 (5th percentile) and 9.0 (95th percentile)

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
				Baseline clarity must be maintained.		A 10% variation from background concentration. Limits must be determined.
			Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 75%
	6.3	Paddavlei	Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 70%
			Biota	Maintain a presence of Wattled Crane in the wetland.	Presence of Critically Endangered Wattled Crane.	Continued presence of Wattled Crane.
IUA 7: UPPER MOOI RIVER (and portion of IUA 14: ESCARPMENT)	7.2	Hlatikulu	Quantity	Existing water inputs to the wetland from its catchment must be maintained, with no increase in direct abstraction from the wetland.	Extent of dams and Surface Flow Reduction (SFR) activities (e.g., irrigated cultivation, plantations, etc.).	No increase from current extent of dams and SFR activities within the catchment.
				River RQO applies EWR maintenance low and drought flows: Nsonge River at the EWR site	Maintenance and drought flows required for the Nsonge River.	

	Maintenance Low flows (m^3/s)	Drought Low flows (m^3/s)
Oct	0.109	0.063
Nov	0.148	0.082
Dec	0.188	0.102

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria		
				THU_EWR20 (-29.2377, 29.7853) in V20C NMAR = 27.136 x10^6m^3 TEC=B/C category The maintenance low flows and drought flows must be attained to support the upstream aquatic ecosystem.	Monitoring of flows at V2H007.	Jan	0.253	0.134
						Feb	0.302	0.159
						Mar	0.271	0.143
						Apr	0.219	0.118
						May	0.155	0.086
						Jun	0.115	0.066
						Jul	0.097	0.057
						Aug	0.090	0.054
						Sep	0.101	0.060
			Quality	River RQO applies Nutrient levels must be maintained to support aquatic ecosystem and good water quality condition. Salinity concentrations must be maintained to sustain good water quality state and ecological condition. pH must be maintained within the prescribed range. The presence of pathogens should not pose a risk to human health. The concentrations of toxicants must pose no risk to aquatic organisms and to human health.	Ortho-phosphate (PO4-) as Phosphorus Total Inorganic Nitrogen (TIN-) as Nitrogen Total Dissolved Solids pH *Escherichia coli* Ammonia as N Atrazine Mancozeb Glyphosate	≤0.01 mg/L (50th percentile) ≤0.5 mg/L (50th percentile) ≤120 mg/L (95th percentile) 6.5 (5th percentile) and 9.0 (95th percentile) ≤130 Colony forming counts per 100 mL ≤ 0.0725 milligrams/litre (mg/l) (95th percentile) ≤0.078 milligrams/litre (mg/l) ≤0.009 milligrams/litre (mg/l) ≤0.7 milligrams/litre (mg/l)		
			Habitat	Maintain or improve current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5	PES score above 65%		

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
					years if possible and report on this with a view to assess if there have been any changes in the state of the system.	
			Biota	Overall diversity and populations of aquatic/wetland dependent bird species must be maintained.	SABAP 2 reporting rates for aquatic/wetland dependent Red Data bird species: • Wattled Crane • Grey Crowned Crane • African Marsh Harrier • African Grass Owl • Blue Crane • Half-Collared Kingfisher Verify from monitoring records and recorded sightings from available avifaunal reporting data. Report on this every year.	Over the next 5 years the reporting rate for each species must not decline from the SABAP2 reporting rates (as at 15 April 2021): • Wattled Crane (~19.6%) • Grey Crowned Crane (~43.5%) • African Marsh Harrier (~15.2%) • African Grass Owl (~2.2%) • Blue Crane (~21.7%) • Half-Collared Kingfisher (~13.0%).
IUA 8: MIDDLE/ LOWER MOOI RIVER	8.1	Melmoth	Habitat	Maintain the current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 90%
			Biota	Overall diversity and populations of aquatic/wetland dependent bird species must be maintained.	SABAP 2 reporting rates for aquatic/wetland dependent Red Data bird species: • Wattled Crane • Grey Crowned Crane • African Marsh Harrier • Blue Crane Verify from monitoring records and recorded sightings from available avifaunal reporting data. Report on this every year.	Over the next 5 years the reporting rate for each species must not decline from the SABAP2 reporting rates (as at 15 April 2021): • Wattled Crane (~21.1%) • Grey Crowned Crane (~28.9%) • African Marsh Harrier (~7.9%) • Blue Crane (~34.2%).
		Dartmoor	Habitat	Maintain the current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as	PES score above 90%

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
					per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	
			Biota	Overall diversity and populations of aquatic/wetland dependent bird species must be maintained.	SABAP 2 reporting rates for aquatic/wetland dependent Red Data bird species: • Wattled Crane • Grey Crowned Crane • African Marsh Harrier • Blue Crane Verify from monitoring records and recorded sightings from available avifaunal reporting data. Report on this every year.	Over the next 5 years the reporting rate for each species must not decline from the SABAP2 reporting rates (as at 15 April 2021): • Wattled Crane (~21.1%) • Grey Crowned Crane (~28.9%) • African Marsh Harrier (~7.9%) • Blue Crane (~34.2%).
		Scawby	Quantity	Existing water inputs to the wetland from its catchment must be maintained, with no increase in direct abstraction from the wetland.	Extent of dams and Surface Flow Reduction (SFR) activities (e.g., irrigated cultivation and plantations)	No increase from current extent of dams and SFR activities within the catchment.
			Habitat	Maintain the current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report	PES score above 75%

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
					on this with a view to assess if there have been any changes in the state of the system.	
			Biota	Overall diversity and populations of aquatic/wetland dependent bird species must be maintained.	SABAP 2 reporting rates for aquatic/wetland dependent Red Data bird species: • Wattled Crane • Grey Crowned Crane • African Marsh Harrier • Blue Crane Verify from monitoring records and recorded sightings from available avifaunal reporting data. Report on this every year.	Over the next 5 years the reporting rate for each species must not decline from the SABAP2 reporting rates (as at 15 April 2021): • Wattled Crane (~21.1%) • Grey Crowned Crane (~28.9%) • African Marsh Harrier (~7.9%) • Blue Crane (~34.2%).
IUA 9: MIDDLE/ LOWER BUSHMAN'S RIVER	9.3	Ntabamhlope	Quantity	Existing water inputs to the wetland from its catchment must be maintained, with no increase in direct abstraction from the wetland.	Extent of dams and Surface Flow Reduction (SFR) activities (e.g. irrigated cultivation, plantations, etc.).	No increase from current extent of dams and SFR activities within the catchment.
			Quality	River RQO applies Nutrient levels must be maintained to the support aquatic ecosystem and sustain the ecological state. Improvement in levels is required. Salinity concentrations must be maintained to support aquatic ecosystem and sustain the ecological state. The presence of pathogens should not pose a risk to human health. pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	Ortho-phosphate (PO4-) as Phosphorus Total Inorganic Nitrogen (TIN-) as Nitrogen Total Dissolved Solids *Escherichia coli* pH range	≤0.058 mg/L (50th percentile) ≤2.0 mg/L (50th percentile) ≤300 mg/L (95th percentile) ≤130 Colony forming counts per 100 mL 6.5 (5th percentile) and 9.0 (95th percentile)
			Habitat	Maintain the current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual	PES score above 70%

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
					digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	
IUA 14: ESCARPMENT	14.8	Highmoor	Habitat	Maintain or improve the current PES category.	PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	PES score above 90% for southern cluster and PES score above 75% for northern cluster.
			Biota	Overall diversity and populations of aquatic/wetland dependent bird species must be maintained.	SABAP 2 reporting rates for aquatic/wetland dependent Red Data bird species: • Wattled Crane • Grey Crowned Crane • African Marsh Harrier • Blue Crane Verify from monitoring records and recorded sightings from available avifaunal reporting data. Report on this every year.	Over the next 5 years the reporting rate for each species must not decline from the SABAP2 reporting rates (as at 15 April 2021): • Wattled Crane (~17.9%) • Grey Crowned Crane (~10.7%) • African Marsh Harrier (~3.69%) • Blue Crane (~10.7%).
		Natal Drakensberg Park	Habitat	Maintain the current PES category.	Desktop PES Category – Compile a wetland inventory for the Ramsar site through desktop identification and mapping of wetlands. Select a representative sample of wetlands to undertake PES assessments and monitoring. PES Category - As a minimum undertake a WET-Health Level 1a PES assessment (as	Maintain current PES for selected representative wetlands. PES to be determined.

IUA	Resource Unit	Wetland/Site	Component prioritised	RQO	Indicator	Numerical Criteria
					per the method described by Macfarlane *et al.*, 2020). For the PES assessment the latest available National or Provincial Land Cover datasets should be utilised for the wetland catchment, while detailed manual digitising of land cover within the wetland should be undertaken off latest available aerial imagery and supplemented through field verification by an experienced wetland specialist. Repeat as soon as new National or Provincial land cover data is available but at least every 5 years if possible and report on this with a view to assess if there have been any changes in the state of the system.	

Table 13: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 1: UPPER BUFFALO RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA1: UPPER BUFFALO RIVER	**GRU-1**	Quantity	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 51% (2021 SI plus 50%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level". Water table conditions at main wetland site (Wakkerstroom Wetland)	Aquifer water level (table) depth must be maintained to allow sustainable use.	Annual water level depletion should not drop to 5 m above the "main water strike" depth in wellfield production boreholes. Wetlands: annual water level depths at control monitoring sites in main wetland area (Wakkerstroom Wetland) should not drop more than 0.5 m.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <300 mgHCO_3/L.
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 450mgTDS/L

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
				Sodium	individual concentrations should be Good water quality).	Sodium: <65 mgNa/L. Long-term trend should not approach +10% (72 mg/L)
				Chloride		Chloride: <90 mgCl/L. Long-term trend should not approach+10% (100 mg/l)
				Sulphate		Sulphate: <180 mgSO_4/L. Long-term trend should not approach+10% (200mg/l).
			Nutrients	Nitrate		Nitrate ≤10 mgNO_3-N/L;
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water level >8 mbgl) - Water level recession rate must be less than 0.5 m/a. If negative trend is observed, abstraction yield (L/s) should be decreased by 25%. Dedicated Groundwater monitoring programme required for main Wakkerstroom Wetland.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach +50%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 14: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 2: NGAGANE RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA2: NGAGANE RIVER	**GRU-2**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 45% (2021 SI plus 55%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Annual water level depletion should not drop to 5 m above the "main water strike" depth.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <300 mgHCO_3/L.
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 450mgTDS/L
				Sodium		Sodium: <65 mgNa/L. Long-term trend should not approach +10% (72 mg/L)
				Chloride		Chloride: <100 mgCl/L. Long-term trend should not approach+10% (110 mg/l)
				Sulphate		Sulphate: <200 mgSO_4/L. Long-term trend should not approach+10% (220mg/l).
			Nutrients	Nitrate		Nitrate ≤10 mgNO_3-N/L;
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >8 mbgl) - Water level in wellfield area(s) should remain +5 m above the main water strike (MWS). Note: Scattered areas where water level is <1 m above MWS If negative trend is observed, abstraction yield (L/s) should be decreased by 25%.

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach +50%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 15: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 3: MIDDLE BUFFALO RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA3: MIDDLE BUFFALO RIVER	**GRU-3**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 47% (2021 SI plus 55%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth. Wetlands: Annual water level depths at control monitoring sites in main wetland area should not drop >0.5 m.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <300 mgHCO_3/L.
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 450mgTDS/L
				Sodium		Sodium: <58 mgNa/L. Long-term trend should not approach +10% (64 mg/L)
				Chloride		Chloride: <90 mgCl/L. Long-term trend should not approach+10% (100 mg/l)
				Sulphate		Sulphate: <180 mgSO_4/L. Long-term trend should not approach+10% (200mg/l)
			Nutrients	Nitrate		Nitrate ≤10 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >13 mbgl) - Water level recession rate must be less than 1.0 m/a. Note: Scattered areas where water level is <1 m and approximately 3 m above Main Water \strike in the northern half and southern half respectively. If negative trend is observed, abstraction yield (L/s) should be decreased by 25%.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach +50%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 16: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 4: LOWER BUFFALO RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA4: LOWER BUFFALO RIVER	**GRU-4**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 55% (2021 SI plus 55%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <300 mgHCO_3/L.
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 600mgTDS/L
				Sodium		Sodium: <58 mgNa/L. Long-term trend should not approach +10% (64 mg/L)
				Chloride		Chloride: <90 mgCl/L. Long-term trend should not approach+10% (100 mg/l)
				Sulphate		Sulphate: <180 mgSO_4/L. Long-term trend should not approach+10% (200mg/l)
			Nutrients	Nitrate		Nitrate ≤10 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >8 mbgl) - Water level recession rate must be less than 1.0 m/a. Note: Scattered areas where water level is <1 m above MWS (main water strike) specifically in QC V32A and should be regarded as a "Hotspot" site. If negative trend is observed, abstraction yield (L/s) should be decreased by 25%.

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach +50%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 17: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 5: BLOOD RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA5: LOWER BUFFALO RIVER	**GRU-5**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 38% (2021 SI plus 50%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Annual water level depletion should not drop to 5 m above the "main water strike" depth. Wetlands: Water level recession should be limited to 0.5 m in the surrounding wetlands buffer zone.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <400 mgHCO_3/L.
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 600mgTDS/L
				Sodium		Sodium: <60 mgNa/L. Long-term trend should not approach +10% (64 mg/L)
				Chloride		Chloride: <90 mgCl/L. Long-term trend should not approach+10% (100 mg/l)
				Sulphate		Sulphate: <180 mgSO_4/L. Long-term trend should not approach+10% (200mg/l)
			Nutrients	Nítrate		Nitrate ≤10 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >6 mbgl) - Water level recession rate must be less than 1.0 m/a. If negative trend is observed, abstraction yield (L/s) should be decreased by 25%.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 45%.

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride: Long-term trend should not approach +10% (1.1 mg/l).

Table 18: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 6: SUNDAYS RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA6: SUNDAYS RIVER	**GRU-6**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 65% (2021 SI plus 50%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Annual water level depletion should not drop to 5 m above the "main water strike" depth. Wetlands: Water level recession should be limited to 0.5 m in the surrounding wetlands buffer zone.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <400 mgHCO_3/L.
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 500mgTDS/L
				Sodium		Sodium: <58 mgNa/L. Long-term trend should not approach +10% (64 mg/L)
				Chloride		Chloride: <90 mgCl/L. Long-term trend should not approach+10% (100 mg/l)
				Sulphate		Sulphate: <360 mgSO_4/L. Long-term trend should not approach+10% (200mg/l)
			Nutrients	Nítrate		Nitrate ≤10 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >10 mbgl) - Water level recession rate must be less than 1.0 m/a. If negative trend is observed, abstraction yield (L/s) should be decreased by 35%.

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 50%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 19: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 7: UPPER MOOI RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA7: UPPER MOOI RIVER	**GRU-7**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 45% (2021 SI plus 50%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Annual water level depletion should not drop to 5 m above the "main water strike" depth. Wetlands: Water level recession should be limited to 0.5 m in the surrounding wetlands buffer zone.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <250 mgHCO_3/L.
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 900mgTDS/L
				Sodium		Sodium: <100 mgNa/L. Long-term trend should not approach +10% (64 mg/L)
				Chloride		Chloride: <100 mgCl/L. Long-term trend should not approach+10% (100 mg/l)
				Sulphate		Sulphate: <200 mgSO_4/L. Long-term trend should not approach+10% (200mg/l)
			Nutrients	Nítrate		Nitrate ≤10 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >5 mbgl) - Water level recession rate must be less than 1.0 m/a. If negative trend is observed, abstraction yield (L/s) should be decreased by 50%.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 10%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride: Long-term trend should not approach +10% (1.1 mg/l).

Table 20: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 8: MIDDLE/ LOWER MOOI RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA8: MIDDLE/ LOWER MOOI RIVER	**GRU-8**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 45% (2021 SI plus 50%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth. Wetlands: Water level recession should be limited to 0.5 m in the surrounding wetlands buffer zone.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <370 mgHCO_3/L

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
					(Quarterly analyses required and individual concentrations should be Good water quality).	(Long-term trend should not approach 390 mgHCO_3/L)
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 2 160mgTDS/L
				Sodium		Sodium: <230 mgNa/L. Long-term trend should not approach +10% (250mg/L)
				Chloride		Chloride: <200 mgCl/L. Long-term trend should not approach+10% (220 mg/l)
				Sulphate		Sulphate: <200 mgSO_4/L. Long-term trend should not approach+10% (220mg/l)
			Nutrients	Nitrate		Nitrate ≤10 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >5 mbgl) - Water level recession rate must be less than 1.0 m/a. If negative trend is observed, abstraction yield (L/s) should be decreased by 50%.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 10%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 21: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 9: MIDDLE/ LOWER BUSHMAN'S RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA9: MIDDLE/ LOWER BUSHMAN'S RIVER	**GRU-9**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 59% (2021 SI plus 50%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth. Wetlands: Water level recession should be limited to 0.5 m in the surrounding wetlands buffer zone.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <370 mgHCO_3/L (Long-term trend should not approach 390 mgHCO_3/L)
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 1 000mgTDS/L
				Sodium		Sodium: <130 mgNa/L. Long-term trend should not approach +10% (145mg/L)
				Chloride		Chloride: <200 mgCl/L. Long-term trend should not approach+10% (220 mg/l)
				Sulphate		Sulphate: <200 mgSO_4/L. Long-term trend should not approach+10% (220mg/l)
			Nutrients	Nítrate		Nitrate ≤10 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >5 mbgl) - Water level recession rate must be less than 1.0 m/a. If negative trend is observed, abstraction yield (L/s) should be decreased by 50%.

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 10%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 22: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 10: UPPER THUKELA RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA10: UPPER THUKELA RIVER	**GRU-10**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 59% (2021 SI plus 27%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <300 mgHCO_3/L (Long-term trend should not approach 330 mgHCO_3/L)
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 900mgTDS/L
				Sodium		Sodium: <180 mgNa/L. Long-term trend should not approach +10% (200mg/L)
				Chloride		Chloride: <180 mgCl/L. Long-term trend should not approach+10% (200 mg/l)
				Sulphate		Sulphate: <300 mgSO_4/L. Long-term trend should not approach+10% (330mg/l)
			Nutrients	Nítrate		Nitrate ≤10 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >3 mbgl) - Water level recession rate must be less than 1.0 m/a. If negative trend is observed, abstraction yield (L/s) should be decreased by 25%.

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 10%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride: Long-term trend should not approach +10% (1.1 mg/l).

Table 23: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 11: KLIP RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA11: KLIP RIVER	**GRU-11**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 45% (2021 SI plus 32%).
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth. Wetlands: Water level recession should be limited to 0.5 m in the surrounding wetlands buffer zone.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <300 mgHCO_3/L (Long-term trend should not approach 330 mgHCO_3/L)
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 1 000mgTDS/L
				Sodium		Sodium: <53 mgNa/L. Long-term trend should not approach +10% (60 mg/L)
				Chloride		Chloride: <180 mgCl/L. Long-term trend should not approach+10% (200 mg/l)
				Sulphate		Sulphate: <360 mgSO_4/L. Long-term trend should not approach+10% (400 mg/l)

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
			Nutrients	Nitrate		Nitrate ≤10 $mgNO_3$-N/L
			Toxics	Fluoride		Fluoride ≤1.0 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >5 mbgl) - Water level recession rate must be less than 1.0 m/a. If negative trend is observed, abstraction yield (L/s) should be decreased by 25%.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 10%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 24: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 12: MIDDLE THUKELA RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA12: MIDDLE THUKELA RIVER	**GRU-12**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed and new water use allocations should be limited.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 65%.
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <300 $mgHCO_3$/L

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
					(Quarterly analyses required and individual concentrations should be Good water quality).	(Long-term trend should not approach 330 mgHCO_3/L)
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 770 mgTDS/L
				Sodium		Sodium: <73 mgNa/L. Long-term trend should not approach +10% (85 mg/L)
				Chloride		Chloride: <180 mgCl/L. Long-term trend should not approach+10% (200 mg/l)
				Sulphate		Sulphate: <200 mgSO_4/L. Long-term trend should not approach+10% (220 mg/l)
			Nutrients	Nitrate		Nitrate ≤9 mgNO_3-N/L Long-term trend should not approach +10% (10.0 mg/l)
			Toxics	Fluoride		Fluoride ≤ 0.9 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >8 mbgl) - Water level recession rate must be less than 1.0 m/a.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 15%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 25: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 13: LOWER THUKELA RIVER

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA13: MIDDLE THUKELA RIVER	**GRU-13**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed and new water use allocations should be limited.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 65%.
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <300 mgHCO_3/L (Long-term trend should not approach 330 mgHCO_3/L)
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 900 mgTDS/L
				Sodium		Sodium: <83 mgNa/L. Long-term trend should not approach +10% (91 mg/L)
				Chloride		Chloride: <100 mgCl/L. Long-term trend should not approach+10% (110 mg/l)
				Sulphate		Sulphate: <100 mgSO_4/L. Long-term trend should not approach+10% (110 mg/l)
			Nutrients	Nitrate		Nitrate ≤9 mgNO_3-N/L Long-term trend should not approach +10% (10.0 mg/l)
			Toxics	Fluoride		Fluoride ≤ 0.9 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >8 mbgl) - Water level recession rate must be less than 1.0 m/a.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 10%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride: Long-term trend should not approach +10% (1.1 mg/l).

Table 26: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 14: ESCARPMENT

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA14: ESCARPMENT	**GRU-14**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed and new water use allocations should be limited.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 65%. Wetlands: Groundwater abstraction from all wetlands terrains should be limited to Schedule 1 water use category.
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth. Wetlands: Water level recession should be limited to 0.5 m in the surrounding wetlands buffer zone.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: dominant anion hydrochemical constituent – should remain <250 mgHCO_3/L
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 450 mgTDS/L
				Sodium		Sodium: ≤ 100 mgNa/L
				Chloride		Chloride: ≤ 100 mgCl/L
				Sulphate		Sulphate: ≤ 200 mgSO_4/L
			Nutrients	Nítrate		Nitrate ≤ 6 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤ 0.7 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >4 mbgl) - Water level recession rate must be less than 1.0 m/a.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 10%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride: Long-term trend should not approach +10% (1.1 mg/l).

Table 27: Regional and Resource Unit specific Resource Quality Objectives for GROUNDWATER in priority Groundwater Resource Units in the Integrated Unit of Analysis 15: ESTUARY

IUA	Groundwater Resource Unit	Component	Sub-component	Indicator(s)	Resource Quality Objective	Measure/Numerical Limit
IUA15: ESTUARY	**GRU-15 (Resource Unit 15.1)**	**Quantity**	Stress Index	Annual calculation of Stress Index (SI) (Aquifer Unit Use divided by Aquifer Unit Recharge) expressed as a percentage.	Groundwater abstraction must be sustainably managed and new water use allocations should be limited.	Annual abstraction should not be larger than 65% of average annual recharge (i.e., SI of 0.65 as upper limit). Upper SI limit to be approximately 65%.
			Water depth	Quarterly "rest" water level depth in "metre below collar level".	Aquifer water level (table) depth must be maintained to allow sustainable use.	Aquifers: Annual water level depletion should not drop to 5 m above the "main water strike" depth.
		Quality	System variables	pH Value	Groundwater water quality must not deteriorate further, to safeguard human health (Quarterly analyses required and individual concentrations should be Good water quality).	pH Value: >5.5 to <9.5 pH units.
				Total Alkalinity		Total Alkalinity: ≤ 250 mgHCO_3/L
			Salinity	Total Dissolved Solids		Total Dissolved Solids ≤ 450 mgTDS/L
				Sodium		Sodium: ≤ 100 mgNa/L
				Chloride		Chloride: ≤ 100 mgCl/L
				Sulphate		Sulphate: ≤ 200 mgSO_4/L
			Nutrients	Nítrate		Nitrate ≤ 6 mgNO_3-N/L
			Toxics	Fluoride		Fluoride ≤ 0.7 mgF/L
				Arsenic		Arsenic ≤ 0.05 mgAs/L
				Dissolved Iron		Dissolved Iron ≤ 0.2 mgFe/L
				Dissolved Manganese		Dissolved Manganese ≤ 0.4 mgMn/L
			Microbiological	Total coliforms		Total coliform counts ≤ 10 counts/100 ml
		Protection Criteria	Level trends	Annual positive or negative water level trend (time series dataset) – water level recession rate (meters per annum (m/a))	Aquifer water level trends must not show significant annual change over time	(Water Level >7 mbgl) - Water level recession rate must be less than 1.0 m/a.
			Water quality trends	Time series trends of TDS obtained from quarterly water quality analyses.	Hydrochemical trends must not show deterioration of water quality over time	Medium-term trend (5-yr cycle) increases should not approach 10%.
				Time series trends of nutrients and toxic dissolved elements.		Nitrate: Long-term trend should not approach + 10% (>10 mgN/L). Fluoride; Long-term trend should not approach +10% (1.1 mg/l).

Table 28: Resource Quality Objectives for THUKELA ESTUARY in priority Resource Units in the Integrated Unit of Analysis IUA 15: ESTUARY

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
IUA 15: ESTUARY	**II**	Thukela Estuary (8.5 km upstream) **V50D**	**15.2**	Quantity	Low Flows	Flows must be met to maintain the open mouth of the estuary.	Base flows	Must exceed 5m^3/s + LTBWSS abstraction (0.64 m^3/s during Phase 1 and 1.27 m^3/s during Phase 2) at Mandini Weir, V2H005
					High Flows (floods)	Floods are necessary to scour the estuary of accumulated sediments and organic matter, which are then transported to the coastal zone (Thukela Banks) and support crustacean and line fish fisheries.	Sediment composition (sediment particle size, organic content), Bathymetry	Maintain TEC: High flows within 8% of reference
				Hydrodynamics	Mouth Condition	The mouth needs to be open to maintain river, estuary and KwaZulu-Natal Bight interlinkages	Mouth condition – Open	Water level within tidal range (Exceeds 2.5 m when closed)
					Abiotic states	The longitudinal salinity profile to be maintained to protect the estuarine ecosystem	River discharge Longitudinal salinity profile	Open estuary, with flows exceeding 5 m^3/s, will have full salinity gradient; euhaline (>30) at mouth to oligohaline (0.5-5) up to 6 km upstream of mouth. Estuary becomes fully fresh at flow >30 m^3/s (low tide) and when mouth has closed for extended period (weeks to months).
				Quality	Salinity	Instream salinity levels as specified must be maintained to protect the aquatic ecosystem health and ensure the prescribed ecological category is met.	Salinity	Saline water (range <0.5 to 35 Practical Salinity Units or conductivity of <1 to 53 mS/cm) within TEC category (C) may penetrate up to 6 km from the mouth at river flows close to 5 m^3/s.
					Dissolved inorganic nitrogen	Instream concentration of nutrients as specified maintained to protect the aquatic ecosystem health and ensure the prescribed ecological category is met.	Total Oxidised Nitrogen (Nitrate + nitrite; TON) plus ammonium = Dissolved Inorganic Nitrogen (DIN)	TON can range from < 0.05 (marine) to 1.40 mg-N/L (fresh) along salinity gradients. NH_4^+ < 0.05 mg-N/L throughout
					Dissolved inorganic phosphorus		Orthophosphate; Dissolved Inorganic Phosphorus (DIP)	DIP < 0.05 (marine) to 0.20 mg-P/L (fresh) along salinity gradients.)
					Nutrients		DIN + DIP	TON < 0.05 (marine) to 1.40 mg-N/L (fresh) along salinity gradients. NH_4^+ < 0.05 mg-N/L throughout. DIP can range from < 0.05 (marine) to 0.20 mg-P/L (fresh) along salinity gradients.

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
					Water Clarity	The river and estuary are naturally turbid, so it is necessary to maintain the turbidity within a range that is suitable for the TEC. A moderate change from natural with temporary high sediment loads and turbidity during runoff events.	Total Suspended Solids (TSS), Secchi depth, and/ or Turbidimeter	
					Dissolved Oxygen	Estuary should be well-oxygenated throughout	Dissolved oxygen (mg/L)	Dissolved Oxygen ≥ 4 mg/L.
					System variables	pH range must be maintained within limits specified to support the aquatic ecosystem and water user requirements.	pH	7.0 to 8.5 range, with <5% falling outside of this range during a given year.
					Toxic substances	Toxic substances in water and sediments not to exceed target values as per SA Water Quality Guidelines and Western Indian Ocean Regional guidelines, respectively.	Organic and inorganic constituents, and pathogens.	Provided pH remains within 7.0-8.5 range within estuary, then ammonia should be present in its non-toxic, ionised form (NH_4^+).
					Pathogens		*Escherichia coli*	Enterococci < 185 counts per 100 ml (90th percentile) *Escherichia coli* < 500 counts per 100 ml (90th percentile)
				Physical Habitat	Intertidal habitat		Area of tidally exposed sediments (GIS mapping)	Tidal exchange present: Tidal range 0.3 m (neap) - 1.5 m (spring) above MSL. Intertidal area estimated at 20.55 ha.
					Subtidal habitat		Area of permanently inundated sediments (GIS mapping)	Subtidal area estimated at 72.47 ha.
					Substrate type	Sediment must be dominated by sand throughout the estuary except in deposition areas where silt/ mud can dominate.	Sediment particle size Ash-free dry weight Water content	Sediment dominated by sand (>90%) throughout the estuary except in deposition areas, within 0.5 km to 1.5 km of mouth, where fines (silt and clay) can exceed 80%; deposition of fines most likely during periods of low flow.
				Biota	Microalgae	Low phytoplankton biomass must be maintained	Biomass using chlorophyll-*a* as an index. Community structure using phytoplankton	Maintain low phytoplankton biomass (average chl a < 20 µg/ℓ or median chl a < 3.5 µg/ℓ) and diversity of phytoplankton groups (cyanobacteria present but not dominant) associated with TEC.

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
							groups and benthic diatoms.	Diatoms and flagellated phytoplankton dominate the mid to lower reaches of the estuary, euglenids, chlorophytes and cyanophytes (in low abundance) present in the fresh upper reaches. Maintain median subtidal and intertidal benthic chl-a < 42 mg/m^2.
					Macrophytes	Distribution of plant communities to be maintained in relevant proportions and alien species to be limited.	Community structure using botanical survey and mapping (including alien invasive species).	Maintain diversity of macrophyte habitats based on TEC. Approximately 40 ha of common reed (*Phragmites australis*), sedge (*Schoenoplectus scirpoides*) and swamp forest (*Barringtonia racemosa* and *Hibiscus tiliaceus*) present in 2001. An increase in reeds and sedge into the main channel, and the presence of water hyacinth (*Eicchornia crassipes*) and bulrush (*Typha* spp.) indicate fresher, more stable and nutrient-rich conditions. Mangroves are not present due to the estuary being a river-dominated system.
					Invertebrates	Invertebrate community structure to be maintained.	Community structure. Macrobenthos: Eckman sediment grab sampling and sieving. Zooplankton: Night collection using Bongo nets. Macrocrustacea: Beam trawls and prawn traps.	Maintain present relatively low diversity and low abundance invertebrate community as per TEC) physico-chemical conditions, sediment composition and estuary morphology. Macrobenthos: State 3 will have species-rich community associated with saline intrusion. Mid to upper reaches dominated by polychaetes, and establishment of gastropods and bivalves. Switch to State 2 will see a peak in abundance, as upper and lower reaches are colonised. During low flows, open mouth, fauna typically dominated by estuarine and marine spp.; polychaetes, amphipods, isopods, Tanaidacea, gastropods and bivalves. Zooplankton (estuarine): High diversity, low abundance during State 3 will switch to low diversity, high abundance during State 2. Macrocrustacea: Paneid post-larvae need access to estuary in spring, and *Varuna litterata* need to access marine environment in late Autumn. *Macrobrachium* requires salinity gradient (States 2 & 3) for larval

IUA	Class	River	Resource Unit	Component	Sub-component	RQO	Indicator	Numerical Limit/ measure
								development and is sensitive to sediment deposition and habitat shrinkage.
					Fish	Estuaries to be maintained as nursery areas for estuary-dependent fish, habitat for stenohaline marine and euryhaline freshwater fish, and conduits for Anguillid eel larvae.	Fish Recruitment Index (FRI) Community structure (seine net collection)	Maintain diversity and abundance that is consistent with TEC. 40 fish spp. from 20 families are present when a full salinity gradient is present. Six species dependent on estuary for breeding purposes, 25 marine spp. with a gradient of dependence on the estuary as a nursery habitat (very dependent to not at all). Only one freshwater species regularly recorded in the estuary. Six species are endemic to southern Africa. Anguillid eels make extensive use of the estuary when migrating between the marine environment and river catchment.
					Birds	Three major groups of estuarine dependent birds to be maintained; summer (incl. palaearctic migrants) and winter fauna that use the estuary for feeding, and birds that use the estuary to roost and mostly feed offshore.	Winter and summer bird counts	Maintain an avifaunal community that is consistent with TEC; representatives of all three groups. 64 bird spp. recorded from estuary. Three groups; summer (incl. Palaearctic migrants) winter that use the estuary for feeding, and species that roost in the estuary and feed offshore (dominated by gulls and terns). Average monthly average of species is 26, exceeding 4000 individuals during summer months (Nov-Mar). No endemic species have been recorded.

GENERAL NOTICES • ALGEMENE KENNISGEWINGS

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NOTICE 877 OF 2022

PRODUCT CONTROL FOR AGRICULTURE (PROKON)

AGRICULTURAL PRODUCT STANDARDS ACT NO. 119 OF 1990

('the act'')

INSPECTION FEES

Following thorough consultation, and approval of the Executive Officer appointed in terms of the act, the assignee, Product Control for Agriculture (hereinafter "PROKON"), designated in terms of section 2(3) of the Agricultural Product Standards Act No. 119 of 1990 hereby imposes inspection fees in terms of section 3(1A)((a)(ii). The said inspection fees which are categorised into (1) shared (general) regulations and (2) own (individual) regulations, shall be applicable to fresh fruits and vegetables, excluding potatoes, destined for sale in the Republic of South Africa.

The inspection fees for the categorised products are set out in Table 1 herein below:

Table 1

Shared (general) regulations	**Inspection fee ***
Asparagus,	1c/kg
Baby Marrow (Courgette),	1c/kg
Aubergines / Eggplant,	1c/kg
Cucumber,	1c/kg
Ginger,	1c/kg
Mushrooms,	1c/kg
Artichokes,	1c/kg
Broccoli,	1c/kg
Brussel Sprouts,	1c/kg
Butternut,	1c/kg
Gem Squash,	1c/kg
Carrots,	1c/kg
Cauliflower,	1c/kg
Celery,	1c/kg
Chillies,	1c/kg
Chinese Cabbage,	1c/kg
Endives,	1c/kg
Fennel,	1c/kg
Green Beans,	1c/kg
Green Onions,	1c/kg
Green Peas,	1c/kg
Horseradish,	1c/kg
Leeks,	1c/kg
Lettuce,	1c/kg
Okra,	1c/kg
Parsley,	1c/kg
Parsnips,	1c/kg
Peppers / Capsicums,	1c/kg
Pumpkins,	1c/kg
Radish,	1c/kg

Rhubarb,	1c/kg
Scorzonera,	1c/kg
Spinach,	1c/kg
Sweetcorn,	1c/kg
Turnips,	1c/kg
Witloof Chicory,	1c/kg
Beetroot,	1c/kg
Cabbages,	1c/kg
Sweet Potatoes	1c/kg
Black Berries,	1c/kg
Blue Berries,	1c/kg
Cactus Pear,	1c/kg
Dragon fruit,	1c/kg
Cranberries,	1c/kg
Figs,	1c/kg
Gooseberries,	1c/kg
Granadilla,	1c/kg
Guava,	1c/kg
Jack fruit,	1c/kg
Kiwi fruit,	1c/kg
Mango,	1c/kg
Melons,	1c/kg
Papayas,	1c/kg
Persimmons,	1c/kg
Pomegranates,	1c/kg
Quinces,	1c/kg
Raspberries,	1c/kg
Star Fruit,	1c/kg
Strawberries,	1c/kg
Watermelons, and	1c/kg
Unspecified vegetables.	1c/kg
Own (individual) regulations	**Inspection fee ***
Apples,	1,5c/kg
Apricots,	1,5c/kg
Avocados,	1,5c/kg
Bananas,	1,5c/kg
Citrus Fruit,	1,5c/kg
Garlic,	1,5c/kg
Grapes,	1,5c/kg
Litchis,	1,5c/kg
Peaches and Nectarines,	1,5c/kg
Pears,	1,5c/kg
Pineapples,	1,5c/kg
Plums and Prunes,	1,5c/kg
Onions and Shallots, and	1,5c/kg
Tomatoes.	1.5c/kg

*The inspection fees are based on weight to ensure objectivity, consistency, fairness, reasonableness, and equity. For the sake of clarity, inspection fees will be charged for the consignment of product inspected per kilogram. For

example, if 100 kg of product makes up a consignment of tomatoes R1.50 will be the inspection fee charged for that consignment.

The inspection fees by weight have been benchmarked with other inspection agencies conducting similar activities to PROKON.

The difference in inspection fees (1c/kg versus 1,5c/kg) on categorised products is substantiated by the extent of resources (labour, finances, etc.) allocated for conducting inspection activities as set out in Table 2 herein below.

Table 2

Own (individual) regulations	Shared (general) regulation
• Confirming marking requirements. • External and internal quality • Sizing • Overall appearance • Sugar content • Ripeness and maturity testing on avocado • Dry matter testing on avocados, if necessary • Determining whether product has seeds or is seedless	• Confirming marking requirements • External and internal quality • Sizing • Overall appearance

Frequency of inspections

A maximum of two inspections per product per week shall be conducted by PROKON. However, if non-conformances are found during inspections in respect of the product or a particular owner, PROKON reserves the right to increase the inspection frequency.

Further details

Full details relating to the calculation of the aforesaid fees and reasons for the differential in inspection fees have been previously provided in the accompanying methodology document once again attached herewith. The inspection fees exclude value added tax (VAT).

The inspection fees shall come into effect seven calendar days after this publication.

METHODOLOGY APPLIED TO DETERMINE THE INSPECTION FEES TO BE CHARGED ON REGULATED FRUITS AND VEGETABLES INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA

1.1 PURPOSE OF METHODOLOGY DOCUMENT

The purpose of the methodology document is to outline the specific actions to be performed in respect of each regulated product, the frequency of such inspections as well as the inspection fees to be charged. This is to ensure that there is proper understanding of Product Control for Agriculture's (hereinafter referred as Prokon) role, the associated costs and the alignment of its role with the respective client's business processes with due cognisance of the parameters of Prokon's mandate in terms of its appointment as assignee of the Department of Agriculture, Land Reform and Rural Development (DALRRD).

Prokon's infrastructure and footprint, established since 1994, was a decisive factor in the company's appointment as the Ministerial assignee to conduct inspections on locally and imported regulated fresh fruits and vegetables, hence Prokon had an established infrastructure in place which it did not have to be re-establish for the purpose of market inspections and consequently the capital cost for the purpose of inspections is minimal. The aforementioned factor also made it possible for it to propose cost effective inspections fees that are fair and reasonable.

1.2 PROCESSES TO BE IMPLEMENTED TO ENSURE STAKEHOLDER PARTICIPATION

To ensure that the handling of the application is beyond reproach:

- Prokon, as an administrative body, will follow the notice and comment procedure as set out in section 4 of the Promotion of the Administrative Justice Act, Act 3 of 2000 (PAJA) in determining the inspection fees. Prokon will thus take appropriate steps to communicate the administrative action to those likely to be materially and adversely affected by such administrative action and called for comment thereon. The comments will be duly considered and, where possible, be incorporated with due cognisance of the Agricultural Products Standards Act no. 119 of 1990 and the procedures prescribed in the regulations.
- Prokon's board of directors, in cooperation with the company's managerial and technical staff, will determine the inspection fees in a rational and proper manner prior to it, together with a detailed methodology, being published as a draft notice in the government gazette as well as in four newspapers being distributed country wide, taking into account the need for it to be published in different languages.
- Sufficient time will be allowed for comment where after such comments will be duly considered and, if appropriate, be incorporated in the notice and circulated to those stakeholders that submitted comments. Should further comments be received it will be duly considered and, if appropriate, be incorporated in the notice and once again be published, affording stakeholders a final opportunity for inputs in terms of section 10 of the PAJA. Should further inputs be received it will be considered in term of relevance, and if affirmative, be incorporated in the notice.
- The final step will be to submit the draft government notice to the Department of Agriculture, Land Reform and Rural Development for approval and publication in the government gazette.

1.3 INSPECTION PROCESS

In terms of this document, Prokon is to inspect all regulated locally produced fresh fruits and vegetables intended for sale in the Republic of South Africa in accordance with the regulations and the company's SANAS ISO 17020 accreditation with due cognisance of the following aspects:

- Compliance with the mandate given to Prokon by the DALRRD to ensure consumer protection and instil consumer confidence.

- Compliance with Prokon's standard operating procedures (SOP) and quality management system (QMS) in terms of its SANAS accreditation.

Prokon will conduct inspections on all regulated fresh fruits and vegetables at the most appropriate frequency, point and time in order to minimise disruption and possible negative impact on the clients' businesses whilst at the same time ensure compliance with its official assignment.

1.4 THE NECESSITY FOR QUALITY ASSURANCE INSPECTIONS

During a two-year period (June 2019 to May 2021) **4 814 directives** were issued in respect of produce at fresh produce markets, retailers, wholesalers and importers which did not comply with prescribed standards set out in the relevant regulations. The majority of non-conformances were found on fresh produce markets. The aforementioned statistics is clear proof that there is a definite need for quality assurance inspections on fresh fruits and vegetables to protect the relevant value chain as a whole as well as to ensure that the consumer purchases a product that complies with official quality and health regulations.

The following problems / non-conformances, which may differ between products, were found in respect of locally produced produce:

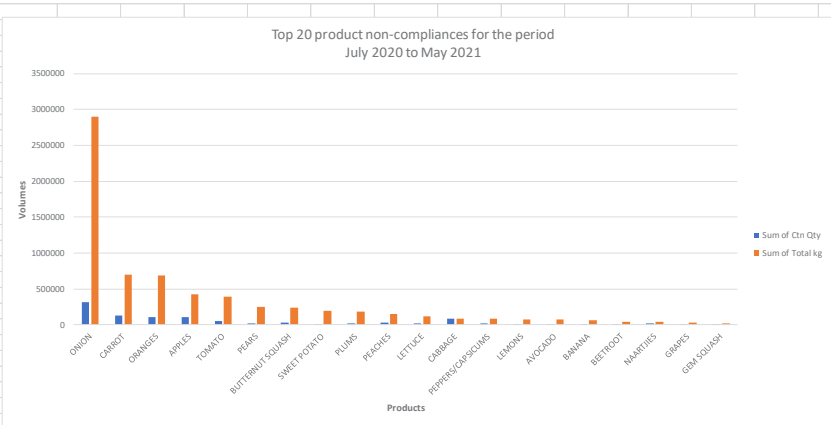
- Consignments are not marked, e.g., no information is provided on the packaging in respect of name / trade name of the supplier / producer and contact details, cultivar / variety, class, weight, date of packing and country of origin. This is especially the case in respect of lower class produce. (Compliance in terms of marking is extremely important in order to ensure that the origin of the product can be traced should quality and health related complaints be lodged.)
- Different sizes are packed in the same container / bag.
- Underweight packaging.
- Consignments do not comply with the official internal and external quality standards.
- Products that were harvested immaturely (ripeness).
- Incorrect sugar levels.

As far as imported produce is concerned the following are examples of the problems / non-conformances found:

- A large consignment avocado was illegally imported from Tanzania. Prokon informed the Inspectorate of the Department of Agriculture, Land Reform and Rural Development who confiscated and destroyed the consignment to the benefit of the local industry and the consumer.
- Indicating the wrong country of origin.

Table 1: Top 20 product non-compliances for the period July 2020 to May 2021

Row Labels	Sum of Ctn Qty	Sum of Total kg
ONIONS	315 770	2 897 082,50
CARROTS	135 547	700 842,50
ORANGES	112 114	683 562,00
APPLES	109 918	421 894,00
TOMATOES	53 208	395 821,10
PEARS	25 831	246 168,44
BUTTERNUT SQUASH	34 931	242 872,56
SWEET POTATOES	12 545	190 386,60
PLUMS	24 838	186 914,50
PEACHES	30 427	151 559,50
LETTUCE	18 671	116 723,00
CABBAGES	90 676	90 676,00
PEPPERS/CAPSICUMS	19 344	85 615,60
LEMONS	8 303	75 400,00
AVOCADOS	8 751	73 784,00
BANANAS	4 929	66 097,80
BEETROOT	8 883	45 926,85
NAARTJIES	17 141	45 901,20
GRAPES	5 699	35 535,00
GEM SQUASH	3 440	20 876,90
Grand Total	**1 040 966**	**6 773 640,05**



1.5 EXAMPLES OF THE POSSIBLE IMPACT ON PRODUCERS AND CONSUMERS

1.5.1 Producers

The table demonstrates the benefits on offer to producers who deliver a quality product in terms of the stipulations set out in the official regulations.

Table 2: Average price attained after produce were downgraded

SCENARIO	Eleven producers				
	All produce delivered marked as class 1				
	Prices ranged between R22.00 and R29.00 per container delivered to the market before inspections				
	Four consignments were downgraded due to non-compliance to quality standards for class 1				
	After Prokon's inspection seven consignments were left which positively influenced the average price for class 1				
	If Prokon does not conduct inspections		**Prokon does inspection and downgrades**	**Scenario average after Prokon inspections**	
	Producers	**Selling price R**		**Producers**	**Selling price R**
	A	R26,00		A	R26,00
	B	R25,00		B	R25,00
	C	R24,00	Downgraded to class 2		
	D	R22,00	Downgraded to class 2		
	E	R28,00		E	R28,00
	F	R29,00		F	R29,00
	G	R27,00		G	R27,00
	H	R23,00	Downgraded to class 2		
	I	R24,00	Downgraded to class 2		
	J	R26,00		J	R26,00
	K	R28,00		K	R28,00
	Average	**R25,64**		**Average**	**R27,00**
	3520 X AVE PRICE	**R90 240,00**		**3520 X AVE PRICE**	**R95 040,00**
	Financial benefit on 3520 containers being inspected by Prokon		**R4 800,00**		

1.5.2 Consumers

The scenario below demonstrates the difference in average prices of actual downgrades for the period July 2020 to May 2021 between classes. It must be taken into account that prices differ on a daily basis depending on volumes and quality supplied versus demand. The last column reflects the true price forming mechanism and how it impacts the buying power of buyers and consumers.

Table 3: Product downgrades and the impact thereof on the true price forming mechanism and how it impacts the buying power of buyers and consumers.

Products / Downgrades	Actual downgrades				
Onions	**Container quantity**	**Total kg**	**Ave R /kg**	**Difference between class 1 and other classes**	**Price differences (Total kg x difference between class 1 and other classes)**
Class 1			R6,76		
Downgraded to class 2	240162	2 218 563,50	R3,86	R2,90	R6 433 834,15
Downgraded to class 3	64925	596 189,00	R3,74	R3,02	R1 800 490,78
Downgraded to lowest class	10683	82 330,00	R1,69	R5,07	R417 413,10
					R8 651 738,03
Carrots					
Class 1			R4,20		
Downgraded to class 2	84838	416 627,50	R3,11	R1,09	R454 123,98
Downgraded to class 3	46208	257 348,00	R2,12	R2,08	R535 283,84
Downgraded to lowest class	4501	26 867,00	R1,50	R2,70	R72 540,90
					R1 061 948,72
Oranges					
Class 1			R5,47		
Downgraded to class 2	16476	117 756,00	R4,84	R0,63	R74 186,28
Downgraded to class 3	33582	170 234,00	R3,49	R1,98	R337 063,32
Downgraded to lowest class	62056	395 572,00	R3,00	R2,47	R977 062,84
					R1 388 312,44
Apples					
Class 1			R12,54		
Downgraded to class 2	26255	99 512,00	R7,44	R5,10	R507 511,20
Downgraded to class 3	70540	231 686,00	R4,01	R8,53	R1 976 281,58
Downgraded to lowest class	13123	90 696,00	R1,93	R10,61	R962 284,56
					R3 446 077,34
Tomatoes					
Class 1			R11,10		
Downgraded to class 2	39523	253 612,40	R8,12	R2,98	R755 764,95
Downgraded to class 3	9371	99 019,00	R6,68	R4,42	R437 663,98
Downgraded to lowest class	4314	43 189,70	R4,71	R6,39	R275 982,18
					R1 469 411,12
				Total	**R16 017 487,64**

1.6 PROKON'S APPOINTMENT AS ASSIGNEE

Prokon's Ministerial appointment as assignee of the Department of Agriculture, Land Reform and Rural Development to conduct inspections on produce for sale in the republic of South Africa are in accordance with the Agricultural Products Standards Act, No. 119 of 1990 and can be summarised as follows:

- Prokon's appointment as assignee to conduct inspections on potatoes was originally published in Notice 232 of 1994. On 21 September 2010 Prokon's mandate to conduct inspections on potatoes was revised to incorporate all inspections at wholesale (national fresh produce markets) and retail level (at all different retailers in South Africa).
- Prokon's was appointed on 17 May 2016 as assignee to conduct inspections on all other regulated local produced and imported fresh fruits, vegetables and flowers.

1.7 BROAD BASED EXPERIENCE IN QUALITY ASSURANCE INSPECTIONS

The quality assurance inspections conducted on the other regulated local produced and imported fresh fruits, vegetables by Prokon inspectors during the past three years, afforded the company the ideal platform to gained valuable broad-based experience and product knowledge to refine the inspection process to the benefit of all stakeholder in the fresh produce supply chain. The exposure allowed Prokon the ability to identify the primary

participants in the fresh produce flow channel, and thus inspection points, as fresh produce markets (handling approximately 47% of all fresh produce and accommodate all spectrum of buyers), distribution centres to retail outlets as well as independent packers and pack houses. These points were also identified as the most cost effective for the supply chain as a whole, as well as the fact that it allows for the optimal use of resources.

However, as fresh produce markets and distributions centres handle the bulk of fresh produce in terms of, e.g., variety, quality and classes the higher percentage of inspections are conducted at these points. It follows that the number of downgrades and directives are issued on fresh produce markets closely followed by distribution centres /retails outlets. It is important that the issuing of directives should not be seen as a penalisation of the suppliers, but rather as a way to assist them to identify and address the problem to their benefit (better price). Through analysing our data Prokon has detected a real improvement in the quality and adherence to marking requirements in the market environment.

1.8 INSPECTION FEES

Prokon, as a non-profit company, operates on a cost recovery basis for the purpose of its Ministerial appointment as assignee on 17 May 2016 in terms of section 2(3)(a) of the Agricultural Products Standards Act, 1990 (Act 119 of 1990) for the application of section 3(1)(a) and (b), 3A(1), 4A(1), 7 and 8 in respect of inspection of fresh vegetables, fruits and flowers. The determination of the new inspection fees has been determined according to the income and expenses specific to the business unit in question, and will thus be fair and reasonable for all stakeholders in the supply chain.

Cognisance must also be taken of the fact that the data used in determining the inspection fees are based on the actual volumes in the past year of a broad spectrum of produce and quality sold on fresh produce markets, as well as the fact that it is publicly available. The statistics on volumes handled by the other stakeholders are confidential and Prokon unfortunately has no access to it.

1.9 CATEGORIES OF PRODUCTS TO BE INSPECTED

Current legislation makes provision for two specified categories of products to be inspected. As the said categories represent an extensive spectrum of fresh produce sold on the fresh produce markets it is, after consultation with role players, recommended that the matter be simplified by dividing the products in two categories, i.e., (1) shared (general) regulations and (2) own (individual) regulations. The two categories, what the inspections entail and the products it will apply to, are set out in Tables 1 and 2 of the Notice.

The regulated fruits and vegetables subject to inspection, as set out in Table 4, were published under Government Notice 1 of 2017 in Government Gazette 40537 dated 6 January 2017 and in Government Gazette 43613 dated 14 August 2020.

Table 4

Shared (general) regulations	Products
• Confirming marking requirements • External and internal quality • Sizing • Overall appearance	Published under Government Notice 1 of 2017 in Government Gazette 40537 dated 6 January 2017 – Asparagus, Baby Marrow (Courgette), Aubergines / Eggplant, Cucumber, Ginger, Mushrooms, Artichokes, Broccoli, Brussel Sprouts, Butternut, Gem Squash, Carrots, Cauliflower, Celery, Chillies, Chinese Cabbage, Endives, Fennel, Green Beans, Green Onions, Green Peas, Horse-Radish, Leeks, Lettuce, Okra, Parsley, Parsnips, Peppers / Capsicums, Pumpkins, Radish, Rhubarb, Scorzonera, Spinach, Sweetcorn, Turnips, Witloof Chicory, Beetroot, Cabbages, Sweet Potatoes and Unspecified vegetables Other Fruits: Published in Government Gazette 43613 dated 14 August 2020 – Black Berries, Blue Berries, Cactus Pear, Dragon fruit, Cranberries, Figs, Gooseberries, Granadilla, Guava, Jack fruit, Kiwi fruit, Mango, Melons, Papayas, Persimmons, Pomegranates, Quinces, Raspberries, Star Fruit, Strawberries, Watermelons.
Own (individual) regulations	**Products**
• Confirming marking requirements. • External and internal quality • Sizing • Overall appearance • Sugar content • Ripeness and maturity testing on avocado • Dry matter testing on avocados, if necessary • Determining whether product is seeded or seedless • Deep cutting to determine if split stone is present on stone fruits • Determining sugar / starch ratio • Destructive testing as prescribed in more detailed categories	Published under Government Notice 1 of 2017 in Government Gazette 40537 dated 6 January 2017 and Government Gazette 43613 dated 14 August 2020 – Apples, Apricots, Avocados, Bananas, Citrus Fruit, Garlic, Grapes, Litchis, Peaches and Nectarines, Pears, Pineapples, Plums and Prunes, Onions and Shallots and Tomatoes.

1.10 FREQUENCY OF INSPECTIONS

In 2017 it was the understanding that inspections must be conducted on a daily basis. Same as Notice Based on Prokon's experience during the past 18 months we are confident that by conducting two inspections per product per week would suffice to conduct a proper quality assurance survey per product line as well as allowing for the identification of quality problems and conveyance of such information to producers, producer organisation and other institutions in the fresh produce supply chain in order to rectify the problems and prevent the reoccurrence thereof. In addition, a twice a week inspection of products optimises the cost / inspection ratio, minimises cost and is sufficient to ensure that non-conforming produce do not reach the consumer.

The suggested frequency of twice a week inspection has also been tested and accepted in the retail environment during the past three years.

1.11 HUMAN RESOURCES TO RENDER INSPECTION SERVICES

The personnel are based on the current personnel component required to render the inspection service at the identified inspection points. However, in order to render the said service at the required level it will be necessary to appoint four additional inspectors during the coming year. These inspectors will be based in Johannesburg, Durban, Cape Town and Polokwane.

The salaries and administrative fees can be kept to a minimum due to a business- and infrastructure established over a period of 27 years and existing service contracts with stakeholders. (The explanatory notes as set out in **Annexure B** have reference to Annexure A.)

The human resources component required to render the inspection service is set out in **Annexure A (see notes 2 and 3).**

The personnel cost per office as set out in **Annexure A** is based on the proposal of Blue Horizon (Pty) Ltd (**as part of Annexure A**).

Prokon has been making use of the services of Blue Horizon (Pty) Ltd since 2013 for human resources consultation and benchmarking of remuneration packages.

The remuneration package for the aforementioned personnel component is based on market remuneration benchmark and design conducted by Blue Horizon (Pty) Ltd in 2020. Remuneration data for the agricultural sector was acquired from one of the four remuneration and rewards survey service providers in South Africa, Price Waterhouse Coopers (PWC). The market surveys provide data at the lower, median and upper quartile which is projected to a specific date for implementation within the year the benchmark data becomes available and before the new benchmark is surveyed by PWC. These values are updated annually to provide CPI related remuneration values in order to provide defensible pay structures for that financial year.

The Prokon Board of Directors decided to base the remuneration of inspectors on the lower quartile as set out in **Annexure A** of the **Memorandum in respect of the determination of new inspection fees on regulated fresh fruits and vegetables**.

1.12 EXPENSES

The total of expenses for both the retail environment (blue column) and the fresh produce markets (yellow column) are set out in **Annexure A** and are divided into the following categories, i.e., general, administrative and overhead expenses.

The yellow column represents a summary of the market expenses, as indicated in **Annexure A** and was used to determine the inspection fee.

1.13 CATEGORIES AND INSPECTION FEES

The assignee, Prokon, designated in terms of section 2(3) of the Agricultural Product Standards Act, No. 119 of 1990, shall impose inspection fees in terms of section 3(1A) (a)(ii). The said inspection fees which are categorised into (1) shared (general) regulations and (2) own (individual) regulations, shall be applicable to fresh fruits and vegetables, excluding potatoes, destined for sale in the Republic of South Africa.

The categories and inspection fees, excluding VAT, are set out in **Annexure C**.

