

THE PROPOSED MAINTENANCE OF THE CULVERT AT KM 8.920 OF WAARBURGH ROAD, PAARL, WESTERN CAPE.

FINAL RIVER MAINTENANCE MANAGEMENT PLAN

Prepared for:

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Table of contents

ACRONYMS	ii
DEFINITIONS OF TERMS.....	iii
REFERENCES	v
A. SCOPE AND IMPORTANT INFORMATION.....	1
B. MAINTENANCE MANAGEMENT PRINCIPLES	5
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).	8
1. PERSONAL DETAILS	8
2. DECLARATION	10
3. BACKGROUND AND INTRODUCTION	11
4. ENGAGEMENT PROCESS.....	11
5. DATA COLLECTION AND ASSESSMENT	15
6. METHOD STATEMENT	19
Method Statements for the proposed maintenance activities.....	21
7. MONITORING AND REPORTING	36
ANNEXURES	40

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
EMP	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)
RE	Resident Engineer
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

FRESHWATER RESOURCE ECOLOGICAL ASSESSMENT: PROPOSED UPGRADE OF CULVERTS
ALONG PROTEA AND WAARBURGH ROADS, Scientific Aquatic Services, October 2018.

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>

(pers. Comm., Scientific Aquatic Services, 2018)

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

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 MAINTENANCE OF THE EXISTING CULVERT AT KM 8.920,
WAARBURGH ROAD, PAARL, WESTERN CAPE.**

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 RIVER MAINTENANCE MANGEMENT PLAN includes:

- **Activity 19 of Listing Notice 1 (GN R 327, 7 April 2017):**

Activity 19 Listing Notice 1 (GN R 327, 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.

- **Management of Urban Stormwater Impacts Policy, Approved by Council: 27 May 2009.**
- **Floodplain and River Corridor Management Policy, Approved by Council: 27 May 2009.**
- **City's By-Law relating to Stormwater Management, Approved by Council: 30 August 2005.**

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?	NO
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- As indicated in the Freshwater Impact Assessment (conducted by Scientific Aquatic Services CC), the maintenance of the culvert at Km 8.920 is warranted to lower the risk of flooding.
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?	YES, it is proposed that debris be

		removed from the culvert.
2.7	Is there an existing obstruction in the watercourse that has changed the flow of the river under normal conditions?	YES, it is proposed that debris be removed from the culvert.
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	• Development and maintenance of ecological buffering systems to improve and/or restore functioning (e.g. wetlands and stormwater detention ponds)

infrastructure	• Actively rehabilitating riparian zones through planting of locally indigenous species • Bank grading and movement/removal of berms and barriers to flow
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- 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 river banks through effective root structures, while contributing to improve in-stream habitat and water quality conditions;
 - d. Invasive alien and bush encroachment vegetation significantly impacts 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:	Department of Transport and Public Works		
Contact person (if other):	Ms Melanie Hofmeyr		
Postal address:	Private Bag X9185, Cape Town		
Telephone:	(021) 483 5713	Postal code:	8000
Fax:	()	Cell:	
Email:	melanie.hofmeyr@westerncape.gov.za		
Name of person who has prepared the MMP:	Guillaume Nel Environmental Consultants		
Contact Person (if other):	Heloise Groenewald		
Postal address:	P.O. Box 2632, Paarl		
Telephone:	(021) 870 1874	Postal code:	7646
Fax:	(021) 870 1873	Cell:	072 157 1321
E-mail:	hdp@gnec.co.za		
Name of landowner(s) on whose behalf the plan has been developed*:	Same as applicant		
Contact person(s):			
Postal address:			
Telephone:		Postal code:	

Fax:		Cell:	
E-mail:			
Municipality for proposed project:	Waarburgh Road forms part of Divisional Road 1098. Waarburgh Road (km 8.79 – 14.24) runs parallel with the N1 and extends from the intersection with the R304 West to the intersection with Lucullus Street.		
Farm name(s), erf(s) and portion number(s) etc*:	Properties Farm No. 24/ 727 Farm No. 43/728		
Magisterial District or Town:	Paarl		
Name(s) of watercourse(s) in question:	Mosselbank River		
*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. BACKGROUND AND INTRODUCTION

Background

The Cape Winelands area have recently experienced tremendous growth; with an influx of more permanent residents being the result. This has automatically resulted in an increase in the number of vehicles utilising the public roads in the area. Consequently, road maintenance and road upgrades are important activities required in order to ensure the safety of the public roads are maintained.

