		(For official use only)
File Reference Number:		
Date Received by Department:		
Date Received by Component:		
Form Duly Signed and Dated:		Yes No

PROJECT TITLE

MAINTENANCE MANAGEMENT PLAN
FOR
S24G APPLICATION – Ref: 14/2/4/2/2/B5/14/0014/19
THE CONSTRUCTION OF A ROAD AND ASSOCIATED BRIDGE INFRASTRUCTURE ON PORTION 1 OF FARM BLOUBANK NO. 52, TULBAGH

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.**

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
2.5	Would you consider an improved design to existing infrastructure to reduce maintenance needs?	NO
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?	NO
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: o Bridges, culverts and drifts • Prevent formation of islands in the channel of the river
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)
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

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)
☐	X	☐

Name of person/authority who will undertake responsibility for the activity:	Bloubank Boerdery Trust		
Contact person (if other):	Die Orffer Landgoed, Bloubank Plaas 1		
Postal address:	Tulbagh		
Telephone:	023 230 0753	Postal code:	6820
Fax:	086 574 5901	Cell:	0825951263
Email:	dol@bloubank.co.za		
Name of person who has prepared the MMP:	Eco Impact Legal Consulting (Pty) Ltd		
Contact Person (if other):	Johmandie Pienaar		
Postal address:	PO Box 45070, Claremont		
Telephone:	021 671 1660	Postal code:	7735
Fax:	021 671 9976	Cell:	072 240 3092
E-mail:	admin@ecoimpact.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:	Witzenberg Municipality		
Farm name(s), erf(s) and portion number(s) etc*:	Portion 1 of Farm Bloubank no. 52, Tulbagh		
Magisterial District or Town:	Ceres		
Name(s) of watercourse(s) in question:	The stream is a unnamed tributary of the Klein Berg River in the Berg 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. BACKGROUND AND INTRODUCTION

Introduction:

To facilitate the movement of larger vehicles within this servitude, owners of Portions 1 and 2 of Farm Bloubank No. 52 in the Tulbagh Valley upgraded the road crossing over a small unnamed stream on the property during June 2017. The crossing was constructed in a tributary of Klein Berg River (G10E quaternary catchment) in the Berg River System.

The tributary has been mapped as a South West Shale Fynbos Channelled Valley Bottom wetland in the Freshwater Ecosystem Priority Areas wetland mapping. The wetland area mapped occurs upstream of the site and incorporates the farm dam on the northern bank of the stream. No wetland area was evident within the immediate area of the stream crossing. The area mapped as valley bottom wetland area comprises largely of a relatively steep stream bank. The small wider stream corridor upstream of the site is also mapped as an aquatic Critical Biodiversity Area buffer due to the largely natural vegetation that still occurs along the steep river bank a short distance upstream of the site.

The ecological condition of the stream at the site is considered to be moderately modified within the channel and seriously modified along the riparian areas due largely to the surrounding agricultural activities. The ecological importance and sensitivity of the stream is moderate. Aerial images taken within the past 50 years show that there has been very little alteration to the channel course or the surrounding land cover for this period. The small farm dam on the northern bank of the stream was constructed after 1966 but before 1980. An informal crossing has been used from time to time through the stream at the site.

The works associated with the culvert structure that has been constructed at the road crossing has largely only resulted in limited change to the bed and banks of the unnamed stream at the site. Considering the history of modification of the river channel as a result of the surrounding agricultural activities and the existing ecological state of the stream, this impact is of a low significance. The structure has sufficient capacity that it is unlikely that it will result in any impedance or diversion of flow in the stream.

The main impacts of the works undertaken are thus a modification/loss of aquatic habitat. With some rehabilitation of the site, this impact could be reduced to being of a very low significance with the potential for a positive impact on the existing ecological condition of the watercourse at the site. Recommendations are provided in the maintenance management plan for the rehabilitation as well as the longer term maintenance and management measures for the site.

The Department of Water and Sanitation risk rating was also determined to be low. It is thus recommended that, if DWS requires that the activity be authorised as a water use, it be authorised under the General Authorisations for Section 21 (c) and (i) of the National Water Act.

Responsible Party:
Bloubank Boerdery Trust

3.1 DEFINITIONS OF TERMS AND ACRONYMS

Acronyms and technical terms used in the MMP must be defined or clarified so that the person(s) who must implement the plan understands the document clearly.