The table above represents the proposed fees for two inspection categories as indicated in **Item 1.9: Categories of products to be inspected** above, i.e., (1) shared (general) regulations and (2) own (individual) regulations . The proposed inspections fees for (1) shared (general) regulations amounts to 1c per kilogram and that for (2) own (individual) regulations 1,5c per kilogram. These fees are calculated on a cost recovery basis as pointed out in the methodology document. (See **Annexure D.)**

ANNEXURE A

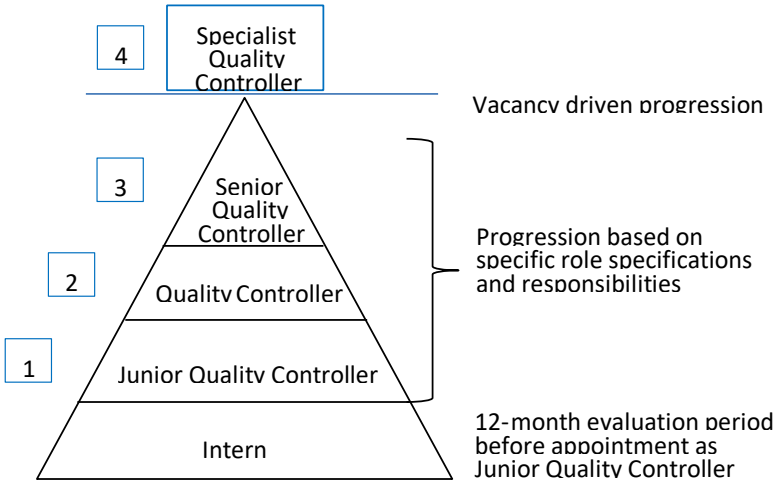
PRODUCT CONTROL FOR AGRICULTURE

EXPENSES SUMMARY

	NOTES		2021/2022 BUDGET	Excluding Potatoes and Imports	Retail	Market	
			100%				
Total Expenses			19 233 535,00	9 851 352,85	4 015 614,73	**5 835 738,12**	
Total Remuneration			13 014 150,95	6 110 143,87	3 081 956,57	3 028 187,30	
	1			46,95%	50,44%	49,56%	
Remuneration	2						
Chief Executive Officer		1					
Operations Manager		1					
Administrative /Financial Manager		1					
Administrative Officers		5					
Database Officers		2					**4 633 951,35**
Senior Quality Controllers (Inspector)		6					
Quality Controllers II (Inspector)		29					
Junior Quality Controllers (Inspector)		10					
Inspector Assistants		32					
Wages	3		1 605 764,05	1 605 764,05	-	1 605 764,05	
Wages			1 554 764,05	1 554 764,05	-	1 554 764,05	
Relief Wages			51 000,00	51 000,00	-	51 000,00	
General Expenses			2 178 520,00	1 022 815,14	300 467,32	693 982,04	
Relief Arrangement	4		118 100,00	55 447,95	27 912,50	27 480,00	
Bank Charges	5		104 860,00	49 231,77	24 783,27	24 399,27	
Printing and Stationery	6		92 260,00	43 316,07	-	43 316,07	
Repair and Maintenance	7		76 600,00	35 963,70	-	35 963,70	
Office Rent	8		510 390,00	239 628,11	71 888,43	167 739,67	
Equipment Rent	9		115 000,00	53 992,50	-	53 992,50	
Labels	10		26 000,00	12 207,00	6 145,00	6 049,79	
Postage	11		22 500,00	10 563,75	5 317,79	5 235,39	
Relationship Management	12		24 500,00	11 502,75	5 790,48	5 700,76	
Protective and Company Ware	13		102 850,00	48 288,08	24 308,22	23 931,57	
Travel and Accommodation	14		312 600,00	146 765,70	73 881,85	72 737,08	
Congress, AGM Attendance	15		115 000,00	53 992,50	-	53 992,50	
Computer Software	16		35 700,00	16 761,15	8 437,56	8 306,83	
Mobile Phones	17		173 620,00	81 514,59	41 034,44	40 398,63	
Landlines	18		82 420,00	38 696,19	-	38 696,19	
Internet	19		92 800,00	43 569,60	-	43 569,60	
Consumable Stock	20		68 300,00	32 066,85	-	32 066,85	
Refreshments	21		44 720,00	20 996,04	10 569,41	10 405,64	
Fuel and Oil	22		20 900,00	9 812,55	9 812,55	-	
Repair and Maintenance Vehicles	23		33 600,00	15 775,20	15 775,20	-	
Licences	24		5 800,00	2 723,10	2 723,10	-	
Administration Fees			1 512 000,00	709 884,00	377 916,42	331 424,37	**1 201 786,77**
Management Committee (Personnel)	25		45 500,00	21 362,25	10 753,76	10 587,13	
Board Meetings	26		90 000,00	42 255,00	21 271,17	20 941,58	
Data Base - Freshmark Systems	27		100 000,00	46 950,00	-	46 950,00	
E-Click Electronic Software System	28		165 000,00	77 467,50	38 997,14	38 392,89	
Contract Expenses (DC visits)	29		190 000,00	89 205,00	89 205,00	-	
Professional Services	30		200 000,00	93 900,00	47 269,26	46 536,84	
Communication (Industry and Consumer)	31		65 000,00	30 517,50	15 258,75	15 258,75	
Subscriptions	32		1 000,00	469,50	236,35	232,68	
Training Expenses (Inspectors)	33		120 000,00	56 340,00	28 361,56	27 922,10	
Training Expenses (Emerging Farmers)	34		300 000,00	140 850,00	70 903,89	69 805,26	
Auditor's Remuneration	35		37 500,00	17 606,25	8 862,99	8 725,66	
Inspector Transfer Fees	36		20 000,00	9 390,00	4 726,93	4 653,68	
Insurance	37		118 000,00	55 401,00	27 888,86	27 456,74	
Business Review	38		60 000,00	28 170,00	14 180,78	13 961,05	

Overhead Expenses			**547 100,00**	**256 863,45**	**99 726,26**	**155 438,77**
Financial Administration	**39**		**360 000,00**	**169 020,00**	**55 776,60**	**111 553,20**
Remuniration Administration	**40**		**104 600,00**	**49 109,70**	**24 554,85**	**24 554,85**
Administrative Services	**41**		**65 000,00**	**30 517,50**	**15 258,75**	**15 258,75**
Membership Fees	**42**		**17 500,00**	**8 216,25**	**4 136,06**	**4 071,97**
Depreciation			**376 000,00**	**176 532,00**	**155 548,17**	**20 941,58**
Depreciation Equipment	**43**		**45 000,00**	**21 127,50**	**10 635,58**	**10 470,79**
Depreciation Computer Equipment	**44**		**45 000,00**	**21 127,50**	**10 635,58**	**10 470,79**
Depreciation Vehicles	**45**		**286 000,00**	**134 277,00**	**134 277,00**	**-**

Prokon inspector remuneration structuring 2020



Prokon QC Payscale Design				
	Grade		**Total Guaranteed Package Annual**	
Market LQ	**C3**		289788	
Max = Market Median	**C3**		359112	
Min = 0.85 of the LQ			246320	
Range Spread of each scale			46%	
Midpoint			302716	
Pay Scales		**Min**	**Mid**	**Max**
Junior Quality Controller I		179415	220680	261945
Quality Controller II		221499	272444	323389
Senior Quality Controller		273456	336351	399246

Source: Blue Horizon (Pty) Ltd – 2020

Prokon has been making use of the services of Blue Horizon (Pty) Ltd since 2013 for human resources consultation and benchmarking of remuneration packages.

The remuneration package for the aforementioned personnel component is based on market remuneration benchmark and design conducted by Blue Horizon (Pty) Ltd in 2020. Remuneration data

for the agricultural sector was acquired from one of the four remuneration and rewards survey service providers in South Africa, Price Waterhouse Coopers (PWC). The market surveys provide data at the lower, median and upper quartile which is projected to a specific date for implementation within the year the benchmark data becomes available and before the new benchmark is surveyed by PWC. These values are updated annually to provide CPI related remuneration values in order to provide defensible pay structures for that financial year.

The Prokon Board of Directors decided to base the remuneration of inspectors on the lower quartile as set out in **Annexure A** of the **Memorandum in respect of the determination of new inspection fees on regulated fresh fruits and vegetables**.

ANNEXURE B

Explanatory notes in respect of total expenditure
(The explanatory notes have reference to Annexure A)

The expenditure listed in the explanatory notes hereunder is proportionately divided between the three core business units, i.e. fresh produce markets, retail and imports.

No.	Category	Explanation
	Remuneration	
1	Total Remuneration	Total remuneration amounts to R14 619 915.00. When potatoes and imports are excluded, it amounts to R7 715 907.92 (52.78% of total remuneration) of which R3 081 956. 57 (21.08%) apply to the retail trade and R4 633 951. 35 (31.7%) to fresh produce markets.
2	Remuneration	Remuneration is based on the personnel component required to render the inspections service set out in the methodology. The specific positions and numbers are indicated in the blue column under the heading Remuneration. The remuneration of management and the administrative personnel (Chief Executive Officer, Operations Manager, Administrative and Financial Manager, five administrative officers and two Database Officers) is based on actual salaries. The remuneration of Inspectors (45) is based on industry norms which was confirmed by a study conducted by Blue Horizon during 2020 (see Annexure A) in order to benchmark the remuneration of all of Prokon's inspectors and some of the administrative personnel. Prokon's Board of Directors took the decision to base the remuneration on the minimum pay scale with due cognisance of what applies in the fresh produce industry in order to retain qualified and component personnel, especially inspection personnel.
3	Wages	Wages apply to 32 general workers who assist the inspectors, and are actual wages. They are paid the minimum wage prescribed in the official wage determination applicable to general workers.
	General Expenses	
4	Relief Arrangement	Cost to provide relief if a staff member goes on vacation / sick leave.

5	Bank Charges	Normal bank charges payable on current account, based on income generated by each business unit.
6	Printing and Stationery	Printing and stationery (paper, pens, staples, etc.) required to perform the service.
7	Repair and Maintenance	Repair and maintenance of equipment used for inspections, e.g., scales and trollies.
8	Office Rent	Rental payable in respect of 16 offices rented. These offices serve as bases for conducting inspections on fresh produce markets, distribution centres and retail outlets, wholesalers and ports of entry.
9	Equipment Rent	Cost of rental of equipment such as copiers and fax machines.
10	Labels	Additional labels to be affixed to containers when inspections are conducted for traceability purposes.
11	Postage	Primarily to send parcels (e.g., colour plates, documentation, protective ware and inspection equipment) to Prokon offices.
12	Relationship Management	Funding to establish and maintain relations with stakeholders in the fresh produce value chain.
13	Protective and Company Wear	Protective wear worn by inspectors such as dust coats, overalls, freezer jackets and safety shoes.
14	Travel and Accommodation	Operational related travel and accommodation expenses for personnel to conduct their duties and attendance of industry and producer meetings to report on inspection related matters.
15	Conferences, AGMs and Workshops	Expenses to attend (travel, accommodation, registration of fresh produce industry body conferences and AGMs, e.g., Potatoes SA, Produce Marketing Association and African Potato Association, international workshops offered by KCB and the International Quality Standards Harmonization Meeting in Europe.
16	Computer Software	Purchasing of computer software required to conduct inspections.
17	Mobile Phones	For use by management and inspectors in conducting daily tasks (taking inspection photos, scan barcodes, take GPS points), to communicate with one another and submit inspection information.
18	Landlines	Used as a back-up for communication purposes and to send faxes.
19	Internet	Used by all staff do conduct daily business activities, e.g., by inspectors as the inspection program is Internet based.
20	Consumable Stock	For example, knifes, side cutters, ink and stamping pads, Iodine to determine starch content, specifically for inspections on regulated fresh fruits and vegetables.
21	Refreshments	For example, tea, coffee and sugar.
22	Fuel and oil	For travelling and upkeep of existing company pool vehicles to perform daily duties.

23	Repair and maintenance Vehicles	Servicing, tyres and general repairs to existing company pool cars.
24	Licences	Annual renewal of licences of existing company pool cars vehicles.
	Administration fees	
25	Management Committee (personnel)	Quarterly meetings – Head office management and regional managers, e.g., to appraise operational performance across all regions and to strategize current and future inspection activities.
26	Board Meetings	2 Board meetings, 2 Risk and Audit Committee meetings, 1 AGM.
27	Data Base – Fresh Mark Systems	Payments to access data such as daily, monthly and yearly market volumes and sales as well as obtaining data on product, classes, cultivars and packaging sizes, when required.
28	E-Click Electronic Software System	Electronic inspection equipment for daily inspections at inspection points (retail, wholesale, fresh produce markets).
29	Contract Expenses (Distribution Centre Visits)	Transport expenses to conduct inspections at distribution centres and other outlets, where necessary. (This expenditure applies to retail inspections only.)
30	Professional Services	Professional services, e.g., SANAS, SEESA and SETA affiliation, legal opinions, design of production aids (colour plate book and tomato quality inspection guide), promotional material and sample testing.
31	Communication (Industry and Consumer)	Direct communication with the industry and the consumer, articles in the agricultural and consumer media and brochures to create awareness about the company's services to the industry and to inform consumers about the role Prokon plays to ensure quality produce reaching their households.
32	Subscriptions	Renewal of industry magazine subscriptions, etc.
33	Training Expenses (Inspectors)	Training expenses incurred to ensure that personnel are at all times geared to render top quality services and are abreast of latest developments.
34	Training Expenses (Emerging Farmers)	Training expenses incurred to train emerging famers to ensure that their products comply with official quality standards, e.g., packaging, size groups and marking. This will ensure that their consignments are market ready and thus prevent downgrading and furthermore being prohibited from being sold.
35	Auditors' remuneration	Auditors' fees in respect of annual audit.
36	Inspector Transfer Fees	Costs related to personnel being transferred to a different office and/or inspection point.
37	Insurance	Insurance premiums in respect of vehicles, equipment, etc.
38	Business Review	Cost to produce Prokon's Annual Business Review (compilation, lay-out and printing).

	Overhead expenses	
39	Financial Administration	Payment for external financial administration service.
40	Remuneration Administration	Payment for external remuneration administration service.
41	Administrative Services	Payment for external administrative service.
42	Membership fees	Payment of fees for membership fees of industry bodies, e.g., Produce Marketing Association (PMA).
	Depreciation	
43	Depreciation – Equipment	Provision for depreciation of existing equipment, e.g., office furniture that is written-off over three years.
44	Depreciation – Computer Equipment	Provision for depreciation of existing computer equipment, e.g., laptops and cellular phones that are written-off over three years.
45	Depreciation – Vehicles	Provision for the depreciation of seven existing motor pool vehicles which are written-off in terms of the company's motor vehicle policy.

ANNEXURE C

Products sold on fresh produce markets

Own regulation products		Shared regulation products	
Product	**Kg**	**Product**	**Kg**
Apples	153 010 111,20	Artichokes	10 435,60
Apricots	825 363,10	Asparagus	33 332,90
Avocados	24 296 673,30	Baby Marrows	789 633,00
Bananas	209 023 833,50	Beetroot	6 521 472,00
Cherries	298 388,30	Blueberries	578 436,60
Cocktail Avocados	6 234,00	Brinjals	2 356 670,00
Cocktail Tomatoes	1 229 360,50	Broccoli / Cauliflower	432 354,50
Exotic Citrus	20 035 110,10	Broccoli	3 211 659,60
Garlic	2 107 081,90	Brussel Sprouts	50 316,00
Grapefruits	3 348 262,50	Butter Lettuce	134 988,70
Grapes	19 418 804,10	Butternuts	95 255 939,00
Lemons	26 121 814,50	Cabbages	124 456 418,00
Limes	602 081,00	Calabash	159 432,00
Litchis	903 460,10	Carrots	145 629 190,10
Mandarins	21 955 991,20	Cauliflower	4 349 482,20
Nectarines	8 120 682,20	Celery	946 015,20
Onions	405 889 819,00	Chillies	13 638 857,60
Oranges	109 598 563,30	Chinese Cabbage	286 469,90
Peaches	13 177 620,30	Chives	6 918,90
Pears	46 280 892,00	Coriander	450 756,30
Pickle onions	2 390 772,00	Cucumber	244 277,40
Pineapples	21 998 089,50	Custard Apple	27 163,50
Plums	15 028 712,80	Dragon Fruit	26 311,60
Prunes	571 515,40	Endives	9 300,00
Shallots	65 621,40	English Cucumber	22 586 028,30
Tomatoes	274 733 850,00	Fennel	87 008,00
Totals	**1 381 038 707,20**	Figs	163 588,70
Total kg inspectable per year	**815 248 206,81**	Fresh Dates	22 351,70
		Gem Squash	6 158 083,00
%	**59,0%**	Ginger	1 375 651,40
See notes to explain %		Gooseberries	18 977,00

			Granadilla	408 000,70
			Green Beans	9 879 224,50
			Green Mealies	579 179,10
			Green Onions	4 836,70
			Green Peas	105 181,00
			Guava	1 917 731,60
			Horse Radish	13 246,00
			Hubbard Squash	27 482 411,00
			Jackfruit	1 432,00
			Kale	178 914,10
			Kiwi	720 947,40
			Kohlrabi	12 742,00
			Kumquats	144 513,50
			Leeks	808 672,40
			Lemon Grass	1 275,10
			Lettuce	17 753 408,00
	22		Liquats	225,00
			Mangoes	20 343 800,80
			Marrows	2 609 193,50
			Morogo	48 535,80
			Mulberries	65,80
			Mushrooms	1 317 874,60
			Muskmelons	4 001 455,00
			Okra	2 830 299,00
			Other berries	177 493,70
			Paprika	162 557,60
			Parsley	370 891,20
			Parsnip	64 825,00
			Patty pans	422 539,90
			Paw Paw Papino	5 057 364,50
			Peppers	62 969 409,10
			Persimmons	614 953,60
			Piquant Peppers	8 668,40
			Pomegranate	381 780,70
			Prickly Pears	1 170 553,90
			Pumpkin	53 330 271,00
			Quinches	24 921,00
			Radishes	137 959,90
			Raspberries	212 686,30
			Red Cabbage	997 163,50
			Rhubarb	13 080,50
			Spinach	20 583 556,30
			Spring Onions	630 955,40
			Star Fruit	147,50
			Strawberries	2 227 173,10
			Sweet Melons	3 416 289,50
			Sweet potatoes	26 292 468,70
			Sweet corn	2 194 479,10
			Turnips	661 823,00
			Watermelons	59 657 351,00
			Totals	**762 962 046,70**
			Total kg inspectable per year	**454 902 398,95**
	23		**%**	**59,6%**
			See notes to explain %	

Simplified fee calculations

			Per year kg
Products with own regulations	Total kg inspectable of product with own regulations		815 248 206,81
Products with shared regulations	Total kg inspectable of products sharing a regulation		454 902 398,95
	Total		1 270 150 605,76

Per day kg (365 days - 52 Sundays - 14 Holidays) = 299 days
2 726 582,63
1 521 412,71
4 247 995,34

Income % according to inspection time of categories
60,00%
40,00%
100,00%

	Twice a week inspection kg	52 Weeks in a year kg
Products with own regulations	5 453 165,26	283 564 593,67
Products with shared regulations	3 042 825,41	158 226 921,37
Total	8 495 990,67	441 791 515,05

	Fee per kg	Projected income per year
Products with own regulations	R0,015	**R4 253 468,91**
Products with shared regulations	R0,010	**R1 582 269,21**
Total		**R5 835 738,12**

Budget to be covered by fees	**R5 835 738,12**
Over(+) / Under (-) budget	**R0,00**

Fee calculations

	1	2	3
	Per year kilogram (From page 22 & 23)	Per day total (Devide per year kg by 299)	Twice per week (Per day x 2)
Products with own regulations	815 248 206,81	2 726 582,63	5 453 165,26
Products sharing a regulation	454 902 398,95	1 521 412,71	3 042 825,41
Total	1 270 150 605,76	4 247 995,34	8 495 990,67

	4	5
	52 Week total (Twice per week x 52)	Projected income per year (Twice per week x 0,015 and 0,01)
Products with own regulations	283 564 593,67	R 4 253 468,91
Products sharing a regulation	158 226 921,37	R 1 582 269,21
Total	441 791 515,05	**R 5 835 738,12**

Notes

% calculated from grand total for each category due to the following:

* Documentation unavailable or received too late for the inspector to conduct an inspection times of markets (04h00 to 10h00)
* Due to the limited number of inspectors per market to ensure the cost effectiveness of inspections
* Each inspector can only inspect a certain number of inspections (volumes / consignments) per hour
* Non-conformities of products prolong the time spent on inspections and thus reduce the number of inspections that can be conducted as the product has to be physically stamped, electronically re-graded, and the market agent as well as the producer informed

PROPOSED INSPECTION FEES TO BE GAZETTED PER CATEGORY

Own regulation products		Shared regulation products		Shared regulation products		Shared regulation products	
Product	**c / kg**	**Product**	**c/ kg**	**Product**	**c/ kg**	**Product**	**c/ kg**
Apples	1,5c	Artichokes	1,0c	Gooseberries	1,0c	Patty pans	1,0c
Apricots	1,5c	Asparagus	1,0c	Granadilla	1,0c	Paw Paw Papino	1,0c
Avo	1,5c	Baby Marrow	1,0c	Green beans	1,0c	Peppers	1,0c
Banana	1,5c	Beetroot	1,0c	Green mealies	1,0c	Persimmons	1,0c
Cherries	1,5c	Blueberries	1,0c	Green onions	1,0c	Piquant peppers	1,0c
Cocktail Avo	1,5c	Brinjals	1,0c	Green peas	1,0c	Pomegranate	1,0c
Cocktail Tom	1,5c	Broccoli/Cauliflower	1,0c	Granadilla	1,0c	Prickly pear	1,0c
Exotic Citrus	1,5c	Broccoli	1,0c	Guava	1,0c	Pumpkin	1,0c
Garlic	1,5c	Brussel Sprouts	1,0c	Horse radish	1,0c	Quinches	1,0c
Grapefruit	1,5c	Butter Lettuce	1,0c	Hubbard squash	1,0c	Radishes	1,0c
Grapes	1,5c	Butternut	1,0c	Jackfruit	1,0c	Raspberries	1,0c
Lemons	1,5c	Cabbage	1,0c	Kale	1,0c	Red Cabbage	1,0c
Limes	1,5c	Calabash	1,0c	Kiwi	1,0c	Rhubarb	1,0c
Litchi	1,5c	Carrots	1,0c	Kohlrabi	1,0c	Spinach	1,0c
Mandarins	1,5c	Cauliflower	1,0c	Kumquats	1,0c	Spring Onion	1,0c
Nectarines	1,5c	Celery	1,0c	Leeks	1,0c	Star Fruit	1,0c
Onions	1,5c	Chillies	1,0c	Lemon grass	1,0c	Strawberries	1,0c
Oranges	1,5c	Chinese Cabbage	1,0c	Lettuce	1,0c	Sweet Melons	1,0c
Peaches	1,5c	Chives	1,0c	Liquates	1,0c	Sweet potatoes	1,0c
Pear	1,5c	Coriander	1,0c	Mango	1,0c	Sweet corn	1,0c
Pickle onions	1,5c	Cucumber	1,0c	Marrows	1,0c	Turnips	1,0c
Pineapples	1,5c	Custard Apple	1,0c	Morogo	1,0c	Watermelons	1,0c
Plums	1,5c	Dragon Fruit	1,0c	Mulberries	1,0c		
Prunes	1,5c	Endives	1,0c	Mushrooms	1,0c		
Shallots	1,5c	English Cucumber	1,0c	Muskmelons	1,0c		
Tomatoes	1,5c	Fennel	1,0c	Okra	1,0c		
		Figs	1,0c	Other berries	1,0c		
		Fresh dates	1,0c	Paprika	1,0c		
		Gem squash	1,0c	Parsley	1,0c		
		Ginger	1,0c	Parsnip	1,0c		

* All fees exclude VAT

ANNEXURE D

DEPARTMENT OF TRADE, INDUSTRY AND COMPETITION

NOTICE 878 OF 2022

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
CR174Feb22	Competition Commission	FirstRand Bank Ltd	01/02/2022	4(1)(b)(ii)
CR176Feb22	Competition Commission	Roche Holdings AG	08/02/2022	8(1)(a)

The Chairperson
Competition Tribunal

DEPARTMENT OF EMPLOYMENT AND LABOUR

NOTICE 879 OF 2022

ERRATUM NOTICE ON DOCUMENTS REQUIRED TO BE PROVIDED BY EMPLOYERS TO THE COMPENSATION FUND TO SUPPORT INJURY ON DUTY AND OCCUPATIONAL DISEASE CLAIMS THAT

The Compensation Commissioner hereby publishes under section 6A (b) of the Compensation for Occupational Injuries and Diseases Act,1993 (Act No. 130 of 1993), the Erratum Notice to the Government Notice **No 1217**, page 42 was published on 09 November 2018.

ERRATUM

Notice is hereby given that the following changes are made the Notice published on 09 November 2018:

1. The heading is changed and replaced with the following heading:

NOTICE ON DOCUMENTS REQUIRED TO BE PROVIDED BY EMPLOYERS TO THE COMPENSATION FUND TO SUPPORT INJURY ON DUTY AND OCCUPATIONAL DISEASE CLAIMS

2. The following paragraph is added at the end of paragraph 1.1

- Proof of employment in the form of employment contract or payslip at the time of an accident or certificate of service or a letter confirming employment in the letterhead of the employer; and

3. The following following paragraph is added at the end of paragraph 1.2

- Proof of employment in the form of employment contract or payslip at the time of accident or diagnosis of a disease or certificate of service or a letter confirming employment in the letterhead of the employer.

The notice will take effect on the date of publication of this Notice.

.....

VUYO MAFATA

COMPENSATION COMMISSIONER

DEPARTMENT OF HEALTH

NOTICE 880 OF 2022

COUNCIL FOR MEDICAL SCHEMES

The Registrar of Medical Schemes hereby notifies, in accordance with section 25 of the Medical Schemes Act, 1998, (Act 131 of 1998), that the undermentioned medical schemes have been registered as indicated.

This list replaces the list published in Government Gazette No. 44191 dated 26 February 2021 and contains 72 Medical Schemes.

DEPARTEMENT VAN GESONDHEID

NOTICE 880 OF 2022

RAAD VAN MEDIESE SKEMAS

Die Registrateur van Mediese Skemas maak ooreenkomstig artikel 25 van die Wet op Mediese Skemas, 1998, (Wet No. 131 van 1998), bekend dat ondergemelde mediese skemas geregistreer is soos aangedui.

Hierdie lys vervang die lys wat in Staatskoerant No. 44191 gedateer 26 Februarie 2021 gepubliseer is en bevat 72 Mediese Skemas.

MEDICAL SCHEMES REGISTERED IN TERMS OF THE MEDICAL SCHEMES ACT, NO 131 OF 1998, AS AT FEBRUARY 2022

NO.	NAME OF SCHEME	TYPE	PO BOX/PRIVATE BAG	CITY/TOWN	POSTAL CODE	REF. NR.	DATE OF REG.	TEL NR.
	NAAM VAN SKEMA	TIPE	POSBUS/PRIVAAT SAK	STAD/DORP	POSKODE	VERW. NO.	DATUM VAN REG.	TEL. NO.
	A							
1	AECI MEDICAL AID SOCIETY	RESTRICTED	1101	FLORIDA GLEN	1708	1005	11/Feb/1971	086 000 2103
2	ALLIANCE-MIDMED MEDICAL SCHEME	RESTRICTED	90346	GARSFONTEIN	0042	1465	30/Aug/1976	086 000 2101
3	ANGLO MEDICAL SCHEME	RESTRICTED	747	RIVONIA	2128	1012	16/Oct/1968	086 022 2633
4	ANGLOVAAL GROUP MEDICAL SCHEME	RESTRICTED	652509	BENMORE	2010	1571	28/Jul/1997	086 010 0693
	B							
5	BANKMED	RESTRICTED	P/Bag X2	RIVONIA	2128	1279	29/Jun/1972	080 022 65633
6	BARLOWORLD MEDICAL SCHEME	RESTRICTED	1101	FLORIDA GLEN	1708	1507	12/Jan/1980	086 000 2106
7	BESTMED MEDICAL SCHEME	OPEN	2297	PRETORIA	0001	1252	11/Aug/1971	012 472 6000
8	BMW EMPLOYEES MEDICAL AID SOCIETY	RESTRICTED	784262	SANDTON	2146	1526	13/Jan/1984	086 000 2107
9	BONITAS MEDICAL FUND	OPEN	3496	CRAMERVIEW	2060	1512	01/Mar/1982	011 384 5100
10	BP MEDICAL AID SOCIETY	RESTRICTED	6006	ROGGEBAAI	8012	1237	20/Feb/1968	021 480 4610
11	BUILDING & CONSTRUCTION INDUSTRY MEDICAL AID FUND	RESTRICTED	3201	JOHANNESBURG	2000	1590	02/Aug/2001	011 208 1005
	C							
12	CAPE MEDICAL PLAN	OPEN	6255	WELGEMOED	7538	1034	11/Nov/1971	021 937 8300
13	CHARTERED ACCOUNTANTS (SA) MEDICAL AID FUND (CAMAF)	RESTRICTED	2964	RANDBURG	2125	1043	06/Aug/1971	086 170 0600
14	COMPCARE WELLNESS MEDICAL SCHEME	OPEN	1411	RIVONIA	2128	1491	01/Jun/1978	011 208 1000
	D							
15	DE BEERS BENEFIT SOCIETY	RESTRICTED	1922	KIMBERLEY	8300	1068	29/May/1969	053 807 3111
16	DISCOVERY HEALTH MEDICAL SCHEME	OPEN	786722	SANDTON	2146	1125	08/Oct/1971	011 529 2888
	E							
17	ENGEN MEDICAL BENEFIT FUND	RESTRICTED	35	CAPE TOWN	8000	1572	07/Aug/1997	080 000 1615
	F							
18	FEDHEALTH MEDICAL SCHEME	OPEN	P/Bag X3045	RANDBURG	2125	1202	26/Nov/1969	086 000 2153
19	FISHING INDUSTRY MEDICAL SCHEME (FISH-MED)	RESTRICTED	15747	VLAEBERG	8018	1271	20/Oct/1967	021 402 9927
20	FOODMED MEDICAL SCHEME	RESTRICTED	1067	PAROW	7499	1086	20/Oct/1967	021 930 3550

MEDICAL SCHEMES REGISTERED IN TERMS OF THE MEDICAL SCHEMES ACT, NO 131 OF 1998, AS AT FEBRUARY 2022

NO.	NAME OF SCHEME	TYPE	PO BOX/PRIVATE BAG	CITY/TOWN	POSTAL CODE	REF. NR.	DATE OF REG.	TEL NR.
	NAAM VAN SKEMA	TIPE	POSBUS/PRIVAAT SAK	STAD/DORP	POSKODE	VERW. NO.	DATUM VAN REG.	TEL. NO.
	G							
21	GENESIS MEDICAL SCHEME	OPEN	144	OBSERVATORY	7935	1554	25/May/1995	021 442 9900
22	GLENCORE MEDICAL SCHEME	RESTRICTED	652509	BENMORE	2010	1253	07/Aug/1968	086 000 2141
23	GOLDEN ARROW EMPLOYEES MEDICAL BENEFIT FUND	RESTRICTED	15729	VLAEBERG	8018	1270	30/Jun/1972	086 010 4122
24	GOVERNMENT EMPLOYEES MEDICAL SCHEME (GEMS)	RESTRICTED	P/Bag X1	HATFIELD	0028	1598	01/Jan/2005	086 111 4367
	H							
25	HEALTH SQUARED MEDICAL SCHEME	OPEN	1075	FONTAINEBLEAU	2032	1141	23/Aug/1971	086 179 16425
26	HORIZON MEDICAL SCHEME	RESTRICTED	1101	FLORIDA GLEN	1708	1566	11/Sep/1996	086 010 1103
	I							
27	IMPALA MEDICAL PLAN	RESTRICTED	P/Bag X82324	RUSTENBURG	0300	1591	15/Jul/2002	014 569 4748
28	IMPERIAL GROUP MEDICAL SCHEME	RESTRICTED	No 1 South Park, 66 South Road, Linden Extension, South Africa	GAUTENG	2194	1559	12/Jan/1995	086 010 5221
	K							
29	KEYHEALTH MEDICAL SCHEME	OPEN	14145	LYTTELTON	0140	1087	28/May/1968	086 067 1050
	L							
30	LA-HEALTH MEDICAL SCHEME	RESTRICTED	Postnet Suite116/P/Bag X19	MILNERTON	7530	1145	10/Jan/1968	021 914 2103
31	LIBCARE MEDICAL SCHEME	RESTRICTED	10499	JOHANNESBURG	2000	1197	20/Feb/1969	080 012 2273
32	LONMIN MEDICAL SCHEME	RESTRICTED	P/Bag X508	MARIKANA	0284	1599	01/Jan/2006	086 010 4883
	M							
33	MAKOTI MEDICAL SCHEME	OPEN	P/Bag X47	RIVONIA	2128	1466	07/Sep/1976	011 208 1000
34	MALCOR MEDICAL AID SCHEME	RESTRICTED	786722	SANDTON	2146	1547	18/May/1994	086 010 0698
35	MASSMART HEALTH PLAN	RESTRICTED	1411	RIVONIA	2128	1495	20/Oct/1978	086 000 2117
36	MBMED MEDICAL AID FUND	RESTRICTED	1101	FLORIDA GLEN	1708	1039	05/Dec/1969	086 000 2109
37	MEDIHELP MEDICAL SCHEME	OPEN	26004	ARCADIA	0007	1149	23/Jun/1969	086 010 0678
38	MEDIMED MEDICAL SCHEME	OPEN	1672	PORT ELIZABETH	6000	1506	12/Sep/1980	041 395 4400
39	MEDIPOS MEDICAL SCHEME	RESTRICTED	2087	PRETORIA	0074	1548	15/Jun/1994	086 010 0078
40	MEDSHIELD MEDICAL SCHEME	OPEN	4346	RANDBURG	2125	1140	06/Feb/1968	010 597 4701

MEDICAL SCHEMES REGISTERED IN TERMS OF THE MEDICAL SCHEMES ACT, NO 131 OF 1998, AS AT FEBRUARY 2022

NO.	NAME OF SCHEME	TYPE	PO BOX/PRIVATE BAG	CITY/TOWN	POSTAL CODE	REF. NR.	DATE OF REG.	TEL NR.
	NAAM VAN SKEMA	TIPE	POSBUS/PRIVAAT SAK	STAD/DORP	POSKODE	VERW. NO.	DATUM VAN REG.	TEL. NO.
41	MOMENTUM MEDICAL SCHEME	OPEN	2338	DURBAN	4000	1167	06/May/1971	086 011 7859
42	MOTOHEALTH CARE	RESTRICTED	3882	RANDBURG	2195	1600	01/Oct/2007	086 100 0300
43	MULTICHOICE MEDICAL AID SCHEME	RESTRICTED	1502	RANDBURG	2125	1241	07/Mar/1972	086 132 9800
	N							
44	NETCARE MEDICAL SCHEME	RESTRICTED	652509	BENMOARE	2010	1584	19/Dec/2000	086 163 8633
	O							
45	OLD MUTUAL STAFF MEDICAL AID FUND	RESTRICTED	66	CAPE TOWN	8000	1214	13/Feb/1969	086 010 0076
	P							
46	PARMED MEDICAL AID SCHEME	RESTRICED	836	FLORIDA HILLS	1716	1441	29/Mar/1974	086 000 2126
47	PG GROUP MEDICAL SCHEME	RESTRICTED	2329	BEDFORDVIEW	2008	1186	20/Nov/1970	011 417 5800
48	PICK N PAY MEDICAL SCHEME	RESTRICTED	15774	VLAEBEG	8018	1563	09/May/1996	080 000 4389
49	PLATINUM HEALTH	RESTRICTED	P/Bag X82081	RUSTENBURG	0300	1583	19/Dec/2000	087 463 0660
50	PROFMED	RESTRICTED	1004	HOUGHTON	2041	1194	08/Oct/1969	011 628 8900
	R							
51	RAND WATER MEDICAL SCHEME	RESTRICTED	1127	JOHANNESBURG	2000	1201	24/Oct/1969	011 682 0982
52	REMEDI MEDICAL AID SCHEME	RESTRICTED	652509	BENMORE	2010	1430	18/Sep/1972	086 011 6116
53	RETAIL MEDICAL SCHEME	RESTRICTED	215	BRACKENFELL	7561	1176	10/Feb/1970	086 010 1252
54	RHODES UNIVERSITY MEDICAL SCHEME	RESTRICTED	1672	PORT ELIZABETH	6000	1013	15/Dec/1967	086 172 7773
	S							
55	SA BREWERIES MEDICAL AID SOCIETY (SABMAS)	RESTRICTED	652509	BENMORE	2010	1209	01/Sep/1970	086 000 2133
56	SABC MEDICAL SCHEME	RESTRICTED	1101	FLORIDA GLEN	1708	1424	23/Jun/1972	086 000 2136
57	SOUTH AFRICAN MUNICIPAL UNION NATIONAL MEDICAL SCHEME(SAMWUMED)	RESTRICTED	134	ATHLONE	7760	1038	11/Nov/1968	021 697 9000
58	SASOLMED	RESTRICTED	5486	JOHANNESBURG	2000	1234	17/Feb/1971	086 000 2134
59	SEDMED	RESTRICTED	468	BLOEMFONTEIN	9300	1531	19/Feb/1987	051 447 8991
60	SISONKE HEALTH MEDICAL SCHEME	RESTRICTED	1672	PORT ELIZABETH	6000	1568	15/Jan/1997	041 395 4400
61	SIZWE HOSMED MEDICAL FUND	OPEN	62345	MARSHALLTOWN	2107	1486	17/Mar/1978	011 298 1500
62	SOUTH AFRICAN POLICE SERVICE MEDICAL SCHEME (POLMED)	RESTRICTED	14812	HATFIELD	0028	1580	01/Nov/1999	012 818 7500

MEDICAL SCHEMES REGISTERED IN TERMS OF THE MEDICAL SCHEMES ACT, NO 131 OF 1998, AS AT FEBRUARY 2022

NO.	NAME OF SCHEME	TYPE	PO BOX/PRIVATE BAG	CITY/TOWN	POSTAL CODE	REF. NR.	DATE OF REG.	TEL NR.
	NAAM VAN SKEMA	TIPE	POSBUS/PRIVAAT SAK	STAD/DORP	POSKODE	VERW. NO.	DATUM VAN REG.	TEL. NO.
63	SUREMED HEALTH	OPEN	1672	PORT ELIZABETH	6000	1464	20/Aug/1976	086 008 0888
	T							
64	TFG MEDICAL AID SCHEME	RESTRICTED	652509	BENMORE	2010	1578	18/Nov/1998	086 012 3077
65	THEBEMED MEDICAL SCHEME	OPEN	4709	JOHANNESBURG	2000	1592	12/Sep/2002	011 544 8899
66	TIGER BRANDS MEDICAL SCHEME	RESTRICTED	P/Bag X131	RIVONIA	2128	1544	01/Jun/1993	080 000 2636
67	TRANSMED MEDICAL FUND	RESTRICTED	32043	BRAAMFONTEIN	2017	1582	22/Nov/2000	080 045 0010
68	TSOGO SUN GROUP MEDICAL SCHEME	RESTRICTED	652509	BENMORE	2010	1579	30/Jul/1999	086 010 0421
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69	UMVUZO HEALTH MEDICAL SCHEME	RESTRICTED	1463	FAERIE GLEN	0043	1597	01/Jul/2004	012 845 0000
70	UNIVERSITY OF KWAZULU NATAL MEDICAL SCHEME	RESTRICTED	786722	SANDTON	2010	1520	01/Jul/1983	086 011 3322
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71	WITBANK COALFIELDS MEDICAL AID SOCIETY (WCMAS)	RESTRICTED	26	WITBANK	1035	1291	30/Apr/1969	013 656 1407
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DEPARTMENT OF HEALTH

NOTICE 881 OF 2022

MEDICAL SCHEMES ACT, 1998 (ACT NO. 131 OF 1998)

ADJUSTMENT TO FEES PAYABLE TO BROKERS

The Minister of Health has, in terms of section 65 of the Medical Schemes Act, 1998 (Act No. 131 of 1998) ("the Act") as amended, read with Regulation 28(2)(a) of the Regulations in terms of the Act determined R106.19 plus Value Added Tax (VAT) as an amount that is payable by medical schemes to brokers with effect from 1 January 2022.

DR MJ PHAAHLA, MP
MINISTER OF HEALTH
DATE: 21/02/2022

NON-GOVERNMENTAL ORGANIZATION

NOTICE 882 OF 2022

(SPECIMEN ADVERTISEMENT)

GAUTENG GAMBLING ACT, 1995

APPLICATION FOR AN AMENDMENT OF LICENCE

Notice is hereby given that Omega Gaming SA (Pty) Ltd (Old Address) 23 Silverstone Crescent, Kyalami Business Park, Midrand intends submitting an application to the Gauteng Gambling Board TO relocate its premises TO Unit A8, Lone Creek, 21 Mac Mac Road, Waterfall Office Park, Midrand. This application will be open for public inspection at the offices of the Board from (DATE) 24th March 2022.

Attention is directed to the provisions of Section 20 of the Gauteng Gambling Act, 1995 which makes provision for the lodging of written representations in respect of the application.

Written representations should be lodged with the Chief Executive Officer, Gauteng Gambling Board, Private Bag 15, Bramley, 2018, within one month from 24th March 2022 (Same as above)

Such representations shall contain at least the following information:

(a) the name of the applicant to which representations relate;
(b) the ground or grounds on which representations are made;
(c) the name, address, telephone and fax number of the person submitting the representations
(d) whether the person submitting the representations requests the board to determine that such person's identity may not be divulged and the grounds for such request; and
(e) whether or not they wish to make oral representations at the hearing of the application.

NOTES:

(Not to form part of the advertisement and for information purposes only)

1 Date as arranged with Board to be inserted.
2 This notice must be placed in the Provincial Gazette as well as a newspaper circulating in the district in which the premises to which the application relates, are situated.
3 At least three weeks' notice is required for the placing of a notice in the Provincial Gazette.

2022 0224

DEPARTMENT OF TRANSPORT

NOTICE 883 OF 2022

MERCHANT SHIPPING ACT, 1951(ACT NO. 57 OF 1951)

DRAFT MERCHANT SHIPPING (CONSTRUCTION AND EQUIPMENT OF FISHING VESSELS OF 24 METRES IN LENGTH AND OVER.) REGULATIONS, 2022

The Minister of Transport hereby in terms of section 356 of the Merchant Shipping Act,1951 (Act No. 57 of 1951), publishes for comments the draft Merchant Shipping (Construction and Equipment of Fishing Vessels of 24 metres in Length and over) Regulations,2022 as indicated in the Schedule.

Interested persons are invited to submit written comments on this draft Regulations 2022, within 30 days from the date of publication of this notice in the Government Gazette.

All comments should be posted or emailed to the Director-General Department of Transport for attention of Ms Glory Semenya at:

Department of Transport
Private Bag x 193
Pretoria
0001

E-mail: semenyag@dot.gov.za or matlalatm@dot.gov.za
Tel: 012 309 3499 or 012 309 3799

SCHEDULE

Regulation No.

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Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
Contact Centre Tel: 012-748 6200. eMail: info.egazette@gpw.gov.za
Publications: Tel: (012) 748 6053, 748 6061, 748 6065

Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 681 | 11 March Maart | 2022 | No. 46032

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CHAPTER I

GENERAL PROVISIONS

1. Definitions

In these regulations, any expression to which a meaning has been assigned in the Act bears the meaning so assigned, unless the context indicates otherwise:

"Act" means the Merchant Shipping Act, 1951 (Act 57 of 1951);

"AIS" means Automatic Information System;

"angle of down flooding" means the angle of heel at which openings which cannot rapidly be closed weathertight commence to immerse excluding small openings through which progressive flooding cannot take place need not be considered;

"accommodation spaces" means those spaces used for public spaces, such as,

corridors, lavatories, cabins, offices, hospitals, cinemas, games and hobbies rooms, pantries containing no cooking appliances and similar spaces;

"amidships"means the mid-length of the Length (L);

"approved" means approved by the Authority;

"approved Inspection Authorities" means:

(1) Any organisation that has been accredited by the chief inspector in terms of:

(a) SABS 0227 Part 1 to perform the functions regarding the certification of new vessels under pressure, inspections and testing; or

(b) SABS 0227 Part 2 to perform the functions regarding the certification of modified or repaired vessels under pressure, inspections and testing, as an approved inspection authority.

(2) Application for approval for an organisation as contemplated in subregulation (1) must be accompanied by a valid certificate issued by the South African Bureau of Standards in terms of SABS 0227 Part 1 and Part 2.

(3) The chief inspector may at any time withdraw any approval of an approved inspection authority, subject to the provisions of section 35 of the Act;

"auxiliary means of activating the rudder" is the equipment which is provided for effecting movement of the rudder for the purpose of steering the vessel in the event of failure of the main steering gear;

"baseline" means the horizontal line intersecting at amidships the keel line;

"boiler" means any apparatus to convert continuously, any liquid into steam, vapour or gas at a pressure higher than that due to the atmosphere and where the heat is derived

from a source other than steam or the ambient temperature of the atmosphere, and includes any superheater or economiser which is an integral part of a boiler or is separately fired therefrom, but does not include such an apparatus, superheater or economiser in which the product of the design pressure in pascal and the volume in cubic metres is less than the figure 15 000;

"breadth (B)" means the maximum moulded breadth of the vessel, measured amidships to the moulded line of the frame in a vessel with a metal shell and to the outer surface of the hull in a vessel with a shell of any other material;

"Collision bulkhead" mean a watertight bulkhead up to the working deck in the forepart of the vessel which meets the following conditions:

(1) The bulkhead shall be located at a distance from the forward perpendicular:

(a) not less than 0.05L and not more than 0.08L for vessels of 45 metres in length and over;

(b) not less than 0.05L and not more than 0.05L plus 1.35 metres for vessels of less than 45 metres in length; or

(c) in no case less than 2.0 metres;

(2) Where any part of the underwater body extends forward of the forward perpendicular, e.g. bulbous bow, the distance stipulated in sub-paragraph (a) shall be measured from a point at mid-length of the extension forward of the forward perpendicular or from a point 0.015L forward of the forward perpendicular, whichever is less;

(3) The bulkhead may have steps or recesses provided they are within the limits prescribed in sub-paragraph (a);

"control stations" means those spaces in which the vessel's radio or main

navigation equipment or the emergency source of power is located, or where the fire recording or fire control equipment is centralized;

"crew" means the skipper and all persons employed or engaged in any capacity on board a vessel on the business of that vessel;

"critical period" in relation to a ship which is being dry docked, is the time between the stern part (or fore part in exceptional circumstances) landing on the blocks and the ship taking the blocks overall;

"dead ship condition"means the condition under which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power;

"deepest operating waterline" means the waterline related to the maximum permissible operating draught;

"Depth (D)" means the vertical distance measured amidships from the keel line to the top of the upper deck beam at side,

in vessels having rounded gunwales, the moulded depth shall be measured to the point of intersection of the moulded lines of the deck and side shell plating, the lines extending as though the gunwale were of angular design

where the working deck is stepped and the raised part of the deck extends over the point at which the moulded depth is to be determined, the depth shall be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part;

"Displacement" in relation to a ship, is the amount of water displaced by the ship's hull at a given instant. In accordance with Archimedes Principle, the mass of a vessel equals the mass of water it displaces;

"draught" means the vertical distance from the underside of the keel, at a defined longitudinal position, to the waterline;

"enclosed superstructure" means a superstructure with

enclosing bulkheads of efficient construction,

access openings, if any, in those bulkheads fitted with permanently attached weathertight doors of a strength equivalent to the unpierced structure which can be operated from each side; and

other openings in sides or ends of the superstructure fitted with efficient weathertight means of closing;

A bridge or poop shall not be regarded as enclosed unless access is provided for the crew to reach machinery and other working spaces inside those superstructures by alternative means which are available at all times when bulkhead openings are closed;

"enclosed volume" means the volume of the spaces in a vessel which can be closed watertight and weathertight and are used for determining the cross curves of stability;

"existing vessel" is a fishing vessel which is not a new vessel;

"factory" means a space where the cleaning and processing of fish is undertaken;

"Fishing vessel" or "vessel" means any vessel, boat, ship or other craft which is used for, equipped to be used for or of a type that is normally used for fishing or related activities, and includes all gear, equipment, stores, cargo and fuel on board the vessel;

"Float-free survival craft" are craft whose installations and stowage are intended to permit them to clear a sinking vessel and float to the surface automatically;

"Forward and after perpendiculars" shall be taken at the forward and after ends of the length (L). The forward perpendicular shall be coincident with the foreside of the stem on the waterline on which the length is measured;

"Free-fall launching" is that method of launching a survival craft whereby the craft and its complement of persons and equipment on board is released and allowed to fall into the sea without any restraining apparatus;

"Fuel oil unit" is the equipment used for the preparation of fuel oil for delivery to an oil-fired boiler, or equipment used for the preparation of oil for delivery to an internal combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a pressure greater than 0.18 newtons per square millimetre;

"GT" for a ship means, its Gross Tonnage calculated in terms of the *"Tonnage Regulations, 1968;*

"Height of a superstructure or other erection" is the least vertical distance measured at side from the top of the deck beams of a superstructure or an erection to the top of the working deck beams;

"Inflatable appliance" is an appliance which depends upon non-rigid gas-filled chambers for buoyancy and is normally kept uninflated until ready for use.

"Inflated appliance" is an appliance which depends upon non-rigid gas-filled chambers for buoyancy and is kept inflated and ready for use at all times.

"keel line" is the line parallel to the slope of keel passing amidships through:

(a) the top of the keel or line of intersection of the inside of shell plating with the keel where a bar keel extends above that line of a vessel with a metal shell;

(b) the rabbet lower line of the keel of a vessel with a shell of wood or a composite vessel; or,

(c) the intersection of a fair extension of the outside of the shell contour at the bottom with the centreline of a vessel with a shell of material other than wood and metal;

"launching appliance" is a device capable of launching, from the embarkation position, a craft fully loaded with the number of persons it is permitted to carry and with its equipment;

"length (L)" shall be taken as 96 per cent of the total length on a waterline at 85 per cent of the least moulded depth measured from the keel line, or as the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater.In vessels designed with rake of keel the waterline on which this length is measured shall be parallel to the designed waterline;

"Lifting Appliance" means any fixed or mobile appliance on a vessel which is used for suspending, raising or lowering a load or moving it from one position to another whilst suspended.

"Lightship condition" means the ship ready for sea, complete with permanent ballast, outfit and spare gear, machinery and systems, but with no fuel, fresh water, feed water, ballast water, lubrication oil, provisions, consumable stores, crew and effects or cargo on board;

"Linehauler recovery station" An area used for the recovery of the linehauler line and catch;

"Low flame spread" means that the surface thus described will adequately restrict the spread of flame, this being determined to the satisfaction of the Authority by an established test procedure;

"Machinery spaces of category A" are those spaces which contain internal combustion type machinery used either for:

(a) main propulsion;

(b) other purposes where such machinery has in the aggregate a total power output of not less than 750 kilowatts;or

(c) which contain any oil-fired boiler or fuel oil unit;

"Machinery spaces" are those machinery spaces of category A and all other spaces containing propulsion machinery, boilers, fuel oil units, steam and internal combustion engines, generators, steering gear, major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilating and air conditioning machinery and similar spaces, and trunks to such spaces;

"Main steering gear" is the machinery, the steering gear power units, if any, and ancillary equipment and the means of applying torque to the rudder stock (e.g. tiller or quadrant) necessary for effecting movement of the rudder for the purpose of steering the vessel under normal service conditions;

"Main switchboard" is a switchboard directly supplied by the main source of electrical power and intended to distribute electrical energy;

Master" means, in relation to a fishing vessel, any person (other than a pilot) having charge or command of such fishing vessel;

"Maximum astern speed" is the speed which it is estimated the vessel can attain atthe designed maximum astern power at its maximum permissible operating draught;

"Maximum ahead service speed" is the greatest speed which the vessel is designed to maintain in service at sea at its maximum permissible operating draught;

"Midship section" is that section of the hull defined by the intersection of the moulded surface of the hull with a vertical plane perpendicular to the waterline and centreline planes passing through amidships;

"Mean draught" means the vertical distance from the underside of the keel amidships to the waterline;

"New vessel" is a fishing vessel for which on or after the date of entry into force of these Regulations:

(a) the building or major conversion contract is placed;

(b) the building or major conversion contract has been placed before the date of entry into force of the Regulations, and which is delivered three years or more after the date of such entry into force; or

(c) in the absence of a building contract:

(i) the keel is laid;

(ii) construction identifiable with a specific vessel begins; or

(iii) assembly has commenced comprising at least 50 tonnes or 1 percent of the estimated mass of all structural material; whichever is the less;

"Non-combustible material" means a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750 degrees Celsius, this being determined to the satisfaction of the Authority by an established test procedure. Any other material is a combustible material;

"Normal operational and habitable conditions" means conditions under which the vessel as a whole, its machinery services, means of main and auxiliary propulsion,steering gear and associated equipment, aids to safe navigation and to limit the risks of fire and flooding, internal and external means of communicating and signalling, means of escape and winches for rescue boats, are in proper working order and the minimum comfortable conditions of habitability are satisfactory;

"Novel life-saving appliance or arrangement" is a life-saving appliance or arrangement which embodies new features not fully covered by the provisions of these Regulations but which provides an equal or higher standard of safety;

"Periodically unattended machinery spaces" means those spaces containing main propulsion and associated machinery and all sources of main electrical supply which are not at all times manned under all operating conditions, including manoeuvring;

"**pressure vessel**" means any vessel of which the interior or jacket is under pressure or in which a cushion of gas or vapour can form above the liquid at a pressure in excess of that of the atmosphere, but does not include –

(a) a boiler;

(b) a vessel in which the pressure is exerted by a liquid the temperature of which does not exceed the boiling point of the liquid at atmospheric pressure and in which a cushion of gas or vapour cannot form above the

liquid;

(c) the working cylinders or chambers of a steam, heat or air engine;

(d) a vessel under pressure which forms an integral operating part of a motor vehicle or locomotive running on railway lines;

(e) a portable gas container;

(f) a pressurised system;

(g) a vessel of which the product of the design pressure in pascal and the capacity in cubic metres is less than the figure 15 000;

(h) a vessel of which the design pressure is less than 40 000 pascal gauge pressure;

(i) a vessel with a nominal internal diameter of less than 150mm; or

(j) a hand-held fire extinguisher;

"pressurised system" means an assembly of vessels under pressure and includes connections by pipes or similar ducts, fittings and valves which operate under gauge pressure equal to or greater than 40 000 pascal for the process and conveyance of a flammable liquid, hazardous chemical substance, saturated steam or superheated steam;

"Public Spaces" are those portions of the accommodation spaces used for halls, dining rooms, lounges and similar permanently enclosed spaces.

"Steering gear power unit" means in the case of:

(a) electric steering gear, an electric motor and its associated electrical equipment;

(b) electro-hydraulic steering gear, an electric motor and its associated electrical equipment and connected pump; and

(c) other hydraulic steering gear, a driving engine and connected pump;

"Superstructure" is the decked structure on the working deck extending from side to

side of the vessel or with the side plating not being inboard of the shell plating more than 0.04B;

"Superstructure deck" is that complete or partial deck forming the top of a superstructure, deckhouse or other erection situated at a height of not less than 1.8 metres above the working deck. Where this height is less than 1.8 metres, the top of such deckhouses or other erections shall be treated in the same ways as the working deck;

"Public spaces" are those portions of the accommodation spaces which are used for halls, dining rooms, lounges, and similar permanently enclosed spaces;

"Rescue boat" is a boat designed to rescue persons in distress and to marshall survival craft;

"Retro-reflective material" is a material which deflects in the opposite direction a beam of light directed on it;

"Service spaces" are those spaces used for galleys, pantries containing cooking appliances, lockers and store-rooms, workshops other than those forming part of the machinery spaces, and similar spaces and trunks to such spaces;

"Skipper" in relation to a fishing vessel shall have the same meaning as Master;

"Standard fire test" is one in which specimens of the relevant bulkheads or decks are exposed in a test furnace to temperatures corresponding approximately to the standard time-temperature curve. The specimen shall have an exposed surface of not less than 4.65 square metres and a height (or length of deck) of 2.44 metres, resembling as closely as possible the intended construction and including where

appropriate at least one joint. The standard time-temperature curve is defined by a smooth curve drawn through the following temperature points measured above the initial furnace temperature at the end of the first :

(a)_5 minutes 556 degrees celsius;
(b)10 minutes 659 degrees celsius;
(c)15 minutes 718 degrees celsius;
(d)30 minutes 821 degrees celsius;and
(e)60 minutes 925 degrees celsius;

"Steel or other equivalent material" means steel or any material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable fire exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation);

"Survival craft" is a craft capable of sustaining the lives of persons in distress from the time of abandoning the vessel;

"Tonne" 1 tonne = 1000 kg;

"Tons" means gross register tons (GT);

"Watertight" means capable of preventing the passage of water through the structure in any direction under a head of water for which the surrounding structure is designed;

"Weathertight" means that in any sea conditions water will not penetrate into the vessel;

"Working deck" is generally the lowest complete deck above the deepest operating waterline from which fishing is undertaken. In vessels fitted with two or more complete

decks, the Authority may accept a lower deck as a working deck provided that that deck is situated above the deepest operating waterline;

"**vessels under pressure**" means a vessel which operates under pressure and includes a boiler, pressure vessel, pressurised system or portable gas container;

"A class divisions" are those divisions formed by bulkheads and decks which comply with the following:

(a) they shall be constructed of steel or other equivalent material.

(b) they shall be suitably stiffened;

(c) they shall be so constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test; and

(d) they shall be insulated with approved non-combustible materials such that the average temperature of the unexpected side will not rise more than 139 degrees celsius above the original temperature, nor will the temperature, at any one point, including any joint, rise more than 180 degrees celsius above the original temperature, within the time listed below:

(i) Class "A-60" 60 minutes
(ii) Class "A-30" 30 minutes
(iii) Class "A-15" 15 minutes
(iv) Class "A-0" 0 minutes

The Authority may require a test of a prototype bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise;

"B class divisions" are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following; they shall :

(a) be constructed as to be capable of preventing the passage of flame to the end of the first one-half hour of the standard fire test;

(b) have an insulation value such that the average temperature of the unexposed side will not rise more than 139 degrees celsius above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225 degrees celsius above the original temperature, within the time listed below;

(i) Class “B-15" 15 minutes

(ii) Class “B-0" 0 minutes; and

(c) be constructed of approved non-combustible materials and all materials entering into the construction and erection of “B” class divisions shall be non-combustible with the exception that combustible veneers may be permitted provided they meet the relevant requirements of Chapter VI.

The Authority may require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise.

“Cclass divisions” are those divisions constructed of approved non-combustible materials. They need meet no requirements relative to the passage of smoke and flame not the limiting of temperature rise. Combustible veneers are permitted provided they meet other requirements of Chapter VI.

“F class divisions” are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following they shall:

(a) be so constructed as to be capable of preventing the passage of flame to the end of the first one-half hour of the standard fire test; and

(b) have an insulation value such that the average temperature of the unexposed side will not rise more than 139 degrees celsius above the

original temperature, not will the temperature at any one point, including any joint, rise more than 225 degrees celsius above the original temperature, up to the end of the first one-half hour of the standard fire test;

The Authority may require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise.

