

**PERIODIC MAINTENANCE OF TRUNK ROAD 83/1, KM
25.78 TO KM 34.00 AND KM 48.50 TO KM 58.00, TRUNK
ROAD 83/2 FROM KM 0 TO KM 11,16 AND KM 15.25 TO
KM 23.01, MAIN ROAD 365 FROM KM 0 TO KM 14.12,
AND TRUNK ROAD 31/5 FROM KM 0.42 TO KM 0.90,
BETWEEN RIVERSDALE TO LADISMITH**

FINAL RIVER MAINTENANCE MANAGEMENT PLAN

Prepared For:

Western Cape Government: Department of
Transport and Public Works: Roads Branch
Cape Town
8000

E Azni.november@westerncape.gov.za

T (021) 483 0526

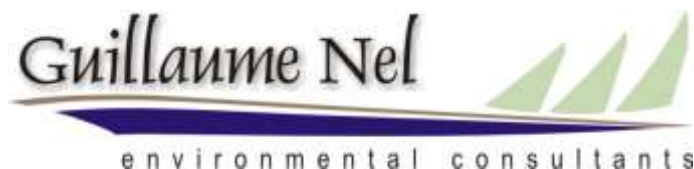
Prepared by:

Guillaume Nel Environmental Consultants
P.O. Box 2632
Paarl
7620

Tel: 021 870 1874

Fax: 021 870 1873

E-Mail: gn@gnec.co.za / carina@gnec.co.za /
intern@gnec.co.za



11 MAY 2022

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ACRONYMS

BAR	Basic Assessment Report
BPG	Best Practice Guideline
CBA	Critical Biodiversity Area
DEA&DP	Department of Environmental Affairs & Development Planning
DWS	Department of Water & Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GA	General Authorisation, in terms of the National Water Act, 1998 (Act No. 36 of 1998)
GN	Government Notice
IB	Irrigation Board
MEC	Member of Executive Council
MMP	Maintenance Management Plan
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NFEPA	National Freshwater Ecosystem Priority Areas
NWA	National Water Act, 1998 (Act No. 36 of 1998)
ER	Employer's Representative
PES	Present Ecological State
SANParks	South African National Parks Authority
SUDS	Sustainable Urban Drainage Systems
WUA	Water Users Association
WULA	Water Use Licence Application

DEFINITIONS OF TERMS

"Activity" means an activity identified in any notice published by the Minister or MEC in terms of section 24D(1)(a) of the Act as a listed activity or specified activity. Activity in this document refers to the activities as listed in Listing Notice 1, 2 and 3 of the Environmental Impact Assessment Regulations, 2014 (as amended).

"Bush Encroachment" means stands of plants of the kinds specified in column 1 of Table 4 of the Conservation of Agricultural Resources Act (Act No. 43 of 1983) where individual plants are closer to each other than three times the mean crown diameter.

"Diverting" as defined in the General Authorisation, in terms of section 39 of the National Water Act, 1998 (Act no 36 of 1998) for Water Uses as defined in Section 21(c) and 21(i) (GN. 509 of 26 August 2016), means to, in any manner, cause the instream flow of water to be rerouted temporarily or permanently.

"Ecological Infrastructure" refers to naturally functioning ecosystems that deliver valuable services to people, such as water and climate regulation, soil formation and disaster risk reduction.

"Estuary" has the meaning assigned to it in the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)

"Flood event" is the event where land is inundated by the overflowing of water from a river channel and where this event causes significant damage to infrastructure or results in watercourse erosion and/or sediment deposition.

NOTE that flooding can be a natural phenomenon in many river or wetland systems which, due to encroachment and human modification of the form and function of the affected system, may have evolved into a potential hazard to life or property.

"Flow-altering" as defined in the General Authorisation, in terms of section 39 of the National Water Act, 1998 (Act no 36 of 1998) for Water Uses as defined in Section 21(c) and 21(i) (GN. 509 of 26 August 2016), means to, in any manner, alter the instream flow route, speed or quantity of water temporarily or permanently.

"General Authorisation" in this document refers to the General Authorisation in terms of section 39 of the National Water Act, 1998 (Act no 36 of 1998) for Water Uses as defined in Section 21(c) or Section 21(i) (GN. 509 of 26 August 2016).

"Impeding" as defined in the General Authorisation, in terms of section 39 of the National Water Act, 1998 (Act no 36 of 1998) for Water Uses as defined in Section 21(c) and 21(i) (GN. 509 of 26 August 2016), means to, in any manner, hinder or obstruct the instream flow of water temporarily or permanently, but excludes the damming of flow so as to cause storage of water.

“Indigenous vegetation” refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

“Maintenance” means actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint.

“Maintenance Management Plan” means a management plan for maintenance purposes defined or adopted by the competent authority.

“River Management Plans” as defined in the General Authorisation, in terms of section 39 of the National Water Act, 1998 (Act no 36 of 1998) for Water Uses as defined in Section 21(c) and 21(i) (GN. 509 of 26 August 2016), any river management plan developed for the purposes of river or storm water management in any municipal/metropolitan area or described river section, river reach, entire river or sub quaternary catchment that considers the river in a catchment context.

“River reach”, a length of river characterised by a particular channel pattern and channel morphology, resulting from a uniform set of local constraints on channel form. A river reach is typically hundreds of meters in length.

“Stretch” a section of watercourse, delineated between two or more mapped coordinates, within which proposed maintenance activities are to take place as guided by a MMP.

“Thalweg” refers to the line of lowest elevation within a valley or watercourse.

“Watercourse” means:

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermittently;
- (c) a wetland, lake or dam into which, or from which, water flows; and
any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and

a reference to a watercourse includes, where relevant, its bed and banks.

“Wetland” means, land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

REFERENCES

Ecosystem Guidelines for Environmental Assessment in the Western Cape, Edition 2, 2016. Available at: www.bgis.org.za

FEN Ecological Network (FEN) Consulting (Pty) Ltd., 2021. Freshwater ecological verification and DWS risk Assessment for the proposed maintenance activities associated with various maintenance activities associated with various roads near Ladismith and Riversdale, Western Cape Province.

General Authorisation, in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) for water uses as defined in Section 21 (c) or Section 21 (i).

National Water Act, 1998 (Act No. 36 of 1998). Available at: <http://www.gov.za/documents/national-water-act>

Preliminary guideline for the determination of buffer zones for rivers, wetlands and estuaries, 2014. Available at: <http://www.wrc.org.za>

Scientific Terrestrial Services, 2021, Terrestrial, Plant and Animal Sensitivity Verification and Impact assessment for the proposed periodic maintenance activities associated with various roads near Ladismith and Riversdale, Western Cape Province.

Wetland offsets: A best practice guideline for South Africa, 2016. Available at: <http://www.wrc.org.za>

Request for the relevant Competent Authority to define or adopt a Maintenance Management Plan for a watercourse in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), Environmental Impact Assessment Regulations, 2014 (as amended).

File Reference Number:
Date Received by Department:
Date Received by Component:
Form Duly Signed and Dated:

(For official use only)	
	Yes No

PROJECT TITLE

THE PROPOSED OF TRUNK ROAD 83/1, KM 25.78 TO KM 34.00 AND KM 48.50 TO KM 58.00, TRUNK ROAD 83/2 FROM KM 0 TO KM 11,16 AND KM 15.25 TO KM 23.01, MAIN ROAD 365 FROM KM 0 TO KM 14.12, AND TRUNK ROAD 31/5 FROM KM 0.42 TO KM 0.90, BETWEEN RIVERSDALE TO LADISMITH

A. SCOPE AND IMPORTANT INFORMATION

- 1) This document is to be used to ensure that the request for adopting or defining a Maintenance Management Plan (MMP) in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) is undertaken to the sufficient standard and requirements as defined by the competent authority, the Department of Environmental Affairs and Development Planning of the Western Cape Government (henceforth the Department). It is advised that the determination of applicability regarding the scale of the proposed maintenance/management activity(ies) be undertaken through a pre-application consultation with the Department.
- 2) The geographical scope of the MMP is limited to watercourses as defined in the EIA Regulations, 2014(as amended). The document does not relate to coastal activities or activities to be undertaken in an estuary.
- 3) The use of this document for the development of a MMP for a watercourse **will only** be considered when the proposed maintenance activities constitute any one of the following listed activities identified in terms of the NEMA EIA Regulations, 2014 (as amended):

EIA Regulations Listing Notice 1 of 2014 (as amended)

- **Activity 19, Listing Notice 1: The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but**

excluding where such infilling, depositing, dredging, excavation, removal or moving-

(a) will occur behind a development setback;

(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;

(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;

(N.B. Points (d) and (e) does not apply as these activities fall within the coastal zone)

- Activity 27, Listing Notice 1: The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-
 - i. The undertaking of a linear activity; or
 - ii. Maintenance purposes undertaken in accordance with a MMP.

EIA Regulations Listing Notice 2 of 2014 (as amended)

- Activity 15, Listing Notice 2: The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-
 - I. The undertaking of a linear activity; or
 - II. Maintenance purposes undertaken in accordance with a MMP.
- Activity 24, Listing Notice 2: The extraction or removal of peat or peat soils, including the disturbance of vegetation or soils in anticipation of the extraction or removal of peat or peat soils, but excluding where such extraction or removal is for the rehabilitation of wetlands in accordance with a MMP.

EIA Regulations Listing Notice 3 of 2014 (as amended)

- **Activity 12, Listing Notice 3: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a MMP.**
 - i. Western Cape**
 - i. **Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;**
 - ii. **Within critical biodiversity areas identified in bioregional plans;**
 - iv. **On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or**
 - v. **On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.**
 - (NB. Point iii does not apply as this activity falls within the coastal zone)**

- 4) In deciding the request, the competent authority may define conditions related to auditing compliance with the MMP; monitoring requirements; reporting requirements, review; updating and amending the document and period for which the MMP is defined/adopted.

- 5) The purpose of the MMP is to maintain both man-made and ecological infrastructure in a manner that either improves the current state of, and/or reduces the negative impacts on a watercourse to ensure that ecosystems services are preserved/improved and to prevent further deterioration of the watercourse.
- 6) Notwithstanding the MMP possibly being defined or adopted by the Competent Authority, any other applicable statutory requirement must still be complied with (e.g. any obligations under the National Water Act, 1998 (Act 36 of 1998) or the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)).
- 7) The proponent must note that a MMP for a watercourse **must** be undertaken through consultation with the Department of Water and Sanitation and/or the relevant Catchment Management Agency (responsible water authority). This is to ensure compliance in terms of a Permissible Water Use as set out in the National Water Act, 1998 (Act No. 36 of 1998). It is recommended that this process for authorisation in terms of the National Water Act be clarified prior to the drafting and submission of the MMP.
- 8) The development of this document has been done in such a way so as to meet the requirements of both this Department as the competent authority in terms of the NEMA EIA Regulations, 2014 (as amended), as well as the requirements of the delegated water authority, regarding general authorisation considerations for sections 21(c) and (i) of the National Water Act, 1998 (Act No. 36 of 1998), to ensure alignment between the two authorities when defining or adopting the MMP.
- 9) In situations where a Water Use Licence Application (WULA) is required by the water authority regarding the proposed activities within a MMP, this will not prevent the proponent from submitting a request for a MMP to be defined or adopted by the Department.
- 10) Unless protected by law, all information contained in, and attached to this document, shall become public information on receipt by the competent authority.
- 11) A duly dated and originally signed copy of this document together with one hard copy and one electronic copy of the MMP must be posted, to the Department at the postal address given below, or delivered to the Registry Office of the Department.
- 12) A copy of the final defined/adopted MMP and cover letter **must** be submitted to the responsible water authority.
- 13) **NOTE: Adopting or defining the MMP does not absolve the proponent from complying with any applicable legislation or the general “duty of care” set out in Section 28(1) of the NEMA that states, “Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.” (Note: When interpreting this “duty of care” responsibility, cognisance must be taken of the national environmental management principles contained in Section 2 of the NEMA.**
- 14) **NOTE: This document can be used as a template to assist in the information required and is to be filled out in full. The Department reserves the right to request any additional information during the initial development and submission of the draft MMP.**