Definitions:

Auditing:	A systematic and objective assessment of an organization's activities and services conducted and documented on a periodic basis based to a (e.g. ISO 19011:2003) standard.
Biodiversity:	The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.
Contractor:	An employer, as defined in section 1 of the Occupational Health and Safety Act 85 of 1993, who performs construction work and includes principal contractors.
Developer:	One who builds on land or alters the use of an existing building for some new purpose.
Environment:	A place where living, non-living and man-made features interact, and where life and diversity is sustained over time.
Evaporation:	The change by which any substance (e.g. water) is converted from a liquid state into and carried off as vapour.
Groundwater:	Subsurface water in the zone in which permeable rocks, and often the overlaying soil, are saturated under pressure equal to or greater than atmospheric.
Independent:	Is independent and has no interest in any business related to the development site, nor will receive any payment or benefit other than fair remuneration for the task undertaken.
Landowner:	Holder of the estate in land with considerable rights of ownership or, simply put, an owner of land.
Monitoring:	A systematic and objective observation of an organisation's activities and services conducted and reported on regularly.
Natural vegetation:	All existing vegetation species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on a site.
Pollution:	The result of the release into air, water or soil from any process or of any substance, which is capable of causing harm to man or other living organisms supported by the environment.
Protected Plants:	Plant species officially listed under the Threatened or Protected Species regulations as well as on the Protected Plants List (each province has such a list), and which may not be removed or transported without a permit to do so from the relevant provincial authority.
Red Data Species:	Plant and animal species officially listed in the Red Data Lists as being rare, endangered or threatened.
Rehabilitation:	Making the land useful again after a disturbance. It involves the recovery of ecosystem functions and processes in a degraded habitat. Rehabilitation does not necessarily re-establish the pre-disturbance condition, but does involve establishing geological and hydro logically stable landscapes that support the natural ecosystem mosaic.
Site:	Property or area where the proposed development will take place.

Acronyms:

DEA&DP:	Department of Environmental Affairs and Development Planning
DWS:	Department of Water and Sanitation
ECO:	Environmental Control Officer
EA:	Environmental Authorisation
EIA:	Environmental Impact Assessment
EM:	Environmental Manager
EMP:	Environmental Management Programme
EO:	Environmental Officer
ER:	Engineer's Representative
I&AP:	Interested and Affected Party
IEM:	Integrated Environmental Management
MS:	Method Statement
PM:	Project Manager
SANS:	South African National Standards

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:

	Authority
NA	Department of Water and Sanitation
No	Catchment Management Agency
No	CapeNature
NA	SANParks
No	Western Cape Department of Agriculture, Directorate: Sustainable Resource Management
No	District Municipality
No	Local Municipality
No	Irrigation Board/Water Users Association
No	Heritage Western Cape
No	Department of Agriculture, Forestry and Fisheries
No	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.

Summary of the comments received by key departments and stakeholders on circulation of the S24G Application:

None to date. To date the only public participation that was conducted was placement of the notice in a local newspaper. We await further instructions from the competent authority on whether or not additional public participation is required.

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.	~~*Yes*~~ / ***No***	***The owner and person in control of the land is the applicant.***
(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.	~~*Yes*~~ / ***No***	***Upon instruction from the competent authority written notice shall be given as required and evidence to be dated letters addressed to landowner and/or manager of adjacent properties.***
(iii) Stakeholder meeting held for adjacent landowners, in which MMP is presented. This must include an opportunity for	~~*Yes*~~ /	***Upon instruction from the competent authority or***

adjacent landowners to provide comment.	***No***	***request from I&APs stakeholder meeting will be held and evidence will consist of meeting requests, attendance register of said meeting, minutes / notes of the meeting, and comments provided.***
(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.	~~*Yes*~~ **/ *No***	***Upon instruction from the competent authority written notice shall be given as required and evidence will include relevant dated letters to the relevant government agencies and departments.***
(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.	~~*Yes*~~ **/ No**	***Upon instruction from the competent authority written notice shall be given as required and evidence to be dated letter(s) to management body (secretary and chairperson) for the WUA/IB.***

Kindly note, the Department may request further or allow reduced requirements for public participation, noting the specific circumstances applied to each request to define or adopt an MMP. Please include or delete the respective sections as agreed to with the Department in the pre-consultative meeting, with supporting evidence of this agreement included.

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.

To date the only public participation that was conducted was placement of the notice in a local newspaper. We await further instructions from the competent authority on whether or not additional public participation is required. Refer to Appendix G of the S24G application form for proof of public participation conducted thus far.

5. DATA COLLECTION AND ASSESSMENT

[This section is intended to provide the required information on the needs for the scientific content and methodology statements of a MMP. It provides headings for the various sections that a MMP must contain, as well as a brief description of typical content and the level of detail required under each heading]