As mentioned, Waarburg Road, which is an existing surfaced road is located within the City of Cape Town Municipality area of jurisdiction. The road runs parallel with the N1; spanning from the intersection with the R304 (in a Western direction), to the intersection with Lucullus Street, which is located within Joosternberg Vlake. The total length of Waarburgh Road is approximately 5.40 Kilometres. The Road is surrounded by both agricultural and residential activities.

Waarburgh Road is an existing surfaced road, with numerous existing stormwater structures.

Guillaume Nel Environmental Consultants (GNEC) have been appointed by the Western Cape Government: Department of Transport and Public Works to compile and submit a River Maintenance Management Plan (RMMP) for the proposed rehabilitation of Waarburgh Road.

This River Maintenance Management Plan (RMMP) is specifically for the construction/maintenance activities to take place within the Mosselbank River. The proposed construction activities located within a watercourse include the construction of new apron slabs of the culvert located at Km 8.920 on Waarburgh Road. Note should be made that the footprint of the culvert will not be increased.

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:

- X Department of Water and Sanitation
- ☐ ~~Catchment Management Agency~~
- X Cape Nature
- ☐ ~~SANParks~~
- X Western Cape Department of Agriculture, Directorate: Sustainable Resource Management
- X District Municipality
- X 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):

N/A _____

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 First Draft RMMP was submitted to the following Authorities for their respective comments during the 1st Public Participation Process:

- Department of Environmental Affairs and Development Planning
- Cape Nature
- Department of Water and Sanitation
- Heritage Western Cape
- City of Cape Town Municipality

The Second Draft RMMP was submitted to the following Authorities for their respective comments during the 2nd Public Participation Process:

- Department of Environmental Affairs and Development Planning
- Cape Nature
- Department of Water and Sanitation
- Heritage Western Cape
- City of Cape Town Municipality

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	Yes, Background Information Documents were hand delivered to all property owners within 100 metres of the proposed maintenance activity (Km 8.920 culvert).
(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	Yes, Background Information Documents were hand delivered to all property owners within 100 metres of the proposed maintenance activity (Km 8.920 culvert).
(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	No stakeholder meetings were held.
(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	Yes, all relevant organs of state were informed about the proposed development.
(v) Provided written notice and confirmation to the relevant	N/A	N/A

Water Users Association (WUA) or Irrigation Board (IB) of the development of the MMP, if applicable.		
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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	N/A
(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	N/A
(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	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	N/A
(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	N/A
(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	N/A