- 15) **NOTE: The Department reserves the right to not adopt the MMP and require that an application be submitted to obtain Environmental Authorisation for the respective activities. Furthermore, consideration for the review should also be aligned to the periodic reviews of the General Authorisation for sections 21 (c) and (i) of the National Water Act, 1998 (Act No. 36 of 1998) to ensure continued alignment and compliance.**

RELEVANT LEGISLATION AND POLICIES

This Maintenance Management Plan includes **Activity 19 of Listing Notice 1 (GN 983, 4 December 2014 as amended in GN 327 on 7 April 2017) & Activity 12 of Listing Notice 3 (GN 985, 4 December 2014 as amended in GN 324 on 7 April 2017):**

Activity 19 Listing Notice 1 (GN R 983, 7 April 2017)

The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from-

- (i) a watercourse;*
- (ii) the seashore; or*
- (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving-*
 - (a) will occur behind a development setback;*
 - (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or*
 - (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;*
 - (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or*
 - (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.*

Activity 12, Listing Notice 3 (GN R 983, 7 April 2017):

The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with an MMP.

i. Western Cape

- i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;*
- ii. Within critical biodiversity areas identified in bioregional plans;*
- iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or*
- v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.*

(NB. Point iii does not apply as this activity falls within the coastal zone)

B. MAINTENANCE MANAGEMENT PRINCIPLES

- 1) The following are overarching principles to be used by landowners and managers when considering the development and implementation of a MMP:
 - a. The anticipation and prevention of negative impacts and risks, then minimisation, rehabilitation or 'repair', where a sequence of possible mitigation measures to avoid, minimize, rehabilitate and/or remedy negative impacts is explicitly considered;
 - b. Avoid and reduce unnecessary maintenance;
 - c. Maintenance and management of a watercourse must be informed by the condition of the physical and ecological processes that drive and maintain aquatic ecosystems within a catchment, relative to the desired state of the affected system;
 - d. Management actions must aim to prevent further deterioration to the condition of affected watercourses and, overall, be guided by a general commitment to improving and maintaining ecological infrastructure for the delivery of ecosystem services;
 - e. Managers and organs of state must identify, address and, where feasible, eliminate the factors that necessitate intrusive, environmentally-damaging maintenance; and
 - f. A process of continuous management improvement be applied, namely Planning; Implementing; Checking (monitoring, auditing, determine corrective action) and Acting (management review).
- 2) The following table provides a simple overview for the determination of the need for a MMP:

	Question	If the answer to any of the questions is YES, then a MMP may be applicable.
2.1	Is there a watercourse on or adjacent to the property?	YES
2.2	Has there been a history of flood damage or vandalism to the existing infrastructure or watercourse – erosion and/or sedimentation?	YES
2.3	Is there infrastructure or any community at risk of being damaged by flooding?	NO
2.4	Is the design of infrastructure considered inadequate in terms of managing the risk of flooding, erosion and/or sedimentation?	YES
2.5	Would you consider an improved design to existing infrastructure to reduce maintenance needs?	YES
2.6	Are there specific incidences where the watercourse is obstructed, or blockages occur that alter the flow of the river during floods?	NO
2.7	Is there an existing obstruction in the watercourse that has changed the flow of the river under normal conditions?	NO
2.8	Is there a marked increase in the rate of erosion/sedimentation being experienced, which threatens operations and assets?	YES
2.9	Is there a presence of alien or bush encroachment vegetation within the watercourse and/or the presence of woody debris after flooding?	YES

- 3) It is important to consider that the type of maintenance required will impact on the level of assessment needed in terms of the impact the activity will have on the system and how best to mitigate the impact. Types of maintenance can broadly be classified in the

following categories, with recognition that maintenance activities vary across the rural and urban context:

Maintenance Category	Types of maintenance activities (examples only)
Category A: Sediment removal as a result of deposition or sediment deposition as a result of erosion	• Clearing sediment or placing sediment at: ○ Pump hole/trench ○ Return flow (irrigation) ○ Off-take weir ○ Stormwater outfall ○ Detention/retention ponds ○ Canalized urban rivers ○ Bridges, culverts and drifts • Prevent formation of islands in the channel of the river • Dredging of in-stream dams
Category B: Emergency repairs – urgent action required to manage risk and damage to assets	• Repair to erosion of river bank or servicing infrastructure (e.g. pipelines/roads) • Removal of material built up as a result of flooding/sedimentation and increasing risk to infrastructure • Address damage or replacement of infrastructure (e.g. bridge, pipeline, pump house) • Manage the condition of flood protection berms, and existing structures such as gabions, canalized and stormwater systems • Installing temporary gravel approaches at flood-damaged river crossings
Category C: Managing alien invasive and bush encroachment plant species	• Clearing of alien invasive vegetation out of a watercourse to reduce maintenance requirements as they relate to erosion and sedimentation • Management of indigenous species categorized as bush encroachment, to improve hydrological flow and reduce associated flooding impacts
Category D: Rehabilitation and restoration activities for maintaining ecological infrastructure	• Development and maintenance of ecological buffering systems to improve and/or restore functioning (e.g. wetlands and stormwater detention ponds) • Actively rehabilitating riparian zones through planting of locally indigenous species • Bank grading and movement/removal of berms and barriers to flow

4) The development of appropriate method statements to mitigate the impact of the maintenance needs, should be aligned within the framework of these considerations:

- a. Watercourses experience a natural process of sedimentation and erosion, with varying rates depending on the geomorphology and the integrity of the land-uses within the catchment;
- b. Manipulation of the watercourse results in increased erosion and/or deposition being experienced further downstream, perpetuating greater need for manipulation and more drastic and costly maintenance interventions;

- c. Locally indigenous riparian and wetland vegetation assists in the stabilization of riverbanks through effective root structures, while contributing to improve in-stream habitat and water quality conditions;
 - d. Invasive alien and bush encroachment vegetation significantly impact on the functioning of a watercourse, often leading to increased flood associated damage, with further implications and a reduction in water quality and availability;
 - e. Persons undertaking maintenance activities have a responsibility to ensure a sense of duty of care is applied as prescribed within NEMA Section 28(1).
- 5) It is recognized that within urban areas, sedimentation and erosion rates are significantly amplified as a result of development in urban areas and thus systems associated with watercourses in such areas can no longer be considered as 'natural'. In such a context, the drivers of such a process are often located outside the control of the landowner or responsible authority (i.e. Municipality). Therefore, the response taken to address the needs of a maintenance management plan for a watercourse within the urban environment may be limited in mitigating the requirement for maintenance to be undertaken.

C. REQUEST FOR THE COMPETENT AUTHORITY TO DEFINE OR ADOPT A MAINTENANCE MANAGEMENT PLAN FOR A WATERCOURSE IN TERMS OF THE NEMA, EIA REGULATIONS 2014 (AS AMENDED).

The following information must be submitted as part of the request for the competent authority to define or adopt the MMP:

1. PERSONAL DETAILS

Highlight the Departmental Sub-Region(s) in which the maintenance is to be undertaken. (mark the appropriate box with an 'X'). For Departmental, details see Annexure A.

REGION 1 (City of Cape Town Metropolitan and West Coast District) ☐	REGION 2 (Cape Winelands District, Overberg District) ☐	REGION 3 (Eden & Central Karoo Districts) ☒	
Name of person/authority who will undertake responsibility for the activity:	Western Cape Government: Department of Transport and Public Works		
Contact person (if other):	Azni November		
Postal address:	P.O. Box X9185		
Telephone:	(021) 483 0536	Postal code:	8000
Fax:		Cell:	
Email:	Azni.november@westerncape.gov.za		
Name of person who has prepared the MMP:	Guillaume Nel Environmental Consultants		
Contact Person (if other):	Hetlie Liebenberg / Carina Becker		
Postal address:	P.O. Box 2632, Paarl		
Telephone:	(021) 870 1874	Postal code:	7620
Fax:	(021) 870 1873	Cell:	
E-mail:	intern@gnec.co.za / gn@gnec.co.za / carina@gnec.co.za		
Name of landowner(s) on whose behalf the plan has been developed:	Western Cape Government Department of Transport and Public Works		

Contact person(s):	Azni November on behalf of Western Cape Government: Department of Transport and Public Works		
Postal address:	P.O. Box 8, Durbanville		
Telephone:	(021) 483 0536	Postal code:	8000
Fax:		Cell:	
E-mail:	Azni.november@westerncape.gov.za		
Municipality for proposed project:	Hessequa Municipality & Kannaland Municipality		
Farm name(s), erf(s) and portion number(s) etc*:	The proposed Periodic Maintenance of TR83/1; TR83/2; TR31/5 and MR365 between Riversdale and Ladismith and is under the jurisdiction of the Garden Route District Municipality. Riversdale is situated on the N2 National Road and is approximately 350 kilometres east of Cape Town.		
Magisterial District or Town:	Between Riversdale and Ladismith		
Name(s) of watercourse(s) in question:	• Piets River • Mied River (Tributary of the Piets River) • Ephemeral drainage line of the Mied River) • Ephemeral drainage line of the Brand River system • Ephemeral drainage line of the Touws River system • Ephemeral tributary of the Touws River system • Touws River • Ephemeral drainage line of the Groot River (straightened and primarily used as an irrigation furrow) • Groot River • Swartberg River • Ephemeral drainage line of the Groot River system • Ephemeral drainage line of the Swartberg River • Dwars River (tributary of the Swartberg River) • Buffelskloof River (tributary of the Swartberg River)		

	Ephemeral drainage line of the Knui River system
*In instances where there is more than one landowner, please attach a list of landowners with their full names, contact details, farm name, farm number, portion number, Erf number, coordinates and signed declaration confirming approval for development and responsibility of the MMP	

2. DECLARATION

THE PERSON THAT WILL BE UNDERTAKING THE MAINTENANCE

I, in my **personal capacity** or **duly authorised** (please circle the applicable option) by (name of legal entity) thereto hereby declare that I/we:

- Request the MMP to be adopted by the Competent Authority;
- Regard the information contained herein to be true and correct for this Maintenance Management Plan;
- Am fully aware of my responsibilities in terms of the National Environmental Management Act of 1998 ("NEMA") (Act No. 107 of 1998) and that, notwithstanding the adoption of this MMP, I/we shall comply with any other statutory requirement applicable, which may include, but not limited to the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983), the National Water Act, 1998 (Act No. 36 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended) ("EIA Regulations"), in terms of NEMA;
- Am fully aware that the proposed maintenance constitutes a listed activity in terms of the NEMA EIA Regulations, 2014 (as amended) and that an environmental assessment for environmental authorisation may be required for any other listed activities not included as part of this MMP;
- Acknowledge that any activity undertaken that does not form part of the defined and adopted MMP, will be subject to the Section 24(F) of NEMA and that appropriate enforcement and compliance requirements will follow;
- Shall undertake only those tasks described in the MMP, failing which environmental authorisation will be required, where applicable;
- Shall provide the competent authorities with access to all information at my disposal that is relevant to this request;
- Shall be responsible for any costs incurred in complying with environmental legislation;
- Hereby indemnify the government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of, inter alia, any loss or damage to property or person as a consequence of undertaking this MMP; and
- Am aware that a false declaration is an offence in terms of Regulation 48(1)(a) GN No. R. 982 of 4 December 2014 (as amended).

Signature of the proponent:

Date:

Name of institution/company:

3. INTRODUCTION AND BACKGROUND

Guillaume Nel Environmental Consultants (GNEC), as independent environmental consultants and impact assessors, has been appointed by the Western Cape Government: Department of Transport and Public Works in order to conduct a Basic Assessment Process for the proposed Periodic Maintenance of TR83/1, TR83/2, TR31/5 and MR365. The proposed periodic maintenance of the mentioned roads is located between Riversdale and Ladismith in the Oudtshoorn area and is maintained by the Garden Route District Municipality on behalf of the Western Cape Government: Department of Transport and Public Works. The proposed maintenance will include maintenance repairs such as: General maintenance; Erosion control; Surface patching; Repair of base failure; Culvert maintenance; Bridge maintenance; and Repairs.

The proposed maintenance will take place within the existing registered road reserve of the following roads:

1. Trunk Road 83/1 from km 25.78 to km 34.00
2. Trunk Road 83/1 from km 48.50 to km 58.00
3. Trunk Road 83/2 from km 0.00 to km 11.16
4. Trunk Road 83/2 from km 15.25 to km 23.01
5. Main Road 365 from km 0.00 to km 14.12
6. Trunk Road 31/5 from km 0.42 to km 0.90

The total length of the road being maintained is 51.24 kilometers.