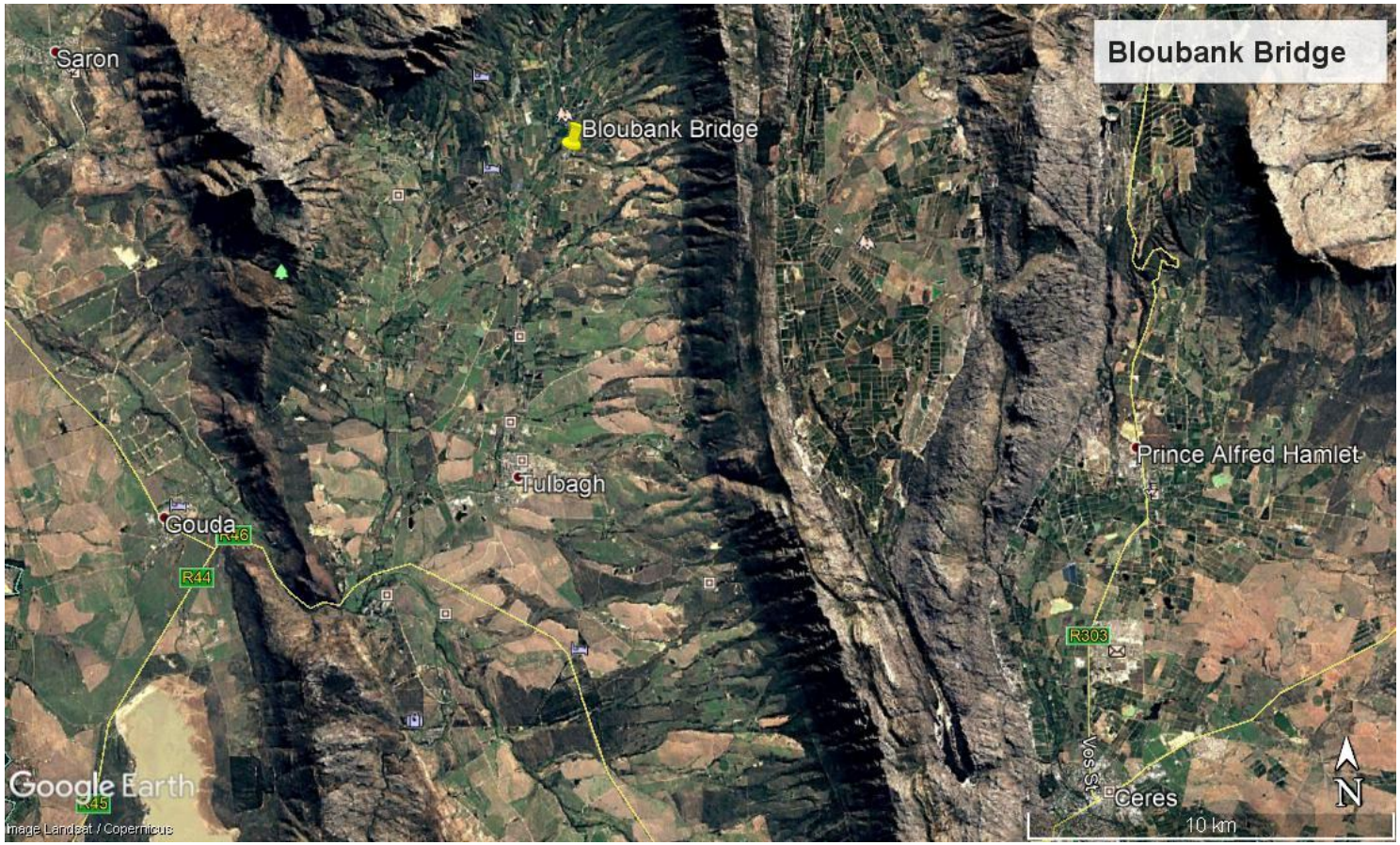
Note: Information relating to the specifications and Terms of Reference used for the appointment of all specialist inputs must be provided.

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

5.1 Provide a map (at an appropriate scale) of the watercourse or stretch of watercourse being applied for within the stretch where maintenance activities will take place being clearly defined – consideration must be made to mapped features relating to Critical Biodiversity Areas (CBAs) and National Freshwater Ecosystem Priority Areas (NFEPAs).