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

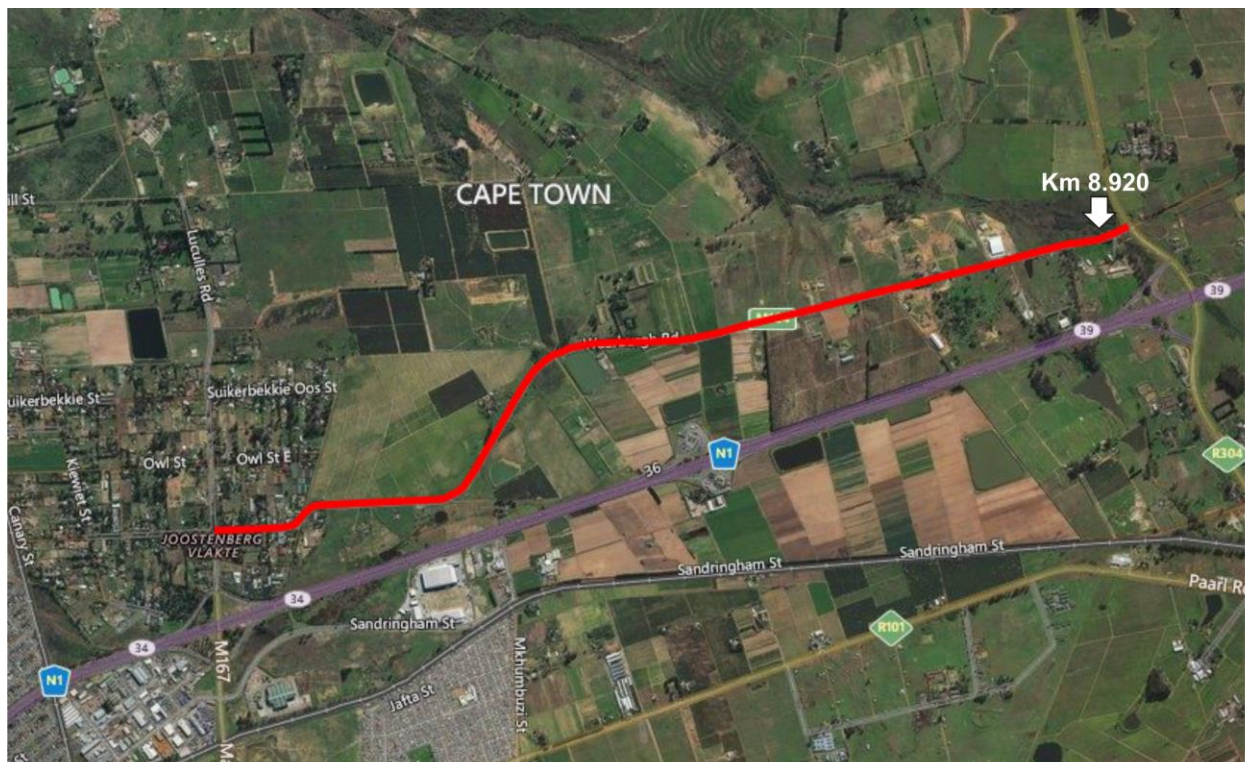
Information required for *maintenance and management activities for a single/ multiple owner along a watercourse.*

Site Location and Activity Description

Location of Waarburgh Road:

	Latitude (S): (deg.; min.; sec)			Longitude (E): (deg.; min.; sec)		
Start of road	33°	48'	59.22"	18°	47'	17.52"
Middle of road	33°	49'	18.84"	18°	45'	41.50"
End of road	33°	44'	51.57"	18°	44'	07.58"

Site location and photo pages:



Location of Waarburgh Road (km 8.79 - 14.24), Paarl	 Tel: (021) 870 1874 Fax: 086 6933 802 Cell: 072 1571 321	
Source: Cape Farm Mapper		

Figure 1: Locality Map of Waarburgh Road



Water Resources Map of Waarburgh Road, Paarl

Source: Cape Farm Mapper

Guillaume Nel
environmental consultants

Tel: (021) 870 1874 Fax: 086 6933 802 Cell: 072 1571 321



Figure 2: Freshwater Resources Map



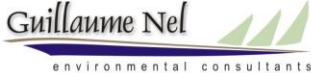
Location of Km 8.920 Culvert, Waarburgh Road, Paarl	 Tel: (021) 870 1874 Fax: 086 6933 802 Cell: 072 1571 321	
Source: Google Earth		

Figure 3: Locality Map of Km 8.920 Culvert, where maintenance activities is proposed.

Activity description

GNEC was appointed by the Department of Transport and Public Works in order to facilitate the proposed maintenance work of Waarburgh Road (km 8.79 -14.24) within the Western Cape. The Department proposes the rehabilitation of Waarburgh Road from kilometre 8.79 to kilometre 14.24, which forms part of Divisional Road 1098, as well as the upgrading of stormwater infrastructures located within the road reserve.