Continuous "B" class ceilings or linings are those "B" class ceilings or linings which terminate only at an "A" or "B" class division.

2. **Application**

(1) Unless expressly provided otherwise, the provisions of these Regulations, shall apply to every registered fishing vessel or fishing vessel required to be registered or licenced in terms of the Merchant Shipping Act,1951 (Act No. 57 of 1951), of 24 metres in length and over, as follows:

(a) New vessels after promulgation of these Regulations;

(b) Existing vessels two years after promulgation of these Regulations;and

(c) Existing vessel registered anew after promulgation of these Regulations.

(2) The provisions of these Regulations shall not apply to vessels exclusively used:

(a) for sport or recreation;

(b) for processing fish or other living resources of the sea;

(c) for research and training; or

(d) as fish carriers

3. **Objects of the Regulations**

(1) These Regulations gives effect to the Cape Town Agreement.

(2) Provide for the safety of registered fishing vessels or fishing vessels required to be registered or licensed in terms of the Act.

4. Exemptions

(1) The Authority may exempt any vessel, to which these Regulations apply, which embodies features of a novel kind from any of the requirements of these Regulations, the application of which might seriously impede research into the development of such features and their incorporation in vessels.

(2) Any such vessel referred to in sub-regulation 1 of this regulation shall, however, comply with safety requirements which, in the opinion of the Authority, are adequate for the service for which it is intended and are such as to ensure the overall safety of the vessel, crew and the environment.

(3) The Authority may exempt any vessel, to which these Regulations apply, from any of the requirements of these regulations, if it considers that the application is unreasonable and impracticable in view of the distance of the vessel's operating area from its base port, the type of vessel, the weather conditions and the absence of general navigational hazards, provided that it complies with safety requirements which, in the opinion of the Authority, are adequate for the service for which it is intended and are such as to ensure the overall safety of the vessel, crew and the environment.

(4) The Authority may exempt an existing vessel from any of the requirements of these Regulations ,if it considers that the application is unreasonable in view of the vessels original construction, provided that it complies with safety requirements which, in the opinion of the Authority, are adequate for the service for which it is intended and are such as to ensure the overall safety of the vessel, crew and the environment.

5. Equivalents

(1) Where these Regulations require that a particular fitting material, appliance or apparatus, be fitted or carried in a vessel, or that any particular provision be made, the Authority may allow any other fitting, material, appliance or apparatus to be fitted or carried, or any other provision to be made, if it is satisfied that it is at least as effective, for the intended operation, as that required by these Regulations.

6. Repairs, Alterations and Modifications

Existing vessels which undergo repairs, alterations and modifications of a major character and outfitting related thereto shall meet the requirements of these Regulations only to the extent of such repairs, alterations and modifications in so

far as the Authority deems reasonable and practicable.

7. Surveys

Every vessel shall be subject to the surveys specified in regulation 14 of these Regulations.

8. Issue and Format of Local General Safety Certificates

(1) (a) A Local General Safety Certificate, in a format prescribed by the Authority, shall be issued after the satisfactory survey of a vessel which complies with the applicable requirements of these Regulations.

(b) Whenever an exemption is granted to a vessel under, and in accordance with, the provisions of these Regulations, a Safety Exemption Certificate, in a format prescribed by the Authority, shall be issued in addition to the certificate required by paragraph (a) of this regulation.

(2) The certificates referred to in sub-regulation (1) of this regulation shall be issued either by the Authority or by any person or organization duly authorized by the Authority.

(3) In every case however, the Authority shall assume full responsibility for the

issuance of the certificate(s).

9. Display of Local General Safety Certificates

Immediately after receipt of the certificate(s) issued in accordance with regulation 8, the owner or master shall cause such certificate(s), or a certified copy thereof, to be conspicuously displayed on board the vessel for the information of all on board and shall cause it to be displayed so long as it remains in force and the vessel remains in use.

10. Duration and Validity of Local General Safety Certificates

(1) A Local General Safety Certificate shall be issued for a period not exceeding one year.

(2) If at the time when the validity of its certificate expires or ceases, a vessel is not in a South African port, the validity of the certificate may be extended by the Authority for a period not longer than five months, but such extension shall be granted only for the purpose of allowing the vessel to complete its voyage to a South African port or to a port in which it is to be surveyed and then only in cases where it appears proper and reasonable to do so.

(3) A vessel to which such extension is granted shall not on its arrival in a South African port, be entitled by virtue of such extension to leave such port without having obtained a new certificate.

(4) A certificate which has not been extended under the provisions of sub-regulation (2) of this regulation may be extended by the Authority for a period of up to one month from the original date of expiry stated on it.

(5) The extensions referred to in sub-regulation (2) and (4) of this regulation shall be applied for before the expiry date indicated on the vessel's safety certificate.

(6) No extension may be granted if a safety certificate has ceased to be valid at the time of such application for an extension

(7) A certificate that expires while a vessel is at sea remains valid until the next arrival in a port.

(8) When any alteration or addition is contemplated for a vessel which is provided for in these regulations, prior approval is to be obtained from the Authority before any such alteration is commenced. Failure to comply with this requirement may invalidate the Local General Safety Certificate.

11. Cancellation of Local General Safety Certificates

(1) The Authority may direct that a local general safety certificate be cancelled if by reason of the contents of a report by a surveyor, or for any other reason, it is satisfied that:

(a) it was obtained fraudulently or on wrong information;

(b) since it was issued, the hull, equipment or machinery of the vessel has, by reason of any alteration made thereto, or by reason or any damage sustained by the vessel, or for any other reason, become insufficient;

(c) since it was issued, the vessel has for any reason become unseaworthy; or,

(d) the vessel no longer complies with all the requirements of these regulations, the radio Regulations, the collision regulations or any other applicable regulations which may have been made, to the same extent to which she complied with those regulations when the certificate was issued.

(2) For the purposes of this regulation, the word “alteration” in relation to the hull, equipment or machinery of a vessel, includes the renewal of any part thereof.

(3) Whenever a direction is issued under sub-regulation (1) of this regulation for the cancellation of a safety certificate, the Authority shall, in writing, notify the owner or master of the vessel in respect of which the certificate was issued of the cancellation.

12. Designated Person Ashore

(1) To ensure the safe operations of each vessel and to provide a link between the company and those on board, every owner shall designate a person ashore having direct access to the highest level of management.

(2) The responsibility and authority of the designated person in terms of sub-regulation (1) of this regulation shall include monitoring the safety and pollution aspects of the operation of each ship and to ensure that adequate resources and shorebased support are applied, as required.

(3) The appointment of the designated person shall be confirmed in writing to the Authority and that person’s name and contact particulars shall be prominently displayed in the wheelhouse of the vessel.

(4) The designated person shall also be responsible for compliance with regulation 39A of the Maritime Occupational Safety Regulations, 1994.

13. On Board Safety Officers

(1) To ensure safe operations on board each vessel and to provide a link between the vessel and the designated person ashore, every owner shall designate a person on board the vessel to have direct access to the person referred to in regulation 12.

(2) The appointment of the onboard safety officer shall be confirmed in writing by the company and owner.

(3) The onboard safety officer shall ensure that all safety aspects of the vessel shall be carried out in a safe manner.

(4) The designated onboard safety officer shall undergo approved training and shall conduct his orher duties in accordance with the Maritime Occupational Safety Regulations,1994.

(5) The duties of the safety officer shall not be impeded by the master or any other person of any vessel and heorher shall not be prevented from having direct access to the person referred to in regulation 12 for any reason whatsoever.

CHAPTER II
SURVEYS

14. General

(1) (a) An initial survey shall be required before a fishing vessel is put into service or before the certificate required under regulation 8 of this Regulations is issued for the first time;

(b) The surveys shall include a complete survey of the vessels structure, stability, machinery, arrangements and material, including the inside and outside of the vessels hull and boilers and associated equipment in so far as the vessel is covered by these Regulations;and

(c)The survey shall be such as to ensure that the arrangements, material and scantlings of the structure, boilers, other pressure vessels and their appurtenances, main and auxiliary machinery, electrical installations, radio installations, including those used in life-saving equipment appliances, fire protection, fire safety systems and appliances, life-saving appliances and arrangements, shipborne navigational equipment, nautical publications and other equipment fully comply with the requirements of these Regulations.

(2) Thereafter, an annual survey of the vessel shall be carried out to ensure continued compliance with requirements of these Regulations.

(3) Specific survey items which do not necessarily require an annual survey are described in regulations (15) to (25) of this Chapter.

(4) The local general safety certificate required by Regulation 8 of these Regulations, shall be issued on completion of the following surveys, to the satisfaction of the Authority:

(a) Hull Survey an annual or biennial survey of the applicable structure and machinery of the vessel referred to in Chapters II to X of these Regulations;

(b) Radio Survey an annual survey of the vessels radio equipment as required by the Merchant Shipping (Radio) Regulations, 2002;and

(c) Safety Survey an annual survey of the applicable machinery, systems, lifesaving equipment and procedures referred to in chapters II to XI of these Regulations.

(5) Where a survey of a fishing boat is required, the owner shall address a request for inspection to the proper officer in order to give at least two working days' notice of the required service.

(6) If any part of the vessel, its machinery or equipment is found by the surveyor to be not in a satisfactory condition, or not complying with any part of these Regulations or any item considered to be unsafe, any repairs or renewals which the surveyor considers necessary shall be carried out to the satisfaction of the surveyor and if required, to be inspected by the surveyor.

15. Hull

(1) Subject to sub-regulation (5) of this regulation, fishing vessels shall every twelve months be placed in dry-dock or on a slipway for inspection by a surveyor.

(2) The hull shall be inspected as follows:

(a) The surveyor shall examine the hull externally and internally after it has been cleaned down but not painted;and

(b) All closing appliances for deck openings and all coamings, ventilators, air pipes and deckhouses shall be thoroughly examined by the surveyor.

(3) Any part which the surveyor requires to be removed in order that the condition of the hull, be ascertained shall be removed.

(4) Thickness testing on steel vessels shall normally be carried out after a vessel has been in service for 10 years and thereafter every 6 years, however thickness testing may be required where and as considered necessary by the surveyor.

(5) Owners may apply to the Authority for an extension of one year between hull surveys, if their vessel is constructed of a material other than wood. Written application for such an extension must be made to the Authority before the survey is carried out, and must be accompanied by:

(a) Appropriate supporting information demonstrating that the owner has in place a suitable regime to the satisfaction of the Authority and this supporting information includes but not limited to ;

(i) Hull Thickness records;
(ii) Cathodic protection arrangements; and
(iii) Adequate paint protection system;

(b) Approval of the one year extension shall be subject to the provision of the above information and the recommendation of the attending surveyor.

16. Tanks

(1) Tanks forming part of the hull structure shall be inspected by the surveyor as is tabled below. Tanks not examined internally may be examined externally from accessible boundaries:

Fluid Contained in Tank	Age of Ship in years			
	Age □5	**5 < Age □10**	**10 < Age □15**	**Age □15**
Sea Water (S/W)	All	All	All	All
S/W & Fresh Water Incorporated	None	One	All	All
SW & Fuel diesel oil incorporated	Half	Half	Half	half
Independent Tanks - Fresh water, Lubricating Oil or Diesel Oil.	None	None	Half	half

(2) The survey of tanks as required by sub-regulation (1) of this regulation should be spread over a 5 year period i.e. not all at one survey. Tanks not examined internally may be examined externally from accessible boundaries.

(3) Where considered necessary, thickness testing or pressure testing of double bottom or peak tanks shall be carried out to the satisfaction of the surveyor.

(4) Where pressure testing of tanks is carried out, they shall be tested by hydraulic pressure to a head not less than the maximum to which the tank can be subjected or 2.4 metres above the tank whichever the great is.

17. Shafts and Rudders

(1) Propeller shafts shall be withdrawn for inspection by the surveyor as follows:

(a) steel, water lubricated shafts; every three years;

(b) Stainless steel, bronze or monel shafts or shafts fitted with continuous liners, water/grease lubricated; every four years;and

(c) Shafts operating in sealed oil lubricated systems; every four years provided that this period may be extended to a maximum of ten years provided that;

(i) an independent analysis of the stern tube lubricating medium is carried out annually for the first four years and at six monthly intervals thereafter;

(ii) a log showing the stern tube lubrication oil consumption is maintained; and,

(iii) a record of the shaft wear-down or shaft clearances is taken at each annual or biennial docking.

(2) Controllable pitch propellers shall be maintained in accordance with the manufacturer's specifications. In the absence of the manufacturer's specifications to the satisfaction of the surveyor.

(3) The surveyor may require that propeller(s) be removed, shaft crack testing be carried out and the fit of the shaft tapers be witnessed and that shaft clearances be measured.

(4) The rudder and rudder stock shall be dismantled at the same time that the shaft is drawn as required by sub-regulation (1) of this regulation, provided that the rudder stock need not be dismantled if records of rudder bearing clearances and oil consumption have been maintained to the satisfaction of the surveyor.

(5) The surveyor may require shaft(s) to be drawn or rudder(s) and rudder stock(s) dismantled for inspection at any survey, if it is considered necessary.

18. Sea Connections

(1) All sea connections, suctions, discharge valves and cocks shall every two years be opened up for inspection by a surveyor while the hull is being surveyed externally.

(2) At intermediate surveys the surveyor shall examine all sea connection fastenings

and, if considered necessary, may require any valve or cock to be opened for inspection.

(3) Scuppers and offal chutes located on the factory deck which form part of the enclosed volume of the vessel shall also be regarded as sea connections the bodies and closing mechanisms shall be inspected in accordance with sub-regulation (1) of this regulation.

19. Anchors, Cables, Wires and Steering Chains

(1) Every twelve months, the vessels anchors, cables, windlass and steering chains (if any) shall be inspected and may be operationally tested by the surveyor.

(2) Anchor cables shall be ranged for inspection by the surveyor eight years after construction of the vessel and thereafter at intervals of four years.

(3) Where anchor cables or steering chains are worn to such an extent that the mean diameter of any part is reduced by more than12% of the minimum size detailed in regulation 46 of these Regulations, then such part shall be renewed.

(4) Anchor wire ropes, if used, shall be run out annually for inspection by the surveyor.

(5) No anchor wire rope shall be used if in any length of 8 diameters the total number of visible broken wires exceeds 10 per cent of the total number of wires, or the rope shows signs of excessive wear, corrosion or other defect which, in the opinion of the surveyor, renders it unfit for use.

20. Steering Gear and Emergency Arrangements

(1) The steering gear and emergency steering arrangements shall be examined by the surveyor every twelve months and the correct operation of the arrangements shall be demonstrated to the satisfaction of the surveyor.

(2) The emergency steering arrangements shall have the instructions for operating that system clearly posted and valves labelled where required.

21. Boilers which permit a full internal examination

(1) A boiler being a fire-tube steam generator, which permits a full internal examination shall be surveyed every 12 months and shall before survey commences, be completely prepared for survey, and all parts shall be thoroughly cleaned to the satisfaction of the surveyor or an approved inspection authority.

(2) Boiler mountings shall be opened up and cleaned and all valves lapped to the respective valve seat.

(3) Any part which prevents proper examination of the boiler, shall be removed and the boiler shall be lifted if the surveyor or an approved inspection authority considers a further examination of the underside thereof necessary.

(4) Lagging shall be removed if the surveyor considers it necessary.

(5) The boiler being a fire-tube steam generator, shall be hydraulically tested to 1.25 times working pressure every three years and critical welds subjected to crack detection: Provided that if major repairs are effected to the boiler, it shall be so tested immediately upon completion of such repairs.

(6) Every pressure vessel and steam generator, excluding those referred to in sub-regulations (1) to (5), to be subjected to an internal and external inspection and a

hydraulic test to a pressure of 1,25 times the design pressure by a surveyor or an approved inspection authority at intervals not exceeding 36 months:

(7) Safety valves shall be reset to the correct operating pressure by an approved inspection authority or suitably qualified person who shall provide the owner with a certificate confirming the work carried out.

(8) The approved inspection authority and surveyor shall ensure that means are provided to prevent subsequent tampering with the adjustment of the valves.

22. Boilers which do not permit a Full Internal Examination

(1) Boilers, pressure vessels and steam generators referred to in regulation 21 of these Regulations, which do not permit a full internal examination, shall be dealt with in accordance with the provisions of regulation 21 of these Regulations, provided that such boilers shall every 12 months be hydraulically tested to 1.25 times working pressure.

23.

(1) Subject to the provisions of sub-regulations (2) and (3) of this regulation, main steam pipes and auxiliary steam pipes with an internal diameter of over 75 mm shall, in the presence of the surveyor or an approved inspection authority or, be tested by hydraulic pressure to twice (2 times) the working pressure at the following intervals -

(a) pipes of steel, or solid drawn copper, every six years;or

(b) copper pipes having brazed longitudinal seams every four years.

(2) At the time of the tests prescribed in sub-regulation (1) of this regulation or at any

other time if it is deemed necessary, the surveyor shall examine the pipes thoroughly, and any pipe shall be removed and hydraulically tested at any time if there is reason to believe that its condition is unsatisfactory.

(3) If the surveyor considers it necessary, copper pipes shall be annealed, and this shall generally be done at the time of the hydraulic tests.

24. Main and Auxiliary Machinery

(1) The surveyor may require that a running trial of the main and auxiliary machinery be held every 12 months to the satisfaction of the surveyor.

(2) The correct operation of air compressor(s), air receiver(s) and any other pressure relief valves shall be demonstrated to the satisfaction of the surveyor every 12 months.

25. Air Receivers and Pressure Vessels

(1) Air receivers and pressure vessels shall be hydraulically tested to a pressure of 1.25 times their working pressure, every four years.

(2) All mountings, valves, controls, indicators, gauges and safety devices shall be overhauled once every four years.

(3) Pressure relief valves shall be calibrated and reset to their operating pressures.

(4) The work required by sub-regulations (1), (2) and (3) of this regulation shall be carried out by an approved person who shall provide the owner with a certificate confirming compliance with this Regulation.

26. Refrigeration Systems used for the Preservation of Catch

(1) Refrigeration systems used for the preservation of catch shall be pressure tested every 4 years, with Nitrogen, to 1.25 times their working pressure.

(2) The entire refrigerant system, with the exception of the receiver shall be pressure tested.

(3) The receiver shall be externally examined by the surveyor every 4 years and if the receiver appears not to be in good condition, the surveyor may require that it be hydraulically pressure tested to 1.25 times working pressure.

(4) The work required by sub-regulations (1) to (3) of this regulation shall be carried out by an approved person who shall provide the owner with a certificate confirming compliance with this Regulation.

27. Electrical Equipment

(1) The electrical equipment of vessels may be examined by the surveyor at every survey.

(2) An insulation test shall be carried out on all electrical circuits and machinery of greater than 50 Volts, every four years and the resistance between all insulated circuits and earth shall be not less than 100,000 ohms.

(3) The generator circuit breakers, over-current protective devices and fuses shall be examined to verify that they will operate satisfactorily.

(4) The work required by sub-regulations (1) to (3) of this regulation shall be carried out by a suitably qualified person who shall provide the owner with a certificate confirming compliance with this Regulation.

CHAPTER III

CONSTRUCTION, WATERTIGHT INTEGRITY AND EQUIPMENT

28. Submission & Approval of Plans

(1) Before the construction of any ship is commenced or at an early stage thereafter, the builder or owner thereof shall submit in duplicate to the Authority the plans and particulars set forth in Annex 1 of these Regulations for approval.

(2) If the vessel is an existing vessel, coming on to the Register, the owner shall submit in duplicate to the Authority the plans and particulars set forth in Annex 1 of these Regulations, to the satisfaction of the Authority, for approval.

(3) The Authority may call for the submission of additional or more detailed plans or particulars, and may also waive the requirements that certain plans be submitted.

(4) Some of plans required by sub-regulations (1) and (2) of this regulation may also be combined, if the vessels size or simplicity of construction allows this.

(5) Any subsequent proposed modifications, alterations or additions to the scantlings, arrangements or equipment shall be shown on approved plans or particulars shall be submitted to the Authority for re-approval.

(6) If a vessel is constructed and presented to the Authority for registration and inspection without the provision of plans and particulars required by sub-regulations (1) or (2) of this regulation, the Authority may refuse to proceed with registration or the issue of safety certification, as required by regulation 8 of these Regulations, for the vessel.

(7) If modifications, alterations or additions to the scantlings, arrangements or equipment shown on approved plans and particulars are carried out without the approval of the Authority, the vessels safety certificate, as required by regulation 8 of these Regulations, may be cancelled.

29. Inspections, Tests and Surveys of New Constructions

(1) During the construction and inspections tests shall be carried out by the surveyor to ensure that the vessel is constructed in accordance with:

(a) the approved plans and particulars required by regulation 28 of these Regulations; and,

(b) the requirements of these Regulations.

(2) The builder or owner shall notify the Authority at least 1 week in advance of:

(a) commencement of framing;

(b) commencement of planking, plating or laminating;

(c) completion of the fitting of all underwater fittings, rudder, stern tube, shaft and propeller; and

(d) the proposed launching date.

(3) In the event of the Authority not being notified in accordance with sub-regulation (2) of this regulation, the Authority may require that any work be carried out to establish that the vessel's construction is satisfactory and in accordance with approved plans and particulars.

(4) The dock and sea trials shall be carried out in the presence of the surveyor, at which time the pumping arrangements, steering gear, main and auxiliary machinery shall be tested to the satisfaction of the surveyor.

(5) Any such further tests as the surveyor may consider necessary to determine whether the vessel is safe and suitable for the purpose that it is intended shall be carried out to the satisfaction of the surveyor.

30 Construction and Structural Strength

(1) Strength and construction of hull, superstructures, deckhouses, machinery casings, companionways and any other structures and vessel's equipment shall be sufficient to withstand all foreseeable conditions for the vessel's intended service and shall be to the satisfaction of the Authority.

(2) A vessel may be constructed of wood, fibre reinforced plastic, aluminium alloy or steel or combinations of such materials.

(3) Proposals to use any other construction material shall be submitted to the Authority for approval.

(4) The hull of a new vessel shall be considered to be of adequate strength after satisfactory examination by a surveyor of the Authority or a person authorised by

the Authority and if it has been built in accordance with the hull construction rules of a Classification Society, Code or Standard recognised by the Authority, in which case the design must be endorsed by the society or organisation.

(5) If a vessel is not intended to be built in accordance with sub-regulation (4) of this regulation it may be specially considered, provided that full information (including calculations, drawings, details of materials and construction), endorsed by a naval architect or professional engineer are submitted to the Authority for approval.

(6) The hull of an existing vessel may be considered to be of adequate strength if it is in a good state of repair and;

(a) has been built to one of the standards described in sub-regulations (4) or (5); or,

(b) has a record, to the satisfaction of the Authority, of safe operation in sea and weather conditions considered to be of no less severe than those likely to be encountered by the vessel.

(7) The hull of vessels intended for operation in ice shall be strengthened in accordance with the rules of an approved classification society for the anticipated conditions of navigation and area of operation.

31. Bulkheads and Double Bottoms

(1) Bulkheads, closing devices and closures of openings in these bulkheads, as well as methods for their testing, shall be in accordance with the requirements of these Regulations.

CHAPTER III

(2) Vessels constructed of material other than wood shall be fitted with a collision bulkhead and at least with watertight bulkheads bounding the main machinery space and such bulkheads shall be extended up to the working deck.

(3) In vessels constructed of wood such bulkheads, shall also be fitted and shall be watertight.

(4) Pipes piercing the collision bulkheads shall be fitted with suitable valves operable from above the working deck and the valve chest shall be secured at the collision bulkhead inside the forepeak.

(5) No door, manhole, ventilation duct or any other opening shall be fitted in the collision bulkhead below the working deck.

(6) Where a long forward superstructure is fitted, the collision bulkhead shall be extended weathertight to the deck next above the working deck.

(7) The extension referred to in sub-regulation (6) of this regulation need not be fitted directly over the bulkhead below provided it is located within the limits given in regulation 1(10) of these Regulations and the part of the deck which forms the step is made effectively weathertight.

(8) The number of openings in the collision bulkhead above the working deck shall be reduced to the minimum compatible with the design and normal operation of the vessel.

(9) Openings referred to in sub-regulation (8) of this regulation shall be capable of being closed weathertight.

(10) In vessels of 75 metres in length and over, a watertight double bottom shall be fitted, as far as practicable, between the collision bulkhead and the after peak

bulkhead.

32. Watertight Doors

(1) The number of openings in watertight bulkheads shall be reduced to the minimum compatible with the general arrangements and operational needs of the vessel.

(2) Openings shall be fitted with watertight closing appliances to the satisfaction of the Authority.

(3) Watertight doors shall be of an equivalent strength to the adjacent unpierced structure.

(4) In vessels of less than 45 metres in length, such doors may be of the hinged type, which shall be capable of being operated locally from each side of the door and shall normally be kept closed at sea.

(5) A notice shall be attached to the door on each side to state that the door shall be kept closed at sea.

(6) In vessels of 45 metres in length and over, watertight doors shall be of the sliding type in:

(a) spaces where it is intended to open them at sea and if located with their sills below the deepest operating waterline; and,

(b) the lower part of a machinery space where there is access from it to a shaft or pipe tunnel.

Otherwise watertight doors may be of the hinged type.

(7) Sliding watertight doors shall:

(a) be capable of being operated when the vessel is listed up to 15 degrees to port or starboard;

(b) whether manually operated or otherwise shall be capable of being operated locally from each side of the door and by remote control from an accessible position above the working deck except when the doors are fitted in the crew accommodation spaces; and,

(c) be provided with indication at remote operating positions to clearly show when the doors are open or closed.

33. Watertight integrity

(1) Openings through which water can enter the vessel shall be provided with closing devices in accordance with the applicable provisions of these Regulations and to the satisfaction of the Authority.

(2) Deck openings which may be open during fishing operations shall normally be arranged near to the vessel's centreline, however, the Authority may approve alternative arrangements if satisfied that the safety of the vessel will not be impaired.

(3) Stockerpond hatches shall be able to be closed weathertight.

(4) Stockerpond hatches shall be power-operated and capable of being controlled from any position which provides an unobstructed view of the operation of the hatch.

(5) Bypass arrangements shall be fitted to hydraulic systems to allow manual closing of fish flaps.

(6) Weathertight closing devices shall be fitted between the stocker pond and the

factory or fish processing area if below the working deck

34. Weathertight Doors

(1) All access openings in bulkheads of enclosed superstructures and other outer structures through which water could enter and endanger the vessel, shall be fitted with doors permanently attached to the bulkhead, framed and stiffened so that the whole structure is of equivalent strength to the unpierced structure, and weathertight when closed.

(2) The means for securing these doors weathertight shall consist of gaskets and clamping devices or other equivalent means and shall be permanently attached to the bulkhead or to the doors themselves, and shall be so arranged that they can be operated from each side of the bulkhead.

(3) The height above deck of sills in those doorways, in companionways, erections and machinery casings which give direct access to parts of the deck exposed to the weather and sea shall be at least 600 millimetres on the working deck and at least 300 millimetres on the superstructure deck.

(4) Where operating experience has shown justification and on approval of the Authority, these heights, except in the doorways giving direct access to machinery spaces, may be reduced to not less than 380 millimetres and 150 millimetres respectively.

(5) Weathertight doors shall be permanently marked with notices to the effect that the doors should be kept closed at sea.

35. Hatchway Closed by Wood Covers

(1) The height above deck of hatchway coamings shall be at least 600 millimetres on exposed parts of the working deck and at least 300 millimetres on the

superstructure deck.

(2) Where operating experience has shown justification and on the approval of the Authority the height of these coamings may be reduced, or the coamings omitted entirely, provided that the safety of vessels is not thereby impaired.

(3) In this case the hatchway openings shall be kept as small as practicable and the covers be permanently attached by hinges or equivalent means and be capable of being rapidly closed and battened down.

(4) For the purpose of strength calculations, it shall be assumed that hatchway covers are subjected to the weight of cargo intended to be carried on them or the following static loads, whichever is the greater:

(a) 10.0 KiloNewtons per square metre for vessels of 24 metres in length;or

(b) 17.0 kiloNewtons per square metre for vessels of 100 metres in length and over;

(5) For intermediate lengths, the load values shall be determined by linear interpolation.

(6) The Authority may reduce the loads to not less than75 percent of the above values for covers to hatchways situated on the superstructure deck in a position abaft a point located 0.25L from the forward perpendicular.

(7) Where covers are made of mild steel, the maximum stress calculated according to sub-regulation (4) of this regulation multiplied by 4.25 shall not exceed the minimum ultimate strength of the material.

(8) Under these loads the deflections shall not be more than 0.0028 times the span.

(9) Covers made of materials other than mild steel shall be at least of equivalent

strength to those made of mild steel, and their construction shall be of sufficient stiffness ensuring weathertightness under the load specified in sub-regulation 4 of this regulation.

(10) Covers shall be fitted with clamping devices and gaskets sufficient to ensure weathertightness, or other equivalent arrangements to the satisfaction of the Authority.

36. Factories

(1) Any openings in the shell plating providing access to a factory which forms part of the enclosed volume of a vessel shall be provided with efficient and readily accessible means for preventing the accidental admission of water unless it can be shown that the vessels intact stability is not adversely affected by such opening(s).

(2) Without prejudice to the generality of subregulation (1) of this regulation, the following is applicable to factories that form part of the enclosed volume of the vessel:

(a) Scuppers shall be able to be closed weather tight.

(b) As a minimum, a non-return arrangement shall be fitted with a positive means of closing at the local position. If a scupper opening is such that water ingress into the vessel is possible before an angle of heel of 40 degrees is reached, then a remote position at least one deck above the factory compartment shall be fitted with openorclosed indication.

(c) Offal chutes shall be able to be closed weather tight. As a minimum,

two means of closing shall be provided with one means of closing being in the form of a non-return arrangement which can be positively secured in the open and closed position. If an offal chute opening is such that water ingress into the vessel is possible before an angle of heel of 40 degrees is reached, with the vessel in its deepest operational load condition, a positive means of closing shall be provided at a remote position at least one deck above the factory compartment fitted with open/close indication.

(d) Linehauler recovery stations shall be separate from the factory area and all accesses and openings between the station and factory shall be able to be closed weathertight.

(e) Accesses from the factory deck used for the loading of fish or crew access to compartments below the factory deck shall be of minimum size and number consistent with the fishing operation. These accesses shall:

(i) be able to be closed weathertight quickly and efficiently;

(ii) be provided with sills or coamings of at least 600 millimetres height. Where operating experience has shown justification and on approval of the Authority, these heights, except in the doorways giving direct access to machinery spaces, may be reduced to not less than 380 millimetres; and,

(iii) be located as close to the centreline as is practicably possible.

(f) If washing water in the factory is removed using dill pumps:

(i) wash pumps shall be configured so that they are unable to

operate unless automatically operated dill pumps of at least 50% greater capacity are in operation; and

(ii) a minimum of one dill pump on the port and starboard side shall be provided to the satisfaction of the Authority. Dill pumps shall be of suitable design and capacity and capable of handling offal and solids that could be expected during normal fishing operations.

(3) Owners and masters shall ensure that standard operating procedures are in place to ensure that all openings in the shell plating, required to be closed, are closed and that washing water pumps are off when the factory compartment is unattended by competent persons.

37. Machinery Space Openings

(1) Machinery space openings shall be framed and enclosed by casings of a strength equivalent to the adjacent superstructure.

(2) External access openings and openings providing access from factory decks which form part of the enclosed volume shall be fitted with doors and sills complying with the requirements of sub-regulation 34.

(3) Openings other than access openings shall be fitted with covers of equivalent strength to the unpierced structure, permanently attached thereto and capable of being closed weathertight.

38. Other Deck Openings

(1) Where it is essential for fishing operations, flush deck scuttles of the screw, bayonet or equivalent type and manholes may be fitted provided these are capable of being closed watertight and such devices shall be permanently attached to the adjacent structure.

(2) Having regard to the size and disposition of the openings and the design of the closing devices, metal-to-metal closures may be fitted if the Authority is satisfied that they are effectively watertight.

(3) Openings other than hatchways, machinery space openings, manholes and flush scuttles in the working or superstructure deck shall be protected by enclosed structures fitted with weathertight doors or their equivalent. Companionways shall be situated as close as practicable to the centreline of the vessel.

39. Testing of Watertight and Weathertight Compartments

(1) The bulkheads of a wooden or fibre reinforced plastic vessels, which are required to be watertight, shall before the vessel is launched, be tested to the satisfaction of the surveyor, pressure test or other suitable means.

(2) Before a steel vessel is launched, the compartments within the main hull shall, before any cementing is commenced, be subjected to pressure tests as follows -

(a) double bottoms which are not to be used for the carrying of oil, shall be tested to a head of water equal to the maximum head which can be expected in service;

(b) deep tanks and peak tanks used for carrying water, and deep tanks and double bottom tanks arranged for carrying oil fuel, shall be

tested to a head of water equal to the maximum head to which the tanks can be subjected in service, but not less than 2.4 m above the crowns of the tanks where the moulded depth to the upper deck exceeds 4.8 m, and 900 mm where the moulded depth does not exceed 3 m. Intermediate heads may be obtained by interpolation;

(c) peak bulkheads which do not form the boundaries of tanks, shall be tested by filling the peaks with water; and,

(d) watertight bulkheads, including recesses and watertight flats, watertight tunnels, weather decks and waterways, shall be either visually inspected, non-destructive tested or pressure tested to the satisfaction of the surveyor.

(3) The correct operation of watertight and weathertight doors, and hatches shall be proven at the time of vessel construction and at subsequent surveys.

40. Ventilators

(1) Ventilators shall be sufficient in number and size to provide adequate ventilation for all spaces which, in the opinion of the surveyor, require ventilation.

(2) In vessels of 45 metres in length and over, the height above deck of ventilator coamings, other than machinery space ventilator coamings, shall be at least 900 millimetres on the working deck and at least 760 millimetres on the superstructure deck.

(3) In vessels of less than 45 metres in length, the height of these coamings shall be 760 millimetres and 450 millimetres respectively.

(4) The height above deck of machinery space ventilator openings shall be to the satisfaction of the Authority.

(5) Coamings of ventilators shall be of equivalent strength to the adjacent structure and capable of being closed weathertight by closing appliances permanently attached to the ventilator or adjacent structure.

(6) Where the coaming of any ventilator exceeds 900 millimetres in height it shall be specially supported.

(7) Ventilators shall be provided with a suitable means of closing secured to the ventilator or adjacent to it.

41. Air Pipes

(1) Where air pipes to tanks and void spaces below deck extend above the working or the superstructure decks, the exposed parts of the pipes shall be of a strength equivalent to the adjacent structures and fitted with appropriate protection. Openings of air pipes shall be provided with automatic means of closing.

(2) The height of air pipes above deck to the point where water may have access below shall be at least 760 millimetres on the working deck and at least 450 millimetres on the superstructure deck.

(3) Fuel air pipes shall be fitted with anti-flash gauze, □max = 0.5mm, of steel or ceramic material.

42. Sounding Pipes and Devices

(1) Sounding pipes or devices, to the satisfaction of the Authority, shall be fitted:

(a) to the bilges of those compartments which are not readily accessible at all times during the voyage; and

(b) to all tanks and cofferdams.

(2) Sounding pipe upper ends shall be extended to a readily accessible position and, where practicable, above the working deck.

(3) The openings of sounding pipes shall be provided with permanently attached means of closing.

(4) Sounding pipes to double bottom tanks or tanks which form part of the hull structure which are not extended above the working deck shall be fitted with automatic self-closing devices.

(5) Striker plates shall be welded in tanks directly below the outlets of sounding pipes, provided that the Authority may accept alternative arrangements which prevent the shell plating from being damaged when tanks are sounded.

43. Side Scuttles and Windows

(1) Side scuttles to spaces below the working deck and to spaces within the enclosed structures on that deck shall be fitted with hinged deadlights capable of being closed watertight.

(2) Side scuttles fitted above the working deck which are less than 1000 millimetres from the deepest operating waterline shall be fitted with hinged deadlights capable of being closed watertight.

(3) No side scuttle shall be fitted in such a position that its sill is less than 500 millimetres above the deepest operating waterline.

(4) Side scuttles, fitted less than 1000 millimetres above the deepest operating waterline shall be of a fixed type.

(5) Side scuttles together with their glasses and deadlights shall be of an approved construction. Those prone to be damaged by fishing gear shall be suitably protected.

(6) Solid toughened glass of not less than 6.35 mm thickness shall be fitted to wheelhouse windows of up to 760 mm square clear light size.

(7) For greater window sizes a minimum glass thickness of 9.5 mm shall be provided.

44. Inlets and Discharges

(1) Valves or cocks shall be fitted to all suction and discharge pipes which pass through the hull below the upper deck, provided that this regulation shall not apply to:

(a) Pump discharges of 38 mm or less which are situated above the deepest operating waterline;

(b) keel cooling systems which form an integral part of the hull; and

(c) scuppers which pass from the upper deck to the ships side above the deepest operating waterline.

(2) Discharge valves shall normally be fitted with an automatic non-return valve with means of positive closing from an accessible position provided that such valves may not be required if the Authority is satisfied that entry through the opening is not likely to lead to dangerous flooding and the thickness of piping is sufficient.

(3) Suction and discharge valves and cocks shall be secured to the hull or to fabricated sea chests such that the securing arrangement is at least as strong as the surrounding structure, to the satisfaction of the authority.

(4) Valves or cocks shall be fitted as close to the hull as possible.

(5) Where a threaded valve and flanged pipe arrangement is used, schedule 40 piping shall be used subject to a minimum pipe wall thickness of 3mm, and not exceeding 200 mm in length.

(6) Valves or cocks shall be fitted in accessible positions and shall be arranged in such a manner that it can be readily seen whether they are open or closed.

(7) The handles of valves or cocks shall not be removable in the open position.

(8) Due regard shall be paid to compatibility of materials used in order that galvanic action be minimised.

45. Freeing Ports

(1) Where bulwarks on weather parts of the working deck form wells, the minimum freeing port area (A) in square metres, on each side of the vessel for each well

on the upper deck shall be determined in relation to the length (*l*) and height of bulwark in the well as follows:

(a) A = 0.07*l* (*l* need not be taken as greater than 0.7L).

(b) (i) Where the bulwark is more than 1200 millimetres in average height the required area shall be increased by 0.004 square metres per metre of length of well for each 100 millimetres difference in height.

(ii) Where the bulwark is less than 900 millimetres in average height, the required area may be decreased by 0.004 square metres per metre of length of well for each 100 millimetres difference in height.

(2) The freeing port area calculated according to sub-regulation (1) of this regulation shall be increased where the Authority considers that the vessel's sheer is not sufficient to ensure that the deck is rapidly and effectively freed of water.

(3) Subject to the approval of the Authority the minimum freeing port area for each well on the superstructure deck shall be not less than one-half the area (A) given in sub-regulation (1) of this regulation.

(4) Freeing ports shall be so arranged along the length of bulwarks as to ensure that the deck is freed of water most rapidly and effectively.

(5) Lower edges of freeing ports shall be as near the deck as practicable.

(6) Pound boards and means for stowage of the fishing gear shall be arranged so that the effectiveness of freeing ports will not be impaired.

(7) Pound boards shall be so constructed that they can be locked in position when in use and shall not hamper the discharge of shipped water.

(8) Freeing ports over 300 millimetres in depth shall be fitted with bars spaced not more than 230 millimetres nor less than 150 millimetres apart or provided with

other suitable protective arrangements.

(9) Freeing port covers, if fitted, shall be of approved construction. If devices are considered necessary for locking freeing port covers during fishing operations they shall be to the satisfaction of the Authority and easily operable from a readily accessible position.

(10) In vessels intended to operate in areas subject to icing, covers and protective arrangements for freeing ports shall be capable of being easily removed to restrict ice accretion.

(11) The size of openings and means provided for removal of these protective arrangements shall be to the satisfaction of the Authority.

(12) On vessels with partially or fully exposed weather decks, no bilge/dill pumps shall be permitted as a replacement for freeing ports.

46. Anchoring Equipment

(1) Anchor equipment designed for quick and safe operation shall be provided which shall consist of anchors, anchor chains or wire ropes, stoppers and windlass or other arrangements for dropping and hoisting the anchor and for holding the vessel.

(2) Every vessel shall be provided with at least two bow anchor which shall be connected and stowed in position, ready for immediate use.

(3) Anchors are normally to be housed in hawse pipes of suitable size and form to prevent movement of anchor and chain due to wave action.

(4) The arrangement is to be such that upon the release of the brake, the anchor is immediately to start falling by its own weight.

(5) At the upper and lower ends of hawse pipes there are to be chafing lips with radius of curvature such that at least 3 links of chain shall bear on the rounded parts.

(6) Alternatively, roller fairleads of suitable design may be fitted.

(7) Where hawse pipes are not fitted, alternative arrangements shall be specially considered by the Authority.

(8) Shell plating in way of the hawse pipes shall be increased in thickness and framing reinforced as necessary to ensure rigid fastening of the hawse pipes to the hull.

(9) Local reinforcement of bulbous bows, if fitted, shall be provided, as necessary.

(10) Vessels shall be fitted with windlass, chain and anchor stoppers which are efficiently bedded to the deck.

(11) Deck plating in way of windlass and chain stoppers shall be thickened and supported by pillars, as necessary.

(12) Chain lockers shall have adequate capacity and suitable form to provide a proper stowage of the chain cable and an easy lead into the chain pipes when the cable is fully stowed.

(13) Port and starboard cables shall be provided with separate spaces.

(14) The chain locker boundaries and access openings are to be watertight and provisions are to be made to prevent the chain lockers from being flooded in adverse weather conditions.

(15) Adequate drainage facilities from the chain locker(s) are also to be provided. Provisions shall be made for securing the inboard ends of the chain to the structure.

(16) This attachment shall be able to withstand a force of not less than 15% or more than 30% of the minimum breaking strength of the chain cable.

(17) The fastening arrangement shall also be such that the chain can be readily slipped in the event of an emergency and anchor and chain have to be sacrificed.

(18) Anchor equipment shall be provided in accordance with Annex 2 in accordance with the vessels Equipment Number, calculated as follows:

$$EN = \Delta^{2/3} + 2BH + 0.1\,A$$

with Δ = Vessels deepest operational displacement in tonnes.

BH = Bow-on element

with B = Vessel Breadth, and;

$H = a + \sum h_i$

with a = distance (m) from the deepest operating waterline amidships to the deck at side, and;

h_i = mean height (m) of superstructures and deck houses having a breadth greater than B/4, measured from the upper deck.

A = Profile element

with A = Area (m^2) in profile view of the hull, superstructures and houses above the deepest operating waterline. Houses of breadth less than B/4 should be disregarded.

Note: Bulwarks and or wind screens having a height greater than 1.5 metres should be regarded as part of the superstructure and deck houses when determining (H) and (A).

(19) The total length of chain required by Annex 2 shall be equally divided between the two anchors.

(20) The mass of the anchors required by Annex 2 shall;

(a) not vary by more than 7% of the table value if stockless bow anchors are used, provided that the combined mass may not be less than the combined table value. For stockless bower anchors the mass of the head may not be less than 60% of the table value;

(b) if a stocked bow anchor is used, the mass may not be less than 80% of the table value. The mass of the stock of stocked bower anchors is to be 25% of the total mass of the anchor, including the shackle, etc., but excluding the stock;

(c) if a high holding power (HHP) anchor is used, the mass of the anchor is to be not less than 75% of the table value.

(21) If steel wire rope is used instead of stud link chain cable, at least the same breaking strength shall be required.

(22) Between the anchor and the steel wire rope a short length of chain cable is to be fitted.

(23) The length is to be taken as the smaller of 12.5 m and the distance between the stowed anchor and the winch.

(24) The anchor weight shall be increased by 25% and the length of steel wire rope is to be at least 50% above the table value for chain cable.

(25) The wire rope strength shall be at least equivalent to that required of the chain cable.

(26) Anchors shall be of approved design and shall be manufactured from forged wrought iron, forged open hearth ingot steel or cast steel.

(27) A test certificate shall be produced to the surveyor for every anchor of more than 75 kg in weight and for every chain cable of 12 mm or more in diameter.

CHAPTER III

47. Mooring Equipment

Mooring ropes shall be provided in accordance with the table in Annex 2 after determination of the vessels Equipment Number in accordance with regulation 46(18).

CHAPTER IV

STABILITY AND ASSOCIATED SEAWORTHINESS

48. Provision of Stability Information

(1) The owner and master of every vessel, to which these Regulations apply, shall cause to be kept on board the ship such information, in writing, about the stability of the ship as is necessary for the guidance of the master in loading and ballasting the vessel.

(2) The owner of the vessel shall send a copy of the stability information to the Authority for approval prior to the issue of a certificate referred to in regulation 8 of these Regulations..

(3) The information shall be based upon the determination of the stability of the ship by means of an inclining experiment witnessed by a surveyor from the Authority or person authorised by the Authority.

(4) Any vessel, which is subject to these Regulations, which does not have a stability book, approved by the Authority, on board shall be considered to be unseaworthy and as such the vessels safety certificate, as required by regulation 8 of these Regulations, may be cancelled.

49. Form of Stability Information

(1) A suitably qualified person recognised by the Authority as competent to provide the required information in a clear and comprehensive manner shall draw up stability information.

(2) The content of stability books shall be as is laid down in Annex 3.

50. General Intact Stability Criteria

(1) Vessels shall comply with the following criteria in all operational load conditions:

(a) The area under the righting lever curve (GZ curve) shall not be less than 0.055 metre radians up to an angle of heel of 30 degrees;

(b) The area under the righting lever curve (GZ curve) shall not be less than 0.090 metre radians up to an angle of heel of 40 degrees or the angle of downflooding, if it is less than 40 degrees;

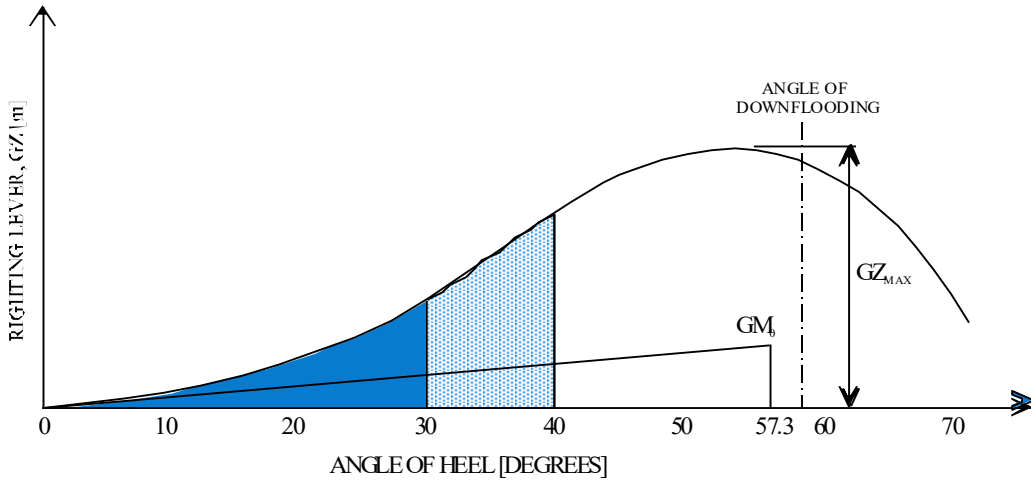
(c) The area under the righting lever curve (GZ curve) between the angles of heel of 30 degrees and 40 degrees or 30 degrees and the angle of downflooding, if it is less than 40 degrees, shall not be less than 0.030 metre radians;

(d) The righting lever arm (GZ) shall be at least 0.200 metres at an angle of

heel equal to or greater than 30 degrees.

(e) The maximum righting arm shall occur at an angle of heel preferably exceeding 30 degrees but not less than 25 degrees; and

(f) The initial metacentric height (GM_0) shall not be less than 0.350 metres for single-decked vessels. In vessels with complete superstructure or vessels of 70 metres in length or over, the GM_0 may be reduced to the satisfaction



of the Authority but in no case to less than 0.150 metres.

Figure 1 - Fishing Vessel General Intact Stability Criteria

51. Loading Conditions

(1) The following operational load conditions shall be evaluated:

(a) Lightship (Non-operational condition);

(b) Departure from port - the vessel being assumed to be loaded with the necessary equipment, materials and supplies, including ice, fuel, stores, water and nets;

(c) Arrival at fishing groundsorFirst fish on board the same as for departure but account being taken of the consumption of fuel, water and stores;

(d) Departure from fishing grounds the vessel, assumed to be loaded with a 100% catch, but account being taken of the consumption of fuel water and stores;

(e) Arrival at port with a 100% catch, but 10% fuel, water and stores;

(f) Arrival at port with a 20% catch, but 10% fuel, water and stores;

(g) Dry docking condition (Non-operational condition);and

(h) Worst case load condition – Any operational condition identified which results in a worse stability condition than those described above shall also be investigated. The Authority may define additional load conditions requiring investigation.

52. Lightship

(1) The vessel lightship condition is not considered to be an operational condition however, the vessel shall have an initial transverse metacentric height (GM_o) of at least 0.05 metres in this condition.

(2) If the vessel does not meet these criteria, a minimum load condition shall be specified so that this criterion is satisfied.

53. Dry Docking Condition

For the drydocking condition, a condition shall be specified which ensures that the vessel is upright and that the initial transverse metacentric height, GM_0, remains positive throughout the critical period.

54. Anti-Rolling or Stabilisation Devices

When anti-rolling or stabilisation devices are installed, all stability criteria applicable to the vessel shall be satisfied with the devices in operation and with the devices not in operation.

55. Severe Wind and Rolling

Vessels shall be able to withstand the effects of severe wind and rolling in accordance with the criteria laid down in Annex 5 in all operational load

conditions.

56. Icing Considerations

For vessels operating in areas where ice accretion is likely to occur, as defined in Annex 6 of the Regulations, icing allowances shall be included in the relevant loading conditions in accordance with Annex 6.

57. Lifting of Weights

Vessels engaged in particular fishing methods involving the lifting of heavy weights over the side shall be evaluated in accordance with criteria laid down in Annex 7 in the relevant loading conditions.

58. Fixed Ballast

(1) Fixed ballast shall be installed under the supervision of the Authority in a manner that prevents any shifting of position of the ballast.

(2) Fixed ballast shall not be removed from a vessel or relocated within a vessel without the prior approval of the Authority.

59. Form of the Righting Arm (GZ) curve

(1) Where the righting arm curve has double peaks or the down flooding angle is

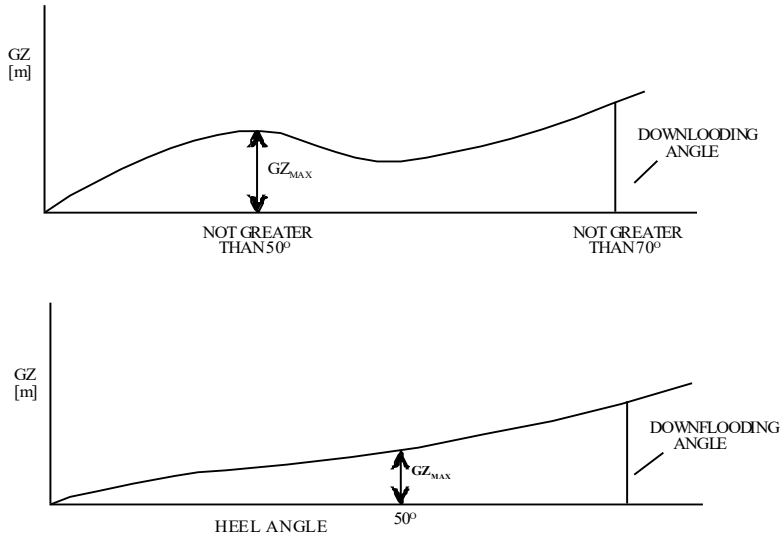
excessively large, the GZ curves can be as is shown in figure 2. In these cases the following shall apply:

(a) The value of maximum GZ shall be taken at the angle of heel corresponding to the first peak or at 50°, whichever angle is less.

(b) The effective range shall be the angle at which unrestricted down flooding occurs or 70°, whichever angle is less.

Figure 2 – Range and GZ maximum limitations

60. Subdivision and Damaged Stability



Vessels of 100 metres in length and over, where the total number of persons carried is 100 or more, shall be capable, to the satisfaction of the Authority, of remaining afloat with positive stability, after the flooding of any one compartment assumed damaged.

61. Water on Deck

Except where a vessel has solid bulwarks without openings (excluding freeing ports) greater than 2 x H_{DA}, calculated in accordance with Annex 8, above the deepest waterline, it shall be demonstrated that the vessel is able to survive rapid flooding of the well up to the level of the bulwarks. In lieu of such calculations the freeing port area, as required by regulation 45, may be doubled.

62. Flooding of Fish Holds

The heel angle at which progressive flooding of fish holds could occur through hatches which remain open during fishing operations shall be at least 20 degrees unless the stability criteria of regulation 50 can be satisfied with the respective fish holds partially or completely flooded.

63. Portable Fish Hold Divisions

(1) The catch shall be properly secured against shifting which could cause dangerous trim or heel of the vessel.

(2) The scantlings of portable fish hold divisions, if fitted, shall be to the satisfaction of the Authority.

64. Bow Height

CHAPTER IV

(1) The bow height shall be sufficient, to the satisfaction of the Authority to prevent the excessive shipping of water.

(2) The vessels minimum bow height shall be calculated in accordance with Annex 8.

65. Maximum Permissible Operating Draft

A maximum permissible operating draft shall be assigned by the Authority and shall be calculated in accordance with Annex 8 subject to the vessel complying with the maximum scantling draught and stability criteria of this Chapter.

66. Additional/Alternative Criteria

Where the characteristics of a craft are unsuitable for the application of the criteria presented in these Regulations, the Authority may specify/accept additional or alternative criteria appropriate to the type of craft and area of operation.

67. Sister ships

The Authority shall only accept stability books based on the stability information of a sister ship if the lightship has been proved similar through the conduct of an inclining experiment. ie If a ships lightship displacement is found to be similar to that of a sister ship and the ships intended mode of operation is the same, a copy of the sister ships stability book may be

accepted in lieu of a new stability book being drawn up.

68. Special Cases

If an owner considers that;

(a) the constancy of a ships voyage conditions,

(b) her stability characteristics; or

(c) other circumstances make it unnecessary to provide all the information set forth in this chapter,

He or she shall set forth to the Authority a copy of the information he proposes to provide together with sufficient particulars about the ships service and stability to enable the Authority to decide whether the proposed form of information will be adequate and the Authority may, if satisfied, allow the ship to be provided with the lesser information.

69. Reliability of Information

(1) A ships stability information shall at all times be reliable and up-to-date.

(2) If there is any change, for example, in the construction, ballasting or service of the ship which affects the accuracy or adequacy of the stability information, this information shall be properly revised and amended and copies of the amendments shall be sent to the Authority.

(3) If the change is such as to make the amended information unreliable, the ship shall be re-inclined, and the new information based on the new test shall be

forwarded to the Authority for approval.

(4) In general, the guidelines illustrated in Annex 9 will be used to determine the requirements for revised stability information.

CHAPTER V

MACHINERY AND ELECTRICAL INSTALLATIONS AND PERIODICALLY UNATTENDED MACHINERY SPACES

PART A - GENERAL

70. Machinery Installations

(1) Main propulsion, control, steam pipe, fuel oil, compressed air, electrical and refrigeration systems, auxiliary machinery, boilers and other pressure vessels, piping arrangements, steering equipment and gears, shafts and couplings for power transmission shall be designed, constructed, tested, installed and serviced to the satisfaction of the Authority.

(2) This machinery and equipment, as well as lifting gear, winches, fish handling and fish processing equipment shall be protected so as to reduce to a minimum any danger to persons on board.

(3) Special attention shall be paid to moving parts, hot surfaces and other dangers.

(4) Machinery spaces shall be so designed as to provide safe and free access to all machinery and its controls as well as to any other parts which may require servicing.

(5) Spaces referred to in sub-regulation 4 of this regulation shall be adequately ventilated and lighted to the satisfaction of the Authority.

(6) (a) Means shall be provided whereby the operational capability of the

propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative and special consideration shall be given to the functioning of:

(i) the arrangements which supply fuel oil pressure for main propulsion machinery;

(ii) the normal sources of lubricating oil pressure;

(iii) the hydraulic, pneumatic and electrical means for the control of main propulsion machinery including controllable pitch propellers;

(iv) the sources of water pressure for main propulsion cooling systems; and

(v) an air compressor and an air receiver for starting or control purposes; provided that the Authority may, having regard to overall safety considerations, accept a partial reduction in capability in lieu of full normal operation.

(b) Means shall be provided whereby the machinery can be brought into operation from the dead ship condition without external aid.

(7) Main propulsion machinery and all auxiliary machinery essential to the propulsion and safety of the vessel shall, as fitted, be capable of operating whether the vessel is upright or listed up to 15 degrees either way under static conditions and up to 22.5 degrees either way under dynamic conditions, when rolling either way and simultaneously pitching (inclined dynamically) up to 7.5 degrees by bow or stern.

(8) The Authority may permit deviation from angles referred to in sub-regulation 7 of this regulation, taking into consideration the type, size and service conditions of the vessel.

(9) Special consideration shall be given to the design, construction and

installation of propulsion machinery systems so that any mode of their vibrations shall not cause undue stresses in such machinery systems in the normal operating ranges.

71. Electrical Installations

The design and construction of electrical installations shall be such as to provide;

(a) the services necessary to maintain the vessel in normal operational and habitable conditions without having recourse to an emergency source of power;

(b) the services essential to safety when failure of the main source of electrical power occurs;and

(c) protection of the crew and vessel from electrical hazards.

72. Periodically Unattended Machinery Spaces

(1) Regulations 88 to 92 shall apply in addition to regulations 70 to 87, to vessels with periodically unattended machinery spaces.

(2) Measures shall be taken to the satisfaction of the Authority to ensure that all equipment is functioning in a reliable manner in all operating conditions, including manoeuvering, and that arrangements to the satisfaction of the Authority are made for regular inspections and routine tests to ensure continuous reliable operation.

(3) Vessels shall be provided with documentary evidence, to the satisfaction of

the Authority, of their fitness to operate with periodically unattended machinery spaces.