According to the Contract Document Book compiled by the Western Cape Government: Department of Transport and Public Works (October 2020), the periodic maintenance repair to the existing pavement defects of the mentioned roads, which will also include maintenance such as surface patching, functional patching, base repairs, rut filling, edge break repairs, crack sealing, repair of eroded shoulders, together with the necessary layer works and texture treatment with a fine slurry (FEN Consulting, 2021). After all, the maintenance work has been completed, it is proposed that the resealing of the roads will be applied using a bitumen rubber single seal consisting of a 14 mm stone.

TR83/1, TR83/2, TR31/5 and MR365 (the indicated sections) are existing surfaced roads

with stormwater infrastructure being present at different locations along the road to ensure that stormwater is adequately attenuated and dispersed. Some of these stormwater structures require minor maintenance.

There are approximately 199 minor concrete pipe culverts passing under the road of which 10 are Armco pipes of varying diameters. Generally, all the culvert inlets and outlets need to be cleaned, and many culvert barrels need to be cleaned out as they are blocked. The culverts will therefore be repaired and cleaned. Erosion protection measures are needed on steep gradients or where erosion has taken place. Some 600mm diameter culverts will be installed under some of the farm and local accesses to improve longitudinal drainage. Proper concrete headwalls, wingwalls and aprons are needed to replace the existing masonry structures, which are mainly in poor condition.

The listed activities in term of the National Environmental Management Act (NEMA) EIA Regulations, 2014 (as amended) for the proposed maintenance work are triggered by the construction activities taking place within the watercourses on the site. There are several watercourse structures included in the scope of works.

It is important to note that the maintenance works outside the road reserve only relates to Activity 19 of Listing Notice 1 and Activity 12 of Listing Notice 3.

The expertise of the person who prepared this report follows:

MSc & Man (PUK), B(Hons) & Man (US), B Geography (US), Certificate- Environmental Law (PUK), Certificate – EIA (PUK), Certificate– EMS 14000 (PUK), Certificate– Air Quality Management (PUK), Certificate– Environmental Auditing (SABS). Guillaume Nel has eighteen years relevant experience as an Environmental Assessment Practitioner.

4. ENGAGEMENT PROCESS

4.1 AUTHORITY ENGAGEMENT

Please indicate (with an 'x') which of the following authorities have been consulted to provide input based on the proposed maintenance activities:

- ☐ Department of Water and Sanitation
- ☐ **Catchment Management Agency**
- ☐ **Cape Nature**
- ☐ SANParks
- ☐ **Western Cape Department of Agriculture, Directorate: Sustainable Resource Management**
- ☐ **District Municipality**
- ☐ **Local Municipality**
- ☐ Irrigation Board / Water Users Association
- ☐ **Heritage Western Cape**

- ☒ Department of Agriculture, Forestry and Fisheries
☐ **Department of Environmental Affairs & Development Planning**
☐ Other (please list):

For each of the indicated authorities, please provide an explanation as to their required involvement. Details of interactions with each of the respective authorities should be captured by providing an attendance register and minutes of meetings attended with the authority in question. Comments received from the authorities must be submitted and referenced within the final application.

The Draft MMP will be submitted to the following Authorities:

- Department of Environmental Affairs and Development Planning
- Cape Nature
- Heritage Western Cape (HWC)
- Department of Agriculture
- Hessequa Municipality
- Kannaland Municipality
- Hessequa Municipality Ward Councillor
- Kannaland Municipality Ward Councillor
- Breede-Gouritz Catchment Management Agency

For a MMP where multiple property owners are involved or a plan is developed for members of an association, it is recommended that a Project Liaison Committee is setup, to achieve the following objectives:

- Present the project work plan and objectives for approval;
- Present the initial findings and draft of the plan for discussion and approval;
- Present the final accepted plan for agreement and clarification.

In cases where the Municipality is the proponent, it is advised that the Project Liaison Committee represent the multiple departments involved with the maintenance and management of watercourse, which could include but is not limited to departments of, Stormwater, Water and Sanitation, Environment, Parks and Wastewater. Such an approach seeks to ensure alignment and an understanding of the roles and responsibilities of the varying maintenance requirements within the Municipality.

4.2 PUBLIC PARTICIPATION

You are required to notify any and all potential interested and affected party(ies) of the proposed activity(ies) and allow them the opportunity to comment on the MMP for a watercourse. The detail required is outlined below, however this can be further discussed and determined as part of the pre-consultative meeting with the Department, which would ensure due diligence and good governance principles are applied.

It is noted, that for the development of MMPs for watercourses within the urban area, by Municipalities, public notice can be undertaken through the advertisement of the development of a MMP within local/community newspapers for the respective areas, with the relevant evidence of such an advertisement included in the final submission.

The following public participation recommendations, regarding the different scale or geographical extent of the request, are as follows. If no, then motivation must be given as to why a particular process was not undertaken.

Single property / maintenance and management activities along a watercourse occurring along a stretch of no more than 1 kilometer (≤1000 meters):

(i) Given written notice to the owner or person in control of that land if the person undertaking the maintenance activity is not the owner or person in control of the land.	N/A	
(ii) Given written notice to adjacent landowners (up to 500m upstream and downstream from furthest upstream and downstream maintenance site and opposite side of the banks) of the development of the MMP.	N/A	
(iii) Stakeholder meeting held for adjacent landowners, in which MMP is presented. This must include an opportunity for adjacent landowners to provide comment.	N/A	
(iv) Given written notice to any organ of state having jurisdiction in respect of any aspect of the activity(ies) proposed within the development of the MMP.	N/A	
(v) Provided written notice and confirmation to the relevant Water Users Association (WUA) or Irrigation Board (IB) of the development of the MMP, if applicable.	N/A	

Single or Multiple properties / WUA / IB / local authority applying for a single MMP to cover a stretch of a watercourse longer than 1 kilometer (>1000 meters) OR a catchment or sub-catchment area

(i) Given written notice to the owner(s) or person(s) in control of the land if the person(s) undertaking the maintenance activity(ies) is not the owner or person in control of the land.	N/A	Western Cape Government: Department of Transport and Public Works is the owner of the respective road reserves and are also responsible for maintenance activities.
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(ii) Given written notice to non-participating adjacent landowners (up to 1km upstream and downstream from furthest upstream and downstream maintenance site and opposite side of the riverbanks) of the development of the MMP. <i>This must also include general notice to adjacent WUA or IB of the proposed MMP development if application is made by a WUA or IB.</i>	N/A	Site notices will be placed along the beginning and end locations along the roads.
(iii) Stakeholder meeting held for all participating and non-participating landowners, in which details and methodology of MMP is presented. A minimum of two meetings are required, to present on the development of the plan and a final draft version of the plan.	N/A	No stakeholder meetings will take place.
(iv) Given written notice to any organ of state having jurisdiction in respect of any aspect of the activity(ies) proposed within the development of the MMP.	N/A	The following Organs of State will be given notice: • Department of Environmental Affairs and Development Planning • Cape Nature • Heritage Western Cape (HWC) • Department of Agriculture • Hessequa Municipality • Kannaland Municipality • Hessequa Municipality Ward Councillor • Kannaland Municipality Ward Councillor • Breede Gouritz CMA
(v) Provide written notice and confirmation to the relevant Water Users Association (WUA) or Irrigation Board (IB), of the development of the MMP <i>(if a MMP is not requested and managed through a WUA/IB).</i>	N/A	The Breede Gouritz CMA will be provided with an electronic copy of the draft RMMP.

(vi) Describe any other measures taken to inform the public about this MMP. A complete list of measures that are in place to deal with interactions with the public, if it becomes necessary and required by the competent authority during implementation of the project, must be provided for.	N/A	An advertisement will be placed in the local newspaper as notification of the proposed maintenance work. The newspaper advertisement will mention that a copy of the draft MMP will be made available electronically and to any I&AP's on request and available on GNEC's website. Site notices will be placed at different locations along all the roads.
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Please circle the appropriate answer above to indicate the public participation process that has been followed to give notice of this request to potential interested and affected parties and attach any comments and/or objections received, with evidence provided and referenced.

5. DATA COLLECTION AND ASSESSMENT

Information required for *maintenance and management activities for a single/ multiple owner along a watercourse.*

Site Location and Activity Description

Site Location:

TR83/1 km 25.78 – km 34.00	Start 33° 54'59.91"S	End 21° 12'08.74"E
TR83/1 km 48.50 – km 58.00	Start 33° 45'21.14"S	End 21° 09'10.24"E
TR83/2 km 0.00 – km 11.16	Start 33° 34'27.07"S	End 21° 07'22.13"E
TR83/2 km 15.25 – 23.01	Start 33° 30'06.60"S	End 21° 00'25.32"E
MR365 km 0.00 – km 14.12	Start 33° 30'48.79"S	End 21° 15'46.36"E
TR31/5 km 0.42 – km 0.90	Start 33° 29'49.49"S	End 21° 16'14.39"E

Site Location and photo pages:

Site location of the proposed periodic maintenance roads.

The co-ordinates are indicated above.

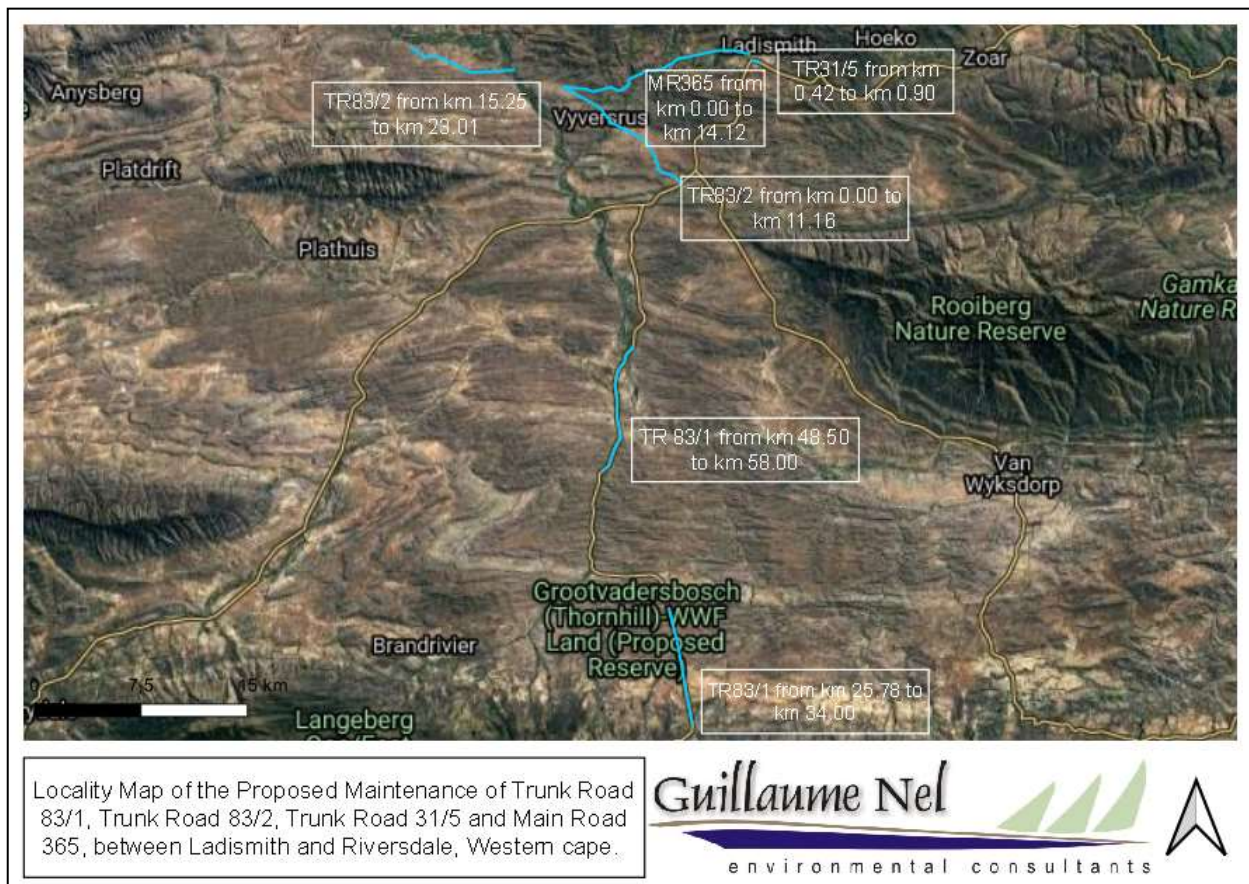


FIGURE 1: LOCALITY MAP OF THE PERIODIC MAINTENANCE ROADS BETWEEN RIVERSDALE AND LADISMITH, WESTERN CAPE.