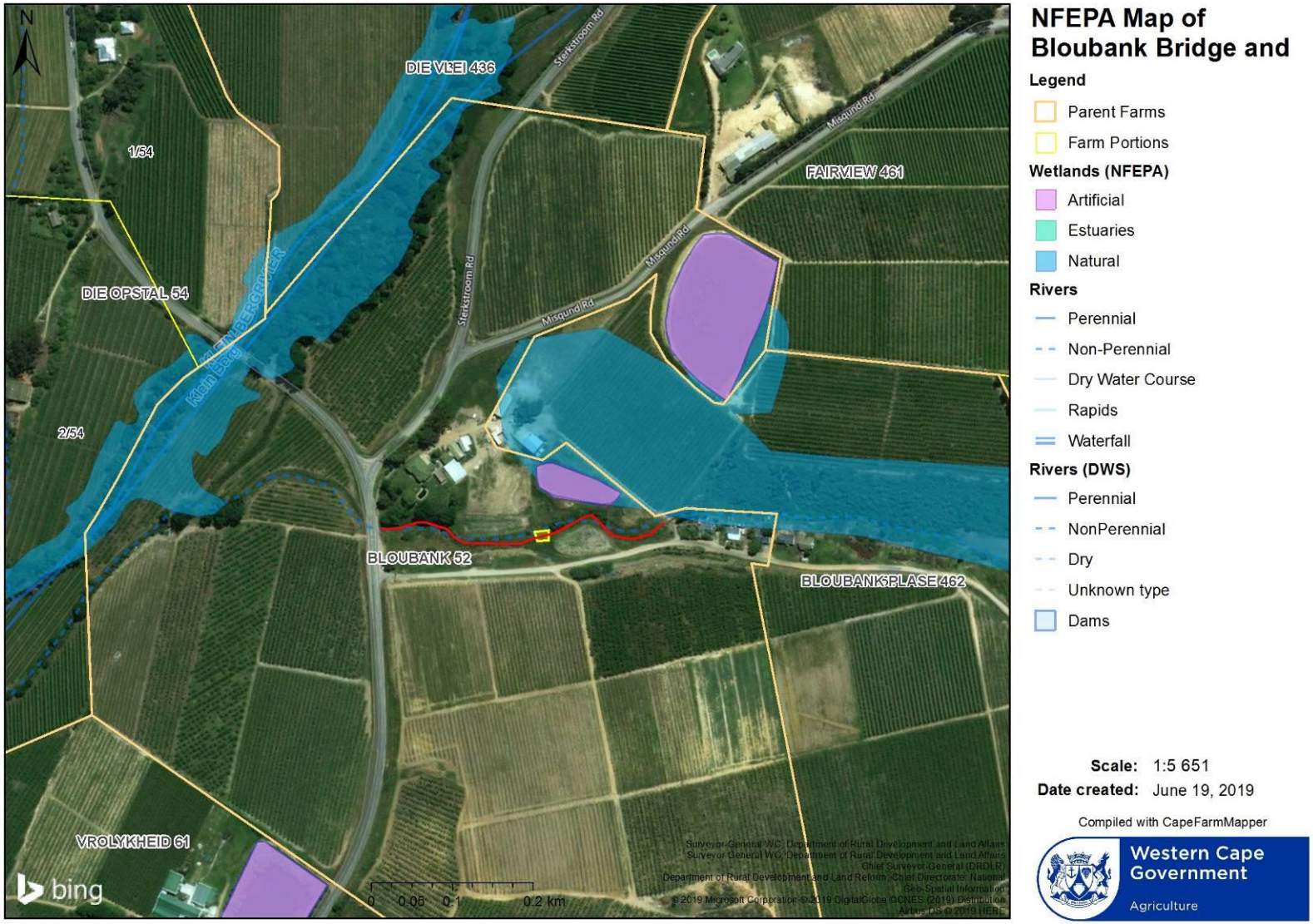
See below maps indicating the relevant environmentally sensitive features:

Map 1.1: Locality map -Location of the Bloubank Bridge near Tulbagh in the western cape.