PART B - MACHINERY INSTALLATIONS

73. Main and Auxiliary Machinery

(1) Main and auxiliary machinery, shafting and propeller essential for the propulsion and safety of the vessel shall be of proven commercial marine design and quality and of power suitable for the envisaged application.

(2) All machinery shall be provided with effective means of control.

(3) Internal combustion engines with a cylinder diameter greater than 200 millimeters or a crankcase volume greater than 0.6 cubic metres shall be provided with crankcase explosion relief valves of an approved type with sufficient relief area.

(4) Where main or auxiliary machinery including pressure vessels or any parts of such machinery are subject to internal pressure and may be subject to dangerous over pressure, means shall be provided, where applicable, which will protect against such excessive pressure.

(5) All gearing and every shaft and coupling used for transmission of power to machinery essential for the propulsion and safety of the vessel or the safety of persons on board shall be so designed and constructed that it will withstand the maximum working stresses to which it may be subjected in all service conditions.

(6) Due consideration shall be given to the type of engines by which it is driven or of which it forms part.

(7) Main propulsion machinery and, where applicable, auxiliary machinery shall be provided with automatic shut-off arrangements in the case of failures, such

as lubricating oil supply failure, which could lead rapidly to damage, complete breakdown or explosion.

(8) An advance alarm shall also be provided so that warning is given before automatic shut-off but the Authority may permit provisions for overriding automatic shut-off devices.

(9) The Authority may also exempt vessels from the provisions of this regulation, giving consideration to the type of vessel or its specific service.

74. Main Engine Starting Arrangements

(1) Where main engines depend upon air starting arrangements:

(a) a minimum of two air receivers shall be provided which are capable of withstanding the pressure assigned to them;

(b) The combined capacity of the air receivers shall be sufficient to provide the main engine with 12 consecutive starts if it is a reversible engine or 6 consecutive starts if it is a non-reversible engine, without replenishing the air in the receivers;

(c) each air receiver, or the piping between each air compressor and each receiver shall be provided with a safety valve set to operate at or below the assigned working pressure; and

(d) one air compressor, driven by a prime mover which can be started without the use of compressed air shall be fitted.

(2) Where main engines depend upon electrical starting arrangements:

(a) batteries shall be in duplicate and shall be connected to the starter motor via a change-over switch so that either battery can be used for starting the engine. In normal conditions it shall not be possible to run both batteries in parallel;and

(b) the combined capacity of the batteries provided for main engine

starting shall be sufficient to ensure at least 6 consecutive starts of the engine without re-charging.

(3) Where main engines depend upon means other than those mentioned in paragraphs (a) and (b) of subregulation (2) above, for starting; the Authority shall be satisfied that such means are acceptable for all foreseeable circumstances.

75. Means of Going Astern

(1) Vessels shall have sufficient power for going astern to secure proper control of the vessel in all normal circumstances.

(2) The ability of the machinery to reverse the direction of thrust of the propeller in sufficient time and so to bring the vessel to rest within a reasonable distance from maximum ahead service speed shall be to the satisfaction of the Authority.

76. Steam Boilers, Feed Systems and Steam Piping Arrangements

(1) The Authority shall give special consideration to steam boiler installations to ensure that feed systems, monitoring devices and safety provisions are adequate in all respects to ensure the safety of boilers, steam pressure vessels and steam piping arrangements.

(2) Every oil-fired steam boiler which is intended to operate without manual supervision shall have safety arrangements which shut off the fuel supply and give an alarm in the case of low water level, air supply failure or flame failure.

(3) Every steam boiler and every unfired steam generator shall be provided with not less than two safety valves of adequate capacity. Provided that the Authority may, having regard to the output or any other features of any steam boiler or unfired steam generator, permit only one safety valve to be fitted if

satisfied that adequate protection against over pressure is thereby provided.

(4) Every vessel propelled by steam shall be provided with not less than two entirely separate power feed pumps.

(5) One of the feed pumps referred to in sub-regulation 4 of this regulation may be operated from the main engines, and the other shall be an independent power pump.

(6) Safety valves of every new boiler shall, after it has been set to the assigned pressure, be subjected to an accumulation test as follows:

(a) **Cylinder Boilers** during a test of 15 minutes with the stop valves closed and under full firing conditions the accumulation of pressure shall not exceed 3 per cent of the working pressure, and during the test no more feed water shall be supplied than is necessary to maintain a safe working water level.

(b) **Water Tube Boilers** during a test with the stop valve closed and under full firing conditions, for as long a time as the water supply in the boiler permits; the accumulation of pressure shall not exceed 3 per cent of the working pressure, but in no case need the test exceed seven minutes.

(7) Boilers shall be hydraulically tested in accordance with the following pressures:

(a) For new boilers -

test pressure = 1.25 x W.P. + 3.5 kg/cm² for W.P.s in excess of 7.5 kg/cm²

and = 2 x W.P. for W.P.s of 7.5 kg/cm² or less.

(b) for existing boilers -

test pressure = 1.25 x W.P.

(8) When the survey of a new boiler is completed, it shall, in a position which will

be clearly visible at all times, be stamped as follows:

W.P. . . . . kg/cm²
Tested to . . . . . kg/cm²
Date . . . . . .

Stamp of Testing Authority

(9) Pressure parts, other than boilers, when new shall be hydraulically tested in accordance with the following pressures:

(a) Boiler mountings:

(i)	Feed check valves	2½ x W.P.
(ii)	Other mountings	2 x W.P.
(iii)	Steam pipes	2 x W.P.
(iv)	Feed pipes	2½ x W.P.
(v)	Feed heaters (bodies, tubes or coils)	2½ x W.P.

(b) Oil fuel pipes, heaters, coils or tubes: 30 kg/cm² or twice the maximum working pressure to which they are subjected, whichever is greater.

(c) Evaporator bodies: Twice the maximum working pressure of the evaporator.

(d) Evaporator coils or tubes: Twice the maximum working pressure to which they may be subjected.

(e) Air receivers: As for boilers.

(10) The work required by sub-regulations (6) to (9) of this regulation shall be carried out by a competent person approved by the Authority.

77. Communication between the Wheelhouse and Machinery Space

Two separate means of communication between the wheelhouse and the machinery space control platform shall be provided, one of which shall be an engine room telegraph.

78. Wheelhouse Control of Propulsion Machinery

(1) Where remote control of propulsion machinery is provided from the wheelhouse, the following shall apply;

(a) under all operating conditions, including manoeuvering, the speed, direction of thrust and, if applicable, the pitch of the propeller shall be fully controllable from the wheelhouse;

(b) the remote control referred to in paragraph (a) of this regulation shall be performed by means of a control device to the satisfaction of the Authority with, where necessary, means of preventing overload of the propulsion machinery;

(c) the main propulsion machinery shall be provided with an emergency stopping device in the wheelhouse and independent from the wheelhouse control system referred to in paragraph (a) of this regulation;

(d) remote control of the propulsion machinery shall be possible only from one station at a time: at any control station interlocked control units may be permitted;

(e) There shall be at each station an indicator showing which station is in control of the propulsion machinery;

(f) The transfer of control between the wheelhouse and machinery spaces

shall be possible only in the machinery space or control room;

(g) indicators shall be fitted in the wheelhouse for:

(i) propeller speed and direction in the case of fixed propellers;

(ii) propeller speed and pitch position in the case of controllable pitch propellers; and

(iii) advance alarm as required in regulation 73(8);

(h) it shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;

(i) unless the Authority considers it impracticable the design of the remote control system shall be such that if it fails an alarm will be given and the pre-set speed and direction of thrust will be maintained until local control is in operation;

(j) special arrangements shall be provided to ensure that automatic starting shall not exhaust the starting possibilities;and

(k) An alarm shall be provided to indicate low starting air pressure and shall be set at a level which will still permit main engine starting operations.

(2) Where the main propulsion and associated machinery including sources of main electrical supply are provided with various degrees of automatic or remote control and are under continuous manned supervision from a control room, the control room shall be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision.

(3) In general, automatic starting, operational and control systems shall include means for manually overriding the automatic means, even in the case of

failure of any part of the automatic and remote control system.

79. Air Pressure Systems

(1) Air receivers and other pressure vessels shall be capable of withstanding the pressure assigned to them.

(2) Means shall be provided to prevent excess pressure in any part of compressed air systems and wherever water-jackets or casings of air compressors and coolers might be subjected to dangerous excess pressure due to leakage into them from air pressure parts.

(3) Suitable pressure-relief arrangements shall be provided.

(4) The main starting air arrangements for main propulsion internal combustion engines shall be adequately protected against the effects of backfiring and internal explosion in the starting air pipes.

(5) All discharge pipes from starting air compressors shall lead directly to the starting air receivers and all starting pipes from the air receivers to main or auxiliary engines shall be entirely separate from the compressor discharge pipe system.

(6) Provision shall be made to reduce to a minimum the entry of oil into the air pressure systems and to drain these systems.

80. Arrangements for Fuel Oil, Lubricating Oil and Other Flammable Oils

(1) Fuel oil which has a flashpoint of less than 60 degrees Celsius (closed cup test) as determined by an approved flashpoint apparatus shall not be used as fuel, except in emergency generators, in which case the flashpoint shall be

not less than 43 degrees Celsius.

Provided that the Authority may permit the general use of fuel oil having a flashpoint of not less than 43 degrees Celsius subject to such additional precautions as it may consider necessary and on condition that the temperature of the space in which such fuel is stored or used shall not rise to within 10 degrees Celsius below the flashpoint of the fuel.

(2) Safe and efficient means of ascertaining the amount of fuel oil contained in any oil tank shall be provided.

(3) If sounding pipes are installed, their upper ends shall terminate in safe positions and shall be fitted with suitable means of watertight closure.

(4) Other means of ascertaining the amount of fuel oil contained in any fuel oil tank may be permitted providing their failure or overfilling of the tanks will not permit release of fuel.

(5) Gauges made of glass of substantial thickness and protected by metal case may be used, provided that automatic closing valves are fitted.

(6) Provision shall be made to prevent over pressure in any oil tank or in any part of the fuel oil system including the filling pipes. Relief valves and air or overflow pipes shall discharge to a position and in a manner which is safe.

(7) Subject to the satisfaction of the Authority, fuel oil pipes which, if damaged, would allow oil to escape from a storage, settling or daily service tank situated above the double bottom, shall be fitted with a cock or valve on the tank capable of being closed from a safe position outside the space concerned in the event of a fire arising in the space in which such tanks are situated.

(8) In the special case of deep tanks situated in any shaft or pipe tunnel or similar space, valves on the tank shall be fitted but control in the event of fire may be effected by means of an additional valve on the pipe or pipes outside the tunnel or similar space.

(9) If such additional valve is fitted in the machinery space it shall be capable of

being operated outside this space.

(10) Pumps forming part of the fuel oil system shall be separate from any other system and the connections of any such pumps shall be provided with an efficient relief valve which shall be in closed circuit.

(11) Where fuel oil tanks are alternatively used as liquid ballast tanks, proper means shall be provided to isolate the fuel oil and ballast systems.

(12) No oil tanks shall be situated where spillage or leakage therefrom can constitute a hazard by falling on heated surfaces. Precautions shall be taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces.

(13) (a) Fuel oil pipes and their valves and fittings shall be of steel or other equivalent material, provided that restricted use of flexible pipes may be permitted in positions where the Authority is satisfied that they are necessary.Such flexible pipes and end attachments shall be of adequate strength and shall, to the satisfaction of the Authority, be constructed of approved fire-resistant materials or have fire-resistant coatings.

(b) Where necessary, fuel oil and lubricating oil pipelines shall be screened or otherwise suitably protected to avoid, as far as practicable, oil spray or oil leakage onto heated surfaces or into machinery air intakes.

(c) The number of joints in piping systems shall be kept to a minimum.

(14) As far as practicable, fuel oil tanks shall be part of the vessel's structure and shall be located outside machinery spaces of Category A.

(15) Where fuel oil tanks, other than double bottom tanks, are necessarily located adjacent to or within machinery spaces of Category A, at least one of their vertical sides shall be contiguous to the machinery space boundaries, and shall preferably have a common boundary with the double bottom tanks where fitted and the area of the tank boundary common with the machinery

space shall be kept to a minimum.

(16) When such tanks are sited within the boundaries of machinery spaces of Category A they shall not contain fuel oil having a flashpoint of less than 60 degrees Celsius (closed cup test).

(17) In general, the use of free-standing fuel oil tanks shall be avoided in fire hazard areas, and particularly in machinery spaces of Category A.

(18) When free-standing fuel oil tanks are permitted, they shall be placed in an oil-tight spill tray of ample size having a suitable drain pipe leading to a suitably sized spill oil tank.

(19) The arrangements for the storage, distribution and use of oil employed in pressure lubrication systems shall be to the satisfaction of the Authority.Such arrangements in machinery spaces of Category A and, wherever practicable,in other machinery spaces shall at least comply with the provisions of sub-regulations (1), (6), (12) and (13) and in so far as the Authority may consider necessary with sub-regulations (2), (3), (4), (5), (7), (8) and (9).This does not preclude the use of sight flow glasses in lubrication systems provided they are shown by test to have a suitable degree of fire resistance.

(20) The arrangements for the storage, distribution and use of flammable oils employed under pressure in power transmission systems other than oils referred to in sub-regulation (10) in control and activating systems and heating systems shall be to the satisfaction of the Authority.

(21) In location where means of ignition are present such arrangements shall at least comply with the provisions of sub-regulations (2), (3), (4), (5) and (12) and with the provisions of sub-regulations (3) and (13) in respect of strength and construction.

81. Bilge Pumping Arrangements

(1) An efficient bilge pumping plant shall be provided which under all practical conditions shall be capable of pumping from and draining any watertight compartment which is neither a permanent oil tank nor a permanent water tank whether the vessel is upright or listed.

(2) Wing suctions shall be provided if necessary for the purposes referred to in sub-regulation (1) of this regulation.Arrangements shall be provided for easy flow of water to the suction pipes. (3) Provided the Authority is satisfied that the safety of the vessel is not impaired the bilge pumping arrangements may be dispensed with in particular compartments.

(4) (a) At least two independently driven power bilge pumps shall be provided, one of which may be driven by the main engine. A ballast pump or other general service pump of sufficient capacity may be used as a power driven bilge pump;

(b) Power bilge pumps shall be capable of giving a speed of water of at least 2 metres per second through the main bilge pipe which shall have an internal diameter of at least:

(Main Bilge line) d = 25 + 1.68 □L(B + D) [mm]

where: d is the internal diameter in millimetres, and L, B and D are in metres;

(c) Branch bilge lines shall have an internal diameter of at least:
(Branch bilge line) d = 25 + 1.68 □□(B + D) [mm]

where: d is the internal diameter in millimetres, and □(compartment length), B and D are in metres;

(d) Each of the bilge pumps provided in accordance with this regulation shall be provided with a direct bilge suction, one of these suctions

drawing from the port side of the machinery space and the other from the starboard side;

(e) Notwithstanding the requirements of paragraphs (b) and (c) of this regulation, bilge suctions shall have a minimum inside diameter of 50 millimetres;and

(f) The arrangement and sizing of the bilge system shall be such that the full rated capacity of the pump specified above can be applied to each of the watertight compartments located between the collision and afterpeak bulkheads.

(5) A bilge ejector in combination with an independently driven high pressure sea-water pump may be installed as a substitute for one independently driven bilge pump required by sub-regulation (4)(a) of this regulation, provided this arrangement is to the satisfaction of the Authority.

(6) In vessels where fish handling or processing may cause quantities of water to accumulate in enclosed spaces, adequate drainage, to the satisfaction of the Authority, shall be provided.

(7) Bilge pipes shall not be led through fuel oil, ballast or double bottom tanks, unless these pipes are of heavy gauge steel construction.

(8) Bilge and ballast pumping systems shall be arranged so as to prevent water passing from the sea or from water ballast spaces into holds or into machinery spaces or from one watertight compartment to another.

(9) The bilge connection to any pump which draws from the sea or from water ballast spaces shall be fitted with either a non-return valve or a cock which cannot be opened simultaneously either to the bilges and the sea or to the bilges and water ballast spaces. Valves in bilge distribution boxes shall be of a non-return type or no return valves are to be fitted in the line.

(10) Any bilge pipe piercing a collision bulkhead shall be fitted with a positive means of closing at the bulkhead with remote control from the working deck with an indicator showing the position of the valve provided that, if the valve is fitted on the after side of the bulkhead and is readily accessible under all service conditions, the remote control may be dispensed with.

(11) Bilge suctions shall generally be fitted with strainers, and the areas of openings of such strainers shall not be less than twice the cross-sectional area of the bilge pipe. Direct emergency bilge suctions shall not be fitted with strainers.

(12) Bilge piping shall be of seamless Schedule 40 steel pipe or other material

considered by the surveyor to be suitable for the purpose, but short lengths of rubber or plastic hose, clearly visible at all times, may be fitted to the satisfaction of the surveyor to reduce the effects of vibration; any hose so installed shall be of sufficient strength to withstand collapsing due to suction, and joints shall be made with clamps suitable for the purpose.

(13) Bilges in machinery spaces of category A shall be provided with a high level alarm in such a way that the accumulation of liquids is detected at normal angles of trim and heel. The detection system shall initiate an audible and visual alarm in at least one place where continuous watch is maintained.

82. Steering Gear

(1) Vessels shall be provided with a main steering gear and an auxiliary means of actuating the rudder to the satisfaction of the Authority.

(2) The main steering gear and the auxiliary means of actuating the rudder shall be arranged so that so far as is reasonable and practicable a single failure in one of them will not render the other one inoperative.

(3) Where the main steering gear comprises two or more identical power units an auxiliary steering gear need not be fitted if the main steering gear is capable of operating the rudder as required by sub-regulations (15) and (16) of this regulation when any one of the units is out of operation. Each of the power units shall be operated from a separate circuit.

(4) The position of the rudder, if power operated, shall be indicated in the wheelhouse. The rudder angle indication for power-operated steering gear shall be independent of the steering gear control system.

(5) In the event of failure of any of the steering gear units an alarm shall be given

in the wheelhouse.

(6) Indicators for running indication of the motors of electric and electro-hydraulic steering gear shall be installed in the wheelhouse. Short circuit protection, an overload alarm and a no-voltage alarm shall be provided for these circuits and motors.

(7) Protection against excess current, of provided, shall be not less than twice the full load current of the motor or circuit so protected, and shall be arranged to permit the passage of the appropriate starting currents.

(8) The main steering gear shall be of adequate strength and sufficient to steer the vessel at maximum service speed.

(9) The main steering gear and rudder stock shall be so designed that they will not be damaged at maximum speed astern or by manoeuvering during fishing operations.

(10) The main steering gear shall, with the vessel at its maximum permissible operating draught, be capable of putting the rudder over from 35 degrees on one side to 35 degrees on the other side with the vessel running ahead at maximum service speed.

(11) The rudder shall be capable of being put over from 35 degrees on either side to 30 degrees on the other side in not more than 28 seconds, under the same conditions.

(12) The main steering gear shall be operated by power where necessary to fulfil these requirements.

(13) The main steering gear power unit shall be arranged to start either by manual means in the wheelhouse or automatically when power is restored after a power failure.

(14) The auxiliary means for actuating the rudder shall be of adequate strength and sufficient to steer the vessel at navigable speed and capable of being

brought speedily into action in an emergency.

(15) The auxiliary means for actuating the rudder shall be capable of putting the rudder over from 15 degrees on one side to 15 degrees on the other side in not more than 60 seconds with the vessel running at one half of its maximum service speed ahead or 7 knots whichever is the greater.

(16) The auxiliary means for actuating the rudder shall be operated by power where necessary to fulfill these requirements.

(17) Electric or electro-hydraulic steering gear in vessels of 75 metres in length and over shall be served by at least two circuits fed from the main switchboard and these circuits shall be as widely separated as possible.

83. Engineers' Alarm

In vessels of 75 metres in length and over an engineers' alarm shall be provided to be operated from the engine control room or at the manoeuvering platform as appropriate, and shall be clearly audible in the engineers accommodation.

84. Refrigeration Systems for Preservation of the Catch

(1) Refrigeration systems shall be so designed, constructed, tested and installed as to take account of the safety of the systems considering the degree of possible harm to persons or to the environment, and shall be to the satisfaction of the Authority.

(2) Refrigerants to be used in refrigeration systems shall be to the satisfaction of

the Authority. However, methyl chloride, ammonia or CFC's whose ozone depleting potential is higher than 5% of CFC-11 shall not be used as a refrigerant.

(3) (a) Refrigerating installations shall be adequately protected against vibration, shock, expansion, shrinkage, etc. and shall be provided with an automatic safety control device to prevent a dangerous rise in temperature and pressure;

(b) Refrigeration systems in which toxic or flammable refrigerants are used shall be provided with drainage devices leading to a place where the refrigerant presents no danger to the vessels or to persons on board;

(c) Any space containing refrigerating machinery including condensers and gas tanks utilizing toxic refrigerants shall be separated from any adjacent space by gastight bulkheads;

(d) Any space containing the refrigerating machinery including condensers and gas tanks shall be fitted with a leak detection system having an indicator outside the space adjacent to the entrance and shall be provided with an independent ventilation system and a water spray system;

(e) The ventilation ducting to such spaces shall be fitted with a power exhaust fan and shall not be higher than 30 centimetres from the deck or lowest part of the space;and

(f) When such containment is not practicable, due to the size of the vessel, the refrigeration system may be installed in the machinery space provided that the quantity of refrigerant used will not cause danger to persons in the machinery space, should all the gas escape, and provided that an alarm is fitted to give warning of a dangerous concentration of gas should any leakage occur in the compartment. In such cases there shall be at least three powered ventilation fans installed with at least one being a suction fan with the ducting located

close or at the areas where the refrigerant is potentially exposed to leaks.

(4) In refrigerating machinery spaces and refrigerating rooms, alarms shall be connected to the wheelhouse or control stations or escape exits to prevent persons being trapped.

(5) At least one exit from each such space shall be capable of being opened from the inside. Where practicable, exits from the spaces containing refrigerating machinery using toxic or flammable gas shall not lead directly into any accommodation spaces.

(6) Where any refrigerant harmful to persons is used in a refrigeration system, at least two sets of breathing apparatus shall be provided, one of which shall be placed in a position not likely to become inaccessible in the event of leakage of refrigerant.

(7) Breathing apparatus provided as part of the vessel's fire-fighting equipment may be considered as meeting all or part of this provision provided its location meets both purposes.

(8) Where self-contained breathing apparatus is used, spare cylinders shall be provided.

(9) Adequate guidance for the safe operation and emergency procedures for the refrigeration systems shall be provided by suitable notices displayed on board the vessel.

85. Ventilation

(1) Ventilation systems serving machinery spaces of category A shall be

independent of systems serving other spaces.

(2) Ventilation provided in machinery spaces shall be sufficient for engine combustion, the removal of heat and prevention of the accumulation of oil vapours under normal operating conditions and shall be to the satisfaction of the surveyor.

(3) Compartments which the crew are required to enter as part of their work which may contain gases which are heavier than air e.g. fuel or refrigerant vapour, shall be provided with exhaust fans which take suction from a low position in the compartment to the satisfaction of the surveyor.

PART C - ELECTRICAL INSTALLATIONS

86. Main Source of Electrical Power

(1) (a) Where electrical power constitutes the only means of maintaining auxiliary services essential for the propulsion and the safety of the vessel, a main source of electrical power shall be provided which shall include at least two generating sets, one of which may be driven by the main engine.The Authority may accept other arrangements having equivalent electrical capability;

(b) The power of these sets shall be such to ensure the functioning of the services referred to in regulation 71(1),excluding the power required in fishing activities, processing and preservation of the catch, in the event of one of these generators being stopped. However, in vessels of less than 45 metres in length, in the event of any one of the generating sets being stopped, it shall only be necessary to ensure the functioning of services essential for propulsion and safety of the vessel;

(c) The arrangement of the vessel's main source of electrical power shall be such that the services referred to in regulation 72(1) can be maintained regardless of the number of revolutions and direction of the main propelling engines or shafting; and

(d) Where transformers constitute an essential part of the supply system required by this paragraph, the system shall be so arranged as to ensure continuity of the supply.

(2) (a) The arrangement of the main lighting system shall be such that a fire or other casualty in the space or spaces containing the main source of electrical power, including transformers, if any, will not render the emergency lighting system inoperative; and

(b) The arrangement of the emergency lighting system shall be such that a fire or other casualty in the space or spaces containing the emergency source of electrical power, including transformers, if any, will not render the main lighting system inoperative.

87. Emergency Source of Electrical Power

(1) A self-contained emergency source of electrical power located, to the satisfaction of the Authority, outside the machinery spaces shall be provided and so arranged as to ensure its functioning in the event of fire or other causes of failure of the main electrical installations.

(2) The emergency source of electrical power shall be capable, having regard to starting current and the transitory nature of certain loads, of serving simultaneously for a period of at least three hours:

(a) internal communication equipment, fire detecting systems and signals which may be required in an emergency;

(b) the navigation lights (if solely electrical) and the emergency lights:

(i) of launching stations and overside of the vessel;

(ii) in all alleyways, stairways and exits;

(iii) in spaces containing machinery or the emergency source of power;

(iv) in control stations; and

(v) in fish handling and fish processing spaces; and

(c) The operation of the emergency fire pump, if any.

(3) The emergency source of electrical power may be either a generator or an accumulator battery:

(a) batteries required for communications shall not be located below the waterline of the vessel when in a fully loaded condition;

(b) batteries required for communications shall be isolated from the vessel's lighting and general service requirements; and

(c) the batteries to supply the Radio Installations should comply with the Merchant Shipping Radio Installations Regulations (2002) as amended.

(4) (a) Where the emergency source of electrical power is a generator, it shall be provided both with an independent fuel supply and with efficient starting arrangements to the satisfaction of the Authority;

(b) Unless a second independent means of starting the emergency generator is provided the single source of stored energy shall be protected to preclude its complete depletion by the automatic starting system;

(c) Where the emergency source of electrical power is an accumulator battery it shall be capable of carrying the emergency load without recharging whilst maintaining the voltage of the battery throughout the discharge period within plus or minus 12 per cent of its nominal

voltage.

(d) In the event of failure of the main power supply this accumulator battery shall be automatically connected to the emergency switchboard and shall immediately supply at least those services specified in paragraph 2(b) and (c); and

(e) The emergency switchboard shall be provided with an auxiliary switch allowing the battery to be connected manually, in case of failure of the automatic connection system.

(3) The emergency switchboard shall be installed as near as is practicable to the emergency source of power and shall be located in accordance with subregulation (1) of this regulation.

(4) Where the emergency source of power is a generator, the emergency switchboard shall be located in the same place unless the operation of the emergency switchboard would thereby be impaired.

(5) An accumulator battery fitted in accordance with this Regulation, shall be installed in a well ventilated space which shall not be the space containing the emergency switchboard.

(6) An indicator shall be mounted in a suitable place on the main switchboard or in the machinery control room to indicate when the battery constituting the emergency source of power is being discharged.

(7) The emergency switchboard is to be supplied in normal operation from the main switchboard by an inter-connector feeder which is to be protected at the main switchboard against overload and short circuit.

(8) The arrangement at the emergency switchboard shall be such that in the event of a failure of the main power supply an automatic connection of the emergency supply shall be provided.

(9) When the system is arranged for feedback operation, the inter-connector feeder shall also be protected at the emergency switchboard at least against

short circuit.

(10) The emergency generator and its prime mover and any accumulator battery shall be so arranged as to ensure that they will function at full rated power when the vessel is upright and when rolling up to an angle of 22½ degrees either way and simultaneously pitching 10 degrees by bow or stern, or is in any combination of angles within those limits.

(11) The emergency source of electrical power and automatic starting equipment shall be so constructed and arranged as to enable adequate testing to be carried out by the crew while the vessel is in operating condition.

88. Precautions against Shock, Fire and Other Hazards of Electrical Origin

(1) (a) Exposed permanently fixed metal parts of electrical machines or equipment which are not intended to be "live", but which are liable under fault conditions to become "live" shall be earthed (grounded) unless:

(i) they are supplied at a voltage not exceeding 55 volts direct current or 55 volts, root mean square, between conductors; auto transformers shall not be used for the purpose of achieving this alternative current voltage;

(ii) they are supplied at a voltage not exceeding 250 volts by safety isolating transformers supplying one consuming device only; or,

(iii) they are constructed in accordance with the principle of double insulation.

(b) Portable electrical equipment shall operate at a safe voltage, exposed metal parts of such equipment which are not intended to have a voltage but which may have such under fault conditions, shall be

earthed;

(c) The Authority may require additional precautions for portable electric lamps, tools or similar apparatus for use in confined or exceptionally damp spaces where particular risks due to conductivity may exist; and

(d) Electrical apparatus shall be so constructed and so installed that it shall not cause injury when handled or touched in the normal manner.

(2) (a) Main and emergency switchboards shall be so arranged as to give easy access as may be needed to apparatus and equipment, without danger to attendants;

(b) The sides and backs and, where necessary, the fronts of switchboards, shall be suitably guarded;

(c) Exposed “live” parts having voltages to earth exceeding a voltage to be specified by the Authority shall not be installed on the front of such switchboards;

(d) There shall be non-conducting mats or gratings at the front and rear, where necessary;

(e) Whilst complying with the requirements of paragraph (a), (b) and (c) of this sub-regulation and the Merchant Shipping Radio Installation Regulations, the radio installation switchboard shall be separate from the main and emergency switchboards to inhibit stray radio frequency and interference;

(f) The radio installation switchboard shall not be fitted in the immediate vicinity of the radio battery installation;

(g) The radio installation earthed connections and arrangements shall be separately installed and connected by utilizing earth leads of copper foil and not round wires;and

(h) In vessels constructed of non-conductive materials, the following two

earth arrangements are acceptable-

- Separate paint-free Dyna Plate type;
- Or alternative methods of earthing integral to the hull maybe accepted by the Authority.

(3) (a) The hull return system of distribution shall not be used for power, heating or lighting; and

(b) The requirement of paragraph (a) of this sub-regulation does not preclude, under conditions approved by the Authority, the use of:

(i) impressed current cathodic protection systems;

(ii) limited and locally earthed systems; and

(iii) insulation level monitoring devices provided the circulation current does not exceed 30 milli-amperes under the most unfavourable conditions.

(4) Where a distribution system, whether primary or secondary, for power, heating or lighting, where no connection to earth is used, a device capable of monitoring the insulation level to earth and of giving an audible or visual indication of abnormally low insulation values shall be provided.

(5) (a) Except as permitted by the Authority in exceptional circumstances, all metal sheaths and armour of cables shall be electrically continuous and shall be earthed;

(b) All electrical cables shall be at least of a flame retardant type and shall be so installed as not to impair the original flame-retarding properties;

(c) The Authority may permit the use of special types of cables when necessary for particular applications, such as radio frequency cables, which do not comply with the foregoing;

(d) Cables and wiring serving essential or emergency power, lighting, internal communications or signals shall as far as practicable be routed clear of galleys, machinery spaces of category A and other high fire

risk areas and laundries, fish handling and fish processing spaces and other spaces where high moisture level can be expected;

(e) Cables connecting fire pumps to the emergency switchboard shall be of a fire resistant type where they pass through high fire risk areas;

(f) Where practicable all such cables should be run in such a manner as to preclude their being rendered unserviceable by heating of bulkheads that may be caused by a fire in an adjacent space.

(g) Where cables which are installed in spaces where the risk of fire or explosion exists in the event of an electrical fault, special precautions against such risks shall be taken to the satisfaction of the Authority;

(h) Wiring shall be supported in such a manner as to avoid chaffing or other damage;

(i) Terminations and joints in all conductors shall be made such that they retain the original electrical, mechanical, flame-retarding and, where necessary, fire-resisting properties of the cable; and

(j) Cables installed in refrigerated compartments shall be suitable for low temperatures and high humidity.

(6) (a) Circuits shall be protected against short circuit;

(b) Circuits shall also be protected against overload, except in accordance with regulation 82 or where the Authority may exceptionally otherwise permit; and

(c) The rating or appropriate setting of the overload protective device for each circuit shall be permanently indicated at the location of the protective device.

(7) Lighting fittings shall be arranged to prevent temperature rises which could damage the wiring and to prevent surrounding material from becoming excessively hot.

(8) Lighting or power circuits terminating in a space where the risk of fire or explosion exists shall be provided with isolating switches outside the space.

(9) (a) The housing of an accumulator battery shall be constructed and

ventilated to the satisfaction of the Authority;

(b) electrical and other equipment which may constitute a source of ignition of flammable vapours shall not be permitted in these compartments except as permitted in sub-regulation (10) of this regulation; and

(c) an accumulator battery shall not be located in accommodation spaces unless installed in a hermetically sealed container.

(10) In spaces where flammable mixtures are liable to collect and in any compartment assigned principally to the containment of an accumulator battery, no electrical equipment shall be installed unless the Authority is satisfied that it is:

(a) essential for operational purposes;

(b) of a type which will not ignite the mixture concerned;

(c) appropriate to the space concerned; and

(d) appropriately certified for safe usage in the dusts, vapours or gases likely to be encountered.

(11) Lightning conductors shall be fitted to all wooden masts or topmasts.

(12) In vessels constructed of non-conductive materials the lightning conductors shall be connected by suitable conductors to a copper plate fixed to the vessel's hull well below the waterline.

PART D - ADDITIONAL REQUIREMENTS FOR PERIODICALLY UNATTENDED MACHINERY SPACES

89. Fire Safety

(1) Fire prevention:

(a) Special consideration shall be given to high pressure fuel oil pipes;

(b) where practicable, leakages from such piping systems shall be collected in a suitable drain tank which shall be provided with a high level alarm;

(c) where daily service fuel oil tanks are filled automatically or by remote control, means shall be provided to prevent overflow spillages;

(d) similar consideration shall be given to other equipment which treats flammable liquids automatically, e.g. fuel oil purifiers, which whenever practicable shall be installed in a special space reserved for purifiers and their heaters;and

(e) Where fuel oil daily service tanks or settling ranks are fitted with heating arrangements, a high temperature alarm shall be provided if the flashpoint of the fuel oil can be exceeded.

(2) Fire detection:

(a) an approved fire detection system based on a self-monitoring principle and including facilities for periodical testing shall be installed in machinery spaces;

(b) the detection system shall initiate both audible and visual alarm in the wheelhouse and in sufficient appropriate spaces to be heard and observed by persons on board, when the vessel is in harbour;

(c) the fire detection system shall be fed automatically from an emergency source of power if the main source of power fails; and

(d) internal combustion engines of 2500 kilowatts and over shall be provided with crankcase oil mist detectors or engine bearing temperature detectors or equivalent devices.

(3) Fire fighting:

(a) a fixed fire-extinguishing system shall be provided to the satisfaction of the Authority, which shall be in compliance with the requirements of

Chapter VI.

(b) in vessels of 75 metres and over provision shall be made for immediate water delivery from the fire main system either by:

(i) remote starting arrangements on one of the main fire pumps in the wheelhouse and at the fire control station, if any; or

(ii) permanent pressurization of the fire main system, due regard being paid to the possibility of freezing; and

(c) the Authority shall be satisfied with the maintenance of the fire integrity of the machinery spaces, the location and centralization of the fire-extinguishing system controls, the shut-down arrangements referred to in regulation 94 e.g. ventilation, fuel pumps, etc., and may require fire-extinguishing appliances and other fire-fighting equipment and breathing apparatus in addition to the relevant requirements of chapter VI.

90. Protection against Flooding

In vessels of 45 metres in length and over the controls of any valve serving a sea inlet, a discharge below the waterline or a bilge injection system shall be so sited as to allow adequate time for operation in case of influx of water to the space.

91. Communications

(1) One of the two separate means of communication referred to in regulation 76 shall be a reliable voice communication.

(2) In vessels of 75 metres and over an additional reliable means of vocal communication shall be provided between the wheelhouse and the engineers'

accommodation.

92. Alarm Systems

(1) An alarm system shall be provided which shall indicate any fault requiring attention.

(2) (a) The alarm system shall be capable of sounding an audible alarm in the machinery space and indicate visually each separate alarm function at a suitable position;

(b) In vessels of 45 metres in length and over the alarm system shall have a connection to the engineers cabin through a selector switch to ensure connection to one of those cabins and to the engineers' public rooms, if any;

(c) the Authority may permit alternative arrangements which permit equivalent safety;

(d) in vessels of 45 metres in length and over an engineers' alarm and an alarm in the wheelhouse for persons on watch shall be activated if an alarm function has not received attention within a period of not more than 3 minutes;

(e) audible and visual alarms shall be activated in the wheelhouse for any situation requiring action by the responsible person on watch or which should be brought to his attention; and

(f) the alarm system shall as far as is practicable be designed on the fail-safe principle.

(3) The alarm system shall be:

(a) continuously powered with automatic change-over to a stand-by power supply in case of loss of normal power supply; and

(b) activated by failure of the normal power supply.

(4) (a) The alarm system shall be able to indicate at the same time more than

one fault and the acceptance of any alarm shall not inhibit another alarm;

(b) acceptance at the position referred to in sub-regulation (2)(a) of any alarm condition shall be indicated at the positions where it was shown;

(c)alarms shall be maintained until they are accepted and the visual indicators shall remain until the fault has been corrected; and

(d) all alarms shall automatically reset when the fault has been rectified.

93. Special Requirements for Machinery, Boiler and Electrical Installations

(1) In vessels of 75 metres and over the main source of electrical power shall be supplied as follows:

(a) where the electrical power can normally be supplied by one generator, there shall be provided suitable load shedding arrangements to ensure the integrity of supplies to services required for propulsion and steering;

(b) to cover the case of loss of the generator in operation, there shall be adequate provisions for automatic steering and connection to the main switchboard of a stand-by generator of sufficient capacity to permit the propulsion and steering and with automatic starting of the essential auxillaries, including where necessary, sequential operations;

(c) resources may be provided, to the satisfaction of the Authority for remote (manual) starting and connection of the stand-by generator to the main switchboard as well as resources of repeated remote starting of the essential generators; and

(d) if the electrical power is normally supplied by more than one generating set simultaneously, there shall be provisions, e.g. by load shedding, to ensure that in cases of loss of one of those generating sets, the remaining ones are kept in operation, without overload, to permit

propulsion and steering.

(2) Where required to be duplicated, auxiliary machinery essential to propulsion shall be fitted with automatic change-over devices allowing transfer to a stand-by machine. An alarm shall be given on automatic change-over.

(3) Automatic control and alarm systems shall be provided as follows:

(a) the control system shall be such that through the necessary automatic arrangements the services needed for the operation of the main propulsion machinery and its auxiliaries are ensured;

(b) resources shall be provided to keep the starting air pressure at the required level where internal combustion engines are used for main propulsion;

(c) an alarm system complying with regulation 91 shall be provided for all important pressures, temperatures, fluid levels, etc.; and

(d) where appropriate an adequate central position shall be arranged with the necessary alarm panels and instrumentation indicating any alarmed fault.

94. Safety System

(1) A safety system shall be provided so that serious malfunction in machinery or boiler operations, which presents an immediate danger, shall initiate the automatic shut-down of that part of the plant and an alarm shall be given.

(2) Shut-down of the propulsion system shall not be automatically activated except in cases which could lead to serious damage, complete breakdown, or explosion.

(3) Where arrangements for overriding the shut-down of the main propelling

machinery are fitted these shall be such as to preclude inadvertent activation.

(4) Visual means shall be provided to show whether or not it has been activated

CHAPTER VI

FIRE PROTECTION, FIRE DETECTION, FIRE EXTINCTION AND FIRE FIGHTING

PART A - FIRE SAFETY MEASURES FOR VESSELS LESS THAN 60 METRES IN LENGTH

95. Structural Fire Protection

(1) The hull, Superstructure, structural bulkheads, decks and deckhouses shall be constructed of non-combustible materials.

(2) The Authority may permit combustible construction provided the requirements of this Regulation and the additional fire-extinguishing requirements of Regulation 108(3) are complied with.

(3) (a) In vessels, the hull of which is constructed of non-combustible materials, the decks and bulkheads separating machinery spaces of category A from accommodation spaces, service spaces or control spaces shall be constructed to “A-60" Class standard where the machinery space is not provided with a fixed fire-extinguishing system and to “A-30" Class standard where such system is fitted;

(b) decks and bulkheads separating other machinery spaces from accommodation, service spaces and control stations shall be constructed to “A-0" Class standard;

(c) decks and bulkheads separating control stations from accommodation

and service spaces shall be constructed to “A” Class standard, except that the Authority may permit the fitting of “B-15" Class divisions from separating such spaces as the masters cabin from the wheelhouse;

(d) in vessels, the hull of which is constructed of combustible materials, the decks and bulkheads separating machinery spaces from accommodation spaces, service spaces or control stations shall be constructed to “F” Class or “B-15" Class standard; and

(e) in addition, machinery space boundaries shall as far as practicable prevent the passage of smoke. Decks and bulkheads separating control stations from accommodation and service spaces shall be constructed to “F” Class standard.

(4) (a) In vessels, the hull of which is constructed of non-combustible materials, bulkheads of corridors serving accommodation, service spaces and control stations shall be of “B-15" Class divisions;

(b) in vessels, the hull of which is constructed of combustible materials, bulkheads of corridors serving accommodation, service spaces and control stations shall be of “F" Class divisions; and

(c) any bulkhead required by paragraphs (a) or (b) of this sub-regulation shall extend from deck to deck unless a continuous ceiling as the same class as the bulkhead is fitted on both sides of the bulkhead, in which case the bulkhead may terminate at the continuous ceiling.

(5) Interior stairways serving accommodation spaces, service spaces or control stations shall be of steel or other equivalent material.

(6) Stairways referred to in sub-regulation (5) of this regulation shall be within enclosures constructed of “F” Class divisions in vessels the hull of which is constructed of combustible materials, or “B-15" Class divisions in vessels the hull of which is constructed of non-combustible materials, provided that where a stairway penetrates only one deck it may be enclosed at one level only.

(7) Doors and other closures of openings in bulkheads and decks referred to in sub-regulations (3) and (4) of this regulation, doors fitted to stairway enclosures referred to in sub-regulations(5) and (6) of this regulation and doors fitted in engine and boiler casings, shall be as far as practicable equivalent in resisting fire to the divisions in which they are fitted.

(8) Doors to machinery spaces of category A shall be self-closing.

(9) Lift trunks which pass through the accommodation and service spaces shall be constructed of steel or equivalent material and shall be provided with means of closing which will permit control of draught and smoke.

(10) (a) In vessels, the hull of which is constructed of combustible materials, the boundary bulkheads of decks and spaces containing any emergency source of power and decks and bulkheads between galleys, paint rooms, lamp rooms or any store rooms which contain appreciable quantities of highly flammable materials, and accommodation spaces, service spaces or control stations shall be constructed of “F” Class or “B-15" Class divisions;

(b) in vessels, the hull of which is constructed of non-combustible materials, the decks and bulkheads referred to in paragraph (a) of this sub-regulation shall be of A Class divisions insulated to the satisfaction of the Authority, having in mind the risk of fire, except that the Authority may accept “B-15" Class divisions between a galley and accommodation spaces, service spaces and control stations when the galley contains electrically heated furnaces, electrically heated hot water appliances or other electrically heated appliances only; and

(c) highly flammable products shall be carried in suitably sealed containers.

(11) Where bulkheads or decks required by sub-regulations (3), (4), (7), (8) or (10) of this regulation to be of “A” Class, “B” Class or “F” Class divisions, are penetrated for the passage of electrical cables, pipes, trunks, ducts, etc., arrangements shall be made to ensure that the fire integrity of the division is not impaired.

(12) Air spaces enclosed behind ceilings, panellings or linings in accommodation spaces, service spaces and control stations, shall be divided by close fittting draught stops fitted not more than 7 metres apart.

(13) Windows and skylights to machinery spaces shall be as follows:

(a) where skylights can be opened they shall be capable of being closed from outside the space. Skylights containing glass panels shall be fitted with external shutters of steel or other equivalent material permanently attached;

(b) glass or similar materials shall not be fitted in machinery space boundaries. This does not preclude the use of wire-reinforced glass for skylights and glass in control rooms within the machinery spaces; and

(c) in skylights referred to in paragraph (a) of this sub-regulation wire-reinforced glass shall be used.

(14) Insulating materials in accommodation spaces, service spaces except domestic refrigerating compartments, control stations and machinery spaces shall be non-combustible.

(15) The surface of insulation fitted on the internal boundaries of machinery spaces of category A shall be impervious to oil or oil vapours.

(16) Within compartments used for the stowage of fish, combustible insulation shall be protected by close-fitting cladding.

(17) Notwithstanding the requirements of this Regulation, the Authority may accept “A-0" class divisions in lieu of “B-15" or “F” class divisions, having regard to the amount of combustible material used in adjacent spaces.

96. Ventilation Systems

(1) Except as provided for regulation 97(2), means shall be provided to stop fans and close main openings to ventilation systems from outside the spaces served.

(2) Resources shall be provided for closing, from a safe position, the annular spaces around funnels.

(3) Ventilation openings may be permitted in and under the doors in corridor bulkheads except that such openings shall not be permitted in and under stairway enclosure doors.

(4) The openings shall be provided only in the lower half of the door.

(5) Where such opening is in or under a door the total nett area of any such opening or openings shall not exceed 0.05 square metres.

(6) When such opening is cut in a door it shall be fitted with a grill and closing slide made of a non-combustible material.

(7) Ventilation ducts for machinery spaces of category A or galleys shall not in general pass through accommodation spaces, service spaces or control stations.

(8) Where the Authority permits this arrangement, the ducts shall be constructed of steel or equivalent material and arranged to preserve the integrity of the divisions.

(9) Ventilation ducts of accommodation spaces, service spaces or control stations shall not in general pass through machinery spaces of category A or through galleys.

(10) Where the Authority permits this arrangement, the ducts shall be constructed of steel or equivalent material and arranged to preserve the integrity of the divisions.

(11) Store rooms containing appreciable quantities of highly flammable products shall be provided with ventilation arrangements which are separate from other ventilation systems.

(12) Ventilation shall be arranged at high and low levels and inlets and outlets of ventilators shall be positioned in safe areas and fitted with spark arrestors in accordance with Regulation 14(3) of Chapter III.

(13) Ventilation systems serving machinery spaces shall be independent from systems serving other spaces.

(14) Where trunks or ducts serve spaces on both sides of “A” Class bulkheads or decks, dampers shall be fitted so as to prevent the spread of fire and smoke between compartments.

(15) Manual dampers shall be operable from both sides of the bulkhead on deck.

(16) Where the trunks or ducts with a free cross sectional area of 0.02 square metres or more pass through “A” Class bulkheads or decks, automatic self-closing dampers shall be fitted.

(17) Trunks serving compartments situated only on one side of the bulkheads shall comply with Regulation 26(2)(b).

97. Heating Installations

(1) Electric radiators shall be fixed in position and so constructed as to reduce fire risks to a minimum and no such radiator shall be fitted with an element so exposed that clothing, curtains or other similar materials can be scorched or set on fire by heat from the element.

(2) Heating by means of open fires shall not be permitted and all Heating appliances of any design shall be firmly secured with adequate protection and insulation against the risk of fire.

(3) Open flame gas appliances, except cooking stoves and water heaters, shall not be permitted.

(4) Spaces containing any such stove or water heater shall have adequate ventilation supplying combustion air and to remove fumes and possible gas leakage to a safe place.

(5) All pipes conveying gas from container to such appliance shall be of seamless steel, copper or other approved material.

(6) An automatic gas shut-off flame failure device shall be fitted on any such appliance.

98. Remote Fuel Stops

(1) Machinery driving fuel oil transfer pumps, fuel oil unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they can be stopped in the event of a fire arising in the space in which they are located.

(2) Pipes connected to any oil fuel storage, settling, or daily service tank, not being a double bottom tank, which if damaged would permit discharge of the contents, due to the gravitational head, so as to cause a fire hazard, shall be fitted with a valve or cock which shall be secured to the tank to which it is connected and be capable of being closed from a readily accessible position outside the space in which the tank is situated.

(3) In the case of an oil fuel deep tank traversed by any shaft or pipe tunnel, in addition to the valve which shall be fitted on the tank, a valve or valves may be fitted on the pipe line or lines outside such tunnel to enable safe control to be exercised in the event of fire.

99. Miscellaneous Items

(1) Exposed surfaces within accommodation spaces, service spaces, control stations, corridor and stairway enclosures and concealed surfaces behind

bulkheads, ceilings, panellings and linings in accommodation spaces, service spaces and control stations shall have low flame-spread characteristics.

(2) All exposed surfaces of fibre reinforced plastic construction within accommodation and service spaces, control stations, machinery spaces of category

(3) A and other machinery spaces of equal fire risk shall achieve the required fire resistance through the use of woven roving [more modern glass types!!!] glass, phenolic resin, additives to resin, fire retardent coatings or protection by non-combustible materials.

(4) Intumescent (*swelling*) polyester resin coatings may be used, however, solvent borne intumescent coatings are not acceptable.

(5) Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke or toxic gases or vapours.

(6) The Authority shall be satisfied that they are not of a nature to offer an undue fire hazard.

(7) Primary deck coverings within accommodation and service spaces and control stations, shall be of approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures.

(8) (a) In accommodation and service spaces and control stations, pipes penetrating “A” or “B” Class divisions shall be of approved materials having regard to the temperature such divisions are required to withstand and here the Authority permits the conveying of oil and combustible liquids through accommodation and service spaces, the pipes conveying oil or combustible liquids shall be of an approved material having regard to the fire risk.

(b) Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, inlets and other outlets which are close to the waterline and where the failure of the material in the

event of fire would give rise to danger of flooding.

(9) All waste receptacles other than those used in fish processing shall be constructed of non-combustible materials with no openings in the sides or bottom.

(10) The main and auxiliary diesel engines, of a vessel shall be fitted with suitable silencers.

(11) The silencers and exhaust pipes shall be efficiently lagged, water-cooled, or installed in such a manner that they will not create a fire risk. Exhaust lagging shall be made from or covered with a non-absorbent material so that it is impervious to oil.

(12) Every possible precaution shall be taken to avoid fuel and lubricating oil running into the bilges.

(13) Drip trays with proper means of drainage to a drain tank or save-all shall be provided under fuel tank outlets and, where possible, under engine

100. Storage of Gas Cylinders and Dangerous Materials

(1) Cylinders for compressed, liquefied or dissolved gases shall be clearly marked by means of prescribed identifying colours, have a clearly legible identification of the name and chemical formula of their contents and be properly secured.

(2) Cylinders containing flammable or other dangerous gases and empty cylinders shall be stored, properly secured, on open decks and all valves, pressure regulators and pipes leading from such cylinders shall be protected against damage.

(3) Cylinders shall be protected against excessive variations in temperature

direct rays of the sun, and accumulation of snow. However, the Authority may permit such cylinders to be stored in compartments complying with the requirements of sub-regulations (3) to (5).

(4) Spaces containing highly flammable liquids, such as volatile paints, paraffin, benzole, etc., and where permitted, liquefied gas, shall have direct access from open decks only.Pressure-adjusting devices and relief valves shall exhaust within the compartment. Where boundary bulkheads of such compartments adjoin other enclosed spaces they shall be gastight. Ventilation of the spaces shall be in accordance with regulation 96(11) and (12).

(5) Except as necessary for service within the space, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases.

(6) Where such electrical fittings are installed, they shall be to the satisfaction of the Authority for use in a flammable atmosphere.

(7) Sources of heat shall be kept clear of such spaces and “No Smoking” and “No Naked Light” notices shall be displayed in a prominent position.

(8) Separate storage shall be provided for each type of compressed gas.

(9) Compartments used for the storage of such gases shall not be used for storage of other combustible products nor for tools or objects not part of the gas distribution system.

(10) However, the Authority may relax these requirements considering the characteristics. Volume and intended use of such compressed gases.

101. Means of Escape

(1) Stairways and ladders leading to and from all accommodation spaces and in spaces in which the crew is normally employed, other than machinery spaces,

shall be so arranged as to provide ready means of escape to the open deck and thence to the survival craft. In particular in relation to these spaces:

(a) at all levels of accommodation at least two widely separate means of escape shall be provided which may include the normal means of access from each restricted space or group of spaces;

(b) (i) below the weather deck the main means of escape shall be a stairway and the second escape may be a trunk or a stairway; and,

(ii) above the weather deck the means of escape shall be stairways or doors to an open deck or a combination thereof. Where it is not practical to fit stairways or doors, one of these means of escape may be by means of an adequately sized porthole or hatch protected, where necessary, against ice accretion.

(c) exceptionally the Authority may permit only one means of escape, due regard being paid to the nature and location of spaces and to the number of persons who normally might be accommodated or employed there. The Authority will only consider reducing the number of escapes in cases where 10 persons or less are accommodated in a space;

(d) a corridor or part of a corridor from which there is only one route of escape, shall preferably not exceed 2.5 metres in length and in no case be greater than 5.0 metres in length; and

(e) the width and continuity of the means of escape shall be to the satisfaction of the Authority.

(2) Two means of escape shall be provided from every machinery space of Category A which shall be as widely separated as possible and Vertical escapes shall be by means of steel ladders.

(3) From machinery spaces other than those of Category A, escape routes shall be provided to the satisfaction of the Authority having regard to the nature and location of the space and whether persons are normally employed in that space.

(4) Lifts shall not be considered as forming one of the required means of escape.

102. Automatic Alarm and Fire Detection Systems

Where the Authority has permitted under regulation (95) a combustible construction, or where otherwise appreciable amounts of combustible materials are used on the construction of accommodation spaces, service spaces and control stations, an automatic fire alarm and detection system shall be installed in those spaces, having due regard to the size of those spaces, their arrangement and location relative to control stations as well as, where applicable, the flame spread characteristics of the installed furniture. Such installations shall be to the satisfaction of the Authority.

103. Fire Pumps

(1) The minimum number and type of fire pumps to be fitted shall be as follows:

(a) two power pumps not dependent on the main machinery for their motive power; or,

(b) one power pump not dependent on the main machinery for its motive power and one power pump which may be driven by main machinery provided that the propeller shafting can be readily disconnected or provided that a controllable pitch propeller is fitted.

(2) (a) Sanitary, bilge, ballast, general service or any other pumps may be used as fire pumps if they comply with the requirements of this chapter and

do not affect the ability to cope with pumping of the bilges; and

(b) Fire pumps shall be so connected that they cannot be used for pumping oil or other flammable liquids.

(3) Centrifugal pumps or other pumps connected to the fire main through which backflow could occur shall be fitted with non-return valves.

(4) The total capacity (Q) of main power-operated fire pumps shall be at least:

$Q = (0.15 \square L(B + D) + 2.25)^2$ cubic metres per hour

where L, B and D are in metres.

(5) Neither of the power pumps fitted shall have a capacity of less than 40% of Q.

(6) Where the main fire pumps are delivering the quantity of water required by sub-regulation (4) of this regulation through the fire main, fire hoses and nozzles, the pressure maintained at any hydrant shall not be less than 0.25 Newtons per square millimetre. (0.25 MPa or 2.5 Bar

104. Fire Mains

(1) Where more than one hydrant is required to provide the number of jets specified in regulation 105(1) a fire main shall be provided.

(2) Materials rendered ineffective by heat shall not be used for fire mains, unless adequately protected.

(3) Where fire pump delivery pressure can exceed the design working pressure of fire mains, relief valves shall be fitted.

(4) Fire mains shall have no connections other than those required for fire fighting except for the purpose of washing the deck and anchor chains or operating the chain locker bilge ejector, subject to the efficiency of the fire

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Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
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Publications: Tel: (012) 748 6053, 748 6061, 748 6065

Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 681 | 11 March Maart | 2022 | No. 46032

PART 4 OF 5

ISSN 1682-5845

fighting system being maintained.

(5) Where fire mains are not self-draining, suitable drain cocks shall be fitted where frost damage may be expected.

105. Fire Hydrants, Fire Hoses and Nozzles

(1) Fire hydrants shall be positioned so as to allow easy and quick connection of fire hoses and so that at least one jet can be directed into any part of the vessel which is normally accessible during navigation.

(2) The jet required by sub-regulation (1) of this regulation shall be from a single length of fire hose.

(3) In addition to the requirements of sub-regulation (1) of this regulation, machinery spaces of category A shall be provided with at least one fire hydrant complete with fire hose and jet orspray nozzle and this fire hydrant shall be located outside the space and near the entrance.

(4) For every required fire hydrant there shall be one fire hose and at least one spare fire hose shall be required in addition to this requirement.

(5) Single lengths of hose shall not exceed 20 metres in length.

(6) Fire hoses shall be of approved material.

(7) Each fire hose shall be provided with couplings and a dual purpose nozzle.

(8) Couplings and nozzles shall be securely connected to fire hoses to the satisfaction of the Authority.

(9) Domestic hose clamps shall not be accepted for this purpose.

(10) Except where fire hoses are permanently attached to the fire main, there shall

be complete interchangeability of fire hose couplings and nozzles.

(11) The nozzles required by sub-regulations (7) and (8) of this regulation shall be appropriate to the delivery capacity of the fire pumps fitted, but in any case shall have a diameter of not less than12 millimetres.

106. Fire Extinguishers

(1) Fire extinguishers shall be of approved types. Every fire extinguisher provided in compliance with this Chapter shall be constructed in accordance with the specifications published by the National Standards Regulator and the Authority by Marine Notice which may be up-dated from time to time.

(2) The capacity of required portable fire extinguishers (other than carbon dioxide extinguishers) shall be not more than 13.5 litres and not less than 9 litres.

(3) Other extinguisher shall not be in excess of the equivalent portability of the 13.5 litre fluid extinguisher and shall not be less than the fire-extinguishing equivalents of a 9 litre fluid extinguisher.

(4) The Authority shall determine the equivalents of fire extinguishers.

(5) Fire extinguishers containing an extinguishing medium which in the opinion of the Authority, either by itself or under expected conditions of use, gives off toxic gases in such quantities as to endanger persons shall not be permitted or shall be subject to safety measures as determined by the Authority.

(6) Normally, one of the portable fire extinguishers intended for use in any space shall be stowed near an entrance to that space.

107. Portable Fire Extinguishers and Fire Blankets in Control Stations and Accommodation and Service Spaces

(1) A sufficient number of approved portable fire extinguishers shall be provided in control stations and accommodation and service spaces to ensure that at least one extinguisher, of a suitable type, is readily available for use in any part of such spaces.