Figure 2: Existing bridge.



Figure 3: Typical pipe culvert with headwalls.



Figure 4: Large box culvert with headwalls.



Figure 5: Typical pipe culvert without headwalls and apron slab.



Figure 6: Large pipe culvert with headwalls and no apron slab.



Figure 7: Large box culvert with headwalls and an apron slab.

Site Photographs

**PROPOSED CULVERT STRUCTURES
ASSOCIATED WITH TR 83/1 THAT
TRAVERSE A WATERCOURSE, BETWEEN
RIVERSDALE AND LADISMITH, WESTERN
CAPE.**



Figure 8: Existing bridge pipe culverts.



Figure 9: Typical pipe culvert with headwalls without apron slab.



Figure 10: Typical pipe culvert with headwalls without apron slab.



Figure 11: Typical pipe culvert with headwalls without apron slab.



Figure 12: Pipe culvert with headwalls without apron slab.



Figure 13: Pipe culverts without headwalls as well as an apron slab.

Site Photographs

**PROPOSED CULVERT STRUCTURES
ASSOCIATED WITH TR 83/2 & TR31/5 THAT
TRAVERSE A WATERCOURSE, NEAR
LADISMIT, WESTERN CAPE.**

Activity description

The proposed periodic maintenance of Trunk Road 83/1, Trunk Road 83/2, Trunk Road 31/5 and Main Road 365 is located between Riversdale and Ladismith in the Oudtshoorn area and is maintained by the Garden Route District Municipality on behalf of the Western Cape Government: Department of Transport and Public Works. Riversdale is situated on the N2 National Road and is approximately 350 kilometers east of Cape Town. The total distance between Riversdale and Ladismith is roughly 82 kilometers. The dominant land-use activity along the TR82/1, TR83/2, TR31/5 and MR365 route relates to agricultural activities.

The majority of the maintenance activities area proposed within the statutory road reserve of the respective roads, however this MMP includes maintenance works outside the road reserve where/if maintenance is required. It is important to note that the maintenance works outside the road reserve only relates to the following Listed Activities in terms of the EIA Regulations 2014 (as amended): Activity 19 of Listing Notice 1 and Activity 12 of Listing Notice 3.

According to the Contract Document Book compiled by the Western Cape Government: Department of Transport and Public Works (October 2020), the proposed maintenance will include maintenance repairs such as:

- General maintenance;
- Erosion control;
- Surface patching;
- Repair of base failure;
- Culvert maintenance;
- Bridge maintenance; and
- Repairs.

The following future maintenance activities are proposed:

As part of the road surface repairs:

- Repair of edge breaks;
- Filling of ruts;
- Slurry texture treatment;
- Shoulder strengthening if required; and
- Reseal

Other maintenance activities proposed:

- Clearing of sediment, vegetation and debris from culverts;
- Repairs to headwalls/wingwalls;
- Cracked culvert barrels must be repaired/sealed;
- Repairs to culver floor;
- Repairs to apron slabs;
- Reinstatement/repairs to concrete slopes;
- Repairs to existing gabions and reno-mattresses for erosion control;
- Reinstatement/repairs to side drains;
- Replacement or realignment of road signs in poor conditions;
- Removal of illegal road signs;
- Removal of overgrown vegetation blocking road signs;
- Reinstatement of danger plates missing at culverts;
- Reinstatement of road markings;
- Repairment of guardrails where required;
- Minor spalling at bridges is to be repaired;
- Slope stabilization if required at bridges;
- Minor repairs at bridges including replacement of bridge joints with new Thorma joints;
and
- Handrailing and gabions at major culverts need to be repaired.

It is important to notice that the maintenance activities will take place within the existing registered road reserve of the following roads:

- Trunk Road 83/1 from km 25.78 to km 34.00
- Trunk Road 83/1 from km 48.50 to km 58.00
- Trunk Road 83/2 from km 0.00 to km 11.16
- Trunk Road 83/2 from km 15.25 to km 23.01
- Main Road 365 from km 0.00 to km 14.12

- Trunk Road 31/5 from km 0.42 to km 0.90

The total length of the road being maintained is 51.24 kilometres.

According to the Contract Document Book compiled by the Western Cape Government: Department of Transport and Public Works (October 2020), the periodic maintenance entails repair to the existing pavement defects of the mentioned roads, which will also include maintenance such as surface patching, functional patching, base repairs, rut filling, edge break repairs, crack sealing, repair of eroded shoulders, together with the necessary layer works and texture treatments with a fine slurry (FEN Consulting, 2021). After all the maintenance work have been completed, it is proposed that the resealing of the roads will be applied using a bitumen rubber single seal consisting of a 14 mm stone.

TR83/1; TR83/2; TR31/5 and MR365 (The indicated sections) are existing surfaced roads with stormwater infrastructure being present at different locations along the road to ensure that stormwater is adequately attenuated and dispersed. Some of these stormwater structures require minor maintenance.

There are approximately 199 minor concrete pipe culverts passing under the road of which 10 are Armco pipes of varying diameters. Generally, all the culvert inlets and outlets need to be cleaned and may culvert barrels need to be cleaned out as they are blocked. The culverts will therefore be repaired and cleaned. Erosion protection measures are needed on steep gradients or where erosion has taken place. Some 600mm diameter culverts will be installed under some of the farm and local accesses to improve longitudinal drainage. Proper concrete headwalls, wingwalls and aprons are needed to replace the existing masonry structures, which are mainly in poor condition.

It is proposed that the maintenance activities indicated in Table 1 below will take approximately 22 months to complete.

The proposed maintenance will also be triggered by the construction activities taking place within the watercourse on the site. There are a number of watercourse structures included in the scope of works. These include:

TABLE 1: NUMBER OF WATERCOURSE STRUCTURES ALONG THE IDENTIFIED ROUTE.

Culvert Details			Proposed Maintenance Actions
<i>Km Marker</i>	<i>Number and size</i>	<i>GPS Coordinates</i>	

TR 83/1			
26.24	C10875 4.9 m x 30.8 m	33°54'47.49"S 21°13'09.21"E	- Removal/trimming of vegetation at inlet and outlet; - Silt deposits inside barrel to be removed.
29.99	C10874 3.7 m x 3.0 m	33°52'47.01"S 21°12'42.76"E	- Removal/trimming of vegetation at inlet and outlet; - Silt deposits inside barrel to be removed; - Riprap to be placed at outlet to prevent further erosion and scouring.
30.63	C10692 1.85 m (circular diameter)	33°52'28.48"S 21°12'38.96"E	Removal and trimmed and silt deposits inside the barrel are to be removed and carted to spoil.
49.97	Un-named Culvert	33°30'49.81"S 21° 7'6.10"E	- Removed and trimmed and silt deposits inside the barrel are to be removed and carted to spoil. - General maintenance activities.
50.82	C10089 4.9 m x 4.9 m	33°44'19.90"S 21°09'49.15"E	- Removal/trimming of vegetation at inlet and outlet; - Installation of gabion baskets to prevent further erosion; - Armco barrel walls are to be cleaned, affected corroded areas painted with a cold galvanized paint and the entire

			internal surface area is to be painted with a mastic asphalt coating to prevent further corrosion.
52.61	C10360 3.2 m x 2.1 m	33°43'23.03"S 21°09'47.48"E	• Replace Armco pipe with prefabricated concrete pipe (1800mm) within the existing culvert and fill remaining space with self-compacting concrete; • Construct new headwall, apron slab and wingwalls; • Install gabion mattresses at outlet to prevent further scouring and erosion.
52.91	B5090 20m	33°43'13.50"S 21°09'45.69"E	• Removal/trimming of vegetation at inlet and outlet; • Silt deposits to be removed; • Vertical cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound, or be sealed using crack injection; • Gabion mattresses are to be installed to avoid further scouring.
54.00	B5007 150 m	33°42'37.90"S 21°09'45.91"E	• Remove vegetation, debris and silt surrounding the foundations; • Addition of riprap around piers and abutments to reinstate

			natural river level and prevent scouring and erosion; Vertical and horizontal cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound or be sealed using crack injection.
55.19	C10867 3.2 m x 2.0 m	33°41'59.29"S 21°09'40.90"E	- Remove vegetation and debris from culvert; - Replace existing deck at inlet and outlet and reconstructed with a raised headwall.
57.49	B4837 (105 m) & B4838 (25 m)	33°40'54.40"S 21°10'16.78"E	- Remove vegetation debris and silt surrounding the foundations; - Vertical cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound, or be sealed using crack injection; - Backfilling is required with suitable imported materials and riprap be placed around the piers and abutments to prevent further scouring and erosion; - Damaged and spalled concrete areas to piers, abutments, wingwalls, deck and parapets are to be neatly cut-out, reinforcement cleaned of all

			oxidation and treated with a non-corrosive compound then repaired with a cementitious repair compound.
TR 83/2			
6.73	B5359 40 m	33°32'11.92"S 21°09'36.89"E	- Remove vegetation, debris and silt surrounding the foundations; - Cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound, or be sealed using crack injection.
9.32	C10972 3.0 m x 1.7 m	33°31'18.68"S 21°08'21.67"E	- Remove vegetation and debris from culvert; - Shape road embankment to a slope of 1:1.5 to prevent material spill over.
15.56	B5490 80 m	33°30'09.20"S 21°04'51.71"E	- Seal crack in deck slab by injection with an approved epoxy; - Seal all damaged concrete with epoxy repair mortar; - All road drains and existing joints to be unblocked and cleaned.
19.93	C10976 3.9 m c 2.0 m	33°29'52.61"S 21°02'09.98"E	- Remove vegetation and debris from culvert; - Shape road embankment to a

			slope of 1:1,5 to prevent material spill over.
20.37	Unnumbered 2.0 m x 2.0 m	33°29'47.54"S 21°01'54.67"E	• Clear vegetation • Install gabion mattresses at apron slab edge to prevent further scour; • Remove sediment build up; • Cut away damaged concrete at spalled edge and recast • Cracks to be sealed; • Install new structure number
22.25	C10977 2.9 m x 2.9 m	33°29'33.36"S 21°00'46.10"E	• Remove vegetation and debris from culvert; • Excessive erosion is evident in the eastern due to the rerouting of the drainage line by a vagrant living in the western cell. The eastern cell is to be partially backfilled and the natural waterway reinstated; • Cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound, or be sealed using crack injection.
MR 365			
3.3	B9061	33°30'50.73"S	• Remove vegetation and debris from culvert;

	7.8 m x 3.5 m	21°09'21.28"E	• Cracks to be sealed by cracks injection and the v-notch repaired with cementitious repair compound, or be sealed using crack injection; • Shape road embankment to a slope of 1:1.5 to prevent material spill over; • Damaged area at abutment and wingwall to be demolished, reinforcement to be exposed and portion to be recast.
4.54	C10969 5.5 m x 2.1 m	33°30'52.12"S 21°10'06.15"E	• Remove vegetation and debris from culvert; • Cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound, or be sealed using crack injection; • Remove damaged deck edge and repair with approved cementitious repair compound.
5.57	C10970 5.2 m x 2.7 m	33°30'26.72"S 21°10'31.19"E	• Remove vegetation and debris from culvert; • Cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound, or be sealed using crack injection.

8.33	C10971 3.7 m x 3.0 m	33°29'58.44"S 21°12'10.22"E	• Remove vegetation and debris from culvert; • Install new gabion boxes and mattresses in the drainage line and along its embankments; • Cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound, or the sealed crack injection.
13.10	B4515 30 m	33°29'26.30"S 21°15'06.79"E	• Remove vegetation and debris from underneath bridge; • Cracks to be sealed by crack injection and the v-notch repaired with cementitious repair compound or be sealed using crack injection. • Excavate, shape and remove boulders from within the river to match original design level; • Remove damaged deck edge and repair with approved cementitious repair compound.
TR 31/5			
0.7	Unnamed		• Vegetation clearing

Freshwater

According to the specialist study conducted by Freshwater Ecological Network (FEN) Consulting, the watercourses identified to be traversed by the identified roads are all riparian

watercourses and no wetlands were identified along the route. The riparian watercourses are predominantly ephemeral drainage lines with riparian vegetation and larger ephemeral river systems with smaller associated tributaries. Due to the historical construction of the roads requiring maintenance activities and current surrounding agricultural land uses, degradation to the ecological integrity of these watercourses were evident (FEN, 2021).