The proposed linear development will entail the maintenance of a culvert at Km 8.920 to transpire along Waarburgh Road. The rehabilitation of Waarburgh Road forms part of the upgrading of the greater Divisional Road 1098. It is imperative that the road be rehabilitated; not only for current road users, but also to accommodate future traffic volumes resulting from increasing developments within the area. The rehabilitation of Waarburgh Road will also result in the maintenance of stormwater infrastructure located at Km 8.920 along the road. The culverts are located within the Mosselbank Rivier, which transverses Waarburgh Road. Scientific Aquatic Services CC was therefore appointed in order to conduct a Freshwater Impact Assessment of the entirety of Waarburgh Road. The culverts which are located at Km 8.920 are the only culvert located within a watercourse that transverse the Waarburgh Road.

It should be noted that the rehabilitation of the road does not trigger any listed activities in terms of the National Environmental Management Act (NEMA) EIA Regulations, 2014 (as amended 07 April 2017). The River Maintenance Management Plan application process is however necessitated as a result of construction to take place within the Mosselbank River through the maintenance of culverts. Mention should be made that the footprint of the said culverts will not be increased. Application is therefore made in terms of Government Notice No. R. 327: Activity 19.

The proposed maintenance activities include the culverts to be cleaned from debris; along with the construction of new apron slabs also proposed. The existing culverts at Km 8.920 are box culverts (2x 2.77 x 1.57m) over the Mosselbank River. The maintenance activities will result in the culverts being replaced with like-for-like apron slabs, along with the rehabilitation of the Mosselbank River (Please refer to addendum F for the proposed rehabilitation plan). It should be noted that the Freshwater Impacted Assessment (dated October 2018) was conducted by a freshwater specialist, being Ms Kim Marais from Scientific Aquatic Systems CC. A site visit was also carried out on the 21st of August 2018.

The following section was extracted from The Freshwater Impact Assessment Report compiled by Ms Kim Marais.

According to the Freshwater Impact Assessment, the Mosselbank River is considered to be of moderate ecological importance and sensitivity. The Present Ecological State of the Mosselbank River is categorised as category D which is largely modified, with the ecoservice provision categorised as moderately low. It should be noted that all activities

- 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.

Method Statements for the proposed maintenance activities

<u>Proposed Maintenance Activity</u>	Site preparation prior to commencement of construction activities.
<u>Actions</u>	• Vehicular transport and access to the site; • Removal of vegetation and associated disturbances to soils; • Miscellaneous activities by construction personnel.
<u>Impacts</u>	• Potential impacts on water quality and contamination of soils within the watercourse. • Altered runoff patterns and alteration to flow patterns, leading to possible increased erosion and sedimentation of the watercourse. • Potential erosion and gully formation as a result of disturbed soils and inappropriate slopes resulting in sedimentation of the watercourses; • Compaction of soils, disrupting the growth medium of the watercourse vegetation. • Construction litter within the watercourse.
<u>Mitigation measures</u>	• Contractor laydown areas and stockpiles to be established outside of the delineated watercourses and the applicable setback zone in consultation with the appropriate authority. • All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is absolutely essential. • Retain as much indigenous vegetation as possible. • Removal of all exotic vegetation. • Utilize existing roads only to gain access to the construction site. • The watercourses and the applicable setback area should be clearly demarcated with danger tape by an ECO and marked as a 'no-go' area where no construction activities are planned. • Vehicles to be serviced at the contractor laydown area and all re-fueling is to take place outside of the watercourses