(2) The total number of extinguishers in spaces referred to in sub-regulation (1) of this regulation shall however not be less than three in vessels of less than 45 metres in length and five for vessels of 45 metres in length and over.

(3) Where portable dry powder extinguishers are provided in either accommodation and service spaces or in machinery spaces, the numbers shall not exceed 50% of the total number of extinguishers provided in either of those spaces.

(4) Every galley is to be provided with a fire blanket which is to be mounted on a bulkhead near an access doorway in a position allowing easy retrieval.

108. Fire-Extinguishing Appliances in Machinery Spaces

(1) Spaces containing oil fired boiler units, fuel oil units or internal combustion machinery used either for main propulsion or for other purposes having a total power output of not less than 375 kilowatts, shall be provided with one of the

following fixed fire extinguishing systems to the satisfaction of the Authority:

(a) a pressure water spraying installation;

(b) a fire smothering gas installation;

(c) a fire extinguishing installation using high expansion foam; or

(d) a fire extinguishing installation using vapours from low toxicity vapourising liquids.

(2) Installations referred to in sub-regulation (1) of this regulation shall be controlled from readily accessible positions outside the machinery space not likely to be inaccessible by a fire in such space or any other space.

(3) The installation shall be to the satisfaction of the Authority.

(4) Installations referred to in sub-regulation (1) of this regulation which release substances which may be hazardous to personnel shall be provided with means of preventing the accidental release of the substance into the space and with pre-release audio andvisual alarms in the machinery space warning the crew of the impending release of the harmful substance.

(5) The complete system shall be to the satisfaction of the Authority.

(6) In all machinery spaces, at least one portable fire extinguisher per 75 kW of installed main engine power shall be fitted to a maximum of 6 extinguishers.

(7) At least 50% of these extinguishers shall be of the foam type with the remainder being Dry Powder or Carbon dioxide.

(8) One portable extinguisher shall be stowed as near to the entrance of the machinery space as is practicable.

(9) The Authority may require the provision of additional portable fire extinguishers if, in the opinion of the surveyor, such extinguishers are required.

(10) Where fixed fire-extinguishing systems, not required by this Chapter are

installed, such systems shall be to the satisfaction of the Authority.

109. Fireman's Outfits

(1) Vessels over 35 metres in length shall be provided with at least two fireman's outfits, stored as to be accessible and ready for use. The fireman's outfit shall consist of:

(a) a breathing apparatus approved by the Authority; and

(b) personal equipment, approved by the Authority, comprising:

(i) protective clothing of material to protect the skin of the entire body from the heat radiating from a fire and from burns and scalding by steam. The outer surface shall be water resistant;

(ii) boots and gloves of rubber or other electrically non-conducting material;

(iii) a rigid helmet providing effective protection against impact;

(iv) a portable self-contained battery-operated safety lamp of the lantern type capable of functioning efficiently for at least three hours;

(v) a firemen's axe with an electrically insulated handle; and,

(vi) a fire resistant life-line.

110. Availability of Fire Appliances

(1) Fire appliances carried in every ship shall be maintained in good working order and shall be kept available for immediate use at all times.

(2) All moveable fire appliances, other than firemen's outfits, carried in compliance with this Chapter shall be stowed where they will be readily accessible from the spaces in which they are intended to be used, and, in particular, one of the portable fire extinguishers intended for use in any space shall be stowed near the entrance to that space.

111. Equivalents, Approval of Types and Servicing of Fire Appliances

(1) Where this Chapter requires that a particular fitting, material, appliance or apparatus, or type thereof, be fitted or carried in a ship, or that a particular provision be made, the Authority may allow any other fitting, material, appliance, apparatus or type thereof, to be fitted or carried, or any other provision to be made in the vessel if satisfied that such other fitting, material, appliance, apparatus or type thereof, or provision, is at least as effective as that required by this Chapter.

(2) The Authority may approve any type of fire appliance for use on a vessel belonging to the Republic which in the opinion of the Authority complies with the requirements of these Regulations.

(3) The number, type and position of portable and fixed fire appliances carried on vessels shall be approved by the Authority.

(4) All fire-fighting appliances shall be serviced at intervals not exceeding 12 months by approved service stations as published by the Authority in Marine Notices which may be updated from time to time.

112. Use of Halon

(1) Halon or other fire fighting mediums containing Chloro-Fluoro- Carbons

(CFC's)_shall not be used as an extinguishing medium on board vessels.

(2) Fire extinguisher standards and the servicing standards are determined by NRS or SAQCC.

PART B - FIRE SAFETY MEASURES IN VESSELS OF 60 METRES IN LENGTH AND OVER

113. General

(1) One of the following methods of protection shall be adopted in accommodation and service spaces:

(a) *Methods IF* - The construction of all internal divisional bulkheads of non-combustible "B" or "C" Class divisions generally without the installation of a detection or sprinkler system in the accommodation and services spaces;

(b) *Methods IIF* - The fitting of an automatic sprinkler and fire alarm system for the detection and extinction of fire in all spaces in which fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheads; or

(c) *Method IIIF* - The fitting of an automatic fire alarm and detection system in all spaces in which a fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheads, except that in no case shall the area of any accommodation space or spaces bounded by an "A" or "B" Class division exceed 50 square metres. However, the Authority may increase this area for public spaces.

(2) The requirements for the use of non-combustible materials in construction and insulation of the boundary bulkheads of machinery spaces, control stations, etc., and the protection of stairway enclosures and corridors shall be common to all three methods.

114. Structure

(1) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material except as otherwise specified in sub-regulation (4) of this regulation.

(2) The insulation of aluminium alloy components of “A” or “B” Class divisions, except structures which, in the opinion of the Authority, are non-load bearing, shall be such that the temperature of the structural core does not rise more than 200 degrees celsius above the ambient temperature at any time during the applicable fire exposure to the standard fire test.

(3) Special attention shall be given to the insulation of aluminium alloy components of columns, stanchions and other structural members required to support survival craft stowage, launching and embarkation areas, and “A” and “B” Class divisions, to ensure:

(a) that for such members supporting survival craft areas and “A” Class divisions the temperature rise limitation specified in sub-regulation (2) of this regulation shall apply at the end of one hour; and

(b) that for such members required to support “B” Class divisions, the temperature rise limitation specified in sub-regulation (2) of this regulation shall apply at the end of one half-hour.

(4) Crowns and casings of machinery spaces of Category A shall be of steel construction adequately insulated and any openings therein shall be suitably

arranged and protected to prevent the spread of fire.

115. Bulkheads within the Accommodation and Service Spaces

(1) Within the accommodation and service spaces, all bulkheads required to be "B" Class divisions shall extend from deck to deck and to the shell or other boundaries, unless continuous "B" Class ceilings or linings, or both, are fitted on both sides of the bulkheads in which case the bulkhead may terminate at the continuous ceiling or lining.

(2) ***Method IF***. All bulkheads not required by this or other Regulations of this Part to be "A" or "B" Class divisions shall be at least "C" Class divisions.

(3) ***Methods IIF***. There shall be no restriction on the construction of bulkheads not required by this or other Regulations of this Part to be "A" or "B" Class divisions except in individual cases where "C" Class bulkheads are required in accordance with Table 1 in regulation 118.

(4) ***Method IIIF***. There shall be no restriction on the construction of bulkheads not required by this or other Regulations of this Part to be "A" or "B" Class divisions. In no case shall the area of any accommodation space or spaces bounded by a continuous "A" or "B" Class division exceed 50 square metres, except in individual cases where "C" Class bulkheads are required in accordance with Table 1 in regulation 118. However, the Authority may increase this area for public spaces.

116. Protection of Stairways and Lift Trunks in Accommodation Spaces, Service Spaces and Control Stations

(1) Stairways which penetrate only a single deck shall be protected at least at

one level by at least “B-O” Class divisions and self-closing doors.

(2) Lifts which penetrate only a single deck shall be enclosed by “A-O” Class divisions with steel doors at both levels.

(3) Stairways and lift trunks which penetrate more than a single deck shall be enclosed by at least “A-O” Class divisions and protected by self-closing [steel!!!] doors at all levels.

(4) All stairways shall be of steel frame construction except where the Authority permits the use of other equivalent material.

117. Doors in Fire-Resistant Divisions

(1) Doors shall have resistance to fire as far as practicable, equivalent to the division in which they are fitted.

(2) Doors and door frames in “A” Class divisions shall be constructed of steel.

(3) Doors in “B” Class divisions shall be non-combustible.

(4) Doors fitted in boundary bulkheads of machinery spaces of Category A shall be self-closing and reasonably gas-tight.

(5) The Authority may permit the use of combustible materials in doors separating cabins from the individual interior sanitary accommodation, such as showers, if constructed according to Method IF.

(6) Doors required to be self-closing shall not be fitted with hold-back hooks. However, hold-back arrangements fitted with remote release fittings of the fail-safe type may be used.

(7) Ventilation openings may be permitted in and under the doors in corridor bulkheads except that such openings shall not be permitted in and under

stairway enclosure doors.

(8) The openings referred to in sub-regulation (7) of this regulation shall be provided only in the lower half of a door ans where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05 square metres.

(9) When such opening is cut in a door it shall be fitted with a grill and closing slide made of non-combustible material.

(10) Watertight doors need not be insulated.

118. Fire Integrity of Bulkheads and Decks

(1) In addition to the specific provisions for fire integrity of bulkheads and decks required elsewhere in this Part the minimum fire integrity of bulkheads and decks shall be as prescribed in Table 1 and Table 2 of this regulation.

(2) The following requirements shall govern application of the Tables:

(a) Tables 1 and 2 shall apply respectively to bulkheads and decks separating adjacent spaces; and

(b) for determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk as follows:

(i) ***Control Stations (1)***

Spaces containing emergency sources of power and lighting.

Wheelhouse and chartroom.

Spaces containing the vessel's radio equipment.

Fire-extinguishing rooms, fire-control rooms and fire-recording stations.Control room for propulsion machinery when

located outside the machinery space.

Spaces containing centralized fire alarm equipment.

(ii) ***Corridors (2)***

Corridors and lobbies.

(iii) *Accommodation Spaces (3)*

Spaces as defined in Regulation 2(3) and 2(35) excluding corridors.

(iv) ***Stairways (4)***

Interior stairways, lifts and escalators other than those wholly contained within the machinery spaces and enclosures thereto. In this connexion, a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door.

(v) ***Service Spaces of Low Fire Risk (5)***

Lockers and store-rooms having areas of less than 2 square metres, drying rooms and laundries.

(vi) ***Machinery Spaces of Category A (6)***

Spaces as defined in Regulation 2(44).

(vii) ***Other Machinery Spaces (7)***

Spaces as defined in Regulation 2(45) including fishmeal processing spaces, but excluding machinery spaces of Category A.

(viii) ***Cargo Spaces (8)***

All spaces used for cargo [fish], including cargo oil [“fish oil”] tanks, and trunk ways and hatchways to such spaces.

(ix) ***Service Spaces of High Fire Risk (9)***

Galleys, pantries containing cooking appliances, paint rooms, lamp rooms, lockers and store-rooms having area of 2 square metres or more, and workshops other than those forming part of the machinery spaces.

(x) ***Open Decks (10)***

Open deck spaces and enclosed promenades, spaces for processing fish in the raw state, fish washing spaces and similar

spaces containing no fire risk. The air spaces outside superstructures and deckhouses.

The title of each category is intended to be typical rather than restrictive. The number in parenthesis following each category refers to the applicable column or row in the following tables.

Spaces	_1	_2	_3	_4	_5	_6	_7	_8	_9	_10
Control Stations (1)	A-0[e]	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	*
Corridors (2)		C	B-0	B-0 A-0[c]	B-0	A-60	A-0	A-0	A-0	*
Accommodation Spaces (3)			C	B-0 A-0[c]	B-0	A-60	A-0	A-0	A-0	*
Stairways (4)				B-0 A-0[c]	B-0 A-0[c]	A-60	A-0	A-0	A-0	*
Service Spaces of Low Fire Risk (5)					C	A-60	A-0	A-0	A-0	*
Machinery Spaces of Category A (6)						*	A-0	A-0	A-60	*
Other Machinery Spaces (7)							A-0[d]	A-0	A-0	*
Cargo Spaces (8)								*	A-0	*
Service Spaces of High Fire Risk (9)									A-0[d]	*
Open Decks (10)										-

TABLE 1- FIRE INTEGRITY OF BULKHEADS SEPARATING ADJACENT SPACES

Spaces Space **Below Above**	**_1**	**_2**	**_3**	**_4**	**_5**	**_6**	**_7**	**_8**	**_9**	**_10**
Control Stations (1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	*
Corridors (2)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*
Accommodation Spaces (3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*
Stairways (4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	A-0	*
Service Spaces of Low Fire Risk (5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*
Machinery Spaces of Category A (6)	A-60	A-60	A-60	A-60	A-60	*	A-60	A-30	A-60	*
Other Machinery Spaces (7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*
Cargo Spaces (8)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	*	A-0	*
Service Spaces of High Fire Risk (9)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0[(d)]	*
Open Decks (10)	*	*	*	*	*	*	*	*	*	-

TABLE 2 - FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES

Notes: *To be applied to both Tables 1 and 2, as appropriate.*

(a) *No special requirements are imposed upon these bulkheads in Methods IIF and IIIF fire protection.*

(b) *In case of Method IIIF "B" Class bulkheads of "B-0" rating shall be provided between spaces or groups of spaces of 50 square metres and over in area.*

(c) *For clarification as to which applies see Regulations 17 and 18.*

(d) *Where spaces are of the same numerical category and superscript (d) appears, a bulkhead or deck of the rating shown in the Tables is only*

required when the adjacent spaces are for a different purpose, e.g. in category (9). A galley next to a galley does not require a bulkhead but a galley next to a paint room requires an "A-0" bulkhead.

(e) Bulkheads separating the wheelhouse, chartroom and radio room from each other may be "B-0" rating.

(f) Fire insulation need not fitted if the machinery space in category (7) in the opinion of the Authority has little or no fire risk.

** Where an asterisk appears in the Tables the division is required to be of steel or equivalent material but is not required to be of "A" Class standard.*

(3) Continuous "B" Class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division.

(4) Windows and skylights to machinery spaces shall be as follows:

(a) where skylights can be opened they shall be capable of being closed from outside the space. Skylights containing panels shall be fitted with external shutters of steel or other equivalent material permanently attached;

(b) glass or similar materials shall not be fitted in machinery space boundaries. This does not preclude the use of wire-reinforced glass for skylights and glass in control rooms within the machinery spaces; and

(c) in skylights referred to in paragraph (a) of this sub-regulation wire-reinforced glass shall be used.

(5) External boundaries which are required by regulation 114(1) to be of steel or equivalent material may be pierced for the fitting of windows and side-scuttles provided that there is no requirement elsewhere in this Part for such boundaries to have "A" Class integrity.

(6) Similarly, in such boundaries which are not required to have "A" Class

integrity, doors may be of materials to the satisfaction of the Authority.

119. Details of Construction

(1) ***Method IF***. In accommodation and service spaces and control stations all linings, draught stops, ceilings and their associated grounds shall be of non-combustible materials.

(2) ***Methods IIF and IIIF***. In corridors and stairways enclosures serving accommodation and service spaces and control stations, ceilings, linings, draught stops and their associated grounds shall be of non-combustible materials.

(3) Methods IF, IIF and IIIF

(a) Except in cargo spaces or refrigerated compartments of service spaces insulating materials shall be non-combustible. Vapour barriers and adhesives used in conjunction with insulation as well as the insulation of pipe fittings, for cold service systems need not be of non-combustible material, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have qualities of resistance to the propagation of flame to the satisfaction of the Authority. In spaces where penetration of oil products is possible, the surface of insulation shall be impervious to oil or oil vapour;

(b) where non-combustible bulkheads, linings and ceilings are fitted in accommodation and service spaces they may have a combustible veneer not exceeding 2.0 millimetres in thickness within any such space except corridors, stairway enclosures and control stations, where it shall not exceed 1.5 millimetres in thickness; and

(c) air spaces enclosed behind ceilings, panellings, or linings shall be divided by close-fitting draught stops spaced not more than 14 metres apart. In the vertical direction, such spaces, including those behind

linings of stairways, trunks, etc., shall be closed at each deck.

120. Ventilation Systems

(1) (a) Ventilation ducts shall be of non-combustible material;

(b) short ducts, however, not generally exceeding 2 metres in length and with a cross section not exceeding 0.02 square metres need not be non-combustible, subject to the following conditions:

(i) these ducts shall be of a material which, to the satisfaction of the Authority, has a low fire risk;

(ii) they may only be used at the end of the ventilation device; and

(iii) they shall not be situated less than 600 millimetres, measured along the duct, from an opening in an "A" or "B" Class division including continuous "B" Class ceilings.

(c) where the ventilation ducts with a free cross-sectional area exceeding 0.02 square metres pass through "A" Class bulkheads or decks, the opening shall be lined with a steel sheet unless the ducts passing through the bulkheads or decks are of steel in the vicinity of passage through the deck or bulkhead and comply in that portion of the duct with the following:

(i) for ducts with a free cross-sectional area exceeding 0.02 square metres the sleeves shall have a thickness of at least 3 millimetres and a length of at least 900 millimetres. When passing through bulkheads this length shall preferably be divided evenly on each side of the bulkhead. Ducts with a free cross-sectional area exceeding 0.02 square metres shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the bulkhead or deck through which the duct passes. Equivalent penetration protection may be provided to the satisfaction of the Authority; and

(ii) ducts with a free cross-sectional area exceeding 0.075 square metres shall be fitted with fire dampers in addition to the requirements of paragraph (b)(i). The fire damper shall operate automatically but shall also be capable of being closed manually from both sides of the bulkhead or deck. The damper shall be provided with an indicator which shows whether the damper is open or closed. Fire dampers are not required, however, where ducts pass through spaces surrounded by "A" Class divisions, without serving those spaces, provided those ducts have the same fire integrity as the bulkheads which they penetrate.

(d) Ventilation ducts for machinery spaces of Category A or galleys shall not in general pass through accommodation spaces, service spaces or control stations.

(e) Where the Authority permits arrangement referred to in paragraph (c) of this sub-regulation , the ducts shall be constructed of steel or equivalent material and so arranged as to preserve the integrity of the divisions.

(f) Ventilation ducts of accommodation spaces, service spaces or control stations shall not in general pass through machinery spaces of Category A or through galleys.

(g) Where the Authority permits arrangement referred to in paragraph (e) of this sub-regulation the ducts shall be constructed of steel of equivalent material and so arranged as to preserve the integrity of the divisions.

(h) Where ventilation ducts with a free cross-sectional area exceeding 0.02 square metres pass through "B" Class bulkheads the openings shall be lined with steel sheet sleeves of at least 900 millimetres in length, unless the ducts are of steel for this length in way of the bulkheads.

(i) When passing through a "B" Class bulkhead this length referred to in paragraph (g) of this sub-regulation shall preferably be divided evenly

on each side of the bulkhead.

(j) Such measures as are practicable shall be taken in respect of control stations outside machinery spaces in order to ensure that ventilation, visibility and freedom from smoke are maintained, so that in the event of fire the machinery and equipment contained therein may be supervised and continue to function effectively.

(j) Alternative and separate means of air supply shall be provided; air inlets of the two sources of supply shall be so disposed that the risk of both inlets drawing in smoke simultaneously is minimized.

(k) At the discretion of the Authority, such requirements need not apply to control stations situated on, and opening on to, an open deck, or where local closing arrangements are equally effective.

(l) Where they pass through accommodation space or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed of "A" Class divisions. Each exhaust duct shall be fitted with:

(i) a grease trap readily removable for cleaning:

(ii) a fire damper located in the lower end of the duct;

(iii) arrangements, operable from within the galley, for shutting off the exhaust fan; and

(iv) fixed means for extinguishing a fire within the duct, except where the Authority considers such fittings impractical in a vessel of less than 75 metres in length.

(3) The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated.

(4) Power ventilation of accommodation spaces, service spaces, control stations and machinery spaces shall be capable of being stopped from an easily

accessible position outside the space being served.

(5) The position referred to sub-regulation (3) of this regulation should not be readily cut off in the event of a fire in the spaces served.

(6) The means provided for stopping the power ventilation of the machinery spaces shall be entirely separate from the means provided for stopping ventilation of other spaces.

(6) Means shall be provided for closing from a safe position, the annular spaces around funnels.

(7) Ventilation systems serving machinery spaces shall be independent of systems serving other spaces.

(8) Store-rooms containing appreciable quantities of highly flammable products shall be provided with ventilation arrangements which are separate from other ventilation systems.

(9) Ventilation shall be arranged at high and low levels and the inlets and outlets of ventilators shall be positioned in safe areas and fitted with spark arresters in accordance with regulation 40(3).

121. Heating Installations

(1) Electric radiators shall be fixed in position and so constructed as to reduce fire risks to a minimum.

(2) No such radiator shall be fitted with an element so exposed that clothing, curtains or other similar materials can be scorched or set on fire by heat from the element.

(3) Heating by means of open fires shall not be permitted. All Heating appliances

of any design shall be firmly secured with adequate protection and insulation against the risk of fire.

(4) Open flame gas appliances, except cooking stoves and water heaters, shall not be permitted.

(5) Spaces containing any such stove or water heater shall have adequate ventilation supplying combustion air and to remove fumes and possible gas leakage to a safe place.

(6) All pipes conveying gas from container to such appliance shall be of seamless steel, copper or other approved material.

(7) An automatic gas shut-off flame failure device shall be fitted on any such appliance

(8) Where gaseous fuel is used for domestic purposes, the arrangements, storage, distribution and use of the fuel shall be to the satisfaction of the Authority and in accordance with Regulation 30.

121. Remote Fuel Stops

(1) Machinery driving fuel oil transfer pumps, fuel oil unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the machinery space concerned so that they can be stopped in the event of a fire arising in the space in which they are located.

(2) Pipes connected to any oil fuel storage, settling, or daily service tank, not being a double bottom tank, which if damaged would permit discharge of the contents, due to the gravitational head, so as to cause a fire hazard, shall be fitted with a valve or cock which shall be secured to the tank to which it is connected and be capable of being closed from a readily accessible position

outside the space in which the tank is situated.

(3) In the case of an oil fuel deep tank traversed by any shaft or pipe tunnel, in addition to the valve which shall be fitted on the tank, a valve or valves may be fitted on the pipe line or lines outside of such tunnel to enable safe control to be exercised in the event of fire.

122. Miscellaneous Items

(1) Exposed surfaces in corridors and stairways enclosures and surfaces including grounds in concealed or inaccessible spaces in accommodation and service spaces and control stations shall have low flame-spread characteristics.

(2) Exposed surfaces of ceilings in accommodation and service spaces and control stations shall have low flame-spread characteristics.

(3) Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke or toxic gases or vapours.

(4) The Authority shall be satisfied that they are not of a nature to offer an undue fire hazard.

(5) Primary deck coverings within accommodation and service spaces and control stations, shall be of approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures.

(6) Where “A” or “B” Class divisions are penetrated for the passage of electrical cables, pipes, trunks, ducts, etc., or for the fitting of ventilation terminals, lighting fixtures and similar devices, arrangements shall be made to ensure that the fire integrity of the divisions is not impaired.

(7) In accommodation and service spaces and control stations, pipes

penetrating “A” or “B” Class divisions shall be of approved materials having regard to the temperature such divisions are required to withstand.

(8) Where the Authority permits the conveying of oil and combustible liquids through accommodation and service spaces, the pipes conveying oil or combustible liquids shall be of an approved material having regard to the fire risk.

(9) Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.

(10) All waste receptacles other than those used in fish processing shall be constructed of non-combustible materials with no openings in the sides or bottom.

(11) Every possible precaution shall be taken to avoid fuel and lubricating oil running into the bilges.

(12) Drip trays with proper means of drainage to a drain tank or save-all shall be provided under fuel tank outlets and, where possible, under engines.

(13) Within compartments used for stowage of fish, combustible insulation shall be protected by close-fitting cladding.

123. Storage of Gas Cylinders and Dangerous Materials

(1) Cylinders for compressed, liquefied or dissolved gases shall be clearly marked by means of prescribed identifying colours, have a clearly legible identification of the name and chemical formula of their contents and be properly secured.

(2) (a) Cylinders containing flammable or other dangerous gases and empty cylinders shall be stored, properly secured, on open decks and all valves,

pressure regulators and pipes leading from such cylinders shall be protected against damage;

(b) Cylinders shall be protected against excessive variations in temperature direct rays of the sun, and accumulation of snow; and

(c) However, the Authority may permit such cylinders to be stored in compartments complying with the requirements of sub-regulations (3) to (5).

(3) (a) Spaces containing highly flammable liquids, such as volatile paints, paraffin, benzole, etc., and where permitted, liquefied gas, shall have direct access from open decks only;

(b) Pressure-adjusting devices and relief valves shall exhaust within the compartment;

(c) Where boundary bulkheads of such compartments adjoin other enclosed spaces they shall be gastight; and

(d) Ventilation of such spaces shall be in accordance with Regulation 120(9).

(4) (a) Except as necessary for service within the space, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases;

(b) Where such electrical fittings are installed, they shall be to the satisfaction of the Authority for use in a flammable atmosphere;

(c) Sources of heat shall be kept clear of such spaces and “No Smoking” and “No Naked Light” notices shall be displayed in a prominent position.

(5) (a) Separate storage shall be provided for each type of compressed gas;

(b) Compartments used for the storage of such gases shall not be used for storage of other combustible products nor for tools or objects not part of the gas distribution system;

(c) However, the Authority may relax these requirements considering the characteristics; and

(d) Volume and intended use of such compressed gases.

124. Means of Escape

(1) Stairways and ladders leading to and from all accommodation spaces and in spaces in which the crew is normally employed, other than machinery spaces, shall be so arranged as to provide ready means of escape to the open deck and thence to the survival craft. In particular in relation to these spaces:

(a) at all levels of accommodation at least two widely separate means of escape shall be provided which may include the normal means of access from each restricted space or group of spaces;

(b) (i) below the weather deck the main means of escape shall be a stairway and the second escape may be a trunk or a stairway; and

(ii) above the weather deck the means of escape shall be stairways or doors to an open deck or a combination thereof. Where it is not practical to fit stairways or doors, one of these means of escape may be by means of an adequately sized porthole or hatch protected, where necessary, against ice accretion;

(c) exceptionally the Authority may permit only one means of escape, due regard being paid to the nature and location of spaces and to the

number of persons who normally might be accommodated or employed there. The Authority will only consider reducing the number of escapes in cases where 10 persons or less are accommodated in a space;

(d) a corridor or part of a corridor from which there is only one route of escape, shall not exceed 7 metres in length; and

(e) the width and continuity of the means of escape shall be to the satisfaction of the Authority.

(2) Two means of escape shall be provided from every machinery space of Category A by one of the following means:

(a) two sets of steel ladders as widely separated as possible leading to doors in the upper part of the space similarly separated and from which access is provided to the open deck.In general, one of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space. However, the Authority may not require such shelter if, due to special arrangements or dimensions of the machinery space, a safe escape route from the lower part of this space is provided. This shelter shall be of steel, insulated, where necessary, to the satisfaction of the Authority and be provided with a self-closing steel door at the lower end; or

(b) one steel ladder leading to a door in the upper part of the space from which access is provided to the open deck and additionally, in the lower part of the space and in a position well separated from the ladder referred to, a steel door capable of being operated from each side and which provides access to a safe escape route from the lower part of the space to the open deck.

(3) From machinery spaces other than those of Category A, escape routes shall be provided to the satisfaction of the Authority having regard to the nature and location of the space and whether persons are normally employed in that space.

(4) Lifts shall not be considered as forming one of the required means of escape.

125. Automatic Sprinkler and Fire Alarm and Fire Detection Systems (Method IIF)

(1) In vessels in which method IIF is adopted an automatic sprinkler and fire alarm system of a approved type and complying with the requirements of this Regulation shall be installed and so arranged as to protect accommodation spaces and service spaces except spaces which afford no substantial fire risks, such as void spaces and sanitary spaces.

(2) (a)The system shall be capable of immediate operation at all times and no action by the crew shall be necessary to set it in operation;

(b)It shall be of the wet pipe type but small exposed sections may be of the dry pipe type where in the opinion of the Authority this is a necessary precaution;

(c)Any parts of the system which may be subjected to freezing temperatures in service shall be suitably protected against freezing; and

(d) It shall be kept charged at the necessary pressure and shall have provision for a continuous supply of water as required in sub-regulation 6(b).

(3) (a) Each section of sprinklers shall include means for giving a visible and audible alarm signal automatically at one or more indicating units whenever any sprinkler comes into operation.

(b) Such units shall indicate in which section served by the system, fire has occurred and shall be centralized in the wheelhouse and in addition, visible and audible alarms from the unit shall be placed in a position other than in the wheelhouse, so as to ensure that the

indication of fire is immediately received by the crew.

(c) Such an alarm system shall be so constructed as to indicate if any fault occurs in the system.

(4) (a) Sprinklers shall be grouped into separate sections, each of which shall contain not more than 200 sprinklers.

(b) Each section of sprinklers shall be capable of being isolated by one stop valve only. The stop valve in each section shall be readily accessible and its location shall be clearly and permanently indicated. Means shall be provided to prevent the operation of the stop valves by any unauthorized person.

(c) A gauge indicating the pressure in the system shall be provided at each section stop valve and at a central station.

(d) The sprinklers shall be resistant to corrosion. In accommodation and service spaces the sprinklers shall come into operation within the temperature range of 68 degrees celsius and 79 degrees celsius, except that in location such as drying rooms, where high ambient temperatures might be expected, the operating temperature may be increased by not more than 30 degrees celsius above the maximum deck head temperature.

(e) A list or plan shall be displayed at each indicating unit showing the spaces covered and the location of the zone in respect of each section. Suitable instructions for testing and maintenance shall be available.

(4) Sprinklers shall be placed in an overhead position and spaced in a suitable pattern to maintain an average application rate of not less than 5 litres per square metre per minute over the nominal area covered by the sprinklers. Alternatively, the Authority may permit the use of sprinklers providing such quantity of water suitably distributed as has been shown to the satisfaction of the Authority to be not less effective.

(5) (a) A pressure tank having a volume equal to at least twice that of the charge of water specified in this sub-paragraph shall be provided. The tank shall contain a standing charge of fresh water, equivalent to the amount of water which would be discharged in one minute by the pump referred to in sub-regulation (6)(b), and the arrangements shall provide for maintaining such air pressure in the tank as to ensure that, where the standing charge of fresh water in the tank has been used, the pressure will be not less than the working pressure of the sprinkler, plus the pressure due to a head of water measured from the bottom of the tank to the highest sprinkler in the system. Suitable means of replenishing the air under pressure and of replenishing the fresh water charge in the tank shall be provided. A glass gauge shall be provided to indicate the correct level of the water in the tank.

(b) Means shall be provided to prevent the passage of sea-water into the tank.

(6) (a) An independent power pump shall be provided solely for the purpose of continuing automatically the discharge of water from the sprinklers. The pump shall be brought into action automatically by the pressure drop in the system before the standing fresh water charge in the pressure tank is completely exhausted.

(b) The pump and the piping system shall be capable of maintaining the necessary pressure at the level of the highest sprinkler to ensure a continuous output of water sufficient for the simultaneous coverage of the maximum area separated by fire-resisting bulkheads of “A” and “B” Class divisions or an area of 280 square metres which-ever is the less at the application rate specified in sub-regulation (4).

(c) The pump shall have fitted on the delivery side a test valve with a short open-ended discharge pipe. The effective area through the valve and pipe shall be adequate to permit the release of the required pump output while maintaining the pressure in the system specified in sub-regulation(5)(a).

(d) The sea inlet to the pump shall wherever possible be in the space containing the pump and shall be so arranged that when the vessel is afloat it will not be necessary to shut off the supply of sea-water to the pump for any purpose other than the inspection or repair of the pump.

(4) The sprinkler pump and tank shall be situated in a position reasonably remote from any machinery space of Category A and shall not be situated in any space required to be protected by the sprinkler system.

(5) (a) There shall not be less than two sources of power supply for the sea-water pump and the automatic fire alarm and fire detection system. If the pump is electrically driven it shall be connected to the main source of electrical power, which shall be capable of being supplied by at least two generators.

(b) The feeders shall be arranged so as to avoid galleys, machinery spaces and other enclosed spaces of high fire risk except in so far as it is necessary to reach the appropriate switchboard. One of the sources of power supply for the fire detection system shall be an emergency source. Where one of the sources of power for the pump is an internal combustion-type engine it shall, in addition to complying with the

provisions of sub-regulation (7), be so situated that a fire in any protected space will not affect the air supply to that engine.

(6) The sprinkler system shall have a connection from the vessel's fire main by way of a lockable screw-down non-return valve at the connexion which will prevent a backflow from the sprinkler system to the fire main.

(7) (a) A test valve shall be provided for testing the automatic alarm for each section of sprinklers by a discharge of water equivalent to the operation of one sprinkler. The test valve for each section shall be situated near the stop valve for that section.

(b) Means shall be provided for testing the automatic operation of the pump on reduction of pressure in the system.

(c) Switches shall be provided at one of the indicating positions referred to in sub-regulation 2(b) which will enable the alarm and the indicators for each section of sprinklers to be tested.

(8) Spare sprinkler heads shall be provided for each section of sprinklers to the satisfaction of the Authority.

126. Automatic Fire Alarm and Fire Detection Systems (Method IIIF)

(1) In vessels in which Method IIIF is adopted an automatic fire alarm and fire detection system of an approved type and complying with the requirements of this regulation shall be installed and so arranged as to detect the presence of fire in all accommodation spaces and service spaces except spaces which afford no substantial fire risk, such as void spaces and sanitary spaces.

(2) (a) The system shall be capable of immediate operation at all times

and no action of the crew shall be necessary to set it in operation.

(b) Each section of detectors shall include means for giving a visible and audible alarm signal automatically at one or more indicating units whenever any detector comes into operation.

(c) Units referred to in sub-paragraph (b) of this sub-regulation shall indicate in which section served by the system a fire has occurred and shall be centralized on the wheelhouse and such other positions as will ensure that any alarm from the system is immediately received by the crew.

(d) Additionally, arrangements shall be provided to ensure that an alarm is sounded on the deck on which the fire has been detected and such an alarm and detection system shall be so constructed as to indicate if any fault occurs in the system.

(3) (a) Detectors shall be grouped into separate sections, each covering not more than 50 rooms served by such a system and containing not more than 100 detectors; and

(b) Detectors shall be zoned to indicate on which deck a fire has occurred.

(4) (a) The system shall be operated by an abnormal air temperature, by an abnormal concentration of smoke or by other factors indicative of incipient fire in any one of the spaces to be protected;

(b) Systems which are sensitive to air temperature shall not operate at less than 54 degrees Celsius and shall operate at a temperature not greater than 78 degrees Celsius when the temperature increase to those levels is not more than 1 degree Celsius per minute;

(c) At the discretion of the Authority the permissible temperature of operation may be increased to 30 degrees Celsius above the maximum deckhead temperature in drying rooms and similar places of a normally high ambient temperature;

(d) Systems which are sensitive to smoke concentration shall operate on the reduction of the intensity of a transmitted light beam by an amount to be determined by the Authority;

(e) Other equally effective methods of operation may be accepted at the discretion of the Authority;and

(f) The detection system shall not be used for any purpose other than fire detection.

(5) (a) The detectors:

(i) may be arranged to operate the alarm by the opening or closing of contacts or by other appropriate methods;

(ii) shall be fitted in an overhead position and shall be suitably protected against impact and physical damage;

(iii) shall be suitable for use in a marine atmosphere ;and

(iv) shall be placed in an open position clear of beams and other objects likely to obstruct the flow of hot gases or smoke to the sensitive element.

(b) Detectors operated by the closing of contacts shall be of the sealed contact type and the circuit shall be continuously monitored to indicate fault conditions.

(6) (a) At least one detector shall be installed in each space where detection facilities are required and there shall be not less than one detector for each 37 square metres of deck area approximately.

(b) In large spaces the detectors shall be arranged in a regular pattern so that no detector is more than 9 metres from another detector or more than 4.5 metres from a bulkhead.

(7) (a) There shall be not less than two sources of power supply for the electrical equipment used in the operation of the fire alarm and fire detection system, one of which shall be an emergency source.

(b) The supply shall be provided by separate feeders reserved solely for that purpose.

(c) feeders shall run to a change-over switch situated in the control station for the fire detection system.

(d) The wiring system shall be so arranged as to avoid galleys, machinery spaces and other enclosed spaces having a high fire risk except in so far as it is necessary to provide for fire detection in such spaces or to reach the appropriate switchboard.

(8) (a) A list or plan shall be displayed adjacent to each indicating unit showing the spaces covered and the location of the zone in respect of each system and suitable instructions for testing and maintenance shall be available.

(b) Provision shall be made for testing the correct operation of the detectors and the indicating units by supplying means for applying hot air or smoke at detector positions.

(9) Spare detector heads shall be provided for each section of detectors to the satisfaction of the Authority.

127. Fixed Fire-Extinguishing Arrangements in Holds and Spaces of High Fire Risk

Holds and spaces of high fire risk shall be protected by a fixed gas fire-extinguishing system or by a fire-extinguishing system which gives equivalent protection, to the satisfaction of the Authority.

128. Fire Pumps

(1) At least two fire pumps shall be provided.

(2) (a) If a fire in any one compartment could put all the fire pumps out of action, there shall be an alternative means of providing water for fire fighting.

(b) This alternative means shall be a fixed emergency fire pump independently driven.

(c) The emergency fire pump shall be capable of supplying two jets of water to the satisfaction of the Authority.

(3) (a) The fire pumps, other than the emergency pump shall be capable of delivering for fire-fighting purposes a quantity of water at a minimum pressure of 0.25 Newtons per square millimetre, with a total capacity (Q) of at least:

$$Q = (0.15 \square L(B + D) + 2.25)^2 \text{ cubic metres per hour}$$

where L, B and D are in metres.

(0.25 MPa or 2.5Bar)

However, the total required capacity of the fire pumps need not exceed 180 cubic metres per hour;

(b) Each of the required fire pumps other than any emergency pump shall have a capacity not less than 40 per cent of the total capacity of fire pumps required by paragraph (a) and shall in any event be capable of delivering at least the jets of water required by Rregulation 128(2)(a);

(c) These fire pumps shall be capable of supplying the fire main systems under the required conditions; and

(d) Where more than two pumps are installed the capacity of such additional pumps shall be to the satisfaction of the Authority.

(4) (a) Fire pumps shall be independently driven power pumps and sanitary, ballast, bilge or general service pumps may be accepted as fire pumps, provided that they are not used for pumping oil or oily water;

(b) Relief valves shall be provided in conjunction with all fire pumps if the pumps are capable of developing a pressure exceeding the design pressure of the water service pipes, hydrants and hoses;

(c) Valves referred to in paragraph (b) of this sub-regulation shall be so placed and adjusted as to prevent excessive pressure in any of the fire main systems;

(d) Emergency power-operated fire pumps shall be independently driven self-contained pumps either with their own diesel engine prime mover and fuel supply fitted in an accessible position outside the compartment which contains the main fire pumps, or be driven by a self-contained generator, which may be the emergency generator referred to in regulation 87 of sufficient capacity and which is positioned in a safe place outside the engine room and preferably above the working deck;

(e) The emergency fire pump shall be capable of operating for a period of at least 3 hours; and

(f) Emergency fire pumps, sea-suction valves and other necessary valves shall be operable from outside compartments containing main fire pumps in a position not likely to be cut off by a fire in those compartments.

129. Fire Mains

(1) (a) Where more than one hydrant is required to provide the number of jets specified in regulation 130(2)(a) a fire main shall be provided;

(b) Fire mains shall have no connections other than those required for fire fighting except for the purpose of washing the deck and anchor chains or operating the chain locker bilge ejector, subject to the efficiency of the fire fighting system be maintained; and

(c) Where fire mains are not self-draining, suitable drain cocks shall be fitted where frost or ice damage could be expected.

(2) (a) The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously or of 140 cubic metres per hour, whichever is the less; and

(b) With the two pumps simultaneously delivering through nozzles specified in regulation 128(5) the quantity of water specified in paragraph (a) of this sub-regulation, through any adjacent hydrants, the minimum pressure of 0.25 Newtons per square millimetre shall be maintained at all hydrants.

130. Fire Hydrants, Fire Hoses and Nozzles

(1) (a) The number of fire hoses provided shall be equal to the number of fire hydrants arranged according to sub-regulation (2) of this regulation and one spare hose and:

(i) this number does not include any fire hoses required in any engine or boiler room; and

(ii) the Authority may increase the number of fire hoses required so as to ensure that hoses in sufficient number are available and accessible at all times, having regard to the size of the vessel;

(b) Fire hoses shall be of approved material and sufficient in length to project a jet of water to any of the spaces in which they may be required to be used and heir maximum length shall be 20 metres;

(c) Every fire hose shall be provided with a nozzle and the necessary couplings; and

(d) Fire hoses shall together with any necessary fittings and tools be kept ready for use in conspicuous positions near the water service hydrants or connections.

(2) (a) The number and position of the hydrants shall be such that at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of fire hose, may reach any part of the vessel normally accessible to the crew while the vessel is being navigated;

(b) All required hydrants shall be fitted with fire hoses having jet orspray nozzles as required by sub-regulation (5);and

(c) One hydrant shall be located near the entrance of the space to be

protected.

(3) (a) Materials readily rendered ineffective by heat shall not be used for fire mains and hydrants unless adequately protected;

(b) the pipes and hydrants shall be so placed that the fire hoses may be easily coupled to them;

(c) the positions of the hydrants shall be such that they are always readily accessible and the pipes shall be arranged as far as practicable to avoid risk of damage; and

(d) unless one fire hose and nozzle is provided for each hydrant, there shall be complete inter-changeability of fire hose couplings and nozzles.

(4) A cock or valve shall be fitted to serve each fire hose so that any fire hose may be removed while the fire pumps are operating.

(5) (a) Standard nozzle sizes shall be 12 millimetres, 16 millimetres and 19 millimetres or as near thereto as possible. Larger diameter nozzles may be permitted at the discretion of the Authority.

(b) For accommodation and service spaces, a nozzle size greater than 12 millimetres need not be used.

(c) For machinery spaces and exterior locations, the nozzle size shall be such as to obtain the maximum discharge possible for two jets at the pressure specified in Regulation 34 (2) (b) from the smallest pump provided that a nozzle size greater than 19 millimetres need not be used.

131. Fire Extinguishers

(1) Fire extinguishers shall be of approved types.

(2) Every fire extinguisher provided in compliance with this Chapter shall be constructed in accordance with the specifications published by the Authority by Marine Notice which may be up-dated from time to time.

(3). The capacity of required portable fire extinguishers (other than carbon dioxide extinguishers) shall be not more than 13.5 litres and not less than 9 litres. Other extinguisher shall not be in excess of the equivalent portability of the 13.5 litre fluid extinguisher and shall not less than the fire-extinguishing equivalents of a 9 litre fluid extinguisher.

(4) The Authority shall determine the equivalents of fire extinguishers.

(5) Fire extinguishers containing an extinguishing medium which in the opinion of the Authority, either by itself or under expected conditions of use, gives off toxic gases in such quantities as to endanger persons shall not be permitted or shall be subject to safety measures as determined by the Authority.

(6) Normally, one of the fire extinguishers intended for use in any space shall be stowed near an entrance to that space.

132. Portable Fire Extinguishers and Fire Blankets in Control Stations and Accommodation and Service Spaces

(1) A sufficient number of approved portable fire extinguishers shall be provided in control stations and accommodation and service spaces to ensure that at

least one extinguisher, of a suitable type, is readily available for use in any part of such spaces. The total number of extinguishers in these spaces shall however not be less than five.

(2) Where portable dry powder extinguishers are provided in either accommodation and service spaces or in machinery spaces, their numbers shall not exceed 50% of the total number of extinguishers provided in either of those spaces.

(3) Every galley is to be provided with a fire blanket which is to be mounted on a bulkhead near an access doorway in a position allowing easy retrieval.

133. Fire-Extinguishing Appliances in Machinery Spaces

(1) (a) Spaces containing oil-fired boilers or fuel oil units shall be provided with one of the following fixed fire-extinguishing systems, to the satisfaction of the Authority:

(i) a pressure water-spraying installation;

(ii) a fire-smothering gas installation;

(iii) a fire-extinguishing using high expansion foam; or,

(iv) a fire-extinguishing installation using low toxicity vapourizing liquids.

Where the engine and boiler rooms are not entirely separate, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms shall be considered as one compartment;

(b) Every boiler room shall be provided with at least one set of portable air foam equipment to the satisfaction of the Authority;

(c) At least two approved portable extinguishers discharging foam or

equivalent shall be provided in each firing space in each boiler room and each space in which a part of the fuel oil installation is situated. At least one approved foam-type extinguisher of at least 135 litres capacity or equivalent shall be provided in each boiler room. These extinguishers shall be provided with hoses on reels suitable for reaching any part of the boiler room. The Authority may relax the requirements of this sub-paragraph, having regard to the size and nature of the space to be protected; and

(d) In each firing space there shall be a receptacle containing sand, sawdust impregnated with soda or other approved dry material, in such quantity as may be required by the Authority. Alternatively an approved portable extinguisher may be provided.

(2) Spaces containing internal combustion machinery used either for main propulsion or for other purposes, when such machinery has a total power output of not less than 375 kilowatts, shall be provided with the following arrangements:

(a) one of the fire-extinguishing systems required by sub-regulation (1)(a) of this regulation;

(b) at least one set of portable air-foam equipment to the satisfaction of the Authority; and

(c) in each such space, approved foam-type fire extinguishers each of at least 45 litres capacity, or equivalent, sufficient in number to enable foam or its equivalent to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards. In addition, there shall be provided a sufficient number of portable foam extinguishers or equivalent which shall be so located that an extinguisher is not more than 10 metres walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space. For smaller spaces the Authority may relax these requirements.

(3) Spaces containing steam turbines or enclosed steam engines used either for

main propulsion, or for other purposes, when such machinery has a total power output of not less than 375 kilowatts shall be provided with the following arrangements:

(a) foam fire extinguishers each of at least 45 litres capacity, or equivalent, sufficient in number to enable foam or its equivalent to be directed on to any part of the pressure lubricated parts of the turbines, engines or associated gearing, and any other fire hazards. Provided that such extinguishers shall not be required if protection at least equivalent to that of this sub-paragraph is provided in such spaces by a fixed fire-extinguishing system fitted in compliance with sub-regulation (1)(a) of this regulation; and

(b) a sufficient number of portable foam extinguishers, or equivalent which shall be so located that an extinguisher is not more than 10 metres walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space, and such extinguishers shall not be required in addition to any provided in compliance with sub-regulation (2)(c) of this regulation.

(4) Where, in the opinion of the Authority, a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing appliances are prescribed in sub-regulations (1), (2) and (3) of this regulation there shall be provided in, or adjacent to, that space a number of approved portable fire extinguishers or other means of fire extinction to the satisfaction of the Authority.

(5) Where fixed fire-extinguishing systems not required by this Regulation are installed, such systems shall be to the satisfaction of the Authority.

(6) For any machinery space of Category A to which access is provided at a low level from an adjacent shaft tunnel, there shall be provided in addition to any watertight door and on the side remote from that machinery space a light steel fire-screen door which shall be capable of being operated from each side of the door.

134. International Shore Connection

(1) At least one international shore connection, complying with sub-regulation (2) of this regulation shall be provided.

(2) Standard dimensions of flanges for the international shore connexion shall be in accordance with the following table:

Description	Dimension
Outside diameter	178 millimetres
Inner diameter	64 millimetres
Bolt circle diameter	132 millimetres
Slots in flange	4 holes 19 millimetres in diameter equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery.
Flange thickness	14.5 millimetres minimum
Bolts and nuts	4 each of 16 millimetres in diameter and 50 millimetres in length.

(3) This connection shall be constructed of material suitable for 1.0 newton per square millimetre service pressure. (10 Bar or 1MPa)

(4) The flange shall have a flat face on one side and the other shall have a coupling permanently attached thereto that will fit the vessel's hydrant and hose and the connection shall be kept aboard the vessel together with a gasket of any material suitable for 1.0 newton per square millimetre (10 Bar or 1MPa) service pressure, together with four 16 millimetre bolts 50 millimetres in length and eight washers.

(5) Facilities shall be available enabling such a connection to be used on either side of the vessel.

(6) The location of the International Shore Connection shall be clearly marked.

135. Fireman's Outfits

(1) Vessels shall be provided with at least two fireman's outfits, stored as to be accessible and ready for use. The fireman's outfit shall consist of:

(a) a breathing apparatus approved by the Authority;and

(b) personal equipment comprising:

(i) protective clothing of material to protect the skin from the heat radiating from a fire and from burns and scalding by steam. The outer surface shall be water resistant;

(ii) boots and gloves of rubber or other electrically non-conducting material;

(iii) a rigid helmet providing effective protection against impact;

(iv) a portable self-contained battery-operated safety lamp of the lantern type capable of functioning efficiently for at least three hours;

(v) a firemen's axe with an electrically insulated handle; and,

(vi) a fire resistant life-line.

136. Fire Control Plan

(1) There shall be a permanently exhibited fire control plan to the satisfaction of the Authority.

(2) There shall be a copy of this Fire Control Plan placed, in a clearly visible waterproof storage container, at each boarding position of the vessel

137. Availability of Fire Appliances

(1) Fire appliances carried in every ship shall be maintained in good working order and shall be kept available for immediate use at all times.

(2) All moveable fire appliances, other than firemen's outfits, carried in compliance with this Chapter shall be stowed where they will be readily accessible from the spaces in which they are intended to be used, and, in particular, one of the portable fire extinguishers intended for use in any space shall be stowed near the entrance to that space.

138. Equivalents, Approval of Types and Servicing of Fire Appliances

(1) Where this Chapter requires that a particular fitting, material, appliance or apparatus, or type thereof, be fitted or carried in a ship, or that a particular provision be made, the Authority may allow any other fitting, material, appliance, apparatus or type thereof, to be fitted or carried, or any other provision to be made in the vessel if satisfied that such other fitting, material, appliance, apparatus or type thereof, or provision, is at least as effective as that required by this Chapter.

(2) The Authority may approve any type of fire appliance for use on a vessel belonging to the Republic which in the opinion of the Authority complies with the requirements of these Regulations.

(3) The number, type and position of portable and fixed fire appliances carried on vessels shall be approved by the Authority.

(4) All fire-fighting appliances shall be serviced at intervals not exceeding 12 months by an approved service station, in accordance with Marine Notices published by the Authority, which may be updated from time to time.

139. Use of Halons

Halon or other fire fighting mediums containing Chloro-Fluoro- Carbons (CFC's)_shall not be used as an extinguishing medium on board vessels.

CHAPTER VII
PROTECTION OF THE CREW

140. General Protection Measures

(1) Owners and masters shall ensure that the state of cleanliness and lighting of the vessel is such that hazardous conditions are not created for persons required to work in any space on board the vessel.

(2) For hazardous work on board a lifeline system shall be provided adequate to ensure the safety of the persons required to undertake such work and constant communication between crew and deck officers should be maintained.

3) Skylights, or other similar openings shall be fitted with protective bars not more than 350 millimetres apart and the authority may exempt small openings from compliance with this requirement.

(4) (a) The surface of all decks shall be so designed or treated as to minimize the possibility of personnel slipping;

(b) In particular, decks of working areas, such as in machinery spaces, in galleys, at winches and where fish is handled as well as at the foot and head of ladders and in front of doors, shall be provided with anti-skid surfaces;

(c) Crew members working should wear the correct protective gear pertaining to their task and ensure that their gear is maintained eg. Wearing

worn-down boots on non-slip deck will defeat objective; and

(d) All crew members conducting hazardous work should have the necessary qualifications/training to perform such tasks

(5) Any person on the main deck or on any other exposed deck shall be required to wear an approved buoyancy aid.

141. Safe Access

(1) Every owner and master shall ensure the provision of safe access to his vessel and on vessels over 30 metres in length, the safe access shall be provided in the form of a gangplank.

(2) The owner shall ensure that, except in an emergency, access equipment referred to in sub-regulation (1) of this regulation is always used between a secured vessel and any quay, pontoon or similar structure or another vessel alongside to which that vessel is secured, and that:

(a) the access equipment is placed in position promptly after the vessel has been so secured and remains in position while the vessel is so secured;

(b) the access equipment which is used is—

(i) properly constructed, of adequate strength, properly rigged, secured, deployed, and safe to use; and

(ii) so adjusted from time to time as to maintain safety of access;

(c) the access equipment and immediate approaches thereto are adequately illuminated;

(d) when access is necessary between a vessel and the shore and that vessel is not secured alongside, access equipment is provided to

ensure safe access;

(e) a portable ladder is used as access equipment only where no other safe means of access is practicable;

(f) a rope ladder is used as access equipment only between a vessel with high freeboard and a vessel with low freeboard or between a vessel and a boat where no other safe means of access is practicable;

(g) a life-buoy with a self-activating light and a separate safety line attached to a quoit or a similar device is provided ready for use at the point of access to a vessel; and

(h) an adequate number of safety nets are rigged to safeguard the full length of a gangway or accommodation ladder in use.

(3) Every owner and master shall ensure that a safe means of access is provided and maintained to any place on a vessel to which a person may be required to go.

142. Deck Openings

(1) (a) Hinged covers of hatchways, manholes and other openings shall be protected against accidental closing;

(b) In particular, heavy covers on escape hatches shall be equipped with counterweights, and so constructed as to be capable of being opened from each side of the cover; and

(c) These escape covers shall be painted red and marked in white "EMERGENCY ESCAPE, KEEP CLEAR AT ALL TIMES"

(2) Dimensions of access hatches shall not be less than 600 millimetres by 600

millimetres or 600 millimetres diameter.

(3) Where practicable, hand-holds shall be provided above the level of the deck over escape openings.

(4) (a) Every owner shall ensure that any opening, open hatchway or dangerous edge which is provided with a coaming or sill of less than 600 millimetres in height into, through, or over which a person could fall is fitted with secure guardrails or fencing of adequate design and construction to prevent such occurrence, except where the installation of such guardrails or fencing will interfere with the proper performance of work.

(b) The Authority may exempt small openings such as fish scuttles from compliance with this sub-regulation (4)(a)..

(5) Where a temporary opening is made in a ship for carrying out repair work, the opening shall, as a minimum, be guarded by means of hazard tape displayed at a height of not less than 800 mm and not higher than 1200 mm and at a distance of not less than 2000 mm from the edge of the opening.

143. Bulwarks, Rails and Guards

(1) (a) Efficient bulwarks or guard rails shall be fitted on all exposed parts of the working deck and on superstructure decks if they are working platforms.

(b) The height of bulwarks or guard rails above deck shall be at least 1 metre.

(c) Where this height would interfere with the normal operations of the vessel , a lesser height or alternative arrangement may be accepted provided that the authority is satisfied that adequate protection is provided.

(2) Not withstanding the minimum freeboard required by Annex 8, the minimum vertical distance from the deepest operating waterline to the lowest point of the top of the bulwark, or to the edge of the working deck if guard rails are

fitted shall ensure adequate protection of the crew from water shipped on deck, taking into account the sea states and the weather conditions in which the vessel may operate, the areas of operation, type of vessel and its method of fishing and shall be to the satisfaction of the Authority.

(3) (a) If guard rails are fitted, clearance below the lowest course of rails shall not exceed 230 millimetres;

(b) Other courses shall not be more than 380 millimetres apart, and the distance between stanchions shall not be more than 1.5 metres;and

(c) In a vessel with rounded gunwales, guard rail supports shall be placed on the flat of the deck. Rails shall be free from sharp points, edges and corners and shall be of adequate strength.

(4) (a) Means to the satisfaction of the Authority, such as guard rails, lifelines, gangways or underdeck passages, shall be provided to protect the crew in moving between accommodation, machinery and other working spaces; and

(b) Storm rails shall be fitted as necessary to the outside of all deckhouses and casings to secure safety of passage or work for the crew.

(5) Stern trawlers shall be provided with suitable protection such as doors, gates or nets at the top of the stern ramp at the same height as the adjacent bulwark or guard rails and hhen such protection is not in position a chain or other means of protection shall be provided across the ramp.

144. Stairways and Ladders

For the safety of the crew, stairways and ladders of adequate size and strength with handrails and non-slip treads shall be provided to the satisfaction of the Authority.

145. Lifting Appliances, Pulleys and Wire Ropes

(1) Every employer shall ensure that any vessel's fishing gear and lifting appliances are:

(a) (i) of adequate strength for the purpose for which it is used;

(ii) free from patent defect;

(iii) properly installed or assembled;

(iv) properly maintained; and

(v) used only in a safe and proper manner;

(b) not loaded in excess of its certified safe working load, except for the purpose of carrying out a test referred to in paragraph (d) of this sub-regulation;

(c) operated only by a person properly trained in the operation thereof;

(d) tested by a competent person after the manufacturing or installation thereof, as the case may be, but before being put into operation, and thereafter after any repairs to or modification of the lifting plant which is likely to alter the safe working load or affect the strength or stability thereof.

(2) Lifting appliances shall be;

(a) tested by a competent person after the manufacturing or installation thereof, as the case may be, but before being put into operation, and thereafter after any repairs to or modification of the lifting plant which is likely to alter the safe working load or affect the strength or stability

thereof but at least every 4 years; tested by a competent person after the manufacturing any of the tests referred to

(b) provided with a test certificate stating that the lifting appliance was tested by a competent person and specifying the safe working load(s);

(c) clearly and conspicuously marked with its safe working load;

(d) provided with a diagram or indicator indicating to the operator the safe working load of the lifting plant corresponding to its operating radius, if it has a safe working load which varies according to its operating radius;

(e) fitted with a load-attaching device so designed or proportioned that the accidental disconnection of a load under working conditions is prevented;

(3) No pulley block shall be used in hoisting or lowering unless the safe working load is clearly stamped thereon.

(4) Means shall be provided to enable any person using chain or wire rope sling to ascertain the safe working load for such chain or sling for the conditions under which it may be used.

(5) Every wire rope used for trawling, hoisting or lowering shall be inspected by the safety officer or a qualified person every 3 months provided that when any wire has broken in such rope it shall be inspected at least monthly and the inspection of such ropes shall be recorded by the safety officer in the safety log book.