The existing road crossings (culvert and bridges) were the most prevalent impact affecting the hydrology of the watercourses, second to the erosion of the embankments of the watercourses (specifically at the outlets of the road crossings).

It should be mentioned that not all culverts requiring periodic maintenance are associated with a watercourse. Some culverts convey stormwater from upstream to downstream areas while others allow for spill over water from impoundments. FEN Consulting confirmed that the risk significance of the proposed maintenance to the watercourses are low, should the mitigation measures be implemented. A Water Use Authorisation (in the form of a General Authorisation) will be submitted to the Department of Water and Sanitation in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998).

According to FEN Ecological Consulting (2021), due to the proposed periodic maintenance activities occurring in the existing road reserve and the degraded nature of the watercourses, there is no anticipated irreplaceable loss to the watercourses already traversed by the identified roads.

Please refer to **Figure 14** below for the relevant Sub-Quaternary Catchment Reaches in the vicinity of the identified roads requiring periodic maintenance.

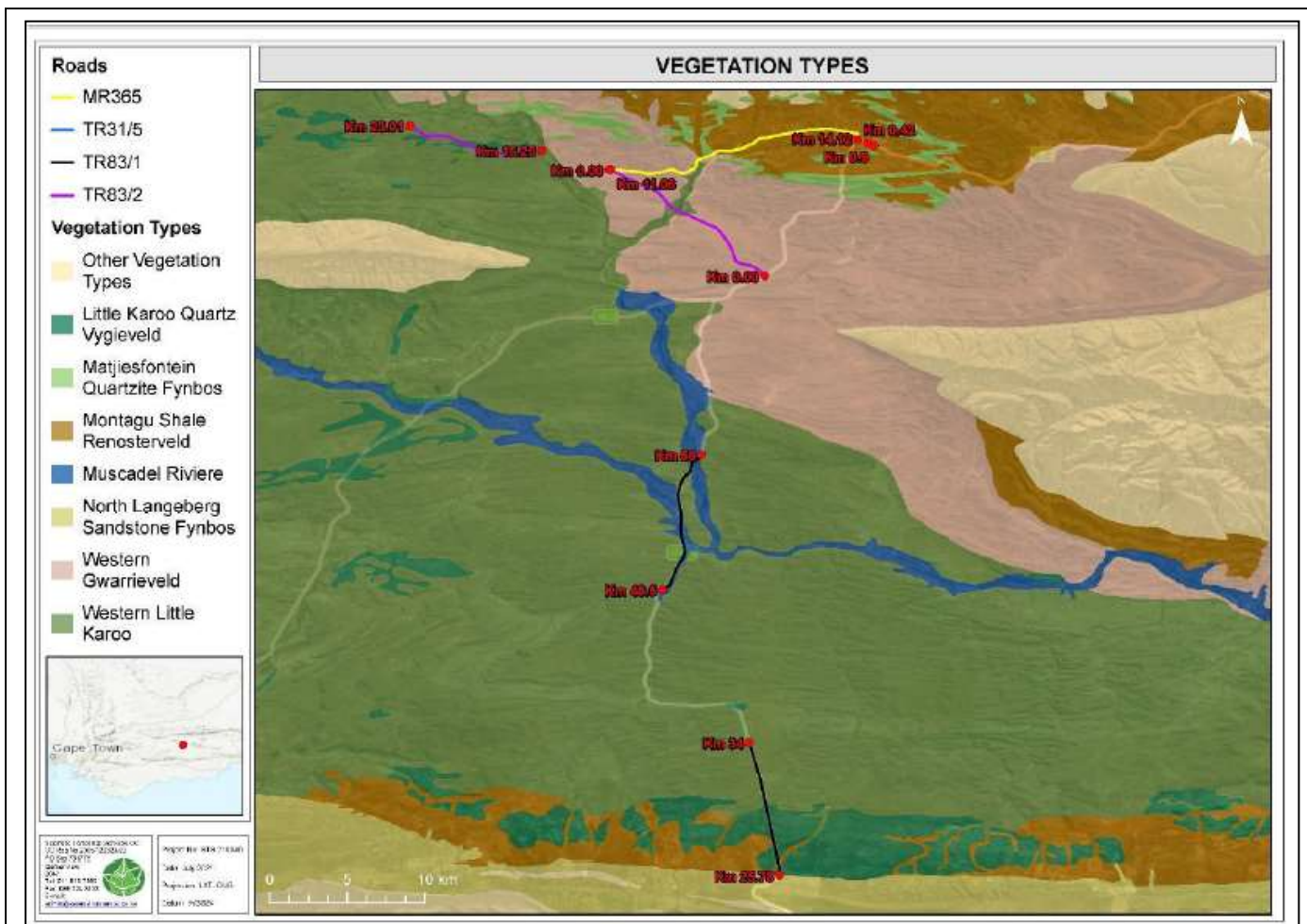


FIGURE 15: Vegetation map indicating the vegetation types associated with the identified roads (STS, 2021).

Terrestrial Biodiversity

According to the Screening Tool Report, the overall terrestrial sensitivity for the roads is considered of Very High sensitivity. Scientific Terrestrial Services (STS) conducted a Terrestrial, Plant and Animal Sensitivity Verification and Impact Assessment and noted that portions of the roads are considered of low sensitivity.

The site's vegetation along the route is mapped to have the following vegetation types:

- FRs13 Eastern Ruens Shale Renosterveld
- FFc1 Swellendam Silcrete Fynbos
- FFs16 South Langeberg Sandstone Fynbos
- FFb4 Central Coastal Shale Band Vegetation
- FFs15 North Langeberg Sandstone Fynbos
- FFh8 Montagu Shale Fynbos
- SKv10 Little Karoo Quartz Vygiveld

- FRs7 Montagu Shale Renosterveld
- AZi8 Muscadel Riviere
- SKv8 Western Little Karoo
- SKv9 Western Gwarrieveld

According to STS (2021), the habitat of the area is associated with the identified roads and is highly fragmented and located within the existing public road reserve. Therefore, historically and at present, the road infrastructure has led to the transformation of vegetation and habitat. Habitat associated with the locations of major road crossings (culvert crossings) might still contain some indigenous vegetation. The identified roads fall within seven vegetation types, as confirmed by STS (2021):

1. **Little Karoo Quartz Vygieveld** (Least Concern): Flat and slightly undulating plains covered by open, low vegetation dominated by fruticose or compact lead-succulent dwarf members of Aizoaceae (*Gibbaeum*), Crassulaceae and Euphorbiaceae, accompanied by non-succulent astercaeuos shrubs and dwarf shrubs.
2. **Matjiesfontein quartzie fynbos** (Least Concern): Low flat mountains and parallel ridges in a west-east orientation. Fynbos and Succulent Karoo vegetation. It is a medium dense, medium tall shrubland.
3. **Montagu Shale Renosterveld** (Least Concern): Undulating hilly landscape with broad valleys supporting a complex open, tall shrubland in a medium dense matrix of short, divaricate shrubs.
4. **Muscadel Riviere** (Endangered): Flat, in places very broad alluvia originally supporting complex of riverine thickets dominated by *Acacia karroo* and accompanying succulent gannabos (*Salsola species*) and low vygie shrublands.
5. **North Langeberg Sandstone Fynbos** (Least Concern): Gentle to steep, north-facing slopes, not much dissected over much of the range. Surface is gently sloping foothills of Waboomsberg, Warmwaterberg and Aasvoëlberg.
6. **Western Gwarrieveld** (Least Concern): Low hilly country supporting low Succulent Karoo shrublands, peppered with solitary trees and tall shrub group (*Euclea*, *Lycium*, *Pappea*, *Rhus*).

7. **Western Little Karoo** (Least Concern): Flat or slightly undulating landscapes dominated by a mosaic of Karoo shrublands of low and medium height encompassing (as dominants) both nonsucculent (*Chrysocoma*, *Pentzia*, *Pteronia*, *Rhigozum*, *Tripteris*) as well as succulent (*Crassula*, *Euphorbia*, *Ruschia*, *Tylecodon*) shrubs.

It should be noted that the road sections are surfaced with stormwater infrastructure present. According to Scientific Terrestrial Services (2021), the habitat associated with the identified roads is highly fragmented and located within an existing public road. Therefore, historically and at present, the road infrastructure has led to the transformation of vegetation and habitat. STS also noted that the conditions within the road reserve are suboptimal for Species of Conservation Concern (SCC) fauna and flora due to a lack of suitable habitat and habitat fragmentation.

STS found that the direct impact of the proposed maintenance on the floral ecology of the site is anticipated to vary between low and very low with the implementation of the mitigation measures. Additionally, the proposed maintenance is anticipated to have a very low impact on faunal communities.

No changes will be made to the vertical or horizontal alignment of any of the roads mentioned above.

STATUS OF THE WATERCOURSES FOUND ALONG THE ROADS:

The following section was extracted from the Freshwater Verification and Risk Assessment Report compiled by Freshwater Ecological Network (FEN) Consulting (Pty) Ltd. (2021).

According to the NFEPA database (2011), none of the selected road sections directly traverse any natural or artificial wetlands. Several natural and artificial wetlands are identified by the NFEPA database to be located within the investigation areas, with specific mention of the investigation area associated with the MR365. These artificial features were field verified and identified as artificial impoundments, some of which are located within a riparian watercourse. TR83/1, TR83/2 and the western portion of MR 365 are located in the Rainshadow Valley Karoo wetland vegetation type (Critically Endangered). The most southern section of TR 83/1, TR 31/5 and the eastern section of MR 365 are located in the Western Fynbos-Renosterveld Shale Renosterveld wetland vegetation type also considered to be Critically Endangered. Small sections of MR 365 traverses through the Western Fynbos-Renosterveld Quartzite Fynbos wetland vegetation type. As per the NFEPA database (2011), the Groot River is traversed by TR83/1 and TR83/2 and is considered to be in a largely modified ecological condition and is considered to be part of a fish support area or fish corridor. The Piets and Touws Rivers are

traversed by TR83/1, and the Swartberg River is traversed by MR 365. The Piets River is considered to be in largely natural ecological condition with few modifications and the Swartberg River is considered to not be intact according to the natural land cover layer. Both these rivers are considered to be part of an Upstream Management Area. The Touws River is considered to be in a largely modified ecological condition.

According to the Western Cape Biodiversity Spatial Plan (2017), the eastern section of TR83/2 (km 15.25 to km 23.01) and several sections along TR 83/1 traverse areas classified as Critical Biodiversity Areas (CBA) 1 of terrestrial ecological importance. CBAs are areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. CBA 1 are areas likely to be in a natural condition and CBA 2 are those areas that are potentially degraded or represent secondary vegetation and therefore require restoration where feasible. All identified roads requiring periodic maintenance traverse several areas classified as Ecological Support Areas (ESA) 1 and 2 ESAs are important in supporting the functioning of Protected Areas (Pas) or CBAs and are often vital for delivering ecosystem services. The area immediately west of the southern section of TR 83/1 is classified as a Protected Area (PA), known as the Grootvaderbosch Nature Reserve, while the area between the investigation area of the MR 365 and TR 83/2 are known as the Ladismith-Kleinkaroo Nature Reserve. All other areas may still provide limited biodiversity and ecological infrastructure functions, even if they are never prioritised for conservation action.

According to the NBA 2018: SAIIE several rivers are traverse by the identified roads, including the Groot River by TR 83/1 and TR 83/2 (The Ecosystem Threat Status (ETS) considered to be endangered and the ecosystem protection level for the river being moderately protected.) The TR31/5 traverses a EPL thereof considered to be not protected. These wetlands are considered to be in a heavily to critically modified ecological condition.

Please refer to **Addendum H** for the Rehabilitation and Alien Clearing Management Plan compiled by GNEC for the proposed upgrade activities at the storm water infrastructures associated with watercourses.