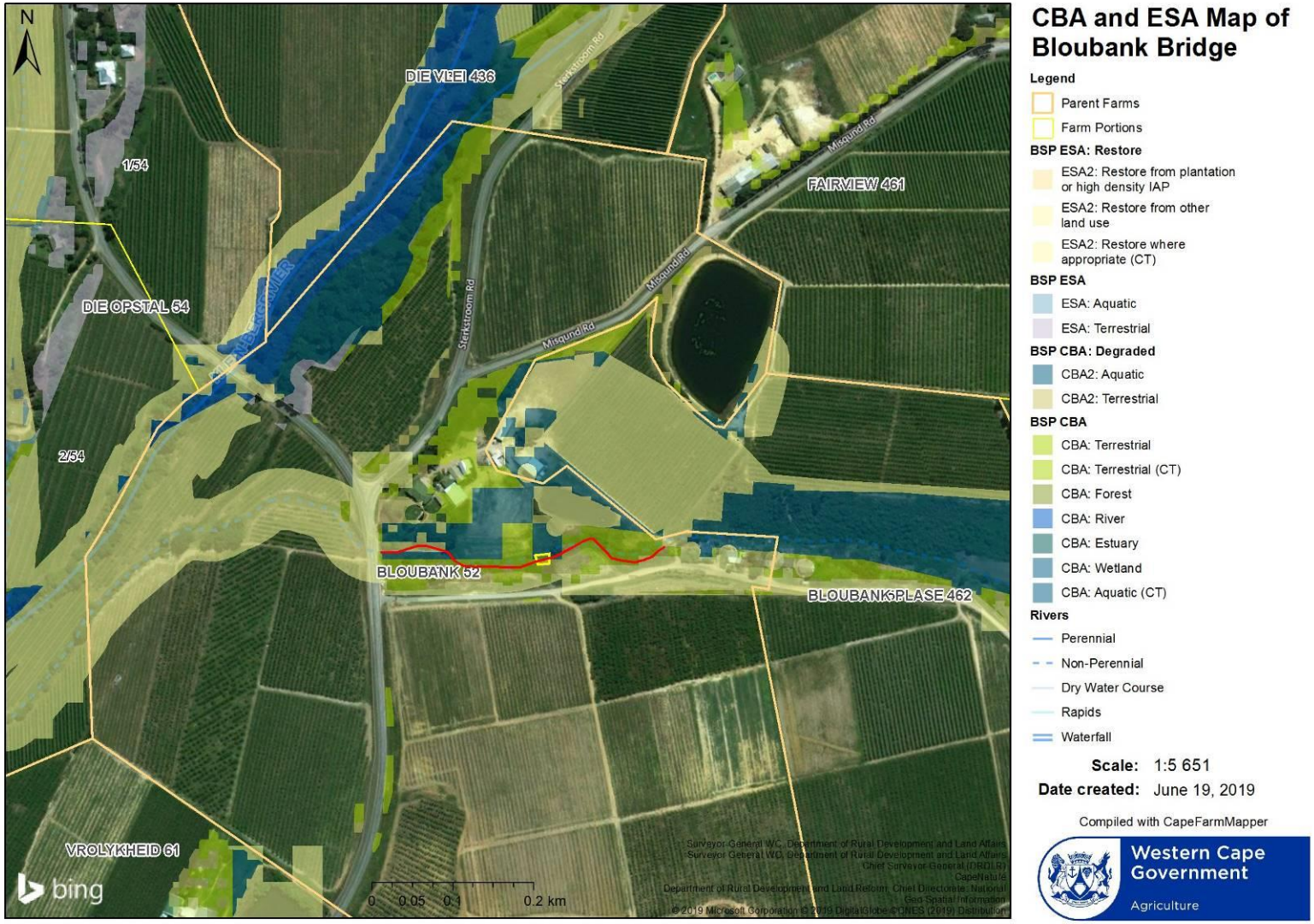


Map 1.2: Locality map -Location of the Bloubank Bridge (yellow square) and associated 300m section within the unnamed watercourse to be maintained

Map 2.1: NFEPA map of drainage line - indicating the Bloubank Bridge and 300m proposed watercourse maintenance area.



Map 2.2: CBA and ESA map of drainage line - indicating the Bloubank Bridge and 300m proposed watercourse maintenance area



5.2 GPS coordinates must be provided for all site(s) at which maintenance activities will take place and included on the map which defines the stretch of watercourse. Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94 WGS84 co-ordinate system. Where numerous properties/sites are involved (e.g. linear activities), you may attach a list of property descriptions and co-ordinates to this form.

Name of Location Point	**GPS Co-ordinates**
Bloubank Bridge	*33° 12' 34.37"S 19° 09' 32.86"E*
Start of 300m Watercourse Section East of Bridge to be Maintained	*33° 12' 33.95"S 19° 09' 37.63"E*
End of 300m Watercourse Section West of Bridge to be Maintained	*33° 12' 34.16"S 19° 09' 26.46"E*

5.3 Specialist assessment to be undertaken (NOTE: information relating to the specifications and Terms of Reference used for the appointment of all specialist inputs must be provided):

A freshwater impact assessment was conducted by BlueScience freshwater specialists during March 2017 with the following terms of reference:
- Literature survey and intialisation
- Site assessment and field work
- Freshwater ecosystem impact opinion
- Rehabilitation plan
- Risk assessment matrix of the Department of Water and Sanitation (DWS)
- Review and liaison

5.4 Mapped biodiversity features such as Critical Biodiversity Area, Ecological Support Area, National Freshwater Ecosystem Priority Area (NFEPA), and the National list of Ecosystems that are threatened and in need of protection (2011) gazetted in terms of Section 52 of the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA), the Western Cape Biodiversity Spatial Plan 2017, as well as relevant provincial specific plans and classifications etc. Please consult the website www.bgis.sanbi.org.za to determine mapped features.

There are two freshwater biodiversity conservation mapping initiatives of relevance to the study area, the national Freshwater Ecosystem Priority Areas (FEPAs) and the Witzenberg Municipality Critical Biodiversity Areas (CBA) mapping. FEPAs are intended to provide strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources. FEPAs were determined through a process of systematic biodiversity planning and were identified using a range of criteria for serving ecosystems and associated biodiversity of rivers, wetlands and estuaries. The G10E catchment within which the relevant area falls is not mapped as a river FEPA.

The catchments of the adjacent Leeu River and the Olifants River to the north are mapped as FEPA rivers. These rivers still support populations of indigenous fish species such as Berg River redfin (Pseudobarbus bergii) in the Leeu River and Clanwilliam yellowfish (Labeobarbus capensis) in the Olifants River. The more widely spread Cape galaxias (Galaxias zebratus) and Cape kurper (Sandelia capensis) do however occur within the larger Klein Berg River System. The Cape Ghost Frog (Heleophryne purcelli) is endemic to the Western Cape Province and occurs in clear, swift flowing and perennial mountain streams such as in the Upper Klein Berg River System.

The CBA map for the Witzenberg Municipality aims to guide sustainable development by providing a synthesis of biodiversity information to decision makers. The map indicates areas of land as well as aquatic features which must be safeguarded in their natural state if biodiversity is to persist and ecosystems are to continue functioning. The small stream which is crossed by the new road is mapped as an aquatic CBA buffer along the wider stream corridor (refer to map2.2) upstream of the site. The management objective of CBA's is that they should be maintained in a natural state and where degraded, they should be rehabilitated. Retaining the ecological services of the stream is important.

5.5 Include a description of existing or previous protection measures or reinforcements (eg. gabions or groynes etc.) and infrastructure. Describe any evidence of erosion and/or siltation at the various sites and outlining possible causal factors and maintenance practices.

The works associated with the culvert structure that has been constructed at the road crossing has largely only resulted in limited change to the bed and banks of the unnamed stream at the site. Considering the history of modification of the river channel as a result of the surrounding agricultural activities and the existing ecological state of the stream, this impact is of a low significance. The structure has sufficient capacity that it is unlikely that it will result in any impedance or diversion of flow in the stream.