	and the applicable setback zone. • Workshop and oil/fuel areas will be located on an impermeable hard standing surface. • If oil/fuel is stored on site, it must be stored in a secure bunded area, the bunded area must be able to contain 110% of any potential spill/leak of stored fuels. • Any spills must be cleaned up immediately and soiled material disposed of in accordance with the requirements for disposal. • The contractor's workshop/offices located outside of any environmental buffer area (to reduce the risk of leaks and spills). • A site-specific methodology for the construction of the apron slabs and the associated works within the watercourse, must be provided to the Catchment, Stormwater and River Management Branch for review prior to any works commencing on site at culvert at 8.920KM. The methodology must also indicate how the developer intends to manage/divert the watercourse during the specific construction works. • DEA&DP and City of Cape Town: Environmental Management Department (CCT: EMD) will be informed once an ECO has been appointed for the proposed maintenance project. • The appointed ECO will liaise with the CCT: Asset and Maintenance Management (Vincent Harris 0214444931 vincent.ramonharris@capetown.gov.za) prior to the commencement of any maintenance activities. • The appointed ECO will liaise with the CCT: Stormwater and Catchment Management (Johann Terblanche 0214003205 ohann.terblanche@capetown.gov.za) prior to the commencement of any maintenance activities. • The appointed ECO will liaise with the CCT: Environmental Management (Pat Titmuss 0214440597 pat.titmuss@capetown.gov.za) prior to the commencement of any maintenance activities.
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<u>Proposed Maintenance Activity</u>	Excavation within freshwater resources or foundations.
<u>Actions</u>	• Disturbances to soils of the watercourses; and removal of topsoil and creation of stockpiles. • Movement of construction machinery/vehicles within the watercourses; and • Possible spills / leaks from construction vehicles.
<u>Impacts</u>	• Disturbances of soils leading to increased alien vegetation proliferation, and in turn to further altered freshwater habitat; • Altered runoff patterns and alteration to flow patterns, leading to increased erosion and sedimentation of the watercourses; • Possible contamination of soils and surface water, leading to further reduced ability to support biodiversity; and • Alterations to flow patterns.
<u>Mitigation measures</u>	• All works must be done during the dry season and consideration has not been given to any temporary water diversions. • Limit vehicle/machinery activity within the freshwater resources to what is absolutely essential. • Excavated materials should not be contaminated, and it should be ensured that the minimum surface area is taken up, however the stockpiles may not exceed 2m in height. • All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) in order to prevent erosion and sedimentation of the watercourses in close proximity to these stockpiles. • Ensure sediment control devices are in place prior to the start of the excavation activities. • Maintain sediment/erosion control devices to minimise risk of sedimentation of the downstream areas. • All construction litter, especially empty cement bags, must be placed within an enclosed bin to prevent them from blowing around and to prevent leachate during rain events.

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|--|--|
| | <ul style="list-style-type: none">• Adjacent natural areas need to be clearly demarcated and seen as No Go area. |
|--|--|

<u>Proposed Maintenance Activity</u>	Maintenance of culverts including the replacement of culverts, the construction of new inlet/outlet structures and apron slabs.
<u>Actions</u>	• Movement of construction machinery/vehicles within the freshwater resources; • Possible spills / leaks from construction vehicles; • Possible discard of construction material within the freshwater resources; • Physical repairs to the culverts: and • Construction of new inlet/outlet structures.
<u>Impacts</u>	• Potential impacts on water quality and contamination of soils within the watercourse. • Altered runoff patterns and alteration to flow patterns, leading to possible increased erosion and sedimentation of the watercourse. • Potential erosion and gully formation as a result of disturbed soils and inappropriate slopes resulting in sedimentation of the watercourses; • Compaction of soils, disrupting the growth medium of the watercourse vegetation. • Construction litter within the watercourse.
<u>Mitigation measures</u>	• It is strongly recommended 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 a excavated channel was not included as part of this risk assessment). • The use of hand labour during the construction works on culverts. • Limit vehicle/machinery footprint within the freshwater resource should machinery be required to the bare minimum. Where possible use existing access routes to the culverts. • Ensure that silt traps are created downstream of the activity should water be present to prevent the further siltation of the watercourse downstream. • No contaminated water run-off from any in-situ concrete works may be allowed. Concrete rubble may not be