STATUS OF THE TERRESTRIAL, PLANT AND ANIMAL SPECIES FOUND ALONG THE ROADS:

The following section was extracted from the Terrestrial, Plant and Animal Sensitivity Verification and Impact Assessment Report compiled by Scientific Terrestrial Services CC (STS, 2021).

The overall Terrestrial Sensitivity for the roads is considered of Very High sensitivity in terms of

the Screening Tool Report. Although the road upgrade falls within CBAs, ESAs, a valuable ecosystem and Focus Areas for land-based protected areas, the scale of the proposed project and, therefore, the impact is expected to be less significant and unlikely to alter the function, objectives and targets from these unique landscapes, with the implementation of the proposed mitigation measures. Thus, the surrounding natural vegetation within the local region is unlikely to be impacted by the proposed development. The National Web-based Environmental Screening Tool indicated all the roads, with the exception of the TR83/1 km 25.78 to km 34 (which has a High Sensitivity), as having an overall Medium Sensitivity in terms of the plant theme. Triggering species included succulent, herb and bulbous species. No floral SCC were recorded in the mountainous and more natural areas and not alongside the road where resurfacings will take place or within the watercourse habitat where culvert upgrades are likely to take place. Although the findings of the field assessment do not dispute the Screening Tool outcome of a medium to high sensitivity for the plant species theme, the impact and scale of the project's activities are likely to be less severe and significant with the implementation of mitigation measures.

For the animal species theme, the TR 83/2 (km 0 to km 11.06), the TR 83/1 (km 25.78 to km 34) and the MR 365 roads are considered to have an overall High Sensitivity in terms of the Screening Tool Report, while TR 31/5, TR 83/1 (km 48.5 to km 58), and TR 83/2 (km 15.25 to 23.01) are considered to have an overall Low Sensitivity. During the field assessment, no faunal SCC were observed nor suitable habitat within the road footprint areas. The loss of vegetation within the road footprint, associated with the development may lead to a loss of common faunal species diversity and abundance but with minimal significance and consequence. The identified roads and the associated habitat within the road servitudes are somewhat fragmented by man-made barriers such as fencing, commercial infrastructure, agricultural areas and the roads themselves, which limit faunal movement within the area. As part of the rehabilitation actions, stormwater runoff must be managed, an AIP control plan implemented, and the remaining vegetated/non-developed areas rehabilitated in such a way as to create habitat for faunal species. The habitat integrity of the majority of the identified roads has been degraded, with many of the faunal species observed in the identified roads being common and widely spread throughout the region. The screening tool identified five faunal SCC that are associated with the roads and that may occur in the surrounding areas more natural and mountainous areas, but not within the road footprint themselves. The findings of the field assessment confirm the Screening Tool outcome of a Low Sensitivity and dispute the High sensitivity for the Animal Species Theme.

The direct impact on the proposed development on the floral ecology of the identified roads is anticipated to vary between medium-low and very low prior to the implementation of mitigation measures. Should these actions not be adhered to, it is highly likely that post-mitigation impacts will increase.

The proposed development footprint is anticipated to have a low to very low impact on faunal communities prior to mitigation. Should such actions not be adhered to, it is highly likely that post-mitigation impacts will increase. The habitat integrity of the majority of the identified roads has been degraded and although many of the faunal species that were observed in the identified roads are common and widely spread throughout the region, several SCC have the potential to utilise the surrounding and more natural and mountainous areas. With mitigation measures implemented, the impacts on the faunal ecology can be reduced to very-low levels.

6. METHOD STATEMENT

The following serves as a general guide required to minimise the spatial impact of the maintenance activity:

- Repairs and maintenance should be undertaken within the dry season, except for emergency maintenance works.
- Where at all possible, existing access routes should be used. In cases where none exist, a route should be created through the most degraded area avoiding sensitive/indigenous vegetation areas.
- Responsible management of pollutants through ensuring handling and storage of any pollutants is away from the watercourse. When machinery is involved, ensure effective operation with no leaking parts and refuel outside of the riparian area, at a safe distance from the watercourse to manage any accidental spillages and pose no threat of pollution.
- At no time should the flow of the watercourse be blocked (temporary diversions may be allowed) nor should the movement of aquatic and riparian biota (noting breeding periods) be prevented during maintenance actions.
- No new berms can be created.
- In circumstances which require the removal of any top soil, this must be sufficiently restored through sustainable measures and practices.
- Concerted effort must be made to actively rehabilitate repaired or reshaped banks with indigenous local vegetation.
- No deepening of the watercourse beyond the original, pre-damage determined thalweg, unless such deepening is directly related to the natural improved functioning and condition of such a watercourse.

- Where at all possible, limit the disturbance to the zone of the thalweg. This is due to the ecological importance of the low flow channel and respective habitat being allowed to re-establish improving the ecological condition.
- The build-up of debris/sediment removed from a maintenance site may:
 - be utilised for the purpose of in-filling or other related maintenance actions related to managing erosion, which form part of an adopted MMP;
 - not be used to enlarge the height, width or any extent of existing berms;
 - not be deposited anywhere within the watercourse or anywhere along the banks of a river where such action is not part of the proposed maintenance activity (ies). Material that cannot be used for maintenance purposes must be removed out of the riparian area to a suitable stockpile location or disposal site. Further action and consideration may be required where the possibility of contaminated material may occur, such as in urban watercourses.
- The use of foreign material, such as concrete, rubble, woody debris and/or dry land based soil, is strictly prohibited from being used in maintenance actions, unless for the specific purpose of repairs to existing infrastructure, coupled with appropriate mitigation measures.
- On completion of the maintenance action, the condition of the site in terms of relative topography should be similar to the pre-damaged state (i.e. the shape of the river bank should be similar or in a state which is improved to manage future damage). This ultimately dictates that the channel, banks and bed cannot be made narrower, higher or deepened respectively. Exceptions are considered for systems involved with the management of stormwater and improvements for water quality within the urban context.

The roles and responsibilities of the various role players involved in the maintenance phase should be noted. The possible role players include the Proponent, Project Manager, Contractor, Environmental Control Officer (ECO) (if applicable) and Civil Engineer (if applicable).

Proponent

The holder of the RMMP, in this case the Western Cape Government: Department of Transport and Public Works, will be the responsible party in ensuring that all mitigation measures are implemented. The proponent will consequently be responsible for the appointment of a suitably qualified independent Environmental Control Officer (ECO) for works where Activity 19 of Listing Notice 1 (GN R 983, 2014, as amended) & Activity 12 of Listing Notice 3 (GN R 983, 2014, as amended) is applicable. Hence, the appointment of an ECO for minor maintenance activities will not be required.

The proponent will be responsible for ensuring that all Contractors receive a copy of the RMMP and understands its contents.

Project Manager

The Project Manager must ensure a clear communication line between all parties working on the project, to ensure all environmental concerns and measures, as stipulated in this

RMMP, are implemented.

The Project Manager should have direct communication with the Proponent.

The Project Manager must ensure that there are sufficient funding and resources for an ECO to adequately perform their role (should the appointment of an ECO be required).

Registered Civil Engineer (if applicable)

Provide all relevant instructions / drawings to the Contractor.

Must immediately inform the Project Manager and ECO if any changes to the project are envisaged.

Must immediately inform the Project Manager and ECO if any aspects of this RMMP cannot be complied with.

Must remain in communication with the ECO and the Project Manager to ensure that any design changes required are issued to the Contractor.

Environmental Control Officer (ECO) (if applicable)

As mentioned, the appointment of a suitably qualified independent Environmental Control Officer (ECO) is only required for works where Activity 19 of Listing Notice 1 of GN Reg. No. 983 (as amended 07 April 2017), is applicable. Hence, the appointment of an ECO for minor maintenance activities will not be required.

The ECO is the person responsible for the monitoring of the implementation of this RMMP during the implementation of the activities and for reporting on the degree of compliance.

The ECO is mandated to do the following:

- Ensure that all contractors / subcontractors / employees / construction workers are fully aware of their environmental responsibilities. The ECO is responsible in ensuring everyone on site is given an environmental awareness induction session which not only clearly defines what the environment is and specifics detailing the local environment but outlines the requirements of the RMMP as a management tool to protect the environment.
- Monitor site activities on a regular basis (Monthly) (fortnightly site visits) to ensure that there is minimal environmental impact due to the proposed maintenance activities. An environmental audit report should be submitted to the DEA&DP and local municipality on a monthly basis.
- The ECO has the authority to stop works if in his / her opinion there is / may be a serious threat to or impact on the environment caused directly by the maintenance activities.
- The ECO must be competent, independent and suitably qualified.

Contractor

The Contractor/s, in this case, refers to any contractor/s on site.

Such contractor/s will take full responsibility for each of his / her employees and any penalties imposed.

The Contractor must immediately inform the Project Manager and ECO if any changes to the project are envisaged and if any aspects of this RMMP cannot be complied with.

It is the responsibility of the Contractor/s to ensure that the measures stipulated within this RMMP are adhered to.

Should the Contractor/s require clarity on any aspect of the RMMP the Contractor must contact the ECO for advice.

The steps followed before development activities are undertaken, will be the same for all related development activities.

The following should be determined before any works within the freshwater system transpires:

- *Identify risk*

The proposed maintenance will be periodic, therefore occurring at intervals as and when required. Extreme weather conditions, such as flooding, can also damage road infrastructure, which might require maintenance activities. The Western Cape Government: Department of Transport and Public Works, or any appointed consultant, will inspect the road infrastructure in order to determine the need for maintenance activities.

- *Determine whether the development activities will impact on sensitive natural habitat, i.e. will the maintenance impact on watercourses or natural vegetation.*

If the development activities will have an impact on natural habitat, the implementation of the mitigation measures stipulated in this RMMP is imperative.

- *Before any maintenance activities are conducted, it should be determined whether the proposed works are classified as maintenance activities.*

This RMMP is compiled for maintenance related activities. If the scope of the proposed works falls outside of the definition of maintenance, the relevant authorisations should be obtained before construction activities commences.

- *Timing of development*

It is considered imperative that the proposed development activities occur during the drier summer periods, to minimise any impact on the hydrological functioning of the watercourses. An exclusion can be made for emergency related maintenance activities.

General Mitigation Measures during development activities

It should be noted that the implementation of the mitigation measures will ensure that potential impacts on the receiving environment is prevented / minimised.

Maintenance footprint

- All development footprint areas should remain as small as possible and should not encroach into watercourse unless absolutely essential. It must be ensured that the freshwater habitat is off-limits to construction vehicles and non-essential personnel;
- The boundaries of footprint areas, including contractor laydown areas, are to be clearly defined and it should be ensured that all activities remain within defined footprint areas. Edge effects will need to be extremely carefully controlled;
- Planning of temporary roads and access routes (if applicable) should avoid watercourse and be restricted to existing roads where possible;
- Appropriate sanitary facilities must be provided for the life of the construction phase and all waste removed to an appropriate waste facility;
- All hazardous chemicals as well as stockpiles should be stored on bunded surfaces and have facilities constructed to control runoff from these areas;
- It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage;
- No fires should be permitted in or near the construction area; and
- Ensuring that an adequate number of waste and “spill” bins are provided will also prevent litter and ensure the proper disposal of waste and spills.

Vehicle access

- All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into the topsoil;
- In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss; and
- All spills should they occur, should be immediately cleaned up and treated accordingly.

Vegetation

- Removal of the alien and weed species encountered on the property must take place in order to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act (CARA, Act 43 of 1983) and Section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998)). Removal of alien invasive species should take place throughout the construction, operational,

and maintenance phases; and

➤ Species specific and area specific eradication recommendations:

- Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used;
- Footprint areas should be kept as small as possible when removing alien plant species; and
- No vehicles should be allowed to drive through designated sensitive wetland areas during the eradication of alien and weed species.

Soils

- Sheet runoff from access roads should be slowed down by the strategic placement of berms;
- As far as possible, all construction activities should occur in the low flow season, during the drier summer months;
- As much vegetation growth as possible (of indigenous floral species) should be encouraged to protect soils;
- No stockpiling of topsoil is to take place within the recommended buffer zone around the freshwater resource, and all stockpiles must be protected with a suitable geotextile to prevent sedimentation of the wetland;
- All soils compacted as a result of construction activities as well as ongoing operational activities falling outside of project footprint areas should be ripped and profiled; and
- A monitoring plan for the development and the immediate zone of influence should be implemented to prevent erosion and incision.