(6) No wire rope shall be used in trawling, hoisting or lowering if in any length of eight diameters the total number of visible broken wires exceeds ten percent of the total number of wires, or the rope shows sign of excessive wear,

corrosion or other defect which in the opinion of the person inspecting it, renders it unfit for use.

(7) (a) A thimble or loop splice made in any wire rope shall have at least three tucks with a whole strand of the rope and two tucks with one half of the wires cut out of each strand; and

(b) The strands in all cases shall be tucked against the lay of the rope, provided that the provisions of this paragraph shall not prevent the use of another form of splice which can be shown to be as effective as that laid down in this paragraph.

146. Safeguarding of Machinery

(1) Every owner shall;

(a) specifically cause every exposed and hazardous part of machinery on board a vessel which is within the normal reach of a person to be effectively safeguarded by means of insulation, fencing, screening or guarding so that it does not constitute a further hazard or potential hazard; and visible warning signs stating its dangers.

(b) ensure that the quality of material used for such insulation, fencing, screening or guarding is suitable for the purpose for which it is being utilised;

(c) ensure that all insulation, fencing, screening or guarding is properly maintained and kept in position while the guarded part is in operation; and

(d) supply suitable apparatus to stop immediately any machine on board a vessel in an emergency and in particular, potentially hazardous machinery on deck shall be provided with means of stopping from a local position A secondary emergency stop apparatus should be

installed in the bridge for hazardous machinery eg line-hauler, winch.

(e) crew members operating machinery should wear the correct protective gear at all times

147. Protection against Noise

(1) (a) Measures shall be taken to reduce the effects of noise upon personnel in machinery, accommodation and navigation spaces to the levels tabled below as far as is practicable.

(b) Safety warning signs shall be placed at all entrances to the machinery space advising personnel of high noise levels and hearing protectors shall be provided for personnel entering the space and any other space where noise levels above 85 dB(A) are expected.

Compartment	Noise limit dB(A)
Machinery Spaces - Continuously Manned	85
Machinery Spaces - Unmanned	110
Accommodation	75
Wheelhouse	65

(2) Owners and masters shall ensure that crew are aware of typical noise levels and the maximum recommended daily noise dose for unprotected ears as tabled in Annex 10.

148. Use of Asbestos

No asbestos based material may be used for lagging or for any purpose on board vessels.

149. Standard Operating Procedures

The owner and master of every vessel shall ensure that Standard Operating Procedures, to the satisfaction of the Authority, are developed and carried on board for any hazardous operation which is required to be carried out by the crew during the operation of the vessel.

CHAPTER VIII
CREW ENVIRONMENT

150. Position of Crew Accommodation

(1) Crew accommodation shall;

(a) be situated above the deepest operating load waterline; and,

(b) not be situated forward of the collision bulkhead.

151. Height of Crew Accommodation

(1) The minimum height of the crew accommodation and any other space where the crew may be required to work shall be 2,10 metres.

(2) The Authority may exempt sleeping rooms, store rooms and sanitary accommodation from the above requirements, but not to less than 2.00 metres of minimum height, at every point in the room which is available for

free movement.

(3) The Authority may exempt vessels less than 35 metres in length from the requirements of sub-regulations (1) and (2) of this regulation, but not to less than 1,90 metres of minimum height, at every point in the compartment which is available for free movement.

152. Bulkheads and Paneling

(1) All bulkheads enclosing the crew accommodations or being a boundary of the crew accommodation shall be properly constructed of steel or other suitable material.

2) Any bulkhead that has exposed frames or other protrusions that could cause injury during the vessels movement at sea, is to be panelled.

(3) Any bulkhead which separates any part of the crew accommodation from a fuel tank, cargo or machinery space, a lamp or paint room, a store room (not forming part of the crew accommodation other than a “Dry Provisions” store room), a chain locker or cofferdam shall be gastight and shall be watertight where necessary to protect the crew accommodation.

(4) Any bulkhead which separates any part of the crew accommodation from sanitary accommodation, laundry, washing rooms or galley shall be watertight to such height as necessary to prevent the passage of water.

(5) A minimum watertight height of 0,23 metres above the floor of the sanitary accommodation is required.

(6) Any inside panelling in the crew accommodation shall be constructed of suitable material with a surface which can easily be kept clean.

(7) Neither bulkhead not panelling shall be constructed in such a manner or of

such material likely to harbour vermin.

153. Overhead Decks

Overhead decks which are exposed to the weather shall be insulated to the satisfaction of the Authority.

154. Flooring

(1) All decks which form the floors in the crew accommodation shall be fitted with material providing good foothold and be capable of easily being kept clean and the floor covering shall be impervious to water and if the deck is situated on top of an oil tank, impervious to oil.

(2) The surface of decks which form the floors in crew accommodation, not being floors in sanitary accommodation, galleys, store rooms or laundries shall be covered with a material complying with the following: The material shall;

(a) provide adequate foothold, whether wet or dry;

(b) be sufficiently hard and strong to withstand all expected conditions of service;

(c) adhere closely to the surface upon which it is laid under all conditions of service;

(d) provide a warm and comfortable surface;

(e) not readily ignite in the position in which it is laid;

(f) after being immersed in water for a period of 48 hours, the moisture

content of the material should not exceed 7% of its dry weight; and

(g) be corrosion resistant.

(3) (a) The floors of sanitary accommodation, galleys and laundries in the crew accommodation shall be covered with terrazzo, tiles, or other hard material which is impervious to liquids;

(b) The floor covering shall be properly laid and shall provide a good foothold; and

(c) The joining of the floors with the side walls shall be rounded in a manner which will avoid crevices.

155. Protection from Weather

(1) In every ship the crew accommodation and the means of access thereto and egress therefrom shall be so arranged and constructed and situated in such a position as to ensure the:-

(a) protection of the crew against injury to the greatest practicable extent;

(b) protection of the crew accommodation against the weather and the sea;

(c) insulation of the crew accommodation from heat and cold;

(d) protection of the crew accommodation against moisture due to condensation;

(e) exclusion from the crew accommodation of alluvia originating in other spaces in the ship; and

(f) exclusion from the crew accommodation, to the greatest practicable extent, of noise originating in other spaces in the ship.

(2) Without prejudice to the generality of the foregoing paragraph:-

(a) every opening from an open deck into the crew accommodation shall be protected against the weather and sea;

(b) the crew accommodation shall be accessible at all times from the open deck;

(c) access to sleeping rooms, mess rooms, recreation rooms and studies forming part of the crew accommodation shall be obtained from a passageway which shall be provided with a hinged door at entrances from the open deck;

(d) bow hawse pipes and other pipes containing anchor cables shall not be situated in the crew accommodation;

(e) All steam pipes, hot water pipes and calorifiers in or serving the crew accommodation shall be efficiently lagged wherever lagging is necessary for the conservation of heat or the protection of the crew against injury or discomfort and all cold water pipes in the crew accommodation shall be efficiently lagged wherever lagging is necessary for prevention of condensation.

(f) Ventilator trunks to cargo spaces or tanks shall be made of steel or other suitable material and shall be gastight where they pass through any part of the crew accommodation.

(g) Batteries shall not be placed in any sleeping room provided for the crew, and precaution shall be taken which will ensure that fumes from such batteries cannot discharge into any part of the crew accommodation.

(h) The bulkheads and the parts of the ship's side which enclose the crew accommodation shall be insulated in a manner which will prevent overheating of the accommodation and shall be covered with protective covering which will prevent the condensation of moisture.

(i) Every bulkhead, casing and deck separating the crew accommodation from other spaces in the ship in which heat or cold may be generated shall be insulated in a manner which will prevent the crew

accommodation being so affected by such heat or cold or by condensation as to prejudice the health or comfort of the crew

(j) There shall be no direct opening between the crew accommodation (other than recreation deck spaces) and any space used as a store room for engine room stores or deck department stores.

(k) There shall be no direct opening between the crew accommodation and spaces use as -

(i) oil fuel bunkers;

(ii) cargo or machinery spaces;

(iii) lamp rooms or paint rooms;

(iv) store rooms not forming part of the crew accommodation;

(v) chain lockers; or

(vi) cofferdams.

Provided that there may be a direct opening between machinery spaces and sanitary accommodation and changing rooms provided for the sole use of crew of the engine room department.

(l) If any part of the crew accommodation is situated on a deck which forms the crown of a space in which oil may be carried in bulk, such deck shall be oiltight.

(m) No manholes or other openings to the oil tanks shall be situated in the crew accommodation.

(n) The means of access to and egress from every part of the crew accommodation shall be so situated that in the event of fire in any lamp room or paint room in the ship, access to and egress from the crew accommodation will not be impeded.

156. Heating

(1) (a) Vessels shall be provided with a permanently installed heating system for all sleeping rooms, mess rooms, recreation rooms, sanitary accommodation and offices forming part of the crew accommodation; and

(b) The heating system shall be capable of ensuring that when the ventilation system is providing at least 0.4 m^3 of fresh air per minute for each person whom the space is designed to accommodate at one time and the ambient temperature of the open air is 0 °C, the temperature therein can be maintained at 15 °C for vessels operating between the latitudes of 40°N and 40°S and at 20 °C for vessels operating South of 40°S or North of 40°N.

(2) The permanent heating system required by sub-regulation (1) of this regulation shall be operated by steam, hot water or electricity or shall be a system supplying warm air.

(3) The heating equipment shall be so constructed, installed and, if necessary, shielded so as to avoid the risk of fire and not to constitute a source of danger or discomfort to the crew.

(4) Means shall be provided to vary and switch the supply of heat to any space on or off.

157. Lighting

(1) (a) In every ship an electrical system shall be installed which is capable of providing adequate lighting in every part of the crew accommodation.

(b) The electric lighting shall be so arranged so as to give the maximum benefit to the crew and in particular an electric reading light, emitting at least 200 lumens shall be fitted at the head of each bunk which can be switched on

and off from the bunk.

(c) An efficient alternative source of light or source of electrical power shall always be available for emergency lighting of the crew accommodation.

(2) All enclosed spaces shall be provided with electric lighting of sufficient intensity taking into account the safe use of any particular area and as far as possible it shall be endeavored to ensure that the lighting provided enables a person of normal vision to read an ordinary newspaper in any point in the room. The minimum illumination of spaces shall be as follows:

(a) Sleeping rooms and day rooms:

(i) 20 lx immediately in front of any drawer, bookcase, clothes locker, wardrobe and toilet mirror;

(ii) 50 lx at any wash basin; and

(iii) 60 lx at any seat at a writing desk or table.

For the purposes of these spaces, reading lights at the heads of bunks shall not be taken into account in determining the illumination of a space except in the case of a sleeping room provided for one person only.

(b) Mess rooms:

(i) 20 lx at general measurement points; and

(ii) 50 lx at any table and sink.

(c) Offices:

(i) 20 lx in front of any drawer or bookcase; and

(ii) 80 lx at every writing position at a desk or table.

(d) Sanitary accommodation:

(i) Toilets - 30 lx in way of the pan;

(ii) Shower spaces - 20 lx in the centre of the spaces; and

(iii) Washrooms and basins:

(aa) 30 lx at general measuring points; and

(bb) 50 lx at any wash basin and at or near the head of any bath.

(e) Laundries:

(i) 30 lx at any general measuring point; and

(ii) 50 lx at any washing trough or washing machine.

(f) Galleys

60 lx at all working positions. The lamps shall be so positioned so as to maximise the amount of light to food preparation tables, the range top, serving tables and washing up sinks.

(g) Provision and dry store rooms:

(i) 20 lx at general measuring points; and

(ii) 20 lx in front of shelving and cupboards.

(h) Cold rooms

10 lux at general measuring points.

(i) Passageways and companionways:

20 lx at general measuring points. A light shall be placed at or near the head of each stairway, ladder or hatchway and at or near any lockers provided for working clothes.

(j) Factories:

(i) 30 lux at general measuring points; and

(ii) 60 lx at all working positions.

(3) The illumination levels required by paragraph (b) shall be measured at a height of 840 mm (or lower in the case of passageways and companionways) above the deck as follows:

(a) where general measurement points are prescribed the measurements shall be taken midway between every adjacent lamp and midway between every lamp and the nearest boundary of the space;

(b) where a particular measurement point is specified then measurements shall be taken at that point; and

(c) provision stores shall be measured when empty.

158. Ventilation

(1) In every ship the enclosed parts of the crew accommodation and working areas shall be ventilated by a system which will maintain the air therein in a state of purity adequate for the health and comfort of the crew and shall be additional to any side scuttles, skylights, companions, doors or other apertures not intended solely for ventilation.

(2) (a) Every enclosed space forming part of the crew accommodation or working area being a space not ventilated by a trunked mechanical ventilation system, shall be provided with a forced draught inlet and natural exhaust ventilation which shall be capable of providing an amount of air equal to at least 30 cubic metres per hour per man expected to be accommodated in the compartment.

Provided that in spaces such as galleys and toilets where heat and odours may be dispelled into adjacent spaces, arrangements shall be such as to ensure a slight negative pressure in the space.

(b) Whatever the number of persons required to use a compartment identified by sub-regulation (2)(a) of this regulation, the total volume of fresh air per minute shall not be required to be such as would result in more than 20 fresh air changes per hour.

(c) No ventilator shall be situated directly over a doorway, stairway or exhaust opening.

(d) The sectional area of every part of the inlet and exhaust system (other than a part serving only a drying room or locker) shall be such as to ensure that a maximum air flow velocity of 5 metres per second only is possible.

(3) Vessels over 35 metres in length shall be provided with trunked mechanical ventilation in accordance with Annex 11.

(4) Power for the system of forced draught or trunked mechanical ventilation system shall be available at all times when any members of the crew are on board.

(5) Ventilation systems shall be quiet in operation.

159. Drainage

(1) In every ship efficient drainage by pipes or channels shall be provided for every part of the crew accommodation situated on an open deck wherever such drainage is necessary for clearing water shipped from the sea.

(2) There shall be no drainage from any source (not being sanitary accommodation) into the sanitary accommodation forming part of the crew accommodation.

(3) Every space appropriated for use as sanitary accommodation shall be served by one or more scuppers which do not serve any space other than sanitary accommodation.

(4) The scuppers shall be at least 50 mm in diameter and shall be situated wherever water is likely to collect on the floor of the space.

160. Painting.

(1) In every ship the interior sides and ceilings of every part of the crew accommodation shall be covered with enamel, paint or other suitable material and the paint or other material shall be of good quality and white or light in colour.

(2) The wooden parts of the furniture and fittings in the crew accommodation shall be finished externally with paint, varnish, polish or by other suitable means.

(3) All paint, varnish, polish and other finishes in the crew accommodation shall be capable of being easily kept clean and shall be maintained in good condition.

161. Sleeping Rooms

(1) Separate sleeping rooms shall be provided, as far as practicable, to ensure that rest periods of watchkeepers are not compromised. In particular;

(a) Every watch shall be provided with sleeping rooms separate to those of other watchkeepers; and,

(b) Day-men shall be provided with sleeping rooms separate from watchkeepers.

(2) The authority may permit more than 4 persons to be accommodated in a room, if satisfied, after consultation with the owner of the ship and with such organisation as appears to be representative of the ratings concerned, that the comfort and safety of the ratings is not compromised.

(3) The minimum floor area provided for each person in a sleeping room forming part of the crew accommodation shall be as follows:-

(a) In vessels under 45 metres in length 1.5 m^2 ; and

(b) In vessels of 45 metres in length and over 2.0 m^2

(4) In determining the floor area of a room for the purpose of this paragraph, the space occupied by berths and lockers and spaces which by reason of their small size, irregular shape or height cannot accommodate furniture and do not contribute to the area available for free movement, shall not be taken into account.

(5) Separate sleeping rooms for men and women should be provided.

162. Bunks

(1) Every vessel proceeding to sea for more than 16 hours shall be provided with a bunk for each person accommodated on the vessel.

(2) (a) The framework of each bunk, and the leeboards or lee-rails thereof, if any, shall be constructed of metal or other material which is hard and smooth and unlikely to become corroded;

(b) The framework shall be so made as not to be likely to harbour vermin;

and

(c) In particular, if the bunk is constructed with tubular frames, the frames shall be completely sealed and without perforations.

(3) There shall be unobstructed access to at least one side of each bunk and in particular, if the adjacent sides of two beds in the same room are parallel to each other or when projected make an angle of less than 90° with each other, the mean distance between those sides at any point shall not be less than 760 mm if both bunks are in single tier or 900 mm in any other case.

(4) (a) Where bunks abut upon each other they shall be separated by partitions made of wood or other suitable material; and

(b) Where bunks are adjacent to each other a division from the bottom of the bunk to the deck head or underside of the next bunk shall be provided.

(5) No bunk shall be placed:-

(a) within 100 mm of the outlet of a ventilation trunk which may be used for circulating hot or cold air; or

(b) within 50 mm of a bulkhead or the ship's side, unless the bed is so supported and the room so constructed as to avoid harbouring dirt and vermin in or near the bed, to enable the bedding to be kept clean and dry, and to minimise the soiling of paintwork in way of the bunk.

(6) Practical bunks shall not be arranged in tiers of more than two.

(7) No bunk shall be less than 300 mm from the floor of the room measured from the bottom of the mattress.

(8) The upper bunk in a double tier shall be at least 760 mm below the lower side of the deck head beams or other obstructions measured from the bottom of the mattress and the bottom of the mattress in the lower bed shall be at least 760 mm below the bottom of the mattress in the upper bunk.

(9) Subject to the provisions of sub-regulation (8) of this regulation, the mean size of the bunks provided for the crew shall be at least 1900 mm by 800 mm, the measurements being taken inside the lee-boards or lee-rails, if any, and at right angles to each other.

(10) (a) Every bunk provided for a member of the crew shall be fitted with a mattress made of material which will resist damp and is unlikely to harbour vermin.

(b) A bottom of wood, canvas or other dustproof material shall be fitted to every bunk which is fitted above another bunk.

163. Furniture and Fittings

(1) Every sleeping room shall be provided with at least the following equipment:

(a) for each person accommodated in the room:

(i) 1 drawer of capacity 0.06 m^3;

(ii) 1 clothes locker or wardrobe at least 1.7m high and 50 cm^2 in internal sectional area; and

(iii) 1 coat hook in addition to any coat hooks fitted in a locker or wardrobe.

(b) A table of fixed or drop-leaf type, or a desk, or a sliding leaf or top fitted to a chest of drawers;

(c) Comfortable seats sufficient to accommodate 50% of the persons accommodated in the room at one time;

(d) A mirror suitable for toilet purposes;

(e) A book rack; and

(f) A curtain, fitted to each bunk to provide the crew member with privacy and to prevent the ingress of light from the room provided that if the room contains only one bunk a curtain is not required.

(2) (a) All lockers, wardrobes, tables, desks, the unupholstered parts of chairs and settees and similar furnishings shall be made of polished hardboard, rustproof metal or other smooth and impervious material not likely to crack, warp or become corroded; and

(b) All furniture provided in sleeping rooms shall be so made as not to be likely to harbour vermin.

(3) In every sleeping room every drawer, locker and wardrobe shall be lockable.

(4) All materials used for the construction of furniture and fittings shall be so constructed that there are no sharp edges or sharp protrusions.

164. Mess Rooms

(1) Every vessel required to carry a certificated cook shall be provided with a mess room with seating and eating facilities capable of accommodating at least 75% of the crew at any one time.

(2) Mess rooms should be as close as is practicable to the galley.

165. Furniture and Fittings in Mess Rooms

(1) Every mess room shall be provided with sufficient seating and tables to allow a space of at least 500 mm per person, measured along the edge of the table for each person required to use the room and tables shall be at least 600 mm

wide if seats are provided on both sides of the table and 380 mm wide if seats are provided on one side only.

(2) All tables, lockers chairs and other fittings shall be made of polished hardboard, rustproof metal or other smooth and impervious material not likely to crack, warp or become corroded or be likely to harbour vermin.

166. Recreation Rooms

(1) In every vessel of 45 metres in length and over recreation room(s) shall be provided and the room(s) shall be capable of accommodating at least one third of the persons carried on board and shall be provided with tables, chairs and a bookcase.

(2) Vessels under 75 metres in length may be exempted from the requirements of sub-regulation(1) of this regulation if mess rooms are provided which are capable of accommodating all of the crew and are fitted with book cases.

167. Sanitary Facilities

(1) The following facilities shall be provided as a minimum:

(a) One bath or shower for every 4 persons or part thereof;

(b) wash basin for every 4 persons or part thereof;

(c) one mirror suitable for toilet purposes for every 6 persons or part thereof; and

(d) one toilet for every 4 persons or part thereof,

Provided that not less than two of each item listed above shall be provided.

(2) The sanitary facilities shall be situated as close to the sleeping

accommodation of the persons for whose use it is appropriated as is practicable.

(3) (a) In every ship, adequately ventilated compartments or lockers shall be provided for hanging oilskins and protective clothing used by the crew;

(b) The compartments or lockers shall be situated outside the sleeping rooms of the crew and in a position readily accessible therefrom; and

(c) Vessels greater than 35 metres in length shall be provided with changing rooms for this purpose to the satisfaction of the authority.

(4) Sanitary facilities provided adjacent to engine rooms, factory and other working spaces shall not be included in the facilities required by sub-regulation (1) of this regulation unless there positions comply with sub-regulation (2) of this regulation.

(5) Every bath, shower and basin shall be provided with hot and cold water and an efficient drainage system.

(6) A minimum of 20 litres of potable water per person per day shall be provided for washing purposes.

(7) Sanitary facilities shall be maintained in a clean and operable condition at all times.

168. Supply of Drinking Water

(1) In every ship, a dedicated supply of at least 2.5 litres of drinking water per person per day shall be provided for drinking and cooking purposes.

(2) Fresh drinking water shall at least be laid on to taps in the galleys and mess rooms.

169. Laundry Facilities

Suitable laundry and drying facilities shall be providing taking in account the number of crew and intended operation and voyage duration of the vessel.

170. Galleys

(1) Every ship shall be provided with a galley for the preparation of food for the crew, which shall be situated as near as practicable to the mess room(s) and any necessary equipment shall be provided to enable food to be served hot in the mess rooms under all weather conditions.

(2) There shall be no direct opening between the galley and any sleeping room.

(3) Any galley situated on an open deck shall be provided with weather doors which are horizontally divided into halves, so that the upper half can be opened independently of the lower half, if such a division is necessary for the lighting, ventilation or privacy of the galley or for the service of food therefrom.

(4) Every galley shall so far as is reasonable and practicable, be lighted by natural lighting from all the sides and from overhead.

(5) Every galley shall be provided with at least three fixed points for artificial lighting, one of which shall be situated close to a cooking range required by this regulation.

(6) If the galley is situated on an open deck, openings shall be cut in the sides and ends of the galley for ventilation purposes and shall be fitted with dust-tight shutters made of steel or other suitable material and permanently attached to the structure of the galley.

(7) Every galley shall be provided with exhaust fans which will draw oil fumes

from the cooking appliances therein and discharge the fumes into the open air unless the Authority is satisfied that the fumes can only discharge into the open air.

(8) The exhaust fan is to be fitted with an emergency stop switch located outside of the galley.

(9) The exhaust fan shall be fitted with a grease trap which shall be accessible and easy to remove for cleaning purposes.

(10) The floor of the galley shall be provided with gutters and with scuppers which shall be led overboard or to an enclosed tank served by a mechanical operated suction pump and the position and number of the gutters and scuppers shall be such as will ensure the efficient drainage of the floor.

(11) The cooking appliances in the galley shall be arranged in a manner which will facilitate the cleaning of the galley.

(12) (a) All cupboards and dressers in the galley shall be made of material which is impervious to dirt and moisture and can easily be kept clean;

(b) All metal parts of the cupboards and dressers shall be rustproof;

(c) The cupboards and dressers shall be so made as not to be likely to harbour dirt or vermin; and

(d) The bottoms of all cupboards and dressers in the galley shall either be flush with the deck or shall be so fitted as to enable the deck space beneath them to be readily accessible for cleaning.

(13) Every galley shall be provided with such equipment as will enable food in sufficient quantity to be properly and readily prepared for the persons whom the galley is intended to serve, and the cooking utensils to be hygienically cleaned.

(14) (a) Salt water taps shall not be fitted over a sink in any galley or other

place in which food may be prepared for the crew;

(b) Hot and cold fresh water shall be laid on to a sink in the galley for washing-up purposes; and

(c) A connection shall be provided on a water pipe within the galley, and shall be suitable for the connection of a hose with which the floor may be scoured.

(15) Galley facilities shall be maintained in a clean and operable condition at all times.

171. Dry Provision Store Rooms

(1) In every ship, one or more store rooms shall be provided for the storage of dry provisions for the crew and such rooms shall be fitted with sufficient shelves, cupboards and bins having regard to the maximum period likely to elapse between successive replenishments of stores and to the maximum number of persons for whom food is to be served.

(2) Every dry provision store room shall be enclosed by bulkheads constructed of steel or other suitable material.

(3) Access to every dry provision store room shall be obtained from a passageway, galley, pantry or another store room, or from a position on an open deck which, in so far as is reasonable and practicable in the circumstances, shall be a protected position.

(4) Every dry provision store room shall be so situated, constructed and ventilated as to avoid deterioration of the stores through heat, draught, condensation or infestation by insects or vermin.

(5) No part of the dry provision store room shall be used for the storage of bedding or textiles.

172. Cold Store Rooms and Refrigerating Equipment

(1) In every ship refrigerating equipment and cold store rooms shall be provided and shall be, having regard to the period likely to elapse between successive replenishments of stores, adequate for the storage of perishable provisions for the crew.

(2) Access to every cold store room shall be obtained from a passageway, galley or pantry or from another store room.

(3) Refrigerating machines shall of sound construction and of proven design.

(4) Every exposed pipe which may contain toxic or inflammable gas shall be adequately protected from damage.

(5) All walk-in refrigerated chambers shall be fitted with audible and visual lock-in alarms.

173. Hospitals

(1) Every vessel which is 35 metres in length or over and every vessel which is less than 35 metres in length but proceeds more than 200 miles offshore with a crew of 15 or more persons shall be provided with a space appropriated for use as a temporary hospital for the crew. When the room is in use as a hospital it shall be used for no purpose other than the treatment of sick persons.

(2) Alternative accommodation shall be provided for crewman normally accommodated in the temporary hospital when the hospital is in use and this alternative accommodation shall at least consist of a bunk located in a sleeping room of the dimensions specified in Regulation 162(9), however the Authority may allow a relaxation of the standards specified in regulations 161162 & 163 for this alternative accommodation.

(3) The hospital shall be readily accessible and so situated that it is readily accessible from the sleeping accommodation of the master or a person designated by the master to take charge of the patient(s).

(4) Sick persons shall have ready access to bath or shower, wash basin, mirror and toilet from the hospital.

(5) Hospitals shall be adequately ventilated and heated to the satisfaction of the Authority.

(6) At least one single tier bed per 50 crew carried shall be provided in the hospital.

174. Medical Cabinet

(1) A medical cabinet shall be provided and fitted in a position in which it will remain dry and which is remote from all sources of heat.

(2) The medical cabinet shall be of a size, design and construction suitable for storing the medicines, medical stores and book of instruction required by the Regulations.

(3) The medical cabinet shall be lighted by an electric light which shall be inside or immediately outside the cabinet, and which will enable all the contents of the cabinet to the clearly seen in the absence of light from any other source.

(4) The medical cabinet and the place in which it is fitted shall be so ventilated as to avoid deterioration of the contents of the cabinet.

(5) Portable medical cabinets may be provided, as a substitute for the medical cabinet, if the volume of medical supplies required to be carried render it practicable.

(6) Medical cabinets shall be lockable

(7) The medical cabinet shall be inspected at least once a year by a competent person and a certificate issued stating that the contents of the cabinet are sufficient for the type of operation and voyages the vessel is engaged in.

175. General

(1) Alleyways in crew accommodation should be not less than 700mm wide and be fitted with handrails on at least one side.
(iii) Access to ordinary exits and emergency exits should be marked with direction indicators. Exits should be marked in a conspicuous manner.

176. Maintenance and Inspection of Crew accommodation

(1) (a) The crew accommodation shall be maintained in a clean and habitable condition and all equipment and installations shall be maintained in good working order.

(b) Every part of the accommodation (not being a store room) shall be kept free of stores and other property not belonging to or provided for the use of persons for whom that part of the accommodation is appropriated.

(2) The master of the ship or an officer appointed by him for the purpose shall inspect every part of the crew accommodation at intervals not exceeding ten days, and shall be accompanied on the inspection by one or more members of the crew. The master of the ship shall cause to be entered in the ship's official logbook a record of: -

(a) the time and date of the inspection;

(b) the names and ranks of the persons making the inspection and

(c) particulars of any respects in which the crew accommodation or any part thereof was found by any of the persons making the inspection not

to comply with these Regulations and measures taken by the master to ensure compliance.

177. Inspection by the Authority

(1) The owner shall cause the Authority to inspect the crew accommodation in every ship or cause it to be inspected whenever -

(a) the ship is registered or re-registered in the Republic;

(b) any part of the crew accommodation in the ship undergoes substantial alterations or repairs and

(c) the number of persons accommodated in any sleeping room is increased above that allowed in accordance with regulation 157.

(2) The Authority may also inspect the crew accommodation at any time if there is reason to believe (whether or not in consequence of a complaint) that any of the provisions of these Regulations have been contravened in respect of that ship, or that any condition subject to which the Authority has exempted the ship from a requirement of these Regulations has not been satisfied.

CHAPTER IX

SHIPBORNE NAVIGATIONAL EQUIPMENT AND ARRANGEMENTS

178. Compasses

(1) Vessels of 45 metres in length and over shall be fitted with:

(a) a standard magnetic compass in a suitable binnacle positioned on the vessels centreline, to the satisfaction of the Authority;

(b) a second magnetic compass in a binnacle adjacent to the main and secondary steering positions for the helmsman to steerby, however, where a projected or reflected image of the standard compass required by paragraph (a) of this sub-regulation is provided for this purpose the second magnetic compass shall be fitted in a suitable position to the satisfaction of the Authority and

(c) Electromagnetic Compatibility with electronic equipment within 1 metre radius of the compass should be considered utilizing the manufacturers' specifications.

(2) Vessels of less than 45 metres in length shall be fitted with:

(a) a standard magnetic compass in a suitable binnacle positioned on the vessels centreline with a projected or reflected image provided adjacent to the main and secondary steering positions for the helmsman to steer by. The installation shall be fitted to the satisfaction of the Authority; and

(b) a second magnetic compass in a binnacle adjacent to the main steering position, where a projected or reflected image of the standard compass is not provided for the helmsman to steer by.

(c) Electromagnetic Compatibility with electronic equipment within 1 metre radius of the compass should be considered utilizing the manufacturers'

specifications.

(3) A gyro-compass, to the satisfaction of the Authority, shall be fitted:

(a) in vessels of 75 metres in length and over;

(b) in vessels intended for operation in latitudes where the horizontal component of the earth's total magnetic force is insufficient to provide adequate directional stability to the magnetic compass. The master gyro-compass or a gyro-repeater shall be clearly readable by the helmsman at the main steering position. A gyro-repeater(s) shall be fitted for taking of bearings to the satisfaction of the Authority and

(c) The gyro compass required by paragraphs (a) and (b) of this sub-regulation shall be so positioned that it can be read by the helmsman, either directly or from a repeater at the main steering position, and shall be fitted with a repeater or repeaters for taking bearings to the satisfaction of the Authority.

(4) Where a gyro-compass is fitted which can be read by the helmsman either directly or from a repeater at the main steering position, the second magnetic compass referred to in sub-regulations (1)(b) and (2)(b) of this regulation need not be fitted, provided that the projected or reflected image of the standard magnetic compass is available for the helmsman to steerby.

(5) Resources shall be provided to enable compass bearings to be taken by day and night and where the compass referred to in sub-regulation (2) of this regulation is fitted such that bearings cannot be taken by the main steering compass, a handheld compass shall be provided.

(6) (a) Each magnetic compass referred to in sub-regulation (2) of this regulation shall be properly adjusted at intervals not exceeding 12 months and its table or curve of residual deviations shall be available at all times and this period may be extended at the discretion of a surveyor on condition that an appropriate and up to date deviation record book is

maintained and the compass deviation is not greater than 10°.

(b) Each magnetic compass referred to in sub-regulation (1) of this regulation shall be properly adjusted when repairs are carried out to the vessel such that these repairs could affect the residual deviations of the vessel.

(7) Where a transmitting magnetic compass and repeater is fitted it shall be provided with an emergency electrical supply to the satisfaction of the Authority.

(8) Illumination and facilities for dimming shall be provided to enable reading of the compass card at all times and if illumination is provided by the vessels main electrical supply, emergency illumination shall be available.

(9) Where only one magnetic compass is carried, a spare magnetic compass which is interchangeable with the magnetic compass shall be carried.

(10) Means of communication between the standard compass position and the normal navigation control position and the emergency steering position shall be provided to the satisfaction of the Authority.

179. Depth Sounding Equipment

Vessels shall be fitted with at least one echo sounder.

180. Global Positioning Systems

(1) All vessels shall carry: –

(a) an efficient time keeping apparatus and at least one efficient sextant to assist in making accurate celestial observations.

(b) at least one global positioning system.

(2) Vessels may carry two global positioning systems operating off independent power supplies in lieu of the requirements of sub-regulation (1) (a) of this regulation.

(3) The Global Position Systems should provide means of interfacing with other navigational electronic equipment, as required.

181. Vessel Manoeuvring Data

(1) The master and owner of every vessel shall cause to be displayed in the wheelhouse for the guidance of the master, a notice which shall indicate the following:

(a) Speeds of the vessel through the water at least 3 different engine speeds or pitch values equivalent to slow, half and full speeds ahead; and

(b) The time elapsed and distance of forward travel of the vessel from the time that full astern power is applied to the vessel whilst moving at full speed ahead until the vessel has stopped in the water.

***182. Radar* and AIS requirements**.

(1) All vessels shall be fitted with marine radar capable of being interfaced with AIS, to the satisfaction of the Authority.

(2) Vessels 500 GT and over, an AIS, interfaced with the radar requirements, in

compliance with IMO specifications.

(3) Vessels <500 GT, an AIS interfaced with the required radar in compliance with 2010 Marine Notice Number, (MARPA and AIS PERFORMANCE SPECIFICATIONS).

(4) Interfacing with a Global Positioning System shall be provided.

183. Speed and Distance Indicator

Vessels over 75 metres in length shall be fitted with a suitable instrument for measuring speed and distance through the water.

184. Nautical and Other Publications and Documentation

(1) Adequate and up to date nautical publications are to be carried on board in accordance with the following list for the intended voyage:

(a) Charts;

(b) Sailing directions (SAN or Admiralty);

(c) List of lights;

(d) List of radio signals;

(e) Tide tables;

(f) Relevant Notices to Mariners; and

(g) International code of signals (For vessels operating beyond the SA EEZ).

(2) In addition to the above the following -

(a) Official Log Book;

(b) articles of Agreement;

(c) Standard Operating Procedures for the safe operation of the vessel;

(d) Company standing orders for the Master and Chief Engineer;

(e) Maritime Occupational Safety Regulations;

(f) Code of Safe Working Practices for Fisherman;

(g) Ship Captain's Medical Guide;

(h) The Merchant Shipping (Collision) Regulations;

(i) Approved Stability Book;

(j) Approved SOPEP manual;(For vessels over 400 GT)

(k) Oil Record Book; (For vessels over 400GT)

(l) Garbage Record Book;

(m) Maneuvering Data Sheet to be displayed in the Wheelhouse

(n) A copy of these Regulations;

(o) Relevant S.A. Marine Notices; and

(p) Documentation required by Merchant Shipping Radio Installation Regulations, 2002, as amended.

185. Signaling Equipment

(1) A daylight portable signaling lamp shall be provided, the operation of which is not solely dependent upon the main source of electrical power. The power supply shall in any case include a portable battery.

(2) Vessels shall carry at least the following flags; B, C, G, H, N, Q, V and Wand

vessels operating beyond the SA EEZ shall carry a full set of flags and pennants to enable communications to be sent using the International Code of Signals in force.

186. Navigating Bridge Visibility

(1) For vessels of less than 45 metres in length, the view of the sea surface shall, under all conditions of trim and deck cargo;

(a) be visible no more than 90 metres ahead from the conning position; and,

(b) take in an arc from forward of the bow to at least 10 degrees on either side.

(2) Vessels of 45 metres in length and over, shall comply with sub-regulation (1) of this regulation provided that the sea surface shall be visible no more than 2 ship lengths or 500 metres, whichever is less, ahead from the conning position.

(3) The horizontal field of vision from the conning position shall extend over an arc of not less than 225 degrees; that is from right ahead to not less than 22.5 degrees behind the beam on either side of the vessel.

(4) Fishing gear or other obstructions outside the wheelhouse forward of the beam which obstructs the visible view of sea surface from the conning position and create blind sectors in the horizontal field of vision shall meet the following requirements:

(a) No single blind sector shall be greater than an arc of 10 degrees;

(b) the total arc of blind sectors shall not exceed 20 degrees;

(c) the clear sectors between blind sectors shall be at least 5 degrees; and,

(d) in the view described in sub-regulations (1) and (2) of this regulation each individual blind sector shall not exceed 5 degrees;

(5) Observers on each bridge wing shall have a horizontal field of vision of at least 225 degrees extending from at least 45 degrees on the opposite bow through right ahead to right astern through 180 degrees on the same side of the vessel.

(6) The main steering position shall have a horizontal field of vision extending over an arc from right ahead to at least 60 degrees on each side of the vessel.

(7) The vessels side shall be visible from the bridge wing.

(8) The height between the lower edge of the wheelhouse front windows and the bridge deck shall be kept as low as possible and in no case shall the lower edge present an obstruction to the forward view.

(9) The upper edge of the navigating bridge front windows shall allow a forward view of the horizon for a person with a height of eye of 1,800 millimetres above the bridge deck at the conning position when the vessel is pitching in heavy seas.

(10) Windows shall meet the following requirements;

(a) Framing between navigating bridge windows shall be kept to a minimum and not be installed immediately forward of any workstation;

(b) to help avoid reflections, the bridge front windows should be inclined from the vertical plane top out, at an angle of not less than 10 degrees and not more than 25 degrees;

(c) polarized and tinted windows shall not be fitted;

(d) a system of ensuring a clear view through at least two wheelhouse

windows in all weather and sea conditions shall be provided and

(e) in wheelhouses where the lookout cannot be posted outside, means shall be provided such that at least two windows can be kept clear.

CHAPTER X

LIFE-SAVING APPLIANCES AND ARRANGEMENTS

PART A - GENERAL

187. Evaluation, Testing and Approval of Radio Life-Saving applicances, Life-saving Appliance and Arrangements

(1) Radio Life-Saving applicances ; Life-saving appliances and arrangements required by this Chapter and the Merchant Shipping Radio Installation Regulations, 2002, as amended, shall be approved by the Authority provided that:

(a) the appliance or arrangement is in accordance with a specification contained in these Regulations or in a Marine Notice published by the Authority which may be updated from time to time; or,

(b) the appliance or arrangement has been approved by an organisation recognised by the Authority.

(2) Novel life-saving appliances or arrangements may be approved by the Authority if the Authority is satisfied that the appliance or arrangement provides an acceptable standard of safety for the envisaged application.

(3) Radio Life Saving appliances , Life-saving appliances and arrangements shall not be used on vessels unless they have been approved by the Authority.

PART B - VESSEL REQUIREMENTS

188. Number and Types of Survival Craft and Rescue Boats

(1) Every vessel shall be provided with at least two survival craft.

(2) The number, capacity and type of survival craft and rescue boats of vessels of 75 metres in length and over shall comply with the following:

(a) Survival craft of sufficient aggregate capacity to accommodate on each side of the vessel at least the total number of persons on board shall be provided. In addition, float-free liferafts of sufficient capacity to accommodate at least 100% of the persons on board shall be provided; and

(b) a rescue boat shall be provided unless the vessel is provided with a lifeboat which fulfils the requirements of a rescue boat and which is capable of being recovered after a rescue operation.

(3) Vessels of less than 85 metres in length shall be provided with:

(a) survival craft of sufficient aggregate capacity to accommodate on each side of the vessel at least 100% of the total number of persons on board;and

(b) a rescue boat, unless the vessel is provided with a survival craft which fulfils the requirement for a rescue boat and can be recovered after a rescue operation.

(4) In lieu of meeting the requirements of sub-regulations (2)(a) or (3)(a) of this regulation, vessels may carry one or more lifeboats capable of being free-fall launched over the stern of the vessel of sufficient capacity to accommodate the total number of persons on board and with liferafts of sufficient capacity to accommodate the total number of persons on board.

(5) In lieu of meeting the requirements of sub-regulation (3)(a) of this regulation, vessels of less than 85 metres may carry :-

(a) float free liferafts of sufficient capacity to accommodate at least 100% of the persons on board;and

(b) unless the liferafts required in sub-regulation 5(a) of this regulation are stowed in a position providing for easy side-to side transfer at a single open deck level, additional liferafts shall be provided so that the total capacity on either side is 150% of the total capacity.

(6) Fully enclosed lifeboats of sufficient aggregate capacity to accommodate on each side of the vessel at least 100% of the total number of persons on board shall be provided for vessels operating South of 60oS or North of 60ºN.

(7) The number of lifeboats and rescue boats that are carried on vessels shall be sufficient to ensure that in providing for the abandonment by the total number of persons on board not more than nine liferafts need be marshalled by each lifeboat or rescue boat.

(8) The capacity of a single liferaft shall not be for more than 25 persons.

189. Availability and Stowage of Survival Craft and Rescue Boats

(1) Survival craft shall:

(a) (i) be readily available in case of emergency;

(ii) be capable of being launched safely and rapidly; and

(iii) be capable of rapid recovery if also fulfilling the requirements for a rescue boat;

(b) be so stowed that:

(i) the marshalling of persons at the embarkation deck is not impeded;

(ii) their prompt handling is not impeded;

(iii) embarkation can be effected rapidly and in good order; and

(iv) the operation of any other survival craft is not interfered with.

(2) Where the distance from the embarkation deck to the waterline of the vessel in the lightest operating condition exceeds 4.5 metres, survival craft, except float-free liferafts, shall be capable of being davit-launched with a full complement of persons or be provided with equivalent approved means of embarkation.

(3) Survival craft and launching appliances shall be in working order and available for immediate use before the vessel leaves port and kept so at all times when at sea.

(4) (a) Survival craft shall be stowed to the satisfaction of the Authority;

(b) Every lifeboat shall be attached to a separate set of davits or approved launching appliance;

(c) Survival craft shall be positioned as close to accommodation and service spaces as possible, stowed in suitable positions to ensure safe launching, with particular regard to clearance from the propeller.

(d) Lifeboats for lowering down the vessel's side shall be stowed with regard to steeply overhanging portions of the hull, so ensuring, as far as practicable, that they can be launched down the straight side of the vessel.

(e) If positioned forward, lifeboats for lowering down the vessel's side shall be stowed abaft the collision bulkhead in a sheltered position and in this respect the Authority shall give special consideration to the strength of the davits;

(f) The method of launching and recovering of rescue boats shall be approved, by the Authority, taking into account the weight of the rescue boat including its equipment and 50% of the number of persons it is certificated to carry, the construction and size of the rescue boat and its position of stowage above the waterline in the vessel's lightest operating condition;

(g) Launching and embarkation appliances shall be approved by the Authority; and

(h) (i) Liferafts shall be so stowed as to be readily available in case of emergency in such a manner as to permit them to float free from their stowage, inflate and break free from the vessel in the event of its sinking. However, davit-launched liferafts need be not float free;and

(ii) lashing, if used, shall be fitted with an automatic (hydrostatic) release system of an approved type.

190. Embarkation into survival craft

(1) Suitable arrangements shall be made for embarkation into the survival craft which shall include;

(a) at least one ladder, or other approved means, on each side of vessel to afford access to the survival craft when waterborne when the vertical distance is in excess of two metres;

(b) means for illuminating the stowage position of survival craft and their launching appliances during preparation for and the process of launching, and also for illuminating the water into which the survival craft are launched until the process of launching is completed, the power for which is to be supplied from the emergency source required by regulation 87;

(c) arrangements for warning all persons on board that the vessel is about

to be abandoned; and

(d) means for preventing any discharge of water into the survival craft.

191. Life Jackets

(1) For every person on board, a "SOLAS TYPE" life jacket approved by the SABS and the Authority shall be carried.

(2) Life jackets shall be so placed in suitable lockers at the survival craft embarkation points. Lockers shall be readily accessible and their position shall be plainly indicated to the satisfaction of the Authority.

(3) Each life jacket shall be marked with the official number or name of the vessel on which it is carried.

(4) Each life jacket shall be fitted with a light complying with the requirements of 2.2.3 and a whistle complying to 2.2.1.7 of the International Life-saving Appliance Code (LSA Code) as published by IMO.

192. Immersion Suits and Thermal Protective Aids

(1) An approved immersion suit of an appropriate size shall be provided for every person assigned to crew the rescue boat.

(2) Vessels complying with the requirements of regulations 188(2) and 188(3) and operating South of 40°S shall carry immersion suits for every person on board not accommodated in:

(a) lifeboats;

(b) davit-launched liferafts; or

(c) liferafts served by equivalent approved appliances which do not require entry into the water to board the liferaft.

(3) In addition to sub-regulation (2)(a) of this regulation, vessels operating South of 40 °S shall carry for each lifeboat at least 3 immersion suits of an approved type.

(4) Vessels operating South of Latitude 40□South shall be provided with sufficient thermal protective aids, of an approved type, for all other persons not required to be provided with immersion suits.

193. Lifebuoys

(1) At least the following number of lifebuoys, of an approved type, shall be provided:

(a) 8 lifebuoys in vessels of 85 metres in length and over; and

(b) 6 lifebuoys in vessels of less than 85 metres in length.

(2) At least half of the number of lifebuoys referred to in sub-regulation (1) of this regulation shall be provided with self-igniting lights, of an approved type.

(3) At least two of the lifebuoys provided with self-igniting lights in accordance with sub-regulation (2) of this regulation shall be provided with self-activating smoke signal, of an approved type, which shall be capable of quick release from the navigating bridge.

(4) At least one life buoy on each side of the vessel shall be fitted with buoyant lifeline, of an approved type, equal to the length of not less than twice the height at which it is stowed above the waterline in the lightest seagoing

condition, or 30 metres, whichever is greater and such lifebuoys shall not have self-igniting lights.

(5) All lifebuoys shall be so placed as to be readily accessible to the persons on board and shall always be capable of being rapidly cast loose and shall not be permanently secured in any way.

194. Line Throwing Appliances

Every vessel shall carry a line-throwing appliance of an approved type.

195. Distress Signals

(1) Every vessel shall be provided, to the satisfaction of the Authority, with means of making effective distress signals by day and by night, including at least 12 rocket parachute flares.

(2) Distress signals required by this Chapter shall be of an approved type and shall be so placed as to be readily accessible and their position shall be plainly indicated.

(3) All distress signals shall be kept in a waterproof container.

196. Retro-reflective Materials on Life-saving Appliances

All survival craft, rescue boats, life jackets and lifebuoys shall be fitted with retro-reflective material to the satisfaction of the Authority.

197. Operational Readiness, Maintenance and Inspections

(1) Before the vessel leaves port and at all times during the voyage, all life-saving appliances shall be maintained in working order and ready for immediate use.

(2) Instructions for on-board maintenance of life-saving appliances shall be provided and maintenance shall be carried out accordingly.

(3) Falls used in launching shall be turned end for end at intervals not exceeding 30 months and shall be renewed every 5 years or when necessary due to deterioration, whichever is the earlier.

(4) Spares and repair equipment shall be provided for life-saving appliances and their components which are subject to excessive wear or consumption and need to be replaced regularly.

(5) On a weekly basis;

(a) all survival craft, rescue boats and launching appliances shall be visually inspected to ensure that they are ready for use;

(b) all engines in lifeboats and rescue boats shall be run ahead and astern for a period of not less than 3 minutes provided that the ambient temperature is above the minimum temperature required for starting the engine(s); and,

(c) the general alarm system shall be tested.

A report shall be made in the official log book and safety officers record book confirming that the inspection and trials have been carried out.

(6) (a) Inspection of the life-saving appliances, including lifeboat equipment, shall be carried out monthly, by the safety officer, using a checklist to ensure that they are complete and in good order.

(b) A report of the inspection shall be entered in the Official log book and

Safety Officers record book.

(c) Emergency repairs of rescue boats may be carried out on board, however, permanent repairs shall be effected by an approved servicing agent.

198. Servicing of Life-saving Appliances

(1) Every inflatable liferaft, rescue boat and life jacket shall be serviced at intervals not exceeding 12 months at an approved servicing station.

(2) Disposable hydrostatic release units shall be replaced when their date of expiry has passed. If not disposable, hydrostatic release units shall be serviced at intervals not exceeding 12 months at an approved servicing station.

CHAPTER XI
EMERGENCY PROCEDURES, MUSTERS AND DRILLS

199. Muster List and Abandon Ship Procedure

(1) A muster list shall be drawn up when the vessel leaves port and shall include the following information

(a) duties assigned to different members of the crew in the event of an emergency in connection with:

(i) closing of watertight doors, fire doors, valves, scuppers, overboard chutes, side scuttles, skylights, portholes and other similar openings in the vessel;

(ii) equipping the survival craft (including portable radio apparatus for the survival craft);

(iii) preparation and launching of survival craft;

(iv) general preparation of other life-saving appliances;

(v) the manning of fire parties assigned to deal with fires; and

(vi) the special duties assigned in respect of the operation of fire equipment and installations and

(b) the signals for summoning the crew to their survival craft and fire stations and particulars of those signals including the emergency signal for summoning the crew to muster stations which shall be a succession of seven or more short blasts followed by one long blast on the whistle or siren.

(2) Copies of the muster list shall be posted up in the wheelhouse, engine room and in the crew accommodation.

100. Practice Musters and Drills

(1) The master shall ensure that all crew are:

(a) competent to don a life jacket,

(b) aware of the procedures to be followed when abandoning ship;

(c) familiar with the fire fighting facilities on board and actions to be taken in the event of a fire;

(d) advised of general safety practices on board;

(e) have completed a pre-sea familiarisation approved by the Authority; and

(f) be in possession of a valid medical certificate issued by a comptent doctor approved by the Authority

In particular the master shall ensure that new members joining the vessel are familiarised with the above preferably before sailing but at least within 24 hours of the vessel leaving port.

(2) The master shall ensure that a muster of the crew for fire and abandon ship drills is carried out at intervals of not more than 14 days when at sea, provided that these drills shall take place within 24 whenever 25 per cent of the crew has been replaced since the last muster. Every muster shall be carried out under the supervision of one of the vessels officers and shall be so arranged as to ensure that the crew thoroughly understand and are practised in the duties they have to perform including the fighting of fires, donning of life jackets and handling and operation of life rafts and rescue boats.

A drill should be done on leaving port even if you have only one new crew member on board. The 25% should not be a benchmark figure. In my experience I also found that doing drills on the way to the fishing grounds and

repeating them on the return voyage were the most favourable times to perform the drills as well as most practical as far as timing is concerned.

(3) When holding musters, the life-saving, fire-fighting and other safety equipment shall be examined to ensure that they are complete and in satisfactory working order.

(4) A record of each muster shall be made in the official log book and a report of each muster shall be made in the safety officers log book. If no muster is held within the prescribed periods indicated in paragraph 1, a note shall be made in the official log book detailing the reasons for the muster(s) not being held.

101. On Board Training

(1) The master shall ensure that all members of the crew are well versed and trained in the applicable provisions of the Code of Safe Working Practices for Fishermen and any other Standard Operating Procedures applicable to the vessels safe operation.

(2) An entry shall be made in the safety officers record book whenever any training is carried out.

102. Short Title and Commencement

These Regulations are called the Draft Merchant Shipping (Construction and Equipment of Fishing Vessels of 24 Metres in Length and Over) Regulations, 2022 and are published for public comments.

ANNEX 1

VESSEL CONSTRUCTION: PLANS AND PARTICULARS

The plans and particulars respecting hull, machinery and equipment to be submitted in accordance with Regulation 1 are as follows:

(1) Plans:

(a) General Arrangement;

(b) Lines Plan;

(c) Midship section, showing scantlings of shell, decking, bulwarks, frames, floors, stringers and beams;

(d) A series of Plan views showing particulars of deck openings, ventilators, air pipes and tanks;

(e) Tank Plan and Sounding Tables;

(f) An Engine Room Layout Plan;

(g) Fuel, Fire, Bilge and Ballast Pumping Arrangement Schematics;

(h) Propellor Shaft Arrangement Plan;

(i) Rudder and Steering Arrangement Plan;

(j) Engine Seating Arrangement;

(k) Refrigerant system schematics (excluding domestic refrigeration systems);

(l) Electrical Circuit Diagrams;

(m) Navigation Light Plan;

(n) Hydrostatic and Cross Curve Data (Curves or Tables);

(o) Safety Plan;and

(p) Watertight Integrity Plan.

(2) Specifications:

(a) All principal hull members, stating the materials, including keel, stem, stern post, beams, frames, floors, shell and deck and their fastening arrangements;

(b) Machinery Arrangements, including auxiliary machinery;

(c) Fuel, Fire, Bilge and Ballast pumping arrangements;

(d) Fuel pumping arrangements;

(e) Underwater fittings;

(f) Bulkheads;

(g) Hatchways, hatch coamings and covers;

(h) Deck houses;

(i) Doors, sills, side scuttles and escape hatches;

(j) Bulwarks;

(k) Ventilation;

(l) Tanks;

(m) Anchors, cables and windlass;

CHAPTER III

(n) Winches, masts and derricks;

(o) Steering Gear;

(p) Crew Accommodation;

(q) Lifeboat / Rescue Boat and Life Raft stowage and launching arrangements;

(r) Other Life Saving and Fire Fighting Equipment which is integral with the vessels structure;

(s) Navigation Lights and Sound Signals; and

(t) Electrical Arrangements.

CHAPTER III

ANNEX 2

ANCHORING, MOORING AND TOWING EQUIPMENT

Equipment Number	Stockless Bow Anchors	Chain Cable		Towline (Steel or Fibre ropes)		Mooring Lines (Steel or fibre ropes)		
	Mass per Anchor [kg]	Total Length [m]	Minimum Breaking Strength [kN]	Minimum Length [m]	Minimum Breaking Strength [kN]	No	Length (each) [m]	Minimum Breaking Strength [kN]
50-60	120	192.5	72	180	98	3	80	34
60-70	140	192.5	72	180	98	3	80	34
70-80	160	220	92	180	98	3	100	37
80-90	180	220	92	180	98	3	100	37
90-100	210	220	116	180	98	3	110	39
100-110	240	220	116	180	98	3	110	39
110-120	270	247.5	150	180	98	3	110	44
120-130	300	247.5	150	180	98	3	110	44
130-140	340	275	179	180	98	3	120	49
140-150	390	275	179	180	98	3	120	49
150-175	480	275	211	180	98	3	120	54
175-205	570	302.5	244	180	112	3	120	59
205-240	660	302.5	280	180	129	4	120	64
240-280	780	330	332	180	150	4	120	69
280-320	900	357.5	389	180	174	4	140	74
320-360	1020	357.5	449	180	207	4	140	78
360-400	1140	385	514	180	224	4	140	88

400-450	**1290**	**385**	**583**	**180**	**250**	**4**	**140**	**98**
450-500	**1440**	**412.5**	**655**	**180**	**277**	**4**	**140**	**108**
500-550	**1590**	**412.5**	**732**	**190**	**306**	**4**	**160**	**123**
550-600	**1740**	**440**	**812**	**190**	**338**	**4**	**160**	**132**
600-660	**1920**	**440**	**896**	**190**	**371**	**4**	**160**	**147**
660-720	**2100**	**440**	**981**	**190**	**406**	**4**	**160**	**157**

ANNEX 3

INFORMATION TO BE PROVIDED IN STABILITY BOOKS

(1) The information shall be in the form of plans, statements, tables and diagrams drawn up separately or appropriately grouped. The information provided shall be in English and shall include:

(a) The name of the company and person who has prepared the stability information;

(b) The vessels principal dimensions;

(c) A general description of the ship including its history, mode of operation and voyage profile;

(d) A list of applicable documentation and drawings used for the compilation of the stability book;

(e) A summary of the stability criteria applicable to the vessel;

(f) If any special procedure is required to ensure adequate stability throughout a voyage, while alongside or during dry-docking, instructions for the attention of the master and chief engineer shall be provided;.

(g) A statement defining the lightship condition of the ship as determined by an inclining experiment;

(h) Instructions on the use of the stability book highlighting any assumptions made for the information presented and including an example calculation, for the reference of the master and chief engineer, showing how the vessel stability can be checked using maximum VCG curves;

(i) A general notice on precautions against capsizing using the applicable paragraphs of Annex 2 of this Chapter plus any other necessary

precautions which may be identified;

(j) The vessel downflooding points shall be identified and curves drawn depicting the angle of down flooding versus expected operational draught for the first point of down flooding for each hydrostatic trim provided;

(k) Maximum VCG curves, which ensure vessel compliance with applicable stability criteria, for the range of expected vessel displacements and trims. Trims should be linked to the position of the vessel's LCG;

(l) A profile and plan view of the ship drawn to a suitable scale showing thereon or in associated tables:

(i) the position of the fore and aft perpendiculars as well as the vessels baseline. The vessel's baseline should preferably be the moulded baseline;

(ii) The position of spaces available for the carriage of cargo, fuel, stores, feed water, domestic water and ballast water;

(iii) The weight and position of any installed fixed ballast;and

(iv) The enclosed volume assumed for the compilation of cross curve (KN) data;

(m) For each load condition which the vessel is required to be evaluated, the following information shall be provided:

(i) Diagrams (profile and plan views, as required) drawn to a suitable scale and statements showing the lightship weight, the position of permanent ballast, if any, and total weights of all components of the weight shall be provided, for each load condition evaluated;

(ii) The vessel's displacement, vertical centre of gravity and longitudinal centre of gravity, free surface correction, KM and GM_0.

(iii) Vessel trim information, clearly indicating whether the reference point is the baseline, underside of keel or other;

(iv) Draught at forward perpendicular, amidships and aft perpendicular. Draughts at the vessel's draught marks may also be required;

(v) Tabulated values of KN for the range of stability being evaluated.