5.6 Provide historical maps and data (images/flow/water quality/land use) of the river channel (if available) in order to assess the natural to changing flow patterns of the watercourse to determine cause of maintenance and possible impact of the maintenance activities, to inform mitigation measures.

All of the historical images as studied below show that there has been very little alteration to the channel course or the surrounding land cover for a number or years. An informal crossing has been used from time to time through the stream at the site that is visible in some of the Google Earth images.


Bloubank Bridge
01/08/2010
Google Earth
Image © 2019 Maxar Technologies
Image © 2019 DigitalGlobe
90 m
N


Bloubank Bridge
26/01/2017
Google Earth
Image © 2019 Maxar Technologies
Image © 2019 DigitalGlobe
90 m
N

5.7 Provide a photographic record for the condition of the riparian habitat around maintenance sites, with the presence of important and/or sensitive habitat/species noted.

The stream at the site flows within a relatively deep channel upstream of the crossing that becomes shallower downstream of the structure. The stream is a lower foothill cobble bed stream that flows naturally throughout the year. The active channel is approximately 2.5m with an 8 to 10m wide macro channel. The southern bank upstream of the crossing is relatively low but downstream of the crossing is steep and approximately 4m high. The bank has been stabilised with boulders. The northern bank on the other hand, is steep upstream of the structure but downstream of the crossing is about 1m in height. All the indigenous riparian vegetation has been removed and the disturbed area now consists of exotic and invasive alien plants. The only remaining riparian vegetation occurs just upstream of the Witzenberg Road crossing over the stream. The banks at the culvert structure have been stabilised with bricks and the brick wing walls.

Photo 1.1: Bridge crossing area cross section of non-perennial river, photos taken June 2017.

Photo 1.2: Upstream view of non-perennial river, photo taken June 2017

Photo 1.3: Downstream view of non-perennial river, photo taken June 2017

Photo 2.1: Bridge crossing over section of non-perennial river, photo taken June 201

Photo 2.2: Upstream view of non-perennial river, photo taken June 2019

Photo 2.3: Downstream view of non-perennial river, photo taken June 2019

5.8 For sites prone to flood damage, a description regarding the history and effect of past floods and include dates of most recent events must be provided. This must inform the process to understand what actions are required along the stretch of the watercourse to reduce such impacts to the resource quality characteristics.

The area is not specifically associated with heavy flooding events. As such the maintenance requirements required would generally consist of the following:

- *Rubble and debris from construction activities that have been undertaken at the crossing should be removed*
- *The stream banks should be cleared of exotic and in particular invasive alien plants. The invasive alien kikuyu grass in particular should be kept out of the riparian zone as it destabilises the river banks. It should be replaced by indigenous grasses such as kweek (Cynodon dactylon). This should be undertaken during the dry season but following rainfall events when the soil is moist. Weedy shrubs and small invasive alien saplings occurring along the stream banks within the disturbed area at the crossing should be hand pulled. Should this not be possible for some of the large plants, the plants should be sprayed with a foliar herbicide. Regular follow-up uprooting of new seedlings or follow-up herbicide spraying of coppicing stumps should be undertaken.*
- *Immediately following the clearing of exotic and invasive alien plants, the banks should be revegetated with local indigenous riparian vegetation such as wild olive trees (Olea europaea subsp africana), Cape willows (Salix mucronata), wild almond (Brabejum stellatifolium), waterwitels (Brachylaena neriifolia), willow karee (Searsia augustifolia), lance-leaved myrtle (Metrosideros angustifolia), kruidjie-roer-my-nie (Melianthus major), fountain bush (Cliffortia strobilifera), water sedge (Isolepis prolifera), spiny rush (Juncus acutus), cobra lilies (Chasmanthes aethiopica), arum lilies and palmiet (Prionium serratum).*
- *Storm water discharge from along the road should not be discharged into the stream at the structures as it is likely to result in erosion at the bridge. The road should*

be shaped to ensure that the concentration/intensity of runoff along the road is reduced to dissipate the energy and erosion potential of the flow from the road into the stream at the crossing and all stormwater channels should be kept clear of build-up and blockages to allow free flow of run-off water.

- *Clean topsoil (not containing invasive alien plant seed or rubble/waste) should be placed over the dumped bricks at the crossing and vegetated to cover the stabilised area adjacent to the crossing. A ground cover such as hottentot-fig (Carpobrotus edulis) or indigenous grass such as kweek could be planted in this area.*
- *Ongoing monitoring and management of the disturbed areas within the stream channel and riparian zone should be undertaken to ensure that the area stays clear of eroded areas and invasive alien plant growth.*
- *The stream channel upstream of the crossing should be kept clear of sediment, cobbles and woody debris that could impede flow through the structure during low and higher flow events.*
- *Control of alien invasive plant species should be undertaken with a specific focus on the invasive plants such Acacia mearnsii, Sesbania punicea and Pennisetum clandestinum. These species are known to do well in riparian and wet habitats. They should be controlled by manual removal or the application of appropriate herbicides. Manual removal should not be carried out by any machinery larger than a chainsaw. For additional information on alien vegetation clearing management visit the Working for Water website (http://www.dwaf.gov.za/wfw/Control/)*

5.9 Explain the risks associated with the no-go option for the MMP i.e. the risk of not undertaking the maintenance activities as stated in the MMP.