Rehabilitation

- Construction rubble/silt removed from the dam must be collected and disposed of at a suitable landfill site; and
- An alien clearing management plan must be implemented for at least three years after rehabilitation to manage the aliens that might germinate in the rehabilitated areas.

Method Statements for the proposed maintenance activities according to the Freshwater Specialist Study conducted by FEN Consulting (2021).

Construction Phase:

<u>Proposed Maintenance Activity</u>	Clearing of vegetation and litter (where applicable) in the crossing (culverts) structure and the watercourse (applicable to most of the crossing assessed).
<u>Actions</u>	• Compaction of riparian soil and disturbance of vegetation due to maintenance personnel in the active channel of the watercourse. • Potential proliferation of alien and invasive vegetation species due to disturbance.
<u>Impacts</u>	• Exposure of soil, leading to increased runoff and erosion, and thus increased sedimentation of the watercourses. • Loss of freshwater habitat and ecological structure resulting in impacts on biota;
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	The result of the DWS Risk Assessment was a Low Risk
<u>Mitigation measures</u>	• It is considered imperative that the proposed maintenance activities occur during the drier summer periods, to minimize any impact on the hydrological functioning of the watercourses. • Contractor laydown areas (if applicable) are to be established outside the delineated watercourses, and only for a short duration (approximately 1 month), in consultation with the appropriate authority. • All maintenance footprint areas to remain as small as possible and vegetation clearing to be

	limited to what is essential and may not extend beyond the road reserve. • The watercourses should be demarcated with danger type by an ECO and marked as a 'no-go' area where no vegetation clearing activities area planned. • All alien and invasive vegetation species, debris and litter removed from the crossing must be removed from site (no stockpiling allowed). • Any sediment or silt removed from the watercourses may be temporarily stockpiled in the road reserve but outside the watercourse, for the duration of the day's work. These stockpiles may not exceed 2 m in height, and their footprint should be kept to a minimum. Stockpiling of removed materials may only be temporary (may only be stockpiled during the period of clearing at a certain crossing point) and should be disposed of at a registered waste disposal facility. • The clearing activities should be limited to only what is necessary. • Only authorised maintenance personnel may be permitted to enter the watercourse as part of the clearing activities to prevent excessive compaction of the soils within the watercourse. • It is preferred that no machinery be used as part of the clearing activities. All vegetation and sediment removal should be undertaken by hand or with the use of handheld equipment.
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<u>Proposed Maintenance Activity</u>	Concrete activities in the watercourses, with focus on new concrete structures or major repairs; construction of new headwalls, apron slab and wingwalls, replacement of headwalls and recasting of abutment and wingwalls. Concrete activities within the delineated watercourses, with focus on minor repairs, such as the filling of cracks: Repair activities with cementation mortar associated with large rivers and EDLs; and
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	replacing the Amco barrel with precast barrel and fill remaining space with self-compacting concrete.
<u>Actions</u>	• Disturbances to soil of the watercourses. • Removal of topsoil and creation of stockpiles. • Uncontrolled trampling of vegetation by personnel within the watercourses.
<u>Impacts</u>	• Disturbance to soil leading to increased alien vegetation proliferation, and in turn to further altered watercourse habitat. • Potential erosion and gully formation as a result of disturbed as a result of disturbed soil and inappropriate slopes resulting in sedimentation of the watercourses. • Potential contamination of soil and surface water as a result of concrete works, leading to further reduced ability to support biodiversity. • Compaction of soil, disrupting the growth medium of the watercourse vegetation. • Disruption to the embankment of the watercourses, potentially causing sedimentation.
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	The result of the DWS Risk Assessment was a Low Risk
<u>Mitigation measures</u>	• It is considered imperative that all works be undertaken during the drier summer months to limit surface water contamination and the need for any surface water diversion during the construction works (diverting the flow of water through a pipe or an excavated channel was not included as part of this risk assessment).

- Limit construction equipment within the watercourses to what is essential.
- Excavated materials should not be contaminated (with hydrocarbons, fuel), and should be ensured that the minimum surface area is taken up. Stockpiles may not exceed 2m in height.
- The soil surrounding the headwalls must be suitably loosened on completion of construction activities and revegetated to prevent erosion.
- All exposed soil must be protected for the duration of construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation of the watercourse near these stockpiles.
- Ensure alien and invasive plant species are managed post construction until suitable basal cover is achieved.
- Avoid unnecessary trampling of vegetation irrespective of the vegetation being associated with the watercourses or the surrounding terrestrial area.
- Fresh concrete and cement mortar should not be mixed near the watercourses. Mixing of cement may be done within the construction camp, however, may not be mixed on bare soil, and must be within a lined, bound or bunded portable mixer. Consideration must be taken to use ready mix concrete.
- No mixed concrete shall be deposited directly onto the ground within the watercourses (outside of the designated area) or associated riparia habitat. A batter board or other suitable platform/mixing tray is to be provided onto which any mixed concrete can be deposited whilst it awaits placing;
- A washout area should be designated outside of the watercourses, and wash water should be treated on-site or discharged to a suitable sanitation system;
- Cement bags must be disposed of in the demarcated hazardous waste receptacles and the

	used bags must be disposed of through the hazardous substance waste stream; and Spilled or excess concrete must be disposed of at a suitable landfill site. Chain of custody documentation must be provided.
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<u>Proposed Maintenance Activity</u>	Installation of ripraps, a gabion mattress.
<u>Actions</u>	- Disturbance to soil. - Removal of vegetation.
<u>Impacts</u>	- Increased sedimentation as a result of disturbances. - Potential loss of indigenous vegetation (if present) and the proliferation of alien floral species due to disturbances.
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	The result of the DWS Risk Assessment was a Low Risk
<u>Mitigation measures</u>	- The clearing of vegetation within the footprint area must be kept to a minimum to avoid unnecessary disturbance within the active channel. - Material used as rip rap or to fill the gabion basket should be in situ material preferably originating from the surrounding area, however it must be sustainably sourced. Alternatively, any imported material must be weed free and not be contaminated by any potential pollutants. - Once gabions are constructed and/or the rip rap installed, the surrounding natural

	embankments should be reprofiled and revegetated with indigenous species as soon as possible. • Stabilisation of the banks and side slopes are required, by employing techniques, such as: - Resloping of banks to a maximum of a 1:3 slope or tied in with the upstream existing embankments. - Revegetation of re-profiled slopes with suitable indigenous vegetation, on consultation with a suitably qualified botanist. - Temporary stabilisation of slopes using geotextiles. • The gabion structures (where applicable) should be monitored for erosion and structural integrity after each rainfall event (especially during the rainy winter season) until suitable basal vegetation cover has re-established. • Use of biodegradable hessian sheeting must be made to prevent sedimentation of downstream resources.
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<u>Proposed Maintenance Activity</u>	Reshaping of the river bed to reinstate flow through bridge structure.
<u>Actions</u>	• Disturbances to soils and sediment. • Removal of vegetation.
<u>Impacts</u>	• Decreasing the habitat availability to aquatic species. • Sedimentation of downstream river reach.
<u>Severity of the impacts according to the DWS Risk Assessment</u>	The result of the DWS Risk Assessment was a Low Risk

<u>conducted by Freshwater Specialist</u>	
<u>Mitigation measures</u>	• The movement in the river must be kept to a minimum to avoid unnecessary disturbance within the active channel. • River rock/boulder removal activities may only be undertaken when no surface water is present within the specific reach of the river (during the dry summer periods) to limit any impacts to the aquatic habitat and prevent any residual downstream impacts from occurring. • Removal of boulders must be only done to ensure that the natural riverbed topography is attained, and that no excessive material are removed that can impact on the velocity of flow during high flow events. No other material may be removed. • Removed boulders may be temporarily stockpiled outside the delineated extent of the river but must be removed/reused in other areas (not within watercourses) and may not be left on site.

<u>Proposed Maintenance Activity</u>	Resurfacing of the road surface (asphalt) and using of sealands
<u>Actions</u>	• Potential indiscriminate movement of construction personnel within the watercourses; • Potential of asphalt/paint to enter the watercourses; • Potential proliferation of alien and invasive species due to disturbances in the road reserve
<u>Impacts</u>	• Loss of the vegetation within the natural buffer surrounding the watercourses, potentially decreasing the habitat provisioning of the watercourses; • Potential degradation of the surface water of the watercourses, due to contaminated material entering the systems.
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	The result of the DWS Risk Assessment was a Low Risk
<u>Mitigation measures</u>	• Construction personnel must be limited to the existing road reserve only, and no movement within the delineated watercourses may be permitted. • During resurfacing/painting, it must be ensured that no foreign materials (e.e. tar from the resurfacing activities) enter the watercourses. • Care must be taken while painting and all personnel must receive training on the risk of chemical contamination of the watercourses. • If any solid materials do enter the watercourses, they should be immediately removed and disposed at a registered water disposal facility. Paint spills on soils within and surrounding

the riparian habitat should be immediately remediated.

Operational Phase:

<u>Proposed Maintenance Activity</u>	Monitoring of the structural integrity of the major and minor structures in the watercourses.
<u>Actions</u>	- Proactive monitoring to ensure structural integrity is maintained and to identify early signs of erosion around the crossing structures. - Proactive monitoring to ensure that any litter or debris which may accumulate on and around the crossing structures is cleared to maintain the flow of water.
<u>Impacts</u>	No direct impacted perceived.
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	The result of the DWS Risk Assessment was a Low Risk
<u>Mitigation measures</u>	- All watercourses are to be considered “off limits” to any vehicular activity. - Disturbances to the watercourses should be limited to what is essential for long-term maintenance in line with the mitigation measures presented herein. - Existing access roads must be used for monitoring purposes to minimise the compaction of soils and loss of riparian and instream habitat. - Hot spots for the build-up of debris and excess sediment must be identified and when necessary, debris/excess sediment must be removed by hand to prevent future flooding and potential damage to infrastructure. In this regard, special mention is made of periods

	following high rainfall and subsequent high instream water volumes. Removal of debris must be undertaken in line with the above listed construction mitigation measures. • The watercourses must be monitored for alien vegetation encroachment and all alien vegetation/weeds must be removed according to a suitable alien vegetation control plan. Annual follow up should be undertaken to all watercourses for at least 3 years post construction. • Any erosion or gully formation must be identified on an ongoing basis and re-profiled and revegetated accordingly.
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<u>Proposed Maintenance Activity</u>	Future maintenance of the crossing (including their headwalls, wingwalls, apron slabs and erosion protection (where applicable))
<u>Actions</u>	• Disturbance to or removal of vegetation while accessing culverts to carry out maintenance activities. • Disturbances to soils.
<u>Impacts</u>	• Potential loss of indigenous vegetation and further proliferation of alien floral species due to disturbances.
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	The result of the DWS Risk Assessment was a Low Risk
<u>Mitigation measures</u>	• All watercourses are to be considered “off limits” to any vehicular activity.

	• Disturbances to the watercourses should be limited to what is essential for long-term maintenance in line with the mitigation measures presented herein. • Existing access roads must be used for monitoring purposes to minimise the compaction of soils and loss of riparian and instream habitat. • Hot spots for the build-up of debris and excess sediment must be identified and when necessary, debris/excess sediment must be removed by hand to prevent future flooding and potential damage to infrastructure. In this regard, special mention is made of periods following high rainfall and subsequent high instream water volumes. Removal of debris must be undertaken in line with the above listed construction mitigation measures. • The watercourses must be monitored for alien vegetation encroachment and all alien vegetation/weeds must be removed according to a suitable alien vegetation control plan. Annual follow up should be undertaken to all watercourses for at least 3 years post construction. • Any erosion or gully formation must be identified on an ongoing basis and re-profiled and revegetated accordingly.
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<u>Proposed Maintenance Activity</u>	Ongoing alien vegetation removal (if required).
<u>Actions</u>	• Proactive monitoring to ensure structural integrity is maintained and to identify early signs of erosion, incision and alien vegetation encroachment.
<u>Impacts</u>	• Compaction of soils and loss of habitat as a result of ongoing disturbance from vehicles and equipment.