(vi) A curve of statical stability (righting lever curve), corrected for free surface, with the angle of downflooding clearly indicated thereon;

(vii) The vessels freeboard;and

(viii) A summary of results indicating compliance or non-compliance of the vessel with the applicable stability criteria. The criteria of Regulations 3 and 5 shall apply to all vessels. The criteria of Regulations 6, 8, 9,10, 13 and 14 shall only be applicable in respect of certain vessel types and areas of operation.

(n) An inclining experiment report detailing the inclining experiment procedure and results obtained. Inclining experiments shall be conducted in accordance with guidance laid down by the Authority;

(o) Hydrostatic and cross curves of stability data (calculated on a free trimming basis), in tabular format, for the range of displacements and trims to be expected in normal operating conditions. The range of trims provided shall be such that the trim steps provided are not more than 2% of LBP and that any extrapolation required is within 1% of LBP. The enclosed volumes used for the calculation of the vessel's cross curves shall be identified;

(p) Tank sounding tables providing tank sounding, volume, weight, VCG, LCG, TCG (if necessary) and free surface information;

ANNEX 4

GENERAL PRECAUTIONS AGAINST CAPSIZING AND FLOODING FOR SHIPS

(1) Compliance with the stability criteria does not ensure immunity against capsizing, regardless of the circumstances, or absolve the master from his responsibilities. Masters should therefore exercise prudence and good seamanship, having regard to the season of the year, weather forecasts and the navigational zone, and should take the appropriate action as to speed and course warranted by the prevailing circumstances.

(2) Before a voyage commences, care should be taken to ensure that sizeable pieces of equipment and stores have been properly stowed or lashed so as to minimize the possibility of both longitudinal and lateral shifting, while at sea, under the effect of acceleration caused by rolling and pitching.

(3) A ship, when engaged in towing operations, should not carry deck cargo, except that a limited amount, properly secured, which would neither endanger the safe working of the crew on deck nor impede the proper functioning of of the towing equipment, may be accepted.

(4) The number of partially filled or slack tanks should be kept to a minimum because of their adverse effect on stability.

(5) The stability criteria contained in these regulations set minimum values, but no maximum values are recommended. It is advisable to avoid excessive values of metacentric height, since these might lead to acceleration forces which would be prejudicial to the ship, its complement, its equipment and to safe carriage of cargo.

(6) All doorways and other openings through which water can enter into the hull, deck-houses, forecastle, etc., should be suitably closed in adverse weather conditions and accordingly all appliances for this purpose should be maintained on board and in good condition.

(7) Weathertight and watertight hatches, doors, etc., should be kept closed during navigation, except when necessarily opened for the working of the ship, and should always be ready for immediately closure and be clearly marked to indicate that these fittings are to be kept closed except for access. Hatch covers and flush deck scuttles in fishing vessels should be kept properly secured when not in use during fishing operations. All portable deadlights should be maintained in good condition and securely closed in bad weather.

(8) Any closing devices provided for vent pipes to fuel tanks should be secured in bad weather.

(9) Reliance on automatic steering may be dangerous as this prevents ready changes to course which may be needed in bad weather.

(10) In all conditions of loading, care should be taken to maintain a seaworthy freeboard.

(11) In severe weather, the speed of the ship should be reduced if excessive rolling, propeller emergence, shipping of water on deck or heavy slamming occurs. Six heavy slammings or 25 propeller emergencies during 100 pitching motions should be considered dangerous.

(12) Special attention should be paid when a ship is sailing in following or quartering seas because dangerous phenomena such as parametric resonance, broaching to, reduction of stability on the wave crest, and excessive rolling may occur singularly, in sequence or simultaneously in a multiple combination, creating a threat of capsize. Particularly dangerous is the situation when the wave length is of the order of 1.0 to 1.5 ship=s length. A ship=s speed and / or course should be altered appropriately to avoid the above-mentioned phenomena.

(13) Water trapping in deck wells should be avoided. If freeing ports are not sufficient for the drainage of the well, the speed of the ship should be reduced or the course changed, or both. Freeing ports provided with closing appliances should always be capable of functioning and are not to be locked.

(14) Masters should be aware that steep or breaking waves may occur in certain areas, or in certain wind and current combinations (river estuaries, shallow water areas, funnel-shaped bays, etc.) These waves are particularly dangerous, especially for small ships.

(15) The use of operational guidelines for avoiding dangerous situations in severe weather conditions or an on-board computer-based system is recommended. The method should be simple to use.

(16) Additional fishing operation specific precautions

(a) All fishing gear and other large weights should be properly stowed and placed as low as possible.

(b) Particular care should be taken when the pull from fishing gear might have a bad effect on stability e.g., when nets are hauled by power-block or the trawl catches obstructions on the sea-bed.

(c) Gear for releasing deck load in fishing vessels carrying catch on deck, e.g., herring, should be kept in good working condition for use if necessary.

(d) When the main deck is prepared for the carriage of deck load by division with pound boards, there should be slots between them of suitable size to allow easy flow of water to freeing ports to prevent trapping of water.

(e) Fish should never be carried in bulk without first being sure that the portable divisions in the holds are properly installed.

(f) Particular care should be taken when the pull from fishing gear results in dangerous heel angles. This may occur when fishing gear fastens onto an underwater obstacle or when handling fishing gear, particularly on purse seiners, or when one of the trawl wires tears off. The heel angles caused by the fishing gear in these situations may be eliminated by employing devices which can relieve or remove excessive forces applied through the fishing gear. Such devices should

not impose a danger to the vessel through operating in circumstances other than those for which they were intended.

(17) Additional bilge/ejector operation specific precautions:

(a) keep the bilge pump, bilge ejectors and bilge system in a well maintained condition;

(b) regularly check spaces not fitted with a high level alarm for water ingress;

(c) regularly check high level alarms;

(d) weekly checks of bilge strainers and mud boxes and clean if required;

(e) clean grids for fish hold suctions whenever possible and always prior to loading of the catch;

(f) check that all valves within the bilges/ejector system are checked at monthly intervals locally, and in the case where fitted, remotely;

(g) check and test bilge and other pumps not in regular use on a monthly basis;

(h) keep areas where suctions are located free of rubbish and debris;

(i) any modifications to the bilge/ejector system and factory deck anti-flooding systems are to be advised to the Authority for approval;

ANNEX 5

SEVERE WIND AND ROLLING CRITERION

(WEATHER CRITERION)

(1) The ability of a ship to withstand the combined effects of beam wind and rolling should be demonstrated with reference to figure 1 as follows:

(a) The ship is subjected to a steady wind pressure acting perpendicular to the ship=s centreline which results in a steady wind heeling lever (l_{W1});

(b) from the resultant angle of equilibrium ($\square_o$), the ship is assumed to roll owing to wave action to an angle of roll ($\square_1$), to windward. Attention should be paid to the effect of steady wind so that excessive resultant angles of heel are avoided. The angle of heel due to steady wind ($\square_o$), should not exceed 16° or 80% of the angle of deck edge immersion, whichever is less;

(c) the ship is then subjected to a gust wind pressure which results in a gust wind heeling lever (l_{W2});

(d) under these circumstances, area b should be equal to or greater than area a; and

(e) free surface effects should be accounted for in the standard conditions of loading

Figure 1 – Severe wind and rolling

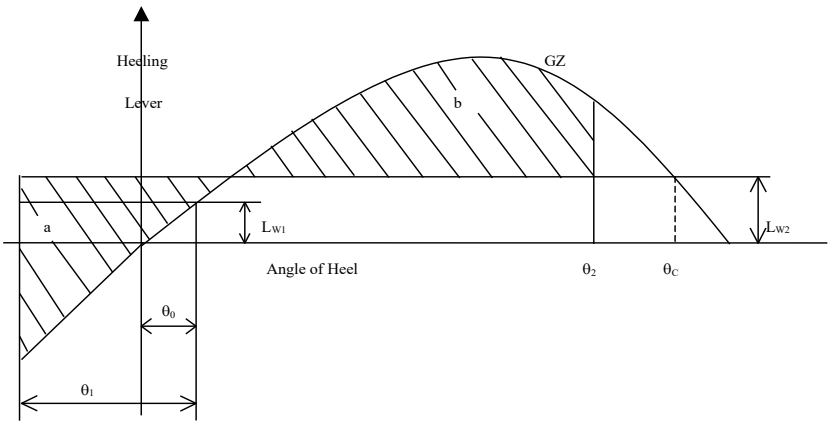
(2) The wind heeling levers and referred to in paragraphs (1)(a) and (1)(c) are constant values at all angles of inclination and should be calculated as follows:

$$l_{W1} = \frac{PAZ}{1000\,g} \text{ [m]} \quad \text{and} \quad l_{W2} = 1.5\, l_{W1} \text{ [m]}$$

where:

P = as calculated in accordance with the table below. The value of P used for ships in restricted service may be reduced, subject to the approval of the Authority;

h [m]	1	2	3	4	5	6 and over
P [N/m^2]	316	386	429	460	485	504



θ_o = angle of heel under action of steady wind.
θ_1 = Angle of roll to windward due to wave action
θ_2 = Angle of downflooding or 50° or θ_c whichever is less
θ_c = Angle of 2nd intercept between wind heeling lever (l_{W2}) and GZ curve.

where h is the vertical distance from the centre of the projected vertical area of the ship above the waterline to the waterline.

A = projected lateral area of the portion of the ship and deck cargo above the waterline [m^2];

Z = vertical distance from the centre of A to the centre of the underwater lateral area or approximately to a point at one half the draught [m];

□ = displacement [t] and;

g = 9.81 [m/s^2]

(3) The angle of roll (□$_1$) referred to in paragraph (1)(b) should be calculated as follows:

□$_1$ = 109 k X_1 X_2 □rs [degrees]

where

X1 = factor as shown in table 2

X2 = factor as shown in table 3

k = factor as follows:

k = 1.0 for a round-bilged ship having no bilge or bar keels

k = 0.7 for a ship having sharp bilges

k = as shown in table 4 for a ship having bilge keels, a bar keel or both.

r = 0.73 □ 0.6 OG/d

with: OG =distance between the centre of gravity and the waterline, [m]

(+ if the centre of gravity is above the waterline, - if it is below)

d = mean moulded draught of the ship [m].

s = factor as shown in table 5

B/d	X_1

C_B	X_2

□ 2.4	1.0
2.5	0.98
2.6	0.96
2.7	0.95
2.8	0.93
2.9	0.91
3.0	0.90
3.1	0.88
3.2	0.86
3.4	0.82
□ 3.5	0.80

Table 2 – Values of factor X_1

□ 0.45	0.75
0.50	0.82
0.55	0.89
0.60	0.95
0.65	0.97
□ 0.70	1.00

Table 3 – Values of factor X_2

$\frac{Ak \times 100}{L \times B}$	K
0	1.0
1.0	0.98
1.5	0.95
2.0	0.88
2.5	0.79
3.0	0.74

T	S
□ 6	0.100
7	0.098
8	0.093
12	0.065
14	0.053
16	0.044

3.5	0.72
□ 4.0	0.70

Table 4 – Values of factor k

18	0.038
□ 20	0.035

Table 5 – Values of factor s

(Intermediate values in these tables should be obtained by linear interpolation)

Rolling period $T = \frac{2\,C\,B}{\square GM}$ [s]

where: $C = 0.373 + 0.023\,(B/d) - 0.043\,(L/100)$

The symbols in the above tables and formula for the rolling period are defined as follows:

L = waterline length of the ship [m]

B = moulded breadth of the ship [m]

d = mean moulded draught of the ship (m)

C_B = block coefficient

A_k = total overall area of bilge keels, or area of the lateral projection on the bar keel, or sum of these areas [m^2].

GM = metacentric height corrected for free surface effect [m].

ANNEX 6

ICING CONSIDERATIONS

(1) For vessels operating in areas where ice accretion is likely to occur, the following iceing allowance should be made in the stability calculations:

(a) 30 kg per square metre on exposed weather decks and gangways;

(b) 7.5 kg per square metre for projected lateral area of each side of the

vessel above the water plane;and

(c) The projected lateral area of discontinuous surfaces of rail, sundry booms, spars (except masts) and rigging of vessels having no sails and the projected area of other small objects shall be computed by increasing the total projected area of continuous surfaces by 5% and the static moments of this area by 10%.

(2) In the application of the above standards, the following ice areas shall apply:

(a) the area north of of Latitude 65°30'N, between Longitude 28°W and the west coast of Iceland; north of the north coast of Iceland; north of the rhumb line running from Latitude 66°N, Longitude15°W to Latitude 73°30'N, Longitude 15°E, north of Latitude 73°30'N between Longitude 15°E and 35°E, and east of Longitude35°E, as well as north of Latitude 56°N in the Baltic sea;

(b) the area north of Latitude 43°N bounded in the west by the North American coast and in the east by the rhumb running from Latitude 43°N, Longitude 48°W to Latitude 63°N, Longitude 28°W and thence along Longitude 28°W;

(c) all seas north of the North American Continent, west of the areas defined in (a) and (b);

(d) the Bering and Okhotsk Seas and the Tartary Strait during the ice season; and

(e) South of Latitude 60°S.

(3) For vessels operating within the areas defined above:

(a) For vessels operating in the areas defined in (a), (c), (d) and (e) known to have ice conditions significantly different from those described in paragraph (1), ice accretion requirements of one half to twice the required allowance may be applied at the discretion of the Authority;

and

(b) For vessels operating within the area defined in (b), where ice accretion in excess of twice the allowance required by paragraph (1) may be expected, more severe allowances may be applied at the discretion of the authority.

ANNEX 7 **Regulation 10**

LIFTING OF HEAVY WEIGHTS OVER THE SIDE

(1) The ability of a ship to withstand the effects of lifting heavy weights over the side should be demonstrated as follows:

(a) The weight is initially assumed to be on the upper deck on the centreline of the vessel;

(b) With reference to the figure below, the heeling arm curve is calculated as follows:

Heeling arm = w a cos□ with w = weight, [tonnes]
□□□□□□□ □□□□□□□□□□□□□□W a = eccentricity of max point of
extension from ships centreline, [m]
W□□□= Ships displacement,[tonnes]
□□ □□□□□□□□□□ = Angle of inclination, [deg]

(c) Criteria with reference to figure 1 below, stability is considered satisfactory if:

(i) The angle of heel (at point C) is less than 15 degrees (subject to crane operating restrictions);

(ii) The heeling arm (GZ) at the intersection of the righting arm and heeling arm curves (point C) is less than six tenths of the maximum righting arm value;

(iii) The reserve of dynamic stability (shaded area) is greater than four tenths of the total area under the righting arm (GZ) curve;

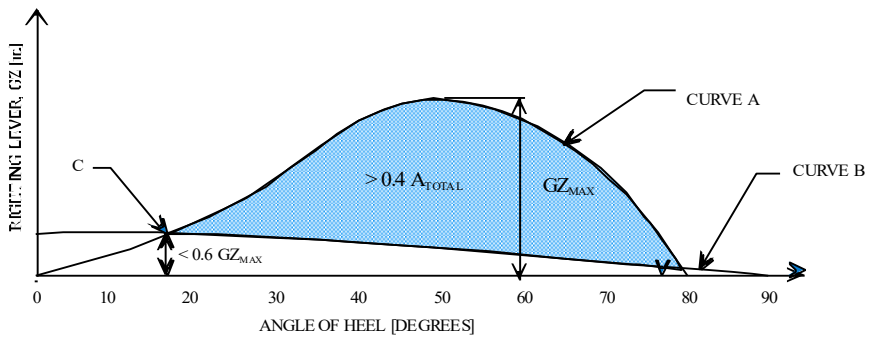
Figure 1 - Lifting of Heavy weights over the side

ANNEX 8

MINIMUM FREEBOARD AND BOW HEIGHT

General requirements:

(1) The structure of the vessel must be appropriate to the loading of the vessel. This means that where a scantling draft has been set by a classification society, this should not be exceeded . Where no such draft has been set the owner shall satisfy the Authority that the structure of the vessel is capable of



withstanding the proposed loading of the vessel by submitting information (including calculations where performed) demonstrating compliance with a

recognised structural standard.

(2) The waterline should not pass above the main deck level at any point in way of exposed main decks or non-weathertight shelters. However, the arrangement of any given vessel may be such that due to a combination of trim and sheer, and provided all other requirements for freeboard and structure are met, the waterline may pass above the main deck in way of a weathertight shelter.

Bow height (H_B)

(3) Flush decked vessels

(a) The value of the bow height, H_B, in metres, shall be given by:

H_B = 0.117 L x (1- L/220) metres

or, for existing vessels;

H_B = 1 + (L/16) metres, if less.

(b) Where the bow height is obtained by sheer, this should extend from the stem to at least 0.15*L* aft of the Forward Perpendicular (see Figure 1b).

(c) Where a bulwark is fitted, this may be taken into account for a height of up to one metre provided that the bulwark extends from the stem to a point 0.15*L* aft of the Forward Perpendicular (see Figure 2a).

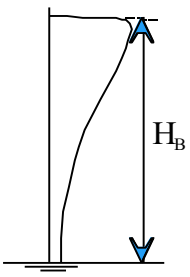


Figure 1a

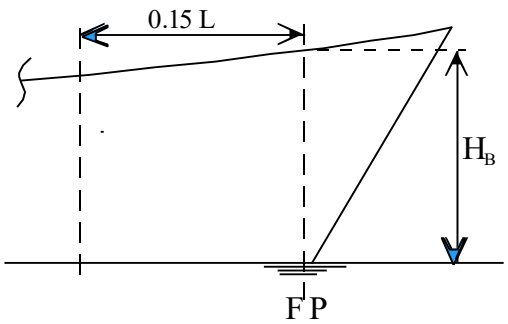


Figure 1b

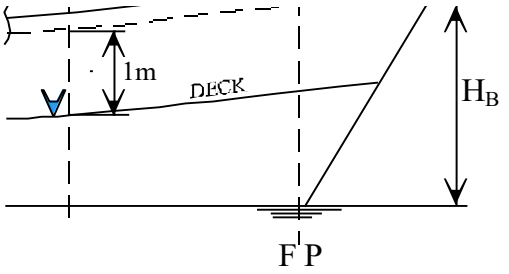


Figure 2a

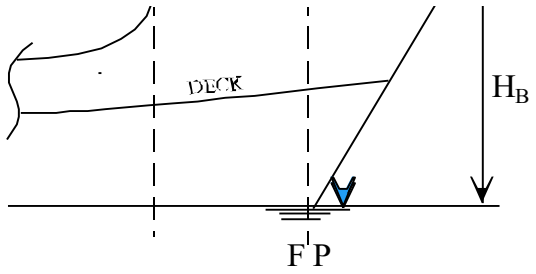


Figure 2b

(4) Vessels with a forecastle

(a) The bow height of vessels with a weathertight or non-weathertight forecastle may be measured from the forecastle deck, provided the forecastle extends from the stem to at least 0.07 *L* aft of the Forward Perpendicular (see Figure 2b). A non–weathertight forecastle extending more than 0.15*L* should be fitted with means of draining water from the shelter.

(a) Where a bulwark is fitted, this may be taken into account for a height of up to one metre provided that the bulwark extends from the stem to a point 0.15*L* aft of the Forward Perpendicular.

Aft freeboard (H_{DA})

(5) General principals

(a) The general aim to provide adequate protection against the vessel being pooped and to ensure that adequate aft freeboard is maintained to reduce, as far as possible:

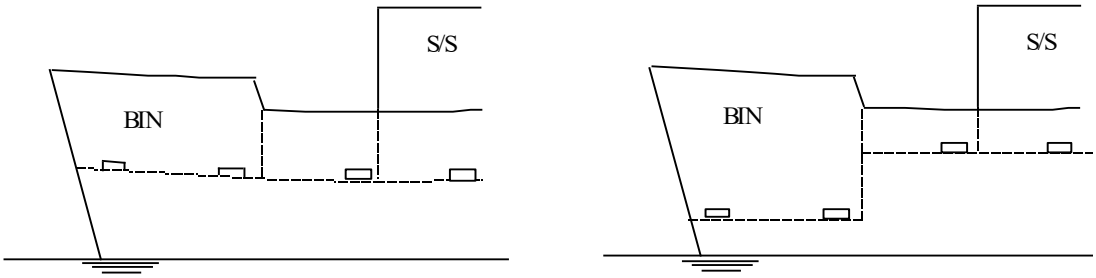
(i) danger to crew working on deck from green seas shipped over the stern,

(ii) downflooding through doors hatches vent or pipes, and

(iii) loss of stability due to water trapped on deck.

(b) In flush decked vessels, H_{DA}, should be regarded as adequate to fulfil

the above requirements. Reduced freeboards may be considered for vessels where the arrangement of superstructures provides greater protection in **all** the above categories. As vessels vary considerably in design, all relevant aspects of the arrangement and operation of the vessel should be taken into account, for example sub-paragraph



(5)(a)(i) would not be as important for a vessel where crew do not work on the after deck at sea.

(c) The following paragraphs set out the requirements for aft freeboard given various arrangements. If the arrangement of a particular vessel does not fit any of the given patterns, then the case should be referred to the Authority.

(6) Flush decked vessels

The value of H_{DA}, in metres, is given by the following formula:

$$H_{DA} = 0.24 + 0.026\,L$$

(7) Vessels with exposed stern wells or net bins

(a) The following conditions should be satisfied for vessels with an exposed after well or a net bin in order to qualify for a reduced after freeboard:

(i) The well or net bin should not extend further than a line *L*/5 forward of the Aft Perpendicular. Examples of net bin arrangements are shown in Figure 3;

(ii) The boundary deck of a well or net bin should be watertight without any

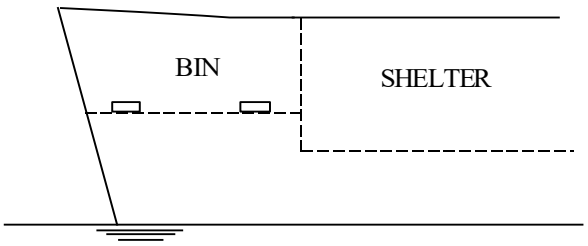
means of access. The only exception, in the case of a well, should be an escape from crew accommodation, where it is not practical to avoid this. The hatch should only be opened in an emergency;

Figure 3a Figure 3b

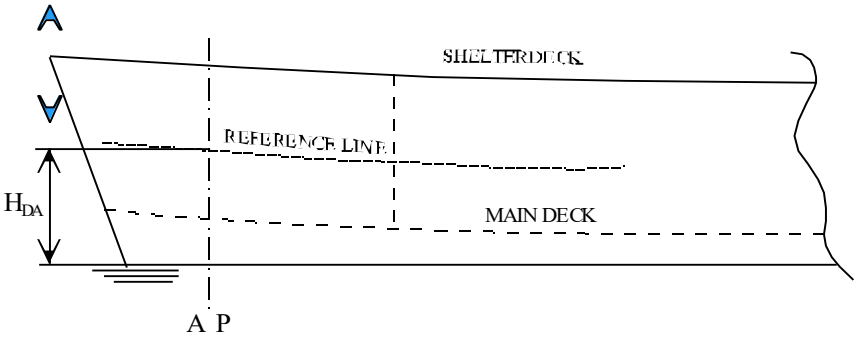
Figure 3c

(iii) The vessel should be watertight up to a height of 600mm above the reference line (see Figure 4) across the full width of the vessel at the forward boundary bulkhead. Where a net bin is positioned on one side, the forward boundary bulkhead should, in conjunction with an adjoining watertight compartment, be watertight up to the same level;

Figure 4



(iv) There should be no need for frequent operational crew access to the



well or net bin at sea;

(v) Positioning machinery space ventilator inlets in a well or net bin should be avoided. All ventilator openings should have their lower edge as high and as far inboard as practical and at least 900mm above the reference line;

(vi) Air pipes should have the lower edge of their goose neck or bend at least 760mm above the reference line;

(vii) If defined, the scantling draft should not be exceeded;

(viii) The watertight boundaries of the well or net bin should be of equivalent strength to the main hull. The bulwarks should be of solid construction and extend at least H_{DA} above the deepest waterline;

(b) The freeboard to the upper deck at the forward bulkhead of the well should not be less than that defined by the reference line;

(c) Provided all the conditions in sub-paragraph (7)(a)(i) are satisfied and sub-paragraph (7)(d) does not apply, the aft freeboard may be zero to the lower boundary deck of the well or net bin and the minimum freeboard set out in paragraph (14) need not be applied. No operational waterlines should cross the lower boundary deck in way of the well or net bin area in such circumstances the minimum freeboard need to be applied in a way of the well or net bin;

(d) If the crew are required to access the well or net bin at sea for operational reasons, then the previous sub-paragraph (7)(c) should not be applied. In such cases, the after freeboard should be at least 62.5% of the value of H_{DA} measured from the deepest operational waterline to the lower boundary of the well or net bin at the AP;

(e) If an access door or hatch (other than an escape hatch) is required in the boundary of the well or net bin, the vessel should meet the full H_{DA} requirement; and

CONTINUES ON PAGE 514 OF BOOK 5

Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
Contact Centre Tel: 012-748 6200. eMail: info.egazette@gpw.gov.za
Publications: Tel: (012) 748 6053, 748 6061, 748 6065

Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 681 11 March Maart 2022 No. 46032

PART 5 OF 5

ISSN 1682-5845

(f) Where the freeboard to the edge of well deck of less than the minimum freeboard ([refer to paragraph 14) at any point in way of the well or net bin, then the freeing port area in way of the well or net bin required by Regulation 19 of Chapter III shall be increased pro rata such that the area is doubled for a zero freeboard.

(8) Vessels with an enclosed non-weathertight stern:

(a) To qualify for a reduced after freeboard, vessels with an enclosed non-weathertight enclosure aft of a full width superstructure (see Figure 5a), shall satisfy the following conditions:

(i) The enclosure shall extend from the stern;

(ii) The boundary deck of the enclosure shall be weathertight without any means of access below. The only exception may be an escape hatch from the crew accommodation, should it not be practical to trunk the escape up to an exposed deck. Such a hatch shall only be opened in an emergency;

(iii) The forward boundary bulkhead shall be full width and watertight without any openings at least up to a height of 600mm above the reference line;

(iv) Machinery space ventilators should not be positioned within the enclosure, unless it is impractical not to do so.Where such ventilator openings are unavoidable, these should be positioned as high and as far inboard as practical and have their lower edge at least 900mm above the reference line;

(v) Air pipes within the enclosure should have the lower edge of their goose neck or bend at least 760mm above the reference line;

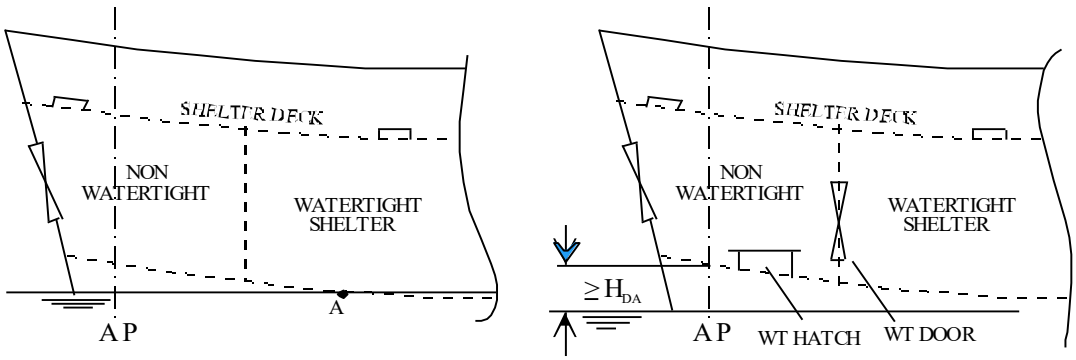
(vi) If defined, the scantling draft shall not be exceeded;

(vii) The boundaries of the enclosure shall be of equivalent strength to the main hull;

(viii) Freeing ports in accordance with Regulation 19 of Chapter III, or an equivalent passive system capable of removing any water trapped on deck, shall be fitted;and

(ix) With the enclosure flooded to the height of the bottom of any substantial opening excluding freeing ports, if fitted, the vessel shall still comply with the stability criteria required by this Chapter;

Figure 5a - A: Zero Minimum Freeboard Figure 5b - With Openings in Well



(b) Provided all the conditions in sub-paragraph (8)(a) are met, the aft freeboard (H_{DA}) may be zero to the lower boundary deck of the well, provided no operational waterlines cross the lower boundary deck in way of the well area. This effectively limits the operational waterlines to the point A on Figure 5a;

(c) The reduction in after freeboard shall be restricted to 37.5% of H_{DA} measured from the deepest operational waterline to the lower boundary of the well at the AP if an access hatch or door is required in the boundary of the well (see Figure 5b). Such a hatch or door in the well

should be fully weathertight and be fitted with a 600mm coaming. In all other respects the requirements of sub-paragraph (8)(a) above should be met (the door or hatch should be assumed to be closed for the calculations). Due to the increased risk of flooding, if any further openings are required then no reduction in freeboard shall be granted;

(d) If the vessel has transom openings which may provide a means of entry for substantial quantities of water in the event of the vessel being pooped, then it should either be demonstrated that the vessel is able to survive rapid flooding of the well up to the level of the openings or the freeing port areas should be increased to enable water to be freed more rapidly; and

(e) Where freeboards of less than the minimum freeboard are to be used then the Authority may require that the freeing port area be increased.

(9) Vessels with an enclosed weathertight stern, poop or raised quarter-deck

(a) This paragraph applies to vessels with a weathertight poop or full width shelter extending from the stern to a point at least *L*/5 forward of the AP. The shelter should be fully weathertight without any side or weatherdeck openings which are required to be used at sea except weathertight doors and hatches for crew access only. Due to the increased risk of flooding, any weathertight structures with openings for fishing gear may not take advantage of the reduced freeboards in this paragraph unless such openings have a means of closure which enables it to be closed weathertight at any time, including if such an opening is normally open during fishing operations and is of sufficient size to be considered to be a downflooding point. An example would be a small hole in a side opening when monofilament lines are deployed from a long-liner;

(b) The principle that should be applied in this circumstance is that the weathertight structure should provide protection against the vessel being pooped. This is achieved by ensuring that hatches, vents and air

pipes are no nearer the deepest operating waterline than would be allowed for a flush decked vessel, thus providing equivalent protection;

(c) A typical arrangement is given in Figure 6;

Figure 6

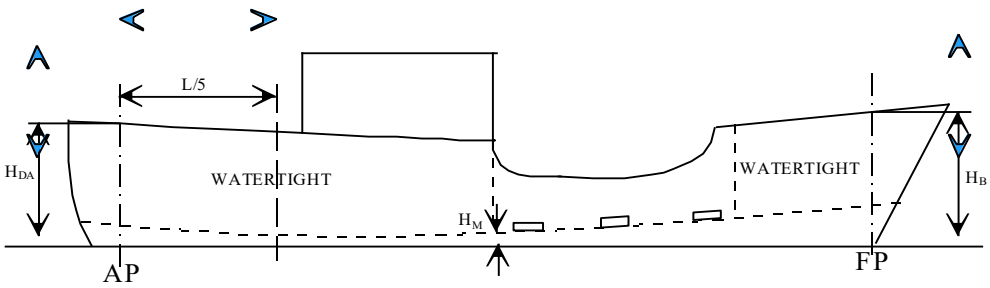
(d) The freeboard may be measured from the poop deck at the AP for compliance with H_{DA}, provided the conditions set out in sub-paragraphs (9)(a) and (9)(b) of are met;

(e) Where a weathertight poop is fitted but is less than $L/5$ in length but greater than $0.07L$ in length, then the freeboard may continue to be measured from the poop deck level, but the minimum aft freeboard shalll be given by the formula:

$$H_{DA} + H_S \times \frac{0.2-(L_S/L)}{(0.13)}$$

Where Ls = The length of the poop

Hs = The height of the poop at the AP



(g) The minimum freeboard (H_M) set out in paragraph (14) shall be met on all deck areas fitted with freeing ports;

(h) All exposed access openings in the poop or shelter deck should have coamings as if fitted on the main deck, unless the upper deck is greater than (H_{DA} + 1.98m) above the deepest waterline at the AP, in which case the deck may be treated as a superstructure;

(i) All ventilators and air pipes shall have coamings and closures as if fitted on an exposed main deck, unless the upper deck is greater than (H_{DA} + 1.98m) above the deepest waterline at the AP, in which case the deck may be treated as a superstructure;

(10) Vessels with a non-weathertight enclosed shelter:

(a) this applies to non-weathertight enclosed spaces wholly within *L*/5 aft of the FP and *L*/5 fwd of the AP. The area of non-closeable openings shall not exceed (5%) of the deck area of the well (see Figure 7). Balanced freeing ports may be counted as closeable. Figure 8 illustrates the principle that should be used to measure the area of an opening;

(b) such spaces may have zero freeboard to the main deck, but no waterlines shall cross the main deck in way of the space and the drainage arrangements shall be able to remove water from the deck rapidly and effectively. If the area of any opening which may be opened at sea is greater than (5% of the area of the shelter), then the shelter should be treated as open or exposed;

(c) the lowest edge of any side opening in the shelter shall be above the bulwark height specified by Regulation 3 of Chapter VII unless it is required to be otherwise for operational reasons. In such circumstances the Authority shall be satisfied that adequate provision is made for the safety of the crew whilst the side opening is in use;

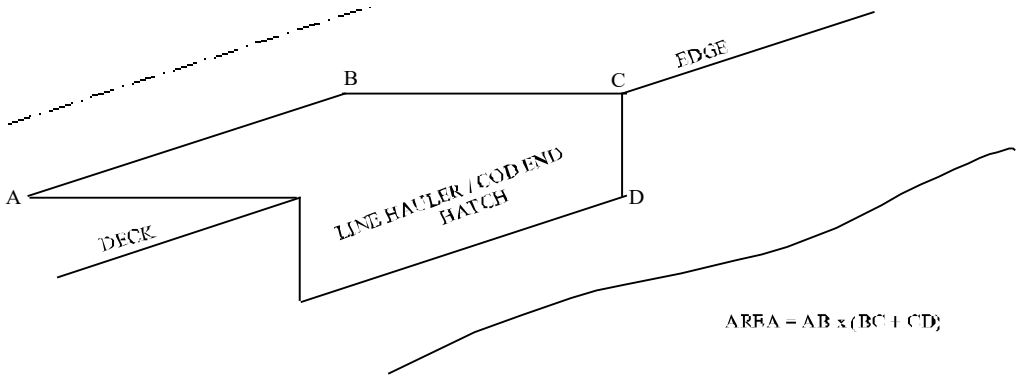
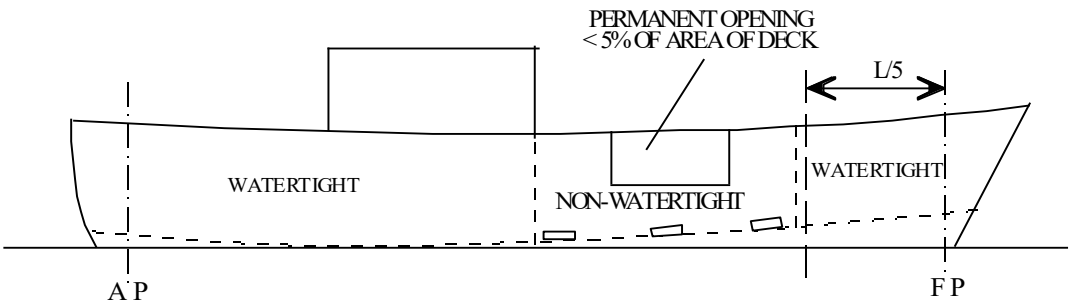


Figure 7 - Enclosed centre well

Figure 8 - Calculation of Hatch Area

(11) Calculations of aft freeboard:

(a) The preceding paragraphs have set out the requirements for determining the aft freeboard given various vessel arrangements. Reference should be made to the appropriate paragraph in order to determine the critical requirement in relation to the actual arrangement of the vessel, taking account of the positions of air pipes, ventilators openings;and



(b) When presenting aft freeboard values in each condition for stability submissions, the critical point should be defined and freeboards given from this point to each operational waterline;

Minimum freeboard (H_M)

(12) A minimum freeboard is required in order to ensure that water can be freed from an exposed deck rapidly and effectively through freeing ports, thus providing a safe working platform for crew working on the deck and avoiding any build up of water which may result in reductions in stability or downflooding.

(13) The minimum freeboard should be applied to all deck areas where freeing ports or decks lined with rails are fitted with the exception of net bins at any point along the length of the vessel., except in way of net bins or wells as defined in paragraph 3.

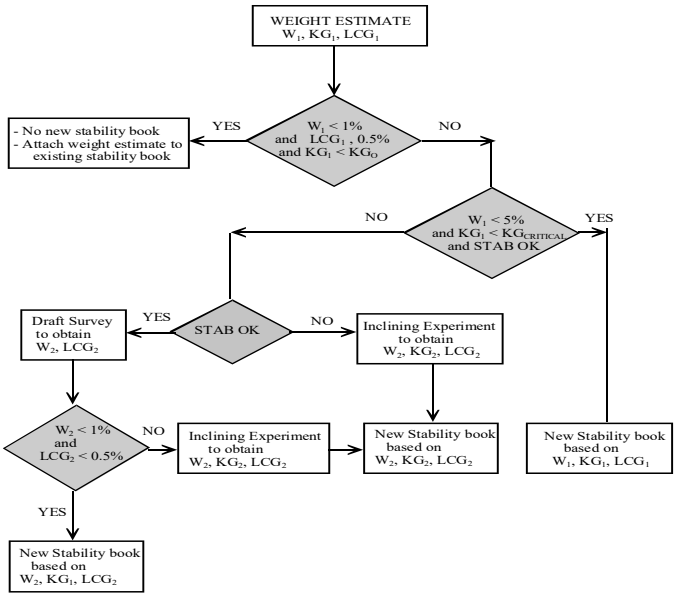
(14) The minimum freeboard, in metres, should be derived from the following formula:

$$H_M = \frac{kL}{B} \qquad \text{where } k = 0.117 - 0.0015L$$

The minimum freeboard need not be applied in way of enclosed shelters where freeing ports are not fitted, but this does not remove the need for the provision of efficient drainage.

ANNEX 9

FLOW CHART FOR THE RELIABILITY



OF STABILITY INFORMATION

When a ship is converted or modified so that the lightship changes, the following process is to be followed:

NOTE

4. W_o, KG_o, LCG_o = Original lightship ship particulars (obtained from inclining experiment).
   W_1, KG_1, LCG_1 = Estimated new lightship particulars.
   W_2. KG_2, LCG_2 = Lightship particulars (obtained from a draft survey / inclining experiment).

2. $\Delta W_1 = \frac{\Delta W_1 - W_o}{W_o}$; $\Delta W_2 = \frac{\Delta W_2 - W_0}{W_0}$

$\Delta LCG_1 = \frac{\Delta LCG_1 - LCG_o}{LCG_o}$; $\Delta LCG_2 = \frac{\Delta LCG_2 - LCG_0}{LCG_0}$

$KG_{CRITICAL} = KG_o + 0.1$ m

3. STAB OK means that in all statutory load conditions, the GM_o is greater than 0.5 m and the GZ value reaches 0.5 m at an angle greater than or equal to 30°.

ANNEX 10 - MAXIMUM RECOMMENDED NOISE LEVELS

1. The following table illustrates the acceptable maximum daily noise doses for unprotected ears, based on dB(A) sound energy received;

Sound Energy Received; dB(A)	Recommended Maximum Duration for Unprotected Ears
Less than 80	no limit (24 hours)
82	16 hours
85	8 hours
90	2 hours
95	50 minutes
100	15 minutes
105	5 minutes
110	1 minute

2. Examples of noise levels in different locations to allow personnel to gauge the existence of conditions giving potentially harmful noise exposure;

120 dB(A) Between two running 1800 rpm diesel generators

110 dB(A) In a small ship engine room with 900 rpm diesel main engines and 1550 rpm generator

105 dB(A) 1 metre from the engine tops of a slow speed (120 rpm) diesel main engine

100 dB(A) between two running 600 rpm diesel generators

95 dB(A) in a slow speed (120 rpm) diesel main engine room at the aft end of the floor plate level

90 dB(A) machine shop or quieter parts of a ship's engine room

80 dB(A) 15 metres from a pneumatic drill

70 dB(A) vacuum cleaner at 3 metres

60 dB(A) inside a supermarket

50 dB(A) inside a house in a suburban area during daytime

1000000dB in a toilet after eating a vindaloo

Note: The levels provided are typical values - engine noise varies considerably with type of installation.

ANNEX 11

TRUNKED MECHANICAL VENTILATION SYSTEMS

(1) Trunked mechanical ventilation systems shall be capable of the standards of performance tabled below.

(2) If any store room is served by a fan which provides warmed air for any other space, the store room shall be provided with ventilation trunking separate from that serving such other space.

(3) The clear area of the exhaust openings provided in conjunction with the system shall be sufficient to ensure that the velocity of air at each opening does not exceed 5 metres per second when the system is in operation.

(4) The system shall be quiet in operation

(5) All trunking forming part of the system shall be provided with non-return flaps where such flaps are necessary for the exclusion of effluvia and the

preservation of health of the crew.

(6) If the system is designed to circulate heated air as the sole means of heating the crew accommodation, the system shall be sub-divided into sections which can be separately controlled to the extent necessary to enable comfortable temperature to be maintained in all parts of the crew accommodation.

Cate-gory	Description of Space	Fresh air changes per hour	Volume of fresh air, in m^3/min, for each person likely to use the room at any one time
	Rooms (other than rooms in category C) in deck houses above the upper or shelter deck:		
	(1) Outside rooms (Not adjoining machinery casing).	10	1.4
A	(2) Inside rooms and rooms adjoining machinery casing.	15	1.4
B	Rooms (other than rooms in category C) in side to side superstructures above the upper or shelter deck:		
	(1) Outside rooms (Not adjoining machinery casing).	12	1.4
	(2) Inside rooms and rooms adjoining machinery casing.	15	1.4
C	Mess rooms, smoking rooms and recreation rooms (above the upper or shelter deck)		
	(1) Not adjoining machinery casing.	15	0.7 (a)
	(2) Adjoining the machinery casing.	18	0.7 (a)
D	Passageways adjoining machinery casings	4	-
E	Rooms in tween decks		
	(1) Not adjoining machinery casing.	12	1.4
	(2) Abreast but not adjoining the machinery casing.	12	1.4
	(3) Adjoining machinery casings (other than mess rooms, smoking rooms and recreation rooms).	15	1.7
	(4) Mess rooms, smoking rooms and recreation rooms (Adjoining machinery rooms)	18	0.7
Cate-gory	**Description of Space**	**Fresh Air Changes per hour**	

		Supply	Exhaust
F	Galleys	20 (c) (d)	40 (d)
G	Sanitary accommodation, drying rooms and pantries	10	-
H	Dry Provision store rooms	> 10 (e), but < 20	

(a) Whatever the number of persons likely to use the room at any one time, the total volume of fresh air per minute shall not be required to be such as would result in more than 20 fresh air changes per hour;

(b) Whatever the number of persons likely to use the room at any one time, the total volume of fresh air per minute shall not be required to be such as would result in more than 25 fresh air changes per hour;

(c) 15, if at least two sides of the galley are exposed to the weather;

(d) The Authority may exempt any vessel from these requirements if satisfied that compliance is unnecessary by reason of the insulation of the equipment in the galley, or by reason of the size of the galley; and

(e) Subject to Regulation.

BOARD NOTICES • RAADSKENNISGEWINGS

BOARD NOTICE 224 OF 2022

HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA

HEALTH PROFESSIONS ACT, 1974 (ACT NO. 56 OF 1974)

RULES RELATING TO THE REGISTRATION BY MEDICAL PRACTITIONERS AND DENTISTS OF ADDITIONAL QUALIFICATIONS: AMENDMENT

The Health Professions Council of South Africa has, under section 61A of the Health Professions Act, 1974 (Act No. 56 of 1974), made the rules in the schedule.

SCHEDULE

Definitions

1. In these rules **"the rules"** means the rules relating to the registration by medical practitioners and dentists of additional qualifications published as Board Notice 35 of 1999 published under Government Gazette No: 19890 of 31 March 1999 as amended by Board Notices. 46 of 2005 published under Government Gazette No: 27592 of 20 May 2005, 34 of 2006 published under Government Gazette No: 28779 of 05 May 2006, 22 of 2007 published under Government Gazette No: 29689 of 16 March 2007, 130 of 2010 published under Government Gazette No: 33540 of 17 September 2010, 109 of 2011 published under Government Gazette No: 34362 of 17 June 2011, 122 of 2012 published under Government Gazette No: 35517 of 20 July 2012, 31 of 2013 published under Government Gazette No: 36225 of 15 March 2013, 28 of 2014 published under Government Gazette No: 37421 of 14 March 2014, 85 of 2014 published under Government Gazette No: 37872 of 01 August 2014, 164 of 2015 published under Government Gazette No: 39127 of 21 August 2015, 4 of 2016 published under Government Gazette No: 39736 of 26 February 2016, and 172 published under Government Gazette No: 42037 of 16 November 2018, and any word or expression to which a meaning has been assigned in the rules shall have that meaning, unless the context otherwise indicates.

Amendment of Rule 2 of the rules

Rule 2 of the rules is hereby amended by the insertion, in alphabetical order and in paragraph (b), of the following qualifications: -

Examination authority	Qualifications	Abbreviation for registration
Pretoria, University of	Master of Science (Clinical Epidemiology)	MSc (Clin Epi) Pret
Stellenbosch, University of	Master of Science (Cytopathology)	MSc (Cytopath) Stell
Witwatersrand, University	Master of Medicine (Radiation Oncology)	MMed (Rad Oncology) Witwatersrand
	Master of Medicine (Dermatology)	MMed (Dermatoloy) Witwatersrand
	Master of Medicine (Emergency Medicine)	MMed (Emergency Medicine) Witwatersrand
	Master of Medicine (Medical Genetics)	MMed (Medical Genetics) Witwatersrand
	Master of Medicine (Occupational Health Medicine)	MMed (Occupational Health Medicine) Witwatersrand
	Master of Medicine (Public Health Medicine)	MMed (Public Health Medicine) Witwatersrand
	Master of Medicine (Paediatric Surgery)	MMed (Paediatric Surgery) Witwatersrand

	Master of Medicine (Neurology)	MMed (Neurology) Witwatersrand
	Master of Medicine (Virology)	MMed (Virology) Witwatersrand
	Master of Public Health	MPH Witwatersrand
	Master of Science (Epidemiology)	MSc (Epidemiology) Witwatersrand

Signed by:Melissa De Graaff
Signed at:2022-02-28 14:51:37 +02:00
Reason:I approve this document

MS. MELISSA DE GRAAFF

ACTING REGISTRAR

DATE:

BOARD NOTICE 225 OF 2022

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AUDITING PROFESSION ACT, 2005 (ACT NO 26 OF 2005), AS AMENDED – REGISTRATION OF REGISTERED AUDITORS AND REGISTERED CANDIDATE AUDITORS

The Independent Regulatory Board for Auditors publishes the following information relating to the registration of Registered Auditors and Registered Candidate Auditors with effect from 1 April 2022.

For further information, enquiries should be directed to:

Ms C M Garbutt
Manager: Registrations
Independent Regulatory Board for Auditors
Email: cgarbutt@irba.co.za

Imre Nagy
Acting Chief Executive Officer

PROCESSES AND DOCUMENTS PRESCRIBED IN TERMS OF THE AUDITING PROFESSION ACT, 26 OF 2005, AS AMENDED BY THE AUDITING PROFESSION AMENDMENT ACT, 2 OF 2015 (APA)

A SUMMARY OF THE RELEVANT SECTIONS OF THE ACT

Section 6(1)(a), (c), (g)

6(1) The Regulatory Board must, subject to this Act

(a) ***prescribe*** minimum qualifications, competency standards and requirements for registration of auditors and candidate auditors in addition to those provided for in this Act;

(c) ***prescribe*** the period of validity of the registration of a registered auditor and a candidate auditor;

(g) ***prescribe*** minimum requirements for the renewal of registration and re-registration of registered auditors and registered candidate auditors.

Section 37(1), (1A) (2)(b)

37(1) An individual must apply on the ***prescribed*** application form to the Regulatory Board for registration as an auditor or registered candidate auditor.

37(2) If, after considering an application, the Regulatory Board is satisfied that the applicant

(b) has complied with the ***prescribed*** education, training and competency requirements for a registered auditor or registered candidate auditor;

Section 38(2), (3)

38(2) On application by a firm which is a partnership fulfilling the conditions in subsection 1(a) or a sole proprietor, on the ***prescribed*** application form, the Regulatory Board must register the firm as a registered auditor on payment of the ***prescribed*** fee.

38(3) The Regulatory Board must register a company as a registered auditor on payment of the ***prescribed*** fee if the company meets the requirements set out in subsection (3)(a)-(d).

Section 40(1), (2)

40(1) A registered auditor or registered candidate auditor must apply in the ***prescribed*** manner to the Regulatory Board for the renewal of his or her registration.

40(2) A registered auditor or registered candidate auditor whose registration was terminated in terms of section 39 or cancelled in terms of section 51(3)(a)(iv) may apply for re-registration in the ***prescribed*** manner to the Regulatory Board.

DETAIL OF DOCUMENTS AND PROCESSES PRESCRIBED IN TERMS OF THE AUDITING PROFESSION ACT, 26 OF 2005, AS AMENDED BY THE AUDITING PROFESSION AMENDMENT ACT, 2 OF 2015 (APA)

SECTION 6:

6(1)	The Regulatory Board must, subject to this Act
(a)	***prescribe*** minimum qualifications, competency standards and requirements for registration of auditors and candidate auditors in addition to those provided for in this Act;

1. **Registration as a Registered auditor**

It is ***prescribed*** that the minimum qualifications, competency standards and requirements for registration of auditors in addition to those provided for in this Act are:

1.1 **For candidates who wrote the Public Practice Examination (PPE):**

1.1.1 The applicant must have successfully completed the PPE;

1.1.2 The applicant must have successfully completed a recognised training contract in public practice;

1.1.3 A determination by the Regulatory Board that the applicant is a fit and proper person to practise the profession;

1.1.4 Proof that an applicant is a member in good standing of a professional body accredited by the Regulatory Board; and

1.1.5 Submission of a valid police clearance certificate in respect of the applicant.

1.2 **For candidates who wrote the Assessment of Professional Competence (APC):**

1.2.1 The applicant must have successfully completed the APC;

1.2.2 The applicant must have successfully completed a recognised training contract;

1.2.3 The applicant must have successfully completed the Regulatory Board's Audit Development Programme (ADP);

1.2.4 A determination by the Regulatory Board that the applicant is a fit and proper person to practise the profession,

1.2.5 Proof that an applicant is a member in good standing of a professional body accredited by the Regulatory Board; and

1.2.6 Submission of a valid police clearance certificate in respect of the applicant.

1.3 **For all candidates:**

If it has been more than three years since the applicant was last registered with the Regulatory Board, successfully completed the PPE, successfully completed their training contract (in the case of applicants who wrote the PPE), or successfully completed the ADP, whichever is the later date, the applicant is required to submit with their application their CV, evidence of CPD undertaken for the past three years, and a short explanation of why registration is required.

If the applicant is joining a firm already registered with the Regulatory Board, the applicant must also provide a letter signed by the Senior Partner or equivalent of the firm confirming their position within the firm and their audit proficiency.

The applicant may be required to attend a proficiency assessment.

1.4 **For candidates who are tax practitioners or are intending to be tax practitioners:**

It is ***prescribed*** that, in addition to applying for registration in terms of paragraphs 1.1, 1.2 and 1.3 above, if an applicant is a tax practitioner, and requires the IRBA to be his/her Recognised Controlling Body in terms of the Tax Administration Act, 28 of 2011, as amended, the candidate must provide the following:

1.4.1 A completed application form for recognition as a tax practitioner by the Regulatory Board as their Recognised Controlling Body (RCB) on Form 4 **(ANNEXURE D)**.

1.4.2 Payment of the ***prescribed*** fee.

The Regulatory Board will only be recognised as a tax practitioner's controlling body once their individual application for registration as a registered auditor has been approved.

2. **Registration as a registered candidate auditor**

It is ***prescribed*** that the minimum qualifications, competency standards and requirements for registration of registered candidate auditors in addition to those provided for in this Act are:

2.1 The applicant must have successfully completed a recognised academic programme at an accredited university;

2.2 The applicant must have successfully completed a recognised core assessment programme;

2.3 The applicant must have completed a recognised professional development and assessment programme;

2.4 The application must be determined by the Regulatory Board to be a fit and proper person to enter into the Audit Development Programme (ADP); and

2.5 Proof that an applicant is a member in good standing of a professional body accredited by the Regulatory Board; and

2.6 Submission of a valid police clearance certificate[1] in respect of the applicant.

3. **Registration of firms**

It is ***prescribed*** that the minimum qualifications, competency standards and requirements for registration of firms in addition to those provided for in this Act are:

3.1 Submission of the completed ***prescribed*** Form 2 **(ANNEXURE B)**;

3.2 Submission of a quality manual drafted in accordance with ISQC1;

[1] A police clearance certificate is valid if it is not older than six months.

3.3 Submission of the name and Regulatory Board number of the registered auditor, or other person acceptable to the Regulatory Board, identified as the firm's Quality Reviewer;

3.4 Submission of a signed copy of the quality reviewer agreement entered into with the Quality Reviewer; and

3.5 Submission of confirmation of firm ownership:

3.5.1 If the firm is an incorporated company, a copy of the shareholders register / securities register / share certificates and the latest COR39 from CIPC confirming directors of the firm;

3.5.2 If firm is a partnership, a copy of the partnership agreement or equivalent.

3.6 If a firm wishes to register additional branches once the firm is registered with the Regulatory Board, the firm must complete and submit a Form 2A **(ANNEXURE C).**

4. **Recognition of a registered auditor as a tax practitioner with the REGULATORY BOARD as Recognised Controlling Body (RCB)**

It is ***prescribed*** that the minimum requirements for the regulatory board to be recognised as the tax practitioner's controlling body are:

4.1 Submission of completed Form 4 **(ANNEXURE D)**;

4.2 Registration as a registered auditor with the Regulatory Board;

4.2 Registration as a tax practitioner with the South African Revenue Services (SARS); and

4.3 Payment of the ***prescribed*** fee;

(c) ***prescribe*** the period of validity of the registration of a registered auditor and a registered candidate auditor;

5. **Period of validity of the registration of a Registered auditor**

It is ***prescribed*** that the period of validity of the registration of a registered auditor, being both defined on a continuous registration basis and on an annual basis, is:

5.1 On a continuous basis, from the date of first registration until termination for whatever reason;

5.2 On an annual basis, from 1 April to 31 March of each year, provided the registered auditor pays the required annual fees, submits the required annual documents and compliance with the annual renewal requirements,

6. **Period of validity of the registration of a registered candidate auditor**

It is ***prescribed*** that the period of validity of the registration of a registered candidate auditor is:

The candidate shall be registered as a registered candidate auditor until:

6.1 the candidate has satisfied all the (ADP) requirements, which include:

6.1.1 the candidate has submitted a portfolio of evidence; and

6.1.2 the Regulatory Board has evaluated the portfolio of evidence and has reached a decision that the candidate has successfully completed the ADP; and

6.1.3 An ADP monitoring visit has been conducted at the firm where the candidate has completed the ADP and the environment has been assessed as conducive to the development of professional competence; or

6.1.4 the candidate withdraws from the ADP.

In the premise, where the candidate has complied with paragraphs 6.1.1, 6.1.2 and 6.1.3, the candidate will then be eligible to apply for registration as a registered auditor.

7. **Period of validity of the registration of a firm**

It is ***prescribed*** that the period of validity of a firm is from date of registration until registration is terminated for whatever reason.

8. **Period of validity of the recognition of a Registered auditor as a tax practitioner with the Regulatory Board as RCB**

It is ***prescribed*** that the period of validity of the Regulatory Board being the recognised controlling body for a tax practitioner, defined both on a continuous registration basis and on an annual basis, is:

8.1 On a continuous basis, from the date of first registration until termination for whatever reason, including termination of the registered auditor's registration with the Regulatory Board and/or termination by the South African Revenue Services of that registered auditor's tax practitioner status.

8.2 On an annual basis, from 1 April to 31 March of each year, provided the registered auditor pays the required tax practitioner annual fees and compliance with the annual renewal requirements as prescribed by the IRBA.

(g) ***prescribe*** minimum requirements for the renewal of registration and re-registration of registered auditors and registered candidate auditors.

9. **Requirements for renewal of registration and re-registration of registered auditors**

9.1 **Renewal of registration of registered auditors**

It is ***prescribed*** that the minimum requirements for the renewal of registration are:

9.1.1 For the registered auditor to be in good standing with the Regulatory Board[2];

9.1.2 Payment of the annual fees by a specified date, which fee is ***prescribed*** by the Regulatory Board from time to time;

9.1.3 Completion and submission by a specified date of an individual Annual Return;

9.1.4 With effect from the year starting 1 April 2022, compliance with the Regulatory Board's CPD Policy, as amended from time to time;.

[2] A registered auditor is in good standing with the Regulatory Board when he/she has complied with all their explicit obligations and the Regulatory Board Rules; paid all fees and debts owing to the Regulatory Board (or made arrangements to pay such debts), while not being subject to any form of sanction with which he/she has not complied or a suspension which has not been uplifted or a disciplinary order which has precluded his/her continued registration.

9.1.5 Continued residence within the Republic of South Africa;

9.1.6 Continued membership in good standing with a professional body accredited by the Regulatory Board; and

9.1.7 A determination by the Regulatory Board to be a fit and proper person to continue to practice the profession.

9.2 **Re-registration of registered auditors**

It is ***prescribed*** that the minimum requirements for re-registration are:

9.2.1 Payment of a registration fee, which fee is ***prescribed*** by the Regulatory Board from time to time;

9.2.2 Payment of any outstanding fees or other amounts owed to the IRBA by the individual applying for re-registration;

9.2.3 Completion and submission of Form 1 (Application by an Individual for Admission to the Register of Auditors) **[see ANNEXURE A];**

9.2.4 A determination by the Regulatory Board that the applicant is a fit and proper person to practice the profession;

9.2.5 Proof that the applicant is a member in good standing with a professional body accredited by the Regulatory Board;

9.2.6 Submission of a valid police clearance certificate in respect of the applicant.

9.2.7 Compliance with all the requirements that would apply if the applicant were applying for registration for the first time as specified in section 37 of Act 26 of 2005;

9.2.8 If it has been more than three years since the applicant was last registered with the Regulatory Board, successfully completed the PPE, successfully completed their training contract (in the case of applicants who wrote the PPE), or successfully completed the ADP, whichever is the later date, the applicant is required to submit with their application their CV, evidence of CPD undertaken for the past three years, and a short explanation of why registration is required. If the applicant is joining a firm already registered with the Regulatory Board, the applicant must also provide a letter signed by the Senior Partner or equivalent of the firm confirming their position within the firm and their audit proficiency. The applicant may be required to undergo a proficiency assessment.