Should the maintenance activities not be undertaken as prescribed in this MMP could have the following results:

- *Extreme erosion - continual erosion without monitoring, prevention and mitigation could result in the altering of flow of the drainage line. It could also result in the washing away of the instream infrastructure should erosion not be mitigated or controlled to minimise the effects on the environment and downstream users.*
- *Siltation / build-up occurs over time within the river system. It is a maintenance requirement to remove siltation by cleaning the infrastructure placed within the drainage line to ensure that flow is not impacted / reduced. Blocked infrastructure could result in the washing away of the drainage line crossing or altering the flow of the drainage line which could result in the loss of crops located on the property.*
- *Encroachment and infestation of alien vegetation - All alien vegetation must be cleared from the property. Alien vegetation clearing to be followed up regularly to ensure that the infestation of alien vegetation is controlled. The encroachment of alien vegetation would result in the loss of indigenous vegetation through their resilience to out-compete naturally occurring vegetation.*

5.10 Reference must be made to any strategic plan where available, for example, a Catchment Management Strategy, with the objectives of the MMP shown to be in alignment with such plans.

The objectives of this MMP is aligned with the strategies as manifested in the Catchment Management Strategy for the Breede-Gouritz Water Management Area, July 2017.

The MMP speaks to the three overarching strategic areas governing the overall strategic management objective of the CMA described as follows:

Strategic Area 1: Protecting for People and Nature: focussing primarily on management of streamflow, water quality, habitat and riparian zones related to riverine, wetland, estuarine and groundwater resources, to maintain important ecosystem goods and services and biodiversity.

Strategic Area 2: Sharing for Equity and Development: focussing primarily on management of water use from surface and groundwater resources through the operation of infrastructure, in order to provide water for productive and social purposes within and outside of the WMA.

Strategic Area 3: Co-operating for Compliance and Resilience: focussing primarily on co-operation and management of institutional aspects to enable and facilitate the protection and sharing of water, including the more co-operative stakeholders, partnerships, information sharing, disaster risk and adaptation elements of the strategy.

This MMP therefore is well aligned to maintaining the objectives as manifested by the CMA.

6. METHOD STATEMENTS

6.1 The method statement must provide a step-by-step plan (which may include a schematic diagram etc.) to inform the responsible person(s) on the process and actions to take in a sequential and logical manner, which aims to reduce the impact of undertaking the activity within a reasonable timeframe and cost.

6.2 A method statement should be compiled for each individual activity given the likely specific circumstances and conditions of a site requiring maintenance. However, in situations whereby uniform conditions and circumstances are evident for multiple sites requiring the same type of activity, a method statement can be given for a specific type of activity to be undertaken at multiple sites given the aforementioned requirements.

6.3 The detail of the method statement will be assessed by the Department and other relevant regulatory authorities to ensure actions that are taken are such that they do not perpetuate increased incidences of erosion/deposition of material.

6.4 Time periods must be given within which the maintenance actions contemplated need to be implemented. An indication must be made whether maintenance actions will be repeated, e.g. clearing of silt/debris from under a bridge annually or after flood events.

6.5 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.

- 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 watercourse bed, 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 watercourse bed. 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

Activity A		
Description of maintenance activity	**Remove rubble and debris from the site and surrounds due to construction activities that were undertaken during the bridge construction.**	
Actions	The following actions are anticipated to be undertaken in order to carry out rubble and debris removal: • Removal of the building rubble and debris caused by previous construction activities should preferably be done by hand to minimise potential impact on the watercourse and surrounds, but it vehicles is require to assist the vehicles must be used in such a manner that it does not cause significant negative impacts on the watercourse i.e. the riverbed and banks must not be excavated mechanically.	
Impacts of actions	The following impacts are anticipated as a result of undertaking the maintenance activity: • Minor disturbance to the vegetation within the aquatic habitats as a result of rubble and debris removal. • Clearance of debris and rubble from the area and subsequent improvement in the ecological health where construction and rehabilitation has taken place within aquatic habitats	
Severity of impacts	Minor disturbance to the local vegetation	If all mitigation measures are implemented, the severity of the impact will be Negligible.
	Rubble and debris clearance	• N/A this impact is a POSITIVE
Measures to mitigate the severity of the impact	Minor disturbance to the local vegetation	Mitigation measures listed as follows: • Removal of the building rubble and debris caused by previous construction activities should preferably be done by hand to minimise potential impact on the watercourse and surrounds, but it vehicles is require to assist the vehicles must be used in such a manner that it does not cause significant negative impacts on the watercourse i.e. the riverbed and banks must not be excavated mechanically..
	Rubble and debris clearance	• N/A this impact is a POSITIVE
Remedial measures if mitigation measures are not implemented adequately on site.	There are no additional remedial mitigation measures other than those listed above. As such, all mitigation measures as outlined above should be implemented in full.	
Method of Access to the site	Access to the site could be gained using the existing access roads and on foot, where no roads exists.	
Time period of maintenance management activity	The maintenance management activity should be undertaken as soon as possible, but preferably within the dryer summer months when stream flow is at its lowest i.e.Jan-March. The maintenance management activity will last for approximately 7 days until all rubble and debris have been removed.	