	stockpiled in or surrounding the watercourses and must be appropriately disposed. Concrete rubble is seen as general waste and may be disposed at a registered general waste facility. • No concrete truck chutes may be washed near any watercourse. Should concrete truck chutes be washed on site, an appropriately bunded area must be created to the approval of the RE and ECO prior to the washing of the chutes. • After maintenance/construction, any areas within the maintenance footprint that have been degraded from their condition prior to construction and as a result of the construction activities must be restored to their former condition. • All construction litter must be placed within an enclosed bin to prevent them from blowing around and to prevent leachate during rain events. • Adjacent natural areas need to be clearly demarcated and seen as No Go area. • Tools and equipment must not be washed in the watercourse and all care must be taken to prevent equipment cleaning water from entering the watercourse; i.e. washed in bunded area.
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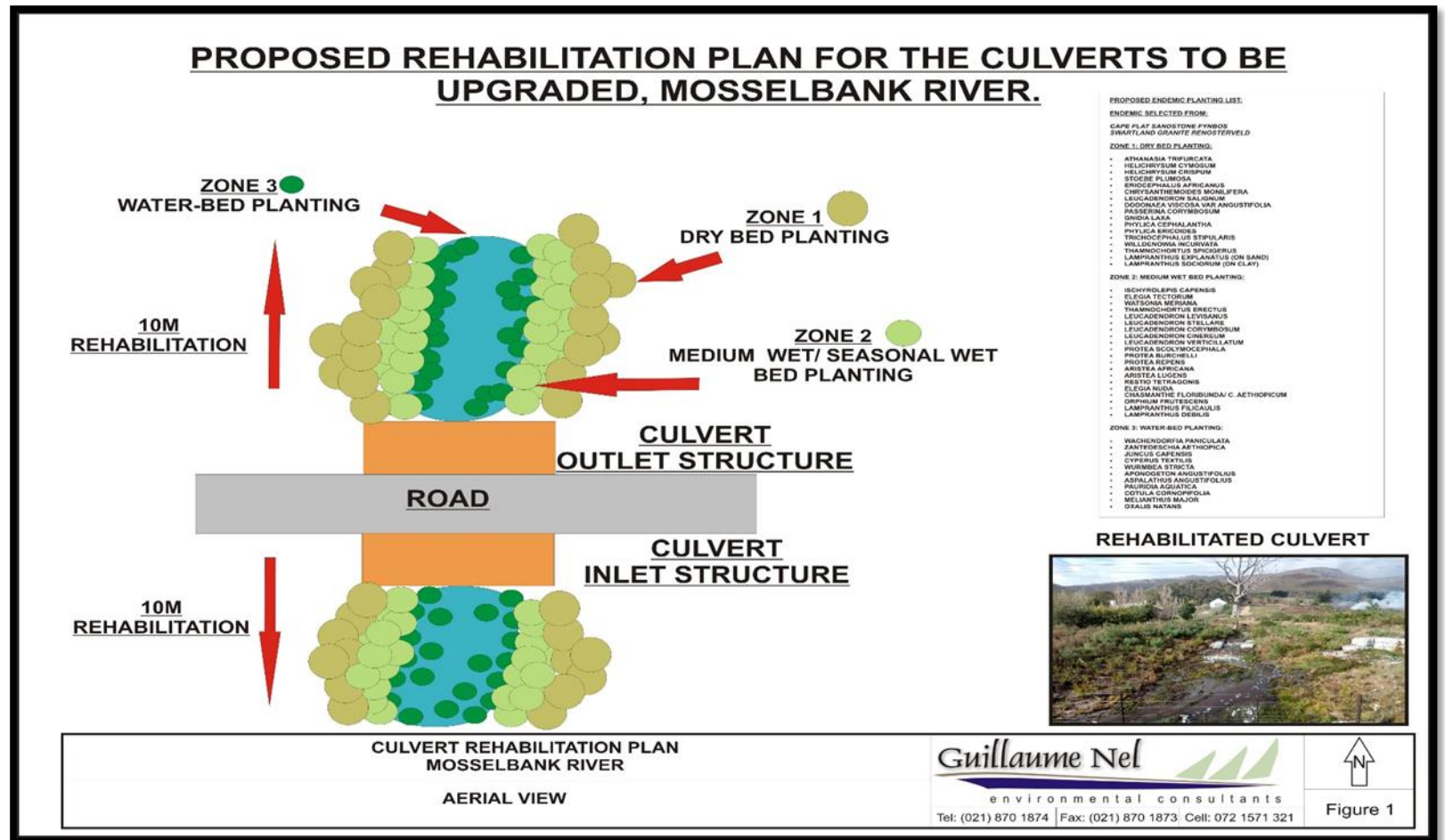
<u>Proposed Maintenance Activity</u>	Control of alien vegetation
<u>Actions</u>	• Access to the works area. • Physical removal of the alien vegetation.
<u>Impacts</u>	• Disturbance of aquatic habitat and vegetation. • Minor disturbance to the local indigenous vegetation should there be present. • Clearance of alien vegetation from the area and subsequent improvement in the ecological health of the section of the watercourse.
<u>Mitigation measures</u>	• Where possible use existing access routes to the alien vegetation to be removed. • All invasive alien vegetation must be correctly identified prior to removal. A specialist must be appointed to ensure this. Removal of the invasive alien vegetation should be according to the guidelines provided by the Working for Water Programme. • When using herbicides, it is essential to apply the correct herbicide, in the right dose, at the right time, using the correct application method. Use only registered herbicides, follow manufacturer's instructions on the label, and wear the appropriate protective clothing during handling. All registered herbicides are labelled with important information to assist in selecting the correct product and give the recommended application methods and dose. Labels also provide safety and poisoning information and recommended disposal methods. Follow-up with the removal of dead material. • Follow-up alien vegetation control measures will need to be ongoing and for several years at least, depending on the site conditions. Progressively less follow-up weeding should be required once indigenous plants are regenerating well and at a rate faster than the invasive plants can become re-established. The cultivation of plant material to be planted within an area that requires replanting should only be done with species that are selected and that are suitable for the area and the type of habitat in which it would have the most optimal chance of survival. • After maintenance/construction, any areas within the maintenance footprint that have been degraded from their condition prior to construction and as a result of the construction activities must be restored to their former condition.