10. **Requirements for renewal of registration and re-registration for registered candidate auditors**

There are no specific requirements for the renewal of registration or re-registration of registered candidate auditors.

11. **Requirements for renewal of registration and re-registration for firms**

11.1 There are no specific requirements for the renewal of registration of firms.

11.2 It is ***prescribed*** that the minimum requirements for re-registration are:

11.2.1 Payment of a registration fee, which fee is ***prescribed*** by the Regulatory Board from time to time;

11.2.2 Payment of any outstanding fees or other amounts owed to the IRBA by the firm; and

11.2.3 Compliance with all the requirements that would apply if the applicant was applying for registration for the first time as specified in section 38 of Act 26 of 2005, including:

11.2.3.1 Completion and submission of Form 2 (Application by a Firm for Admission to the Register of Auditors) **[see ANNEXURE B];**

11.2.3.2 Submission of a quality manual drafted in accordance with ISQC1;

11.2.3.3 Submission of the name and Regulatory Board number of the registered auditor identified as the firm's Quality Reviewer; and

11.2.3.4 Submission of the agreement entered into with the Quality Reviewer.

11.2.3.5 Submission of confirmation of firm ownership:

11.2.3.5.1 If firm is an incorporated company, a copy of the shareholders agreement / share certificates and the latest COR39 from CIPC confirming directors of the firm;

11.2.3.5.2 If firm is a partnership, a copy of the partnership agreement or equivalent.

11.2.4 The requirements set out in paragraph 11.2.3 also apply to firms merging or unmerging who have not previously submitted these documents.

11.2.5 The requirements set out in paragraph 11.2.3.2 to 11.2.3.4 apply to firms who are applying for re-registration and who had not previously complied with these requirements.

12. **Requirements for the renewal and re-application for recognition of a registered auditor as a tax practitioner with Regulatory Board as RCB**

12.1 **Renewal of a registered auditor as a tax practitioner**

It is ***prescribed*** that the minimum requirements for the renewal of registration are:

12.1.1 Payment of the tax practitioner annual fees by a specified date, which fee is ***prescribed*** by the Regulatory Board from time to time;

12.1.2 Continued registration as a registered auditor with the Regulatory Board; and

12.1.3. Continued registration as a tax practitioner with SARS.

12.2 **Re-application for the Regulatory Board to be recognised as the tax practitioner's controlling body**

It is ***prescribed*** that the minimum requirements for the re-application for recognition by a registered auditor as a tax practitioner are:

12.2.1 Submission of completed Form 4 **(ANNEXURE D)**;

12.2.2 Payment of the ***prescribed*** fee;

12.2.3 Registration as a registered auditor with the Regulatory Board; and

12.2.4 Registration as a tax practitioner with SARS.

SECTION 37:

37(1)	An individual must apply on the ***prescribed*** application form to the Regulatory Board for registration as an auditor or candidate auditor.

13. **Application forms for registered auditors, registered candidate auditors and tax practitioner application**

13.1 The ***prescribed*** application form for registration as a registered auditor is attached as **ANNEXURE A**.

13.2 The ***prescribed*** application form for registration as a registered candidate auditor is attached as **ANNEXURE E.**

13.3 The ***prescribed*** application form for the Regulatory Board to be recognised as the tax practitioner's controlling body is attached as **ANNEXURE D**.

37(2)	If, after considering an application, the Regulatory Board is satisfied that the applicant
(a	has complied with the ***prescribed*** education, training and competency requirements for a registered auditor or registered candidate auditor.

14. **Education, training and competency requirements for registered auditors or registered candidate auditors**

The ***prescribed*** education, training and competency requirements are detailed in this document under paragraphs 1, 2, 3 and 4 of this document.

SECTION 38

38(2)	On application by a firm which is a partnership fulfilling the conditions in subsection 1(a) or a sole proprietor, on the ***prescribed*** application form, the Regulatory Board must register the firm as a registered auditor on payment of the ***prescribed*** fee.
38(3)	The Regulatory Board must register a company as a registered auditor on payment of the ***prescribed*** fee if…

15. **Application form for firm registration**

The ***prescribed*** application form for all applications to register a firm is attached as **ANNEXURE B**, and the fee is determined and ***prescribed*** by the Regulatory Board from time to time**.**

SECTION 40

40(1)	A registered auditor or registered candidate auditor must apply in the ***prescribed*** manner to the Regulatory Board for the renewal of his or her registration.

16. **Renewal of registration for Registered Auditors**

16.1 In order to renew his or her registration with the Regulatory Board on an annual basis it is ***prescribed*** that a registered auditor must:

16.1.1 Pay an annual fee by a specified date, which fee is ***prescribed*** by the Regulatory Board from time to time;

16.1.2 Pay an annual tax practitioner renewal fee by a specified date, if the registered auditor has selected the Regulatory Board as its recognised controlling body, which fee is ***prescribed*** by the Regulatory Board from time to time;

16.1.3 Ordinarily reside within the Republic of South Africa;

16.14 Provide proof of continued membership in good standing with a professional body accredited by the Regulatory Board; and

16.1.5 With effect from 1 April 2022, comply with the IRBA CPD policy as amened from time to time; and

16.1.6 Complete and submit an individual Annual Return by a specified date, which Annual Return comprises:

16.1.7.1 a compliance questionnaire relating to the Financial Intelligence Centre Act, 38 of 2001;

16.1.7.2 a public practice information questionnaire, including questions about a Registered auditor's assurance status;

16.1.7.3 a Continuing Professional Development questionnaire;

16.1.7.4 a Fit and Proper questionnaire;

16.1.8.5 a tax practitioner status questionnaire;

16.1.8.6 a tax compliance declaration; and

16.1.8.7 a declaration that the registered auditor is in good standing with the Regulatory Board[3].

The content of the questionnaires comprising the Individual Annual Return may change from time to time as determined by the Regulatory Board.

16.2 It is further ***prescribed*** that if the registered auditor fails to pay his annual fees by the specified date, the registered auditor's registration automatically lapses in terms of section 39(5) of the APA.

16.3 It is further ***prescribed*** that if the registered auditor fails to submit his complete Individual Annual Return by the specified date, the registered auditor's registration will be cancelled in terms of section 40(2) read with 39(3) of the APA for failing to meet the annual renewal requirements.

[3] A registered auditor is in good standing with the Regulatory Board when he/she has complied with all their explicit obligations and the Regulatory Board Rules; paid all fees and debts owing to the Regulatory Board (or made arrangements to pay such debts), while not being subject to any form of sanction with which he/she has not complied or a suspension which has not been uplifted or a disciplinary order which has precluded his/her continued registration.

16.4 It is further ***prescribed*** that, with effect from the year starting 1 April 2022, failure to comply with the Regulatory Board's CPD Policy, as amended, and its requirements will result in the RA's registration not being renewed.

16.5 It is further ***prescribed*** that, with effect from 1 April 2022, registered auditors who are not in good standing with the Regulatory Board, as at the date on which the Individual Annual Return is submitted, will not be eligible to renew their registration with the Regulatory Board.

16.6 It is further ***prescribed*** that if the registered auditor, who has selected the Regulatory Board as his/her recognised controlling body, fails to pay the tax practitioner annual fee by due date, his or her status as a recognised tax practitioner will be terminated.

16.7 It is further ***prescribed*** that a Registered Auditor who is no longer residing within the Republic of South Africa will not be eligible for the renewal of his/her registration.

16.8 **Reinstatement of a registered auditor whose registration has lapsed or been cancelled in terms of paragraph 16.2 and 16.3 above**

16.8.1 It is ***prescribed*** that if the registered auditor's registration is lapsed or cancelled in terms of paragraph 16.2 or 16.3 above, the registered auditor may request reinstatement on payment of a ***prescribed*** administration fee, together with payment of the outstanding annual fees and/or submission of the outstanding Annual Return and any other fees or documents that are outstanding to the Regulatory Board.

16.8.2 It is further ***prescribed*** that the registered auditor may apply for reinstatement in terms of paragraph 16.7.1 above up until 31 January of the year following the year of lapsing or cancellation of registration. Late reinstatements may be considered based on the registered auditor's individual circumstances.

16.8.3 It is further ***prescribed*** that if the registered auditor does not apply for reinstatement before 31 January of the year following the year of the annual renewal process in which he/she was lapsed or cancelled, the registered auditor may apply for re-registration of registration from 1 February of the calendar year following the calendar year of lapsing or cancellation of registration.

16.8.4 It is further ***prescribed*** that, if a registered auditor whose registration has lapsed or been cancelled does not apply for re-instatement, the registered auditor may not apply for re-registration until 1 February of the calendar year following the calendar year of lapsing or cancellation.

16.9 **Reinstatement of a registered auditor whose registration has not been renewed as a result of non-residence within South Africa**

16.9.1 It is ***prescribed*** that a registered auditor whose registration has not been renewed as a result of non-residence within South Africa, may only be reinstated if he/she provides evidence of residence within South Africa by 31 January of the calendar year following the calendar year of the annual renewal process in which his/her registration was not renewed.

16.9.2 It is further ***prescribed*** that a registered auditor described in 16.8.1 above, may only apply for re-registration:

16.9.2.1 after 1 February of the calendar year following the calendar year of the annual renewal process in which his/her registration was not renewed; and

16.9.2.2 if he/she provides evidence of his/her ordinary residence within South Africa, pays the prescribed fee and submits all outstanding documents to the Regulatory Board.

16.10 **Reinstatement of a registered auditor whose registration has not been renewed as a result of non-compliance with the IRBA's CPD policy, as amended**

16.10.1 It is ***prescribed*** that a registered auditor whose registration has not been renewed as a result of non-compliance with the IRBA's CPD policy, as amended, may only be reinstated if he/she has submitted evidence of compliance with the CPD policy by 31 January of the calendar year following the annual renewal process in which his/her registration was not renewed.

16.10.2. Evidence referred to in 16.9.1 above will be evaluated and must be confirmed as satisfactory to the Regulatory Board before 31 January of the calendar year following the annual renewal year in which his/her registration was not renewed, before such a reinstatement can be processed.

16.10.2 It is ***prescribed*** that a registered auditor, whose registration has not been renewed as a result of non-compliance with the IRBA's CPD policy, as amended, may only apply for re-registration:

16.10.2.1 after 1 February of the calendar year following the year of the annual renewal process in which his/her registration was not renewed; and

16.10.2.2 if he/she has submitted, to the satisfaction of the Regulatory Board, evidence of compliance with the CPD policy, and has paid the prescribed fee and submitted all outstanding documents to the Regulatory Board.

16.11 **Reinstatement of a registered auditor whose registration has not been renewed as a result of the failure to maintain good standing with the Regulatory Board**

16.11.1 It is ***prescribed*** that, if a registered auditor whose registration has not been renewed as a result of the failure to maintain good standing with the Regulatory Board as at the time of submission the Individual Annual Return, may only be reinstated once:

16.11.1.1 the registered auditor has, to the satisfaction of the Regulatory Board, remedied any conduct which affected his standing with the Regulatory Board[4].

16.11.1.3 It is further ***prescribed*** that the registered auditor who may apply for reinstatement of his registration in terms of paragraph 16.11 above up until 31 January of the calendar year following the year of the non-renewal of his registration. Late reinstatements may be considered based on the registered auditor's individual circumstances.

16.11.1.4 It is further ***prescribed*** that if the registered does not apply for reinstatement of his registration before 31 January of the calendar year following the year of the annual renewal process in which his/her registration was not renewed, the registered auditor may re-apply for the Regulatory Board to be re-registered from 1 February of the calendar year following the year of the annual renewal process in which his/her registration was not renewed.

[4] This includes compliance with any outstanding obligations, payment of any outstanding fees or debts (or making an appropriate arrangement), upliftment of any suspension or compliance with any disciplinary order or sanction.

16.12 **Reinstatement of tax practitioner recognition status**

16.12.1 It is ***prescribed*** that, if a registered auditor's tax practitioner status has been terminated in terms of paragraph 16.5 above, the registered auditor may apply for reinstatement of his tax practitioner status on payment of a ***prescribed*** administration fee together with the outstanding annual tax practitioner fee.

16.12.2 It is further ***prescribed*** that the registered auditor who is a tax practitioner recognised by the Regulatory Board may apply for reinstatement of his tax practitioner status in terms of paragraph 16.9.1 above up until 31 January of the calendar year following the year of the termination of his tax practitioner status. Late reinstatements may be considered based on the registered auditor's individual circumstances.

16.12.3 It is further ***prescribed*** that if the registered auditor who is a tax practitioner recognised by the Regulatory Board does not apply for reinstatement of his tax practitioner status before 31 January of the calendar year following the calendar year of the annual renewal process in which his/her registration was lapsed or cancelled, the registered auditor who is also a tax practitioner may re-apply for the Regulatory Board to be recognised as his/her controlling body from 1 February of the calendar year following the year of the annual renewal process in which his/her registration was lapsed and cancelled.

16.12.4 It is further ***prescribed*** that, if a registered auditor who is a tax practitioner and whose tax practitioner status has been terminated does not apply for reinstatement of his tax practitioner status, that registered auditor may not apply for re-recognition as a tax practitioner until 1 February of the calendar year following the calendar year of the annual renewal process in which his/her tax practitioner status was terminated.

17. **Renewal of registration for registered candidate auditors**

There are no specific requirements for the renewal of registration of registered candidate auditors.

18. **Requirements for renewal of registration for firms**

There are no specific requirements for the renewal of registration of firms.

40(2)	A registered auditor or registered candidate auditor whose registration was terminated in terms of section 39 or cancelled in terms of section 51(3)(a)(iv) may apply for re-registration in the ***prescribed*** manner to the Regulatory Board.

19. **Re-registration for Registered auditors**

The ***prescribed*** manner of re-registration for registered auditors is as follows:

19.1 Payment of a registration fee, which fee is ***prescribed*** by the Regulatory Board from time to time;

19.2 Completion and submission of Form 1 (Application by an Individual for Admission to the Register of Auditors) **[see ANNEXURE A)**

19.3 A determination by the Regulatory Board that the applicant is a fit and proper person to practise the profession;

19.4 Proof that the applicant is a member in good standing of a professional body accredited by the Regulatory Board;

19.5 Submission of a valid police clearance certificate in respect of the applicant;

19.6 Compliance with all the requirements that would apply if the applicant were applying for registration for the first time as specified in section 37 of the APA and in terms of paragraphs 1.1, 1.2 and 1.3 of this document; and

19.7 If it has been more than three years since the applicant was last registered with the Regulatory Board, successfully completed the PPE, successfully completed their training contract (in the case of applicants who wrote the PPE), or successfully completed the ADP, whichever is the later date, the applicant is required to submit with their application their CV, evidence of CPD undertaken for the past three years, and a short explanation of why registration is required. If the applicant is joining a firm already registered with the Regulatory Board, the applicant must also provide a letter signed by the Senior Partner or equivalent of the firm confirming their position within the firm and their audit proficiency. The applicant may be required to undergo a proficiency assessment.

20. **Re-registration for registered candidate auditors**

The ***prescribed*** manner of re-registration of registered candidate auditors is as follows:

20.1 Payment of a registration fee, which fee is ***prescribed*** by the Regulatory Board from time to time;

20.2 Completion and submission of Form 5 (Application by an Individual for Admission to the Register of Registered candidate auditors) **[see ANNEXURE E]**

20.3 A determination by the Regulatory Board that the applicant is a fit and proper person enter the Audit Development Programme (ADP);

20.4 Proof that the applicant is a member in good standing of a professional body accredited by the Regulatory Board;

20.5 Submission of a valid police clearance certificate in respect of the applicant; and

20.6 Compliance with all the requirements that would apply if the applicant were applying for registration for the first time as specified in section 37 of the APA and in terms of paragraph 2 of this document.

21. **Re-registration of firms**

The ***prescribed*** manner of re-registration of firms is as follows:

21.1 Payment of a registration fee, which fee is ***prescribed*** by the Regulatory Board from time to time;

21.2 Compliance with all the requirements that would apply with the firm were applying for registration for the first time as specified in section 38 of the APA;

21.3 Completion and submission of Form 2 (Application by a Firm for Admission to the Register of Auditors) **[see ANNEXURE B];**

21.4 Submission of a quality manual drafted in accordance with ISQC1;

21.5 Submission of the name and Regulatory Board number of the registered auditor identified as the firm's Quality Reviewer; and

21.6 Submission of the agreement entered into with the Quality Reviewer

21.7 Submission of confirmation of firm ownership:

21.7.1 If firm is an incorporated company, a copy of the shareholders agreement, memorandum of incorporation, shareholders register / securities register / share certificates and the latest COR39 from CIPC confirming directors of the firm;

21.7.2 If firm is a partnership, a copy of the partnership agreement or equivalent.

21.1.8 The requirements set out in paragraph 11.2 apply likewise to firms merging or unmerging who have not previously submitted these documents.

21.1.9 The requirements set out in paragraph 11.2.2.2 to 11.2.2.4 apply to firms who are applying for re-registration and who had not previously complied with these requirements.

22. **Re-application for the Regulatory Board to be recognised as the tax practitioner's controlling body**

It is ***prescribed*** that the minimum requirements for a registered auditor who is a tax practitioner to re-apply for the Regulatory Board to be recognised as his/her controlling body are:

22.1 Submission of completed Form 4 **(ANNEXURE D)**;

22.2 Registration as a registered auditor with the Regulatory Board;

22.3 Registration as a tax practitioner with SARS; and

22.2 Payment of the ***prescribed*** fee;

23. **ASSURANCE AND NON-ASSURANCE STATUS**

The following is ***prescribed*** in terms of Section 6(1)(a) and (g) and Section 37(1) and (2)(b) and Section 40(1) and (2):

23.1 **First and re-registration of applicant(s) as registered auditor (Sections 37 and 40):**

23.1.1 An applicant for registration as a registered auditor may apply for registration with an assurance or non-assurance status.

23.1.2 Assurance is determined by the definition of "assurance engagement" as it appears in the Regulatory Board's Code of Professional Conduct, and includes "audit" as it is defined in the Auditing Profession Act, 26 of 2005.

23.1.3 An applicant who is registered with the Regulatory Board as a registered auditor with an assurance status means that he or she has informed the Regulatory Board that he or she intends to perform assurance work as defined in the Code of Professional Conduct and the Auditing Profession Act, 26 of 2005.

23.1.4 An applicant who is registered with the Regulatory Board as a registered auditor with a non-assurance status means that he or she has informed the Regulatory Board that he or she does not intend to perform assurance work as defined in the Code of Professional Conduct and the Auditing Profession Act 26 of 2005.

23.1.5 Any applicant may be required to attend an interview with the Regulatory Board's Proficiency Assessment Panel.

23.1.5 The Regulatory Board, or the Proficiency Assessment Panel, may, at the time of considering the application for registration or re-registration as a registered auditor, require that an applicant who has requested to be registered with an assurance status instead be registered with a non-assurance status until certain criteria have been met.

23.1.6 An applicant who applies to be registered with the Regulatory Board as a registered auditor with an assurance status must be linked to a firm that is registered with the Regulatory Board.

23.2 **Annual renewal of registration of registered auditor (Section 40):**

23.2.1 A registered auditor must disclose in his or her Individual Annual Return whether he or she is currently performing assurance work.

23.2.2 If such disclosure reflects a change in the registered auditor's current assurance status, the Regulatory Board will follow the procedure referred to in paragraphs 23.3.1 to 23.3.4 below.

23.3 **Change of assurance or non-assurance status:**

23.3.1 A registered auditor who wishes to change their assurance or non-assurance status must request such change from the Regulatory Board.

23.3.2 If a registered auditor wishes to change their status from non-assurance to assurance, such change must be requested on Form 6 **(ANNEXURE F)** and approved by the Regulatory Board prior to any assurance engagements being accepted or performed.

23.3.3 The Regulatory Board may request any information it requires from the registered auditor in order for it to come to a determination as to whether the registered auditor is proficient to change their status from non-assurance to assurance.

23.3.4 The Regulatory Board will assess the registered auditor's request and may decline the request if the Registered auditor:

23.3.4.1 is not linked to a firm registered with the Regulatory Board; and/or

23.3.4.2 is not determined by the Regulatory Board to be sufficiently proficient to perform assurance engagements; and/or

23.3.4.3 has not provided a letter from the firm to which the registered auditor is linked, if that registered auditor is an employee, consenting to changing their status to assurance; and/or

23.3.4.4 has not provided any other information which the Regulatory Board has requested in terms of paragraph 23.3.3 above.

23.3.5 If it has been more than three years since the applicant was last assurance, or if the applicant was registered as non-assurance with the Regulatory Board, the applicant may be required to attend an interview with the Regulatory Board's Proficiency Assessment Panel.

23.3.6 A registered auditor may request his/her status be changed from assurance to non-assurance at any time during the year by sending an email to the regulatory board requesting such a change.

23.3.7 A registered auditor may also change his/her status from assurance to non-assurance by changing his/her status to non-assurance in the Individual Annual Return.

23.3.8 A registered auditor may not change his/her status from non-assurance to assurance by changing his/her status in the Individual Annual Return. A form 6 must be completed as referred to in paragraph 23.3.2 above.

23.3.9 If a registered auditor changes his/her status from assurance to non-assurance in his/her Individual Annual Return, the regulatory board will change his/her status to non-assurance in their register as being the current status of the registered auditor.

ANNEXURE A

FORM 1

INDEPENDENT REGULATORY BOARD FOR AUDITORS
(Established under Section 3 of Act 26 of 2005)

APPLICATION BY AN INDIVIDUAL TO THE ENTERED INTO THE REGISTER OF REGISTERED AUDITORS
(For application in terms of Section 37(1) and Section 40(2)

I hereby apply to be registered as a Registered Auditor and I submit the following information in support of my application:

1. **NAME IN FULL:**

(a)	Title:	
(b)	Surname as per ID (and Maiden name if applicable):	
(c)	Forename(s) as per ID:	

2. **ADDRESSES:**

(a)	Your physical address:	
(b)	Your postal address:	
c)	Physical area of practice (if in practice) (Required in order for you to accurately reflect on the IRBA website in the area in which you practice)	

3. **CONTACT DETAILS:**

(a)	Telephone number:	
(b)	Cell number:	
(c)	Fax number (if applicable):	
(d)	Primary email address	
(e)	Secondary email address 2 (this will be used only if we cannot contact you on your primary email address)	

4. **PERSONAL INFORMATION:**

(a)	Identity Number: **(Please attach a copy of the front page of your Identity Document or Card)**	

(b)	Passport Number, only if no South African ID Number: **(Please attach a copy of the relevant page of your passport)**	
(c)	Race: (This information is requested in order to gauge the profession's success in becoming more representative of the people in South Africa.)	
(d)	Are you disabled? (This information is requested in order to gauge the profession's success in becoming more representative of the people in South Africa.)	

5. **TRAINING DETAILS:**

(a)	Dates registered as a trainee accountant with the Board:	From:	To:
(b)	Registration number:		

Please attach a copy of SAICA's confirmation of discharge of training contract letter.

6. **QUALIFICATION DETAILS:**

Tertiary Qualifications	University	Date completed

Passed the Public Practice Examination (PPE)	Month:	Year:

OR

Completed IRBA's Audit Development Programme (ADP)	Month:	Year:

If you are applying for registration and you are a CA(SA) through a reciprocity agreement between SAICA and a foreign professional body, please contact Registry for further assistance.

7. If it has been more than three years since you were last registered with the IRBA as an assurance RA, successfully completed the ADP, passed the Public Practice Examination (date of writing), or completed your training contract in public practice (for applicants who wrote the PPE), whichever is the later date, then your application, for purposes of section 37(2)(d), must be accompanied by:

7.1 an up to date CV detailing your professional history with specific focus on your assurance roles and responsibilities;
7.2 comprehensive CPD records for the past three years, including the current year and your must current assurance CPD;
7.3 a short explanation of why registration is required.

If you are joining an existing firm or the Auditor-General, please also submit a letter from the Senior Partner or CEO or equivalent of the firm or Auditor-General confirming your role within the firm and your audit proficiency Please include details as to how audit proficiency was assessed.

Your application will be assessed to determine whether a proficiency assessment is required.

If you are requested to attend a proficiency interview, an additional fee, as prescribed by the IRBA for the relevant period will be applicable.

8. **RESIDENCE:**

Are you resident in the Republic of South Africa?	

Please note that residence in South Africa is a requirement for registration and continued registration with the IRBA.

9. **PROFESSIONAL BODY MEMBERSHIP:**

(a)	Are you a member of a professional body accredited by the IRBA?	
(b)	If yes, please provide name of body and membership number:	

Please note that membership of a professional body accredited by the IRBA is required for registration and continued registration with the IRBA. The only professional body currently accredited by the IRBA is the South African Institute of Chartered Accountants (SAICA).

10. **PREVIOUS REGISTRATION:**

Have you ever previously been registered as an auditor with the IRBA or its predecessor body?	

If termination was as a result of disciplinary action by the IRBA's Disciplinary Committee, provide on a separate page comprehensive reasons as to why you should be re-registered, with specific reference to any changes in circumstance since date of termination.

11. **FIT AND PROPER:**

Answer Yes or No to the following questions.

If the answer to any of the questions is yes, provide details on a separate page.

Financial Integrity		
11.1	Are you an unrehabilitated insolvent, have you entered into a compromise with creditors, are you under debt review, or have you been provisionally sequestrated?	
11.2	Have you ever failed, or are you failing to, manage any financial obligations (including debts) satisfactorily, including civil judgements or pending proceedings which may lead to such a judgement in respect of any unpaid debt?	
Civil Liability		
11.3	Have you ever accepted civil liability for, or been the subject of a civil judgement in respect of theft, fraud, forgery, uttering a forged document, perjury, misrepresentation or dishonesty under any law?	
Good Character		
11.4	Have you at any time been removed from an office of trust because of misconduct related to a discharge of that office?	
11.5	Have you, at any time been convicted, whether in the South Africa or elsewhere, of theft, fraud, forgery, uttering a forged document, perjury, an offence under the Combating of Corrupt Activities Act, 2004, or any other offence involving dishonesty? *	

11.6	Have you at any time been convicted, whether in South Africa or elsewhere, of any other criminal offence? *	
11.7	Are you for the time being declared by a competent court to be of unsound mind or unable to manage your own affairs?	
11.8	Have you ever been found guilty of unprofessional conduct by any statutory entity or professional or regulatory body?	
11.9	Are you currently under investigation by any local or statutory entity or regulatory body, including IRBA?	
11.10	Have you ever been refused registration or membership of any professional or statutory body, or had that registration or membership revoked, withdrawn or terminated by that professional or statutory body?	
11.11	Have you ever been dismissed from any office (other than as auditor) or employment, or requested to resign from any office, employment, or firm?	
11.12	Have you ever been involved, as a director or member of senior management of a business that has been placed under statutory management or curatorship, in business rescue or in liquidation while you were connected with that organisation, or within one year of that connection?	
11.13	Have you ever been disqualified from being a director of a company or from acting in the management or conduct of the affairs of any company?	
11.14	Have you, or a business with which you have been involved in the capacity of director of member of senior management, ever been the subject of frequent or material preventative, remedial or enforcement actions by any regulatory authority?	

PLEASE NOTE THAT A VALID POLICE CLEARANCE CERTIFICATE MUST BE SUBMITTED WITH THIS APPLICATION.

12. **PUBLIC PRACTICE INFORMATION:**

(a)	Are you in public practice?	
(b)	Do you intend performing assurance work within the next 12 months? [1]	
(c)	If the answer to (b) above is yes, is any of the assurance work you intend performing classified as high risk? Please refer to **Annexure A.**	

Please note the following with regard to public practice:

- If you are an employee who earns a salary you are not in public practice, even if you intend performing assurance work.
- If you are intending to be a partner, or shareholder and director, of a registered audit firm, you will be in public practice, even if you do not perform assurance work.
- All assurance work must be performed through a firm, even if you intend practising as a sole proprietor.
- If you are registering as an employee of an existing firm and you intend performing assurance work[1], please provide a letter from the firm confirming that they are aware you are registering as an assurance Registered Auditor.

[1] Please refer to the Code of Conduct for the definition of Assurance Work

13. **TAX PRACTITIONER:**

If you are a tax practitioner and require the IRBA to be recognised as your Controlling Body in terms of the Tax Administration Act 28 of 2011, as amended, please submit a completed Form 4 together with the required proof of payment of the tax practitioner application fee as specified on Form 4.

I certify that the above information is true and correct in every detail, and I undertake to comply with the Auditing Profession Act, 26 of 2005, as amended, the Code of Professional Conduct, as published from time to time, as well as the CPD policy of the IRBA as published, with amendments, if any.**

I attach proof of payment of the registration fee in the prescribed amount of R_____.

I understand that the registration fee is not pro-rated and I will be invoiced for annual renewal fees on an annual basis with effect from 1 April in the financial year subsequent to my registration . Please note that the IRBA's financial year runs from 1 April to 31 March.

The IRBA's banking details are:

Bank:	Standard Bank
Branch:	Eastgate
Branch Code:	018505
Account Number:	221290532

Please note we cannot start processing your application without confirmation of payment.

If you withdraw or cancel your application for registration, you will be refunded the registration fee less a 15% administration fee on submission of proof of your banking details to registry@irba.co.za.

_____ _____

Date Signature of applicant

** The Auditing Profession Act, IRBA's Code of Professional Conduct and the CPD policy are available on our website at www.irba.co.za.

Please email your application form and supporting documentation to registry@irba.co.za.

Please note that in order for the IRBA to engage with you, it will have to Process certain Personal Information which belongs to you, which Processing is described and explained under the specific and informative IRBA Processing Notices, housed for ease of reference on IRBA's website at https://www.irba.co.za/library/popi-act, which we ask you to download and read. By providing us with the required Personal Information, such act will be taken as an indication that you have read and agree with the provisions described under the Processing Notice and, where applicable, you consent to the processing by us of your Personal Information.

ANNEXURE A

WHAT IS HIGH AND LOW RISK ASSURANCE WORK?

High risk audits and related assurance work:

This refers to assurance engagements that are performed by RAs and firms that are required in terms of legislation or regulation. These engagements include but are not limited to:

- Audits required in terms of the Companies Act of 2008 (as amended), of:
  - public companies;
  - state-owned enterprises; and
  - private companies with a public interest score of 350 or more;
  - private companies with a public interest score of less than 350 but at least 100, if its annual financial statements were internally compiled;
  - private companies with a public interest score below 350 and where the MOI was altered to include an audit requirement. Such an engagement is not considered to be a voluntary audit.
- Audits of banks and regulatory returns to the SARB in terms of the regulations to the Banks Act.
- Audits required per the South African Reserve Bank Act.
- Audits required by legislation under the Financial Services Conduct Authority, of:
  - insurance companies;
  - collective investment schemes;
  - pension and retirement funds;
  - provident funds; and
  - any other audits required by the Financial Advisory and Intermediary Services Act (FAIS).
- Audits of Medical Schemes.
- Audits on behalf of the Auditor-General:
  - Secondment of staff to assist the Auditor-General – no opinion is expressed and consequently these engagements should be excluded;
  - Performance of an engagement under the supervision of the Auditor-General (so called "contracted out" engagements). Although this audit opinion is signed by the Auditor-General, a substantial portion of the work is performed by the contracted firm. These engagements should be included; and
  - Audits performed and signed by a firm in terms of Section 4(3) of the Public Audit Act, 2004 (as amended). These engagements should be included.
- Trust accounts for legal practitioners (including attorney trust accounts).
- Estate Agents (business and trust accounts).
- Audits of Cooperatives.
- Audits of non-profit organisations where the turnover is **more than R50 million**.
- Audits of all tertiary educational institutions.
- Audits required by the Sectional Titles Schemes Management Act, 2011 (as amended).
- Assurance work related to other regulatory returns in respect of **any of the above audit clients**.

Low risk assurance work, being all assurance work not already stated above and including:

- Voluntary audits by decision.
- Independent reviews required in terms of the Companies Act of 2008, as amended.
- Other assurance work.

ANNEXURE B

FORM 2

INDEPENDENT REGULATORY BOARD FOR AUDITORS
(Established under Section 3 of Act 26 of 2005)

APPLICATION BY A FIRM FOR ADMISSION TO THE REGISTER OF AUDITORS
(For application in terms of Section 38(2)) and Section 40 (2)

This firm hereby applies to be registered as a Registered Auditor and submits the following information in support of its application:

1. **FIRM DETAILS:**

(a)	Full name of firm (head office):	
(b)	Type of firm (Sole Proprietorship, Partnership or Incorporated Company):*	
(c)	Company Registration Number (if applicable):	
(d)	Postal address of firm (including province and postal code):	
(e)	Street address of firm (including province and postal code):	
(f)	Physical area in which firm practices (this will be the area displayed on the IRBA website).	
(g)	Firm's telephone number:	
(h)	Firm's fax number (if applicable):	
(i)	Firm's primary email address: (This is the email to which IRBA will send all communications, except accounts, and which will reflect on the IRBA website.)	
(j)	Firm's Secondary email address for firm: (This email address will only be used if we are unable to contact the firm on the primary email address provided.)	
(k)	Firm's website address (if applicable):	

* These are the only entities that may be registered with the IRBA as audit firms in terms of section 38 of the Auditing Profession Act, 26 of 2005.

2. ACCOUNTS CONTACT PERSON

(a)	Name of accounts contact person:	
(b)	Email address:	
(c)	Direct telephone number:	
~~(d)~~	~~Direct fax number:~~	

3. REGISTERED AUDITORS IN THE FIRM

Full names of RAs in firm	IRBA registration no (if individual application in process, write "pending")	Status in firm **(please specify whether partner, director, senior partner, sole practitioner, employee, consultant, CEO, Quality Leader, or Risk Leader)**	Is this RA assurance or non-assurance?	Is this RA attached to a branch? If branch, please indicate which branch.

4. BRANCHES:

For each branch, please provide the following information. If your firm has more than one branch, please copy and paste this section.

(a)	Name of branch:	
(b)	Telephone number of branch:	
(c)	Fax number of branch (if applicable):	
(d)	Email address of branch:	
(e)	Postal address of branch (including province and postal code):	
(f)	Street address of branch (including province and postal code):	
(g)	Area in which branch practices (this will be the area displayed on the IRBA website).	

5. BROAD BASED BLACK ECONOMIC EMPOWERMENT STATUS

Please select one of the following to indicate the category of your firm's B-BBEE status. Is your firm:

1.	A Start Up Enterprise (a recently formed or incorporated Entity that has been in operation for less than 1 year	Yes	No
2.	An Exempted Micro Enterprise	Yes	No
3.	A Qualifying Small Enterprise to which the QSE scorecard applies	Yes	No
4.	An Enterprise to which the Generic Scorecard applies	Yes	No
5.	An Enterprise to which a Sector Code Scorecard applies	Yes	No

If you selected 3, 4 or 5 above, have you obtained a Rating of your B-BBEE status from an accredited Verification Agency or approved RA or a member of an Approved Professional Institute? _Yes / No__

If yes, please attach a copy of your Verification Certificate and Scorecard.

Please indicate the level of your B-BBEE status as reflected on your Verification Certificate by selecting the equivalent level:

B-BEE status	Please select
Level 1	
Level 2	
Level 3	
Level 4	
Level 5	
Level 6	
Level 7	
Level 8	
Non-compliant	

The following documents must be attached to this application (see **Annexure A** for further information):

- Business plan;
- Quality (ISQC) Manual of the practice you intend to start;
- Name and RA number of RA identified as the practice's Quality Reviewer;
- Copies of agreements entered into with the Quality Reviewer; and
- Details of firm ownership and directorship, if applicable, including memorandum of incorporation, shareholders agreement, copy of shareholders register / securities register, share certificates and CIPC COR39 Form.

_____ _____
Date Signature

_____
Capacity

I certify that the above information is true and correct in every detail.

I attach proof of payment of the registration fee in the amount of **R_____** in respect of the year ending **31 March____.**

I understand that the registration fee is not pro-rated.

The IRBA's banking details are:

Bank: Standard Bank

Branch: Eastgate
Branch Code: 018505
Account Number: 221290532

Please note we cannot start processing your application without confirmation of payment.

Please note further that if you are re-registering a firm, we cannot start processing the firm's application until any outstanding fees or other amounts due to the IRBA by the previously registered firm, if any, have been paid.

PLEASE NOTE YOUR FIRM APPLICATION WILL TAKE 4 TO 6 WEEKS TO PROCESS DUE TO THE DOCUMENTS TO BE EVALUATED.

THE FIRM DOCUMENTS ARE REQUIRED FOR BOTH NEW AND RE-REGISTRATIONS OF FIRMS.

_____ _____
Date Signature of applicant

Please email your application form and supporting documentation to registry@irba.co.za.

Please note that in order for the IRBA to engage with you, it will have to Process certain Personal Information which belongs to you, which Processing is described and explained under the specific and informative IRBA Processing Notices, housed for ease of reference on IRBA's website at https://www.irba.co.za/library/popi-act, which we ask you to download and read. By providing us with the required Personal Information, such act will be taken as an indication that you have read and agree with the provisions described under the Processing Notice and, where applicable, you consent to the processing by us of your Personal Information.

ANNEXURE A

DOCUMENTATION TO BE SUBMITTED WITH THIS APPLICATION

We require all candidates who are registering a new firm, re-registering a previously registered firm where the below documents were not submitted on the previous registration of the firm, or converting existing firms from non-assurance to assurance, to first set up their audit quality structures before we register their firms.

We require this because we believe it is in the public interest for the IRBA as a regulator to ensure that all firms have their Quality Control structures in place. This also ensures that your firm is running in accordance with ISQC1.

We generally find that the process of setting up these structures is one that is very beneficial to you and those you will be working with as it focusses on the overall structures in terms of quality.

The following documents must be submitted with this application relating to the practice you intend to register:

1. Business plan (practice plan);
2. Quality (ISQC) manual – the quality manual must be drafted in accordance with ISQC1; and
3. Name and IRBA number of the RA identified as your firm's Quality Reviewer together with agreements entered into with the Quality Reviewer; and
4. Firm ownership and directorship confirmation (if applicable).

---

1. BUSINESS PLAN

The business plan must contain more than an introduction. It must contain items such as:

- the structure of the firm;
- services offered by the firm;
- resources (HR, IT etc. including what software the firm will be using);
- financial projections including revenue streams (such as will your clients be private or public sector clients,
  how will clients be sourced);
- organogram of firm;
- risk identification and mitigation strategy; and
- firm's transformation strategy and objectives.

2. QUALITY MANUAL:

Your manual must contain all the established procedures and policies covering all aspects of ISQC1.

Please ensure that you also submit to us all your templates and checklists as identified in your manual.

Please note that we do not provide templates or examples of the quality manual as we see this as a developmental process you will go through as you familiarise yourself with the requirements of ISQC1.

Leaving the process open is very important as different practitioners will have different manuals applicable to their own circumstances. IFAC does have a guidance document on their website.

3. AGREEMENT WITH REVIEWER:

We are generally led by you regarding the structure of the agreement with your reviewer. However, the agreement must cover, amongst others, the following aspects:

- <u>Scope of the review</u>
  - Indicating your expectation from the reviewer on entering into such an agreement
    - Including aspects to be considered or focused on; how you will determine engagements to be reviewed (please ensure that the agreement specifically states that the first three engagements will require a review); and indicating the stages of an audit that would require a review

- <u>Reporting requirement</u>
  - Indicating the report and format thereof to be issued by the reviewer at the end of their review.

- Duration of the review
  - Estimate of the length of the review to be carried out by the reviewer.

- Commencement date
  - Commencement date of the agreement.

- Fees
  - The fees that would be payable to the reviewer for each of the reviews.

- Terms and conditions
  - These would be general terms and conditions of the formal arrangement you are entering into. Such terms would include the responsibilities of the firm.

3. CONFIRMATION OF FIRM OWNERSHIP AND DIRECTORSHIP

- If the firm you wish to register is an incorporated company, we will require the following documents:

  - Copy of shareholders agreement indicating all the shareholders of the company;
  - Memorandum of incorporation of the company;
  - Copy of shareholders register / securities register and share certificates and
  - Copy of the latest COR39 from CIPC indicating all the directors of the company.

- If the firm you wish to register is a partnership, we will require the following document:

  - Copy of partnership agreement or equivalent.

- If the firm is a sole proprietorship, we do not require any confirmation documents.

ANNEXURE C

FORM 2A

INDEPENDENT REGULATORY BOARD FOR AUDITORS
(Established under Section 3 of Act 26 of 2005)

DETAILS OF BRANCH OF A FIRM

This form is only to be used to provide details of branches of firms. **Please complete one Form 2A per branch of a firm**

1. **FIRM DETAILS**

(a)	Name of firm applying for registration on Form 2 or currently registered with the IRBA:	
(b)	If the firm is currently registered with the IRBA, what is the firm's IRBA practice number?	
(c)	Name by which branch is known:	

2. **BRANCH CONTACT DETAILS**

(a)	Postal address of branch (including province and postal code):	
(b)	Street address of branch (including province and postal code):	
(d)	Telephone number of branch:	
(e)	Fax number of branch (if applicable)	
(f)	Email address of branch:	
(g)	Physical area in which firm practices (this will the area that will be reflected on the IRBA website)	

3. RESIDENT RAs AT BRANCH

Please photocopy page if necessary.

Name and -surname of RA	IRBA Registration Number	Role in firm (ie. director / partner / senior partner / employee / consultant / CEO / Risk Leader / Quality Leader)

I confirm that the above information is true and correct in every detail to the best of my knowledge and belief.

Date

Signature

Capacity

Please email the completed form to registry@irba.co.za.

ANNEXURE D

FORM 4

INDEPENDENT REGULATORY BOARD FOR AUDITORS
(Established under Section 3 of Act 26 of 2005)

APPLICATION BY AN INDIVIDUAL REGISTERED AUDITOR FOR RECOGNITION AS A TAX PRACTITIONER WITH THE IRBA AS THE RECOGNISED CONTROLLING BODY IN TERMS OF SECTION 240A OF THE TAX ADMINISTRATION ACT, 2011

I, a Registered Auditor, hereby request to be recognised as a tax practitioner with the IRBA as my Recognised Controlling Body and submit the following information in support of my request:

1. PERSONAL DETAILS

Surname:	
Forename(s):	
IRBA individual registration number:	
SA identity number:	

Passport details are only required if the Registered Auditor is not a holder of a valid South African Identity Document and has not filled in a valid South African Identity Number above:

Passport number:	
Country of issue of passport:	
Date of issue of passport:	
Date of expiry of passport:	

2. **TAX DETAILS:**

Tax practitioner number:	
Personal Income tax reference number:	

Please note that in order for SARS to confirm your registration with the IRBA, the above information is mandatory.

I confirm that my contact information on the IRBA's registers is correct, and I undertake to inform the IRBA within 30 days if any of my contact details change.

I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT IN EVERY DETAIL.

I attach proof of payment of the prescribed application fee.

I understand that the application fee is not pro-rated and that I will be invoiced for a tax practitioner annual fee, over and above my registration renewal annual fee, on an annual basis with effect from 1 April of the financial year following my registration. Please note that the IRBA's financial year runs from 1 April to 31 March.

The IRBA's banking details are:

Bank:	Standard Bank
Branch:	Eastgate
Branch Code:	018505
Account Number:	221290532

Please note we cannot start processing your application without confirmation of payment.

If you withdraw or cancel your application for recognition as a tax practitioner, you will be refunded the application fee less a 15% administration fee on submission to registry@irba.co.za of proof of your banking details.

_____ _____

Date Signature of applicant

Please submit your completed form with proof of payment to registry@irba.co.za.

Please note that in order for the IRBA to engage with you, it will have to Process certain Personal Information which belongs to you, which Processing is described and explained under the specific and informative IRBA Processing Notices, housed for ease of reference on IRBA's website at https://www.irba.co.za/library/popi-act, which we ask you to download and read. By providing us with the required Personal Information, such act will be taken as an indication that you have read and agree with the provisions described under the Processing Notice and, where applicable, you consent to the processing by us of your Personal Information.

ANNEXURE E

FORM 5

INDEPENDENT REGULATORY BOARD FOR AUDITORS
(Established under Section 3 of Act 26 of 2005)

APPLICATION BY AN INDIVIDUAL TO REGISTER AS A REGISTERED CANDIDATE AUDITOR
(For application in terms of Section 37(1))

I hereby apply to be registered as a Registered Candidate Auditor (RCA) and I submit the following information in support of my application:

1. Is this your first application to be registered as an RCA? _____

2. If the answer to question 1 is no, please provide your previous registration number and reasons for your previous registration. _____

3. Name in full: (please use block letters)
   (a) Title: _____
   (b) Surname (and maiden name, if applicable): _____
   (c) Forename(s) as per ID: _____
   (d) Preferred name: _____

4. Addresses: **(Please circle the → next to the address where you would like to receive any individual correspondence that is not sent by email. Please complete all the address details.)**

→ (a) Your physical address: _____
_____

→ (b) Your postal address: _____
_____

→ (c) Your firm's postal address: _____
_____

5. Telephone number: (_____) _____
   Cell number: (_____) _____ Email address: _____

6. Identity number: _____ Race* _____ Gender*_____
   (Please attach a copy of your identity document or card)

7. If you do not have a South African identity document, please provide the following details
Passport number: _____ Country of issue: _____
Date of issue: _____ Date of expiry: _____
(please provide a copy of the passport)

8. I was registered as a trainee accountant from _____ to _____

and my registration number was _____

9. Do you intend applying for the Recognition of Prior Learning (RPL) for a part of the period since completion of your training contract; if so indicate the period you intend to apply for RPL? Also indicate whether this period was attained in your current firm.

_____

_____

_____

10. I passed the Assessment of Professional Competence (APC) on _____ (date)

ANSWER "YES" OR "NO" TO QUESTIONS 12 TO 16

11. Are there any outstanding or in-progress disciplinary matters against you? If yes, please provide details on a separate page _____

12. Have you at any time been removed from an office of trust because of misconduct related to a discharge of that office? If yes, please provide details on a separate page. _____

13. Have you at any time been convicted, whether in the Republic or elsewhere, of theft, fraud, forgery, uttering a forged document, perjury, an offence under the Prevention and Combating of Corrupt Activities Act, 2004, or any other offence involving dishonesty? If yes, please provide details on a separate page. _____

PLEASE NOTE THAT A VALID POLICE CLEARANCE CERTIFICATE MUST BE SUBMITTED WITH THIS APPLICATION.

14. Are you, for the time being, declared by a competent court to be of unsound mind or unable to manage your own affairs? If yes, please provide details on a separate page. _____

15. Are you an unrehabilitated insolvent, have you entered into a compromise with your creditors, are you under debt review, or have you been provisionally sequestrated? If yes to any of these questions, please provide details on a separate page. _____

16. Are you a member of a professional body accredited as such by the Board?

_____

161 If you answered yes to question 16, please state the name of the body and your membership number: _____

_____

Please note that membership of a professional body accredited by the IRBA is required for registration and continued registration with the IRBA. The only professional body currently accredited by the IRBA is the South African Institute of Chartered Accountants (SAICA).

17. Are you resident within South Africa? _____

Please note that residence in South Africa is a requirement for registration and continued registration with the IRBA.

FIRM INFORMATION

18. Name of a registered audit firm that will offer the Audit Development Programme (ADP) _____

_____

19. Full name and surname of the Oversight Registered Auditor (ORA) _____

_____

20. ORA's IRBA registration number _____

21. ORA's identity number _____

22. ORA's email address _____

PLEASE PROVIDE BRIEF RESPONSES TO THE FOLLOWING QUESTIONS:

Firms with candidates registered on the ADP will be required to go through a monitoring process. The monitoring process is useful for creating an environment that is conducive to the development of professional competence of aspirant Registered Auditors. (Please refer to the IRBA website for the Standards and Indicators that form the basis of the ADP Monitoring process).

23. Has the abovementioned firm been subject to and undergone an IRBA firm inspection in the past three years? _____

24. Please provide details of your firm's audit methodology? .

_____
_____
_____
_____
_____

25. Does the firm have an established quality control system as required by international standards on quality control? Please provide details

_____
_____
_____
_____
_____

26. Does the firm have policies and procedures in place for acceptance of new clients and continuance with existing clients? Briefly explain.

_____
_____
_____
_____
_____

27. Does the firm have policies and procedures regarding documentation retention? Briefly explain.

_____
_____
_____
_____
_____

FIRM'S JOB PLANNING TOOL

28. Firm's job planning
(Please attach a copy of your firm's job planning documentation or use the provided template. The job planning template should indicate the clients that you have been allocated for either a six-month or 12- month period – refer to the ADP Booklet for more details in this regard.)

I certify that the above information is true and correct in every detail, and I undertake to comply with the Code of Professional Conduct, as updated from time to time by the IRBA. **

I enclose a cheque, or proof of payment, in the amount of **R**_____ in respect of the application fee.

The IRBA's banking details are:

Bank:	Standard Bank
Branch:	Eastgate
Branch Code:	018505
Account Number:	221290532

Please note that we cannot start processing your application without confirmation of payment.

Please sign:

_____ _____

Date Signature of applicant

_____ _____

Date Signature of ORA

* This information is requested in order to gauge the profession's success in becoming more representative of the people in South Africa.

** The IRBA's Code of Professional Conduct is available on our website at www.irba.co.za.

Please e-mail us your application form and supporting documentation to adpadmin@irba.co.za.

Please note that in order for the IRBA to engage with you, it will have to Process certain Personal Information which belongs to you, which Processing is described and explained under the specific and informative IRBA Processing Notices, housed for ease of reference on IRBA's website at https://www.irba.co.za/library/popi-act, which we ask you to download and read. By providing us with the required Personal Information, such act will be taken as an indication that you have read and agree with the provisions described under the Processing Notice and, where applicable, you consent to the processing by us of your Personal Information.

ANNEXURE F

FORM 6

INDEPENDENT REGULATORY BOARD FOR AUDITORS
(Established under Section 3 of Act 26 of 2005)

APPLICATION BY AN INDIVIDUAL REGISTERED AUDITOR TO CHANGE FROM A NON-ASSURANCE TO AN ASSURANCE REGISTRATION STATUS

I, a Registered Auditor, hereby request to change my registration status from non-assurance to assurance:

1. PERSONAL DETAILS

Surname:	
Forename(s):	
IRBA individual registration number:	

2. ASSURANCE CATEGORY

Is any of the assurance work you intend to perform classified as high risk as per **Annexure A**?	

3. FIRM DETAILS

You must be linked to a firm registered with the IRBA in order to perform assurance work.

3.1 If you are currently linked to a firm registered with the IRBA, please provide the following details:

Name of firm:	
IRBA practice number:	
Role in firm: (Please select either partner, director, sole proprietory, senior partner, CEO, Risk Leader, Quality Leader or employee.)	

If the firm to which you are currently linked is a non-assurance firm (eg. you are the sole proprietor and are non-assurance, or there is more than one partner in the firm and all partners are non-assurance), you will also need to provide a business plan for the firm, an ISQC manual and the name and RA number of the RA identified as the practice's Quality Reviewer as well as copies of the agreements entered into with the Quality Reviewer. (See **Annexure B**)

3.2 If you are intending to join a firm registered with the IRBA, please submit a completed **Form 1A** with this application.

3.3 If you are intending to register a new firm with the IRBA, please submit a completed **Form 2** with this application.

3.4 If you are an employee in a firm, please also submit a letter from the Senior Partner, CEO or equivalent of the firm confirming your position in the firm, your assurance proficiency, how your assurance proficiency was determined and that they are aware you are applying to change your status to assurance.

4. SUPPORTING DOCUMENTS

If it has been more than three years since you were last assurance or if you were registered with the IRBA as non-assurance, you will need to submit the following documents with your application:

- A brief CV detailing your professional history with specific reference to your assurance roles and experience;
- Evidence of CPD undertaken for the past three years, including your most recent assurance CPD;
- A letter motivating why you now seek assurance registration;
- If you are a partner or shareholder and director in a firm, a letter from the Senior Partner, CEO or equivalent of the firm confirming your position in the firm and your assurance proficiency, how your assurance proficiency was determined; and that they are aware you are applying to change your status to assurance.

In these scenarios, you will be required to attend an interview with the IRBA's Proficiency Assessment Panel and a proficiency interview fee in the amount prescribed by the Board for the relevant year of the application will be payable prior to the date of your proficiency interview.

I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT IN EVERY DETAIL.

_____ _____

Date Signature of applicant

Please submit your completed form to registry@irba.co.za.

Please note that in order for the IRBA to engage with you, it will have to Process certain Personal Information which belongs to you, which Processing is described and explained under the specific and informative IRBA Processing Notices, housed for ease of reference on IRBA's website at https://www.irba.co.za/library/popi-act, which we ask you to download and read. By providing us with the required Personal Information, such act will be taken as an indication that you have read and agree with the provisions described under the Processing Notice and, where applicable, you consent to the processing by us of your Personal Information.

ANNEXURE A

WHAT IS HIGH AND LOW RISK ASSURANCE WORK?

High risk audits and related assurance work:

This refers to assurance engagements that are performed by RAs and firms that are required in terms of legislation or regulation. These engagements include but are not limited to:

- Audits required in terms of the Companies Act of 2008 (as amended), of:
  - public companies;
  - state-owned enterprises; and
  - private companies with a public interest score of 350 or more;
  - private companies with a public interest score of less than 350 but at least 100, if its annual financial statements were internally compiled;
  - private companies with a public interest score below 350 and where the MOI was altered to include an audit requirement. Such an engagement is not considered to be a voluntary audit.
- Audits of banks and regulatory returns to the SARB in terms of the regulations to the Banks Act.
- Audits required per the South African Reserve Bank Act.
- Audits required by legislation under the Financial Services Conduct Authority, of:
  - insurance companies;
  - collective investment schemes;
  - pension and retirement funds;
  - provident funds; and
  - any other audits required by the Financial Advisory and Intermediary Services Act (FAIS).
- Audits of Medical Schemes.
- Audits on behalf of the Auditor-General:
  - Secondment of staff to assist the Auditor-General – no opinion is expressed and consequently these engagements should be excluded;
  - Performance of an engagement under the supervision of the Auditor-General (so called "contracted out" engagements). Although this audit opinion is signed by the Auditor-General, a substantial portion of the work is performed by the contracted firm. These engagements should be included; and
  - Audits performed and signed by a firm in terms of Section 4(3) of the Public Audit Act, 2004 (as amended). These engagements should be included.
- Trust accounts for legal practitioners (including attorney trust accounts).
- Estate Agents (business and trust accounts).
- Audits of Cooperatives.
- Audits of non-profit organisations where the turnover is **more than R50 million**.
- Audits of all tertiary educational institutions.
- Audits required by the Sectional Titles Schemes Management Act, 2011 (as amended).
- Assurance work related to other regulatory returns in respect of **any of the above audit clients**.

Low risk assurance work, being all assurance work not already stated above and including:

- Voluntary audits by decision.
- Independent reviews required in terms of the Companies Act of 2008, as amended.
- Other assurance work.

ANNEXURE B

We require all candidates who are registering a new firm, re-registering a previously registered firm where the below documents were not submitted on the previous registration of the firm, or converting existing firms from non-assurance to assurance, to first set up their audit quality structures before we register their firms or process the change of status from non-assurance to assurance.

We require this because we believe it is in the public interest for the IRBA as a regulator to ensure that all firms have their Quality Control structures in place. This also ensures that your firm is running in accordance with ISQC1.

We generally find that the process of setting up these structures is one that is very beneficial to you and those you will be working with as it focusses on the overall structures in terms of quality.

The following documents must be submitted with this application relating to the practice you intend to register:

1. Business plan (practice plan);

2. Quality (ISQC) manual – the quality manual must be drafted in accordance with ISQC1; and

3. Name and IRBA number of the RA identified as your firm's Quality Reviewer together with agreements entered into with the Quality Reviewer; and

---

1. BUSINESS PLAN

The business plan must contain more than an introduction. It must contain items such as:

- the structure of the firm;
- services offered by the firm;
- resources (HR, IT etc. including what software the firm will be using);
- financial projections including revenue streams (such as will your clients be private or public sector clients,
  how will clients be sourced);
- organogram of firm;
- risk identification and mitigation strategy; and
- firm's transformation strategy and objectives.

2. QUALITY MANUAL:

Your manual must contain all the established procedures and policies covering all aspects of ISQC1.

Please ensure that you also submit to us all your templates and checklists as identified in your manual.

Please note that we do not provide templates or examples of the quality manual as we see this as a developmental process you will go through as you familiarise yourself with the requirements of ISQC1.

Leaving the process open is very important as different practitioners will have different manuals applicable to their own circumstances. IFAC does have a guidance document on their website.

3. AGREEMENT WITH REVIEWER:

We are generally led by you regarding the structure of the agreement with your reviewer. However, the agreement must cover, amongst others, the following aspects:

- Scope of the review
  - Indicating your expectation from the reviewer on entering into such an agreement
    - Including aspects to be considered or focused on; how you will determine engagements to be reviewed (please ensure that the agreement specifically states that the first three engagements will require a review); and indicating the stages of an audit that would require a review

- Reporting requirement
  - Indicating the report and format thereof to be issued by the reviewer at the end of their review.

- Duration of the review
  - Estimate of the length of the review to be carried out by the reviewer.

- Commencement date
  - Commencement date of the agreement.

- Fees
  - The fees that would be payable to the reviewer for each of the reviews.

- Terms and conditions
  - These would be general terms and conditions of the formal arrangement you are entering into. Such terms would include the responsibilities of the firm.

Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
Contact Centre Tel: 012-748 6200. eMail: info.egazette@gpw.gov.za
Publications: Tel: (012) 748 6053, 748 6061, 748 6065