	• Impact to water quality as a result of the application of herbicides; and • Disturbances of soils and resulting in erosion and sedimentation.
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	The result of the DWS Risk Assessment was a Low Risk
<u>Mitigation measures</u>	Please refer to Addendum H for the Rehabilitation and Alien Clearing Management Plan compiled by GNEC for the proposed upgrade activities at the storm water infrastructures associated with watercourses.

Method Statements for the proposed mitigatory requirements for the biodiversity according to the Terrestrial, Plant and Animal Sensitivity Verification and Impact Assessment conducted by Scientific Terrestrial Services (STS, 2021).

Pre-construction Phase:

<u>Proposed Project phase</u>	Pre-construction Phase
<u>Impact Summary</u>	• Loss of floral and faunal habitat, species, and SCC
<u>Mitigation Measures:</u> Floral and Faunal Habitat and Diversity	• Minimise loss of indigenous vegetation where possible through planning and where necessary by incorporating sensitive habitat such as watercourses as well as any other specialist studies; • Prior to the commencement of construction activities, an AIP Management/Control Plan should be compiled for implementation: - Removal of alien invasive species should preferably commence during the pre-

	construction phase and continue throughout the construction and operational phases. AIPs should be cleared within the identified roads before any vegetation clearing activities commence, thereby ensuring that no AIP propagules are spread or soils contaminated with AIP seeds during the construction phase; and - An AIP Management/Control Plan should be implemented by a qualified professional. No chemical control of AIPs to occur without a certified professional.
<u>Mitigation Measures: Floral SCC</u>	• If the proposed development is authorised, it is advised that a walkthrough of the direct footprint areas of all activities associated with the culvert and road upgrades and road upgrades be conducted before the commencement of any development of construction activities. Should any SCC be encountered within this footprint area it must be rescued and relocated by a suitably qualified specialist either to suitable habitat (outside the development footprint) or moved to registered nurseries such as the Agricultural Research Council (ARC) or the South African National Biodiversity Institute (SANBI), Permits and authorisation must be obtained to remove, cut, or destroy any of the above-mentioned protected and/or threatened species before any vegetation clearing may take place.

Construction Phase:

<u>Proposed Project Phase</u>	Construction Phase
<u>Impact Summary</u>	Loss of floral and faunal habitat, species, and SCC
<u>Development Footprint</u>	• The upgrade and maintenance footprint must be kept as small as possible to minimise the impact on the surrounding environment (edge effect management); • Removal of vegetation must be restricted to what is absolutely necessary and should remain

	within the approved footprint. No clearing of vegetation is allowed on the road reserve where resurfacing will take place. Should this be the case, a walkdown must be done to identify and relocate any floral SCC; • Smaller species that are not as readily able to move out of an area ahead of ground clearing activities such as scorpions and reptiles will be less mobile during rainfall events and cold days (winter). As such should any be observed in the construction site during clearing and construction activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Construction personnel are to be education about these species and instructed not to kill them. Smaller scorpion species and harmless reptiles (that are likely present within the identified roads) should be carefully relocated by a suitably nominated construction person. For langer venomous snakes, a suitably trained specialist, or on-site personnel, should be contracted to carry out the relocation of the species, should it not move off on its own; • Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the construction activities. Additional road construction should be limited to what is absolutely necessary, and the footprint thereof kept to a minimal; • No collection of floral SCC must be allowed by construction personnel; • No hunting or trapping of faunal species is to be allowed by construction personnel; • Informal fires by construction personnel should be prohibited, and no uncontrolled fires whatsoever should be allowed; • Care should be taken during the construction operation of the proposed development to limit edge effects to surrounding natural habitat. This can be achieved by: - Demarcating all footprint areas during construction activities;
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	- No construction rubble or cleared alien invasive species are to be disposed of outside of demarcated areas, and should be taken to a registered waste disposal facility; - All soils compacted as a result of construction activities should be ripped and profiled and reseeded; and - Manage the spread of AIP species, which may affect remaining natural habitat within surrounding areas. • Appropriate sanitary facilities must be provided during the construction of the development and must be removed to an appropriate waste disposal site; • No dumping of litter, rubble or cleared vegetation on site should be allowed, infrastructure and rubble removed because of the construction activities should be disposed of at an appropriate registered dump site away from the development footprint. No temporary dump sites should be allowed in areas with natural vegetation. It is advised that waste disposal containers and bins be provided during the construction phase for all construction rubble and general waste. Vegetation cuttings must be carefully collected and disposed of at a separate waste facility; • If any spills, occur, they should be immediately cleaned up to avoid soil contamination that can hinder floral rehabilitation later down the line. Spill kits should be kept on-site within workshops. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practiced, preventing the ingress of hydrocarbons into the topsoil; and • Upon completion of construction activities, it must be ensured that no bare areas remain, and that indigenous species be used to revegetate the disturbed area.
<u>Alien Vegetation</u>	• Edge effects arising from the proposed development, such as erosion and alien plant species

	proliferation, which may affect adjacent natural areas, need to be strictly managed. Specific mention in this regard is made of Category 1b AIP species (as listed in the NEMBA Alien species lists, 2020), in line with the NEMBA Alien and Invasive Species Regulations (2014); and • Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. All cleared plant material to be disposed of at a licensed waste facility that complies with legal standards.
<u>Floral and Faunal SCC</u>	• The relocation of floral SCC (if found) should be monitored during the construction phase to ensure immediate actions can be taken if it becomes evident that relocation is not successful; • No collection of floral SCC or medicinal floral species must be allowed by construction personnel; • Edge effect control needs to be implemented to prevent further degradation and potential loss of floral and faunal SCC outside of the proposed development footprint area; • No trapping or hunting of fauna whatsoever must be allowed; and • Should the presence of any faunal SCC be noted, or their breeding sites be located within the development footprint, a suitably qualified specialist should be consulted on the best way to proceed.

Operational and Maintenance Phase:

<u>Proposed Project Phase</u>	Operational and Maintenance Phase
<u>Impact Summary</u>	Loss of floral and faunal habitat, species, and SCC

<u>Alien Vegetation</u>	• Edge effects arising from the proposed development, such as erosion and alien plant species proliferation, which may affect adjacent natural areas, need to be strictly managed. Specific mention in this regard is made of Category 1b AIP species (as listed in the NEMBA Alien species lists, 2020), in line with the NEMBA Alien and Invasive Species Regulations (2014); and • Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. All cleared plant material to be disposed of at a licensed waste facility, which complies with legal standards.
<u>Floral and Faunal SCC</u>	• Monitoring of relocation success should continue for at least one year after the completion of the construction phase or until it is evident that the species have established self-sustaining populations.

7. MONITORING AND REPORTING

It is important to note that any and all activities undertaken outside the scope of the adopted MMP, in terms of the action outlined within the given method statement, the responsible person(s) will be subject to Section 24(F) of NEMA and that appropriate enforcement and compliance requirements will follow.

The specific reporting information required by the competent authority should be discussed during the consultation phase between the proponent and the Department. The relevant information required should be considered on a case-by-case basis.

The following Forms A and B are to be considered as a guideline in terms of the type of information required. It is proposed that Form A below must be completed by the relevant person(s) before maintenance activities are undertaken and Form B after a maintenance activity has been completed. A copy of each completed Form A & B must be sent to the relevant WUA/IB/local authority management if they have undertaken the development of the MMP. For any individual landowner applications, the landowner is responsible to ensure a record of all maintenance activities is recorded as per Form A & B below. Form A and B must also be sent to the Provincial Department of Agriculture, Directorate: Sustainable Resource Management.

The Department may, within a reasonable notice period, request to evaluate the maintenance activities and assess the maintenance sites as per the adopted MMP.

Form A should be completed at least 7 working days before the commencement of any maintenance activity and Form B at least 3 working days following the completion of the maintenance activity(ies). At least two photographs are required from two different points of perspective (A and B) looking at the site (coordinates of these points are required). When listing the type and reference code, this must be done by specifically listing the relevant detail within the adopted MMP.

	Monitoring of structural integrity of the major and minor structures in the watercourses.
<u>Actions</u>	- Proactive monitoring to ensure structural integrity is maintained and to identify early signs of erosion around the culverts. - Proactive monitoring to ensure that any litter or debris which may accumulate on and around the culverts is cleared to maintain the flow of water.
<u>Impacts</u>	No direct impacts perceived.
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	N/A
<u>Mitigation measures</u>	- All watercourses are to be considered "off limits" to any vehicular activity. - Disturbances to the watercourses should be limited to what is essential for long-term maintenance in line with the mitigation measures presented herein. - Existing access roads must be used for monitoring purposes to minimise the compaction of soils and loss of riparian and instream habitat. - Hot spots for the build-up of debris and excess sediment must be identified and when necessary, debris/excess sediment must be removed by hand to prevent future flooding and potential damage to infrastructure. In this regard, special mention is made of periods following high rainfall and subsequent high instream water volumes. Removal of debris must be undertaken in line with the above listed construction mitigation measures. - The watercourse must be monitored for alien vegetation encroachment and all alien vegetation/weeds must be removed according to a suitable alien vegetation control plan. - Any erosion or gully formation must be identified on an ongoing basis and re-profiled and revegetated accordingly.

	Maintenance of culverts in the event of failure (if necessary)
<u>Actions</u>	Disturbances to or removal of vegetation whilst accessing culverts to carry out maintenance activities.
<u>Impacts</u>	Potential loss of indigenous vegetation and the further proliferation of alien floral species due to disturbances.
<u>Severity of the impacts according to the DWS Risk Assessment conducted by Freshwater Specialist</u>	N/A
<u>Mitigation measures</u>	- Ensure that the footprint area of cleared vegetation remains as small as possible. - Limit clearing of indigenous vegetation. - If deemed necessary, re-seed with indigenous vegetation once maintenance activities have been completed.

REPORTING FOR INTENT TO UNDERTAKE MAINTENANCE ACTIVITIES – FORM A				
Section A: Landowner Details				
Name	Surname	Farm No.	Erf No.	Today's Date
Section B: Details of proposed maintenance activity				
WUA/GA reference number and DEA&DP reference number for MMP.	Activity Type:	Reference code (make reference to MMP)	Footprint area (m ²)	Volume of material (m ³)
Equipment to be used:	Description of method for planned activity:			Date when work will commence:
Date of last flood event for site:	Note any further damage and comments regarding the state of the site			
Section C: Photographs of activity location before maintenance				
Before A Coordinates: S E				
Before B Coordinates: S E Date of photos taken:				

REPORTING FOR COMPLETION OF MAINTENANCE ACTIVITIES – FORM B				
Section A: Landowner Details				
Name	Surname	Farm No.	Erf No.	Today's Date
Section B: Details of proposed maintenance activity				
WUA/GA reference number and DEA&DP reference number for MMP.	Activity Type:	Reference code (make reference to MMP)	Footprint area (m ²)	Volume of material (m ³)
Equipment that was used:	Description of method for completed activity and if commence date changed			Date activity completed
Date of last flood event for site:	Note any challenges or difficulties experienced in following the MMP method statement			
Section C: Photographs of activity location after maintenance				
After A Coordinates: S E				
After B Coordinates: S E Date of photos taken:				

ANNEXURES

ANNEXURE A

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE: REGION 1 (City of Cape Town & West Coast District)	CAPE TOWN OFFICE: REGION 2 (Cape Winelands District & Overberg District)	GEORGE OFFICE: REGION 3 (Central Karoo District & Eden District)
Requests for competent authority to adopt an MMP must be sent to the following details: Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000 Registry Office 1 st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1) at: Tel: (021) 483-5829 Fax (021) 483-4372	Requests for competent authority to adopt an MMP must be sent to the following details: Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 2) Private Bag X 9086 Cape Town, 8000 Registry Office 1 st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 2) at: Tel: (021) 483-5842 Fax (021) 483-3633	Requests for competent authority to adopt an MMP must be sent to the following details: Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530 Registry Office 4 th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Development Management (Region 3) at: Tel: (044) 805-8600 Fax (044) 8058650

WESTERN CAPE DEPARTMENT OF AGRICULTURE DETAILS

Francis Steyn
 Director: Sustainable Resource Management, LandCare Programme
 Western Cape Department of Agriculture
 Private Bag X1
 Elsenburg
 7607
 Main Building, Elsenburg, Muldersvlei Road
 Tel: 021 808 5090
 Email: franciss@elsenburg.com