	• All construction litter must be properly removed from the watercourse and appropriately stored before removed from site. • All invasive vegetation will be removed by hand; ensuring that the maintenance footprint remain as contained as possible.
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<u>Proposed Maintenance Activity</u>	Casting of Concrete Slabs
<u>Actions</u>	• Mixing and casting of concrete; • Digging of foundation; • Placement of bedding material; and • Miscellaneous activities by construction personnel.
<u>Impacts</u>	• Potential impact on water quality and contamination of soils within the watercourses; • Erosion of areas surrounding the slabs; • Potential of backfill material entering watercourses, increasing the sediment load; and • Disruption of the growth medium of vegetation.
<u>Mitigation measures</u>	• All work must be done during the dry season and consideration has not been given to any temporary water diversions. • No contaminated water run-off from any in-situ concrete works may be allowed. Waste concrete may not be dumped in or surrounding the watercourses and must be taken off site. • No mixed concrete may be deposited outside of the designated construction footprint. A batter / dagga board mixing trays and impermeable sumps should be provided, onto which any mixed concrete can be deposited whilst it awaits placing. • Concrete spilled outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site. • Concrete for the construction of concrete apron slabs must be done with ready mixed concrete and not be mixed on site, where at all possible.

	General Rehabilitation after maintenance work
<u>Actions</u>	• Access to the works area. • Physical rehabilitation of disturbed areas.
<u>Impacts</u>	• Minor disturbance to the local indigenous vegetation should there be present. • Integrity of the riverine profile (longitudinal as well as cross sectional) and maintenance of vegetation cover are the two most critical factors for achieving overall ecological resilience and functionality.
<u>Mitigation measures</u>	• Rehabilitation may be necessary to prevent deterioration of the present ecological state and maintain overall riparian functionality. • Rehabilitation activities will therefore generally comprise reconstruction of the profile and substrate layers and revegetation of denuded or disturbed areas. • The natural (current) profile of the bank and bed should be recorded before the commencement of the maintenance phase. This will provide a localised template for rehabilitation of the maintenance activities once maintenance has been completed. • Adjacent natural areas need to be clearly demarcated and seen as No Go areas. • After construction/maintenance the disturbed sections needs to be carefully ripped, levelled, shaped and stabilized in such a way that it blends in with the natural contour and drainage line of the site and surrounding area. • It is recommended that where excavations take place that as much of the in-situ material be replaced as possible, and that levelling be done according to the original slopes as far as possible. In addition, should the in-situ material display distinct layering when excavated, different substrata should be stockpiled separately and replaced according the original layering and compaction. • The Rehabilitation Plan compiled by GNEC should be followed in order to ensure successful rehabilitation of the watercourse. Please refer to Addendum F for the proposed vegetation Rehabilitation Plan for the proposed maintenance of the Km 8.920 culvert, Waarburgh Road, Paarl.

<u>Mitigation measures</u>	• The topsoil then needs to be evenly spread over the naturally looking prepared slopes. • Disturbed area needs to be rehabilitated by means of planting these areas with the searched and rescued endemic plants that were removed from the construction footprint before maintenance activities commenced. • Rehabilitation should be undertaken in the beginning of the rainy season to ensure that the rehabilitated area receive enough water. Should rehabilitation be done in summer, the area will have to be watered at least once a week. • A follow up assessment should be undertaken every three months for at least one year to assess the success of the rehabilitation. • Prior to the commencement of any rehabilitation activities, the details of the qualified horticulturist or rehabilitation specialist are to be submitted to the Environmental Management Department.
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Rehabilitation needs to be done with species from the following endemic species list: (Refer to Addendum F for the proposed rehabilitation plan)

Zone 1; Dry Bed Planting:

- Athanasia trifurcata
- Helichrysum cymosum
- Helichrysum crispum
- Stoebe plumosa
- Eriocephalus africanus
- Chrysanthemoides monilifera
- Leucadendron salignum
- Dodonaea viscosa var angustifolia
- Passerina corymbosum
- Gnidia laxa
- Phylica cephalantha
- Phylica ericoides
- Trichocephalus stipularis
- Wildenowia incurvata
- Thamnochortus spicigerus
- Lampranthus explanatus (on sand)
- Lampranthus sociorum (on clay)

Zone 2: Medium Wet Bed Planting:

- Ischyrolepis capensis
- Elegia tectorum
- Watsonia marginata/meriana
- Thamnochortus erectus

- Leucadendron levisanus
- Leucadendron stellare
- Leucadendron corymbosum
- Leucadendron cinereum
- Leucadendron verticillatum
- Protea scolymocephala
- Protea burchellii
- Protea repens
- Aristeia africana
- Aristeia lugens
- Restio tetragonis
- Elegia nuda
- Chasmanthe floribunda/ C. aethiopicum
- Orphium frutescens
- Lampranthus filicaulis
- Lampranthus debilis

Zone 3; Waterbed Planting:

- Wachendorfia thyrsiflora
- Zantedeschia aethiopica "Arum lily"
- Juncus capensis
- Cyperus textilis
- Wurmbea stricta

	• Aponogeton angustifolius • Aspalathus angustifolius • Pauridia aquatic • Cotula cornopifolia • Melianthus major • Oxalis natans
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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 culverts.
<u>Actions</u>	- Proactive monitoring to ensure structural integrity is maintained and to identify early signs of erosion around the culverts and bridge. - 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>Mitigation measures</u>	There should be no need to encroach the active channels of the watercourse to obtain a visual assessment of the structural integrity of the culverts.

	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>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