Activity B		
Description of maintenance activity	**Removal of all alien vegetation from the river channel and associated areas that were constructed and rehabilitated.**	
Actions	The following actions are anticipated to be undertaken in order to carry out alien vegetation removal: • Removal of the invasive and alien plants should be according to the appropriate invasive alien plant clearing guidelines/methods provided by the Working for Water Programme.. • The stream banks should be cleared of exotic and in particular invasive alien plants. The invasive alien kikuyu grass in particular should be kept out of the riparian zone as it destabilises the river banks. It should be replaced by indigenous grasses such as kweek (Cynodon dactylon). This should be undertaken during the dry season but following rainfall events when the soil is moist. Weedy shrubs and small invasive alien saplings occurring along the stream banks within the disturbed area at the crossing should be hand pulled. Should this not be possible for some of the large plants, the plants should be sprayed with a foliar herbicide. Regular follow-up uprooting of new seedlings or follow-up herbicide spraying of coppicing stumps should be undertaken. • Control of alien invasive plant species should be undertaken with a specific focus on the invasive plants such Acacia mearnsii, Sesbania punicea and Pennisetum clandestinum. These species are known to do well in riparian and wet habitats. They should be controlled by manual removal or the application of appropriate herbicides. Manual removal should not be carried out by any machinery larger than a chainsaw. For additional information on alien vegetation clearing management visit the Working for Water website (http://www.dwaf.gov.za/wfw/Control/)	
Impacts of actions	The following impacts are anticipated as a result of undertaking the maintenance activity: • Minor disturbance to the local indigenous vegetation within the aquatic habitats as a result of removal of alien and invasive plants. • Clearance of alien and invasive vegetation from the area and subsequent improvement in the ecological health where construction and rehabilitation has taken place within aquatic habitats	
Severity of impacts	Minor disturbance to the local vegetation	If all mitigation measures are implemented, the severity of the impact will be Negligible.
	Alien vegetation clearance	• N/A this impact is a POSITIVE
Measures to mitigate the severity of the impact	Minor disturbance to the local vegetation	Mitigation measures listed as follows: • Refer to actions as listed above
	Alien vegetation clearance	• N/A this impact is a POSITIVE
Remedial measures if mitigation measures are not implemented adequately on site.	There are no additional remedial mitigation measures other than those listed above. As such, all action measures as outlined above should be implemented in full.	
Method of Access to the site	Access to the site could be gained using the access roads and selected demarcated areas.	

Time period of maintenance management activity	The maintenance management activity should be undertaken on a regular basis (at least 12 monthly) after the work is completed. This should be undertaken during the dry season but following rainfall events when the soil is moist. The maintenance management activity will last for approximately 1-2 days.

Activity C		
Description of maintenance activity	**Ongoing monitoring and management of the disturbed areas within the stream channel and riparian zone upstream and downstream should be undertaken to ensure that the area stays clear of eroded areas, sediment, cobbles, woody debris and invasive alien plant growth.**	
Actions	Undertake regular inspections to ensure that: • The river channel, drainage line crossing and associated areas do not become blocked with sediment, debris or nuisance vegetation growth; • No erosion of the upgraded drainage line crossing and associated areas occurs; • The areas remain clear of invasive alien plants and nuisance plant growth should it serve to block the channel or associated areas. • All waste within the drainage channels must be removed regularly. • Sandy areas and riffles must be maintained for frog habitat. • .All rubble and waste debris in the river channel should be removed out of the river channel and banks by hand. Particular attention should be given to upstream of the structure in the drainage line. • Clearing of nuisance growth of plants within the channel if necessary should also be undertaken by hand during the low/no flow period.	
Impacts of actions	The following impacts are anticipated as a result of undertaking the maintenance activity: • A negligible disturbance to the local vegetation as a result of the inspection and removal/rectification process.	
Severity of impacts	Minor disturbance to the local vegetation	If all mitigation measures are implemented, the severity of the impact will be Negligible.
Measures to mitigate the severity of the impact	Minor disturbance to the local vegetation	Mitigation measures are listed as follows: • Remove all accumulated sediment, cobble, waste and woody debris by hand which may cause flooding or lead to blockage of river flow. • Remove all alien vegetation as per the relevant method statement provided in the MMP. • Rectify erosion immediately and implement preventative measures if any is detected • The disturbance of aquatic habitats associated with the maintenance works should be limited (both temporal and spatial extents) as far as possible.

		• Care should be taken to minimize the sedimentation that would be caused downstream of the works. • Work should preferably be undertaken by hand with no machinery driven into aquatic habitats. • Activities associated with the maintenance work should be undertaken during the low flow period before the onset of the high flows. • Soil, debris and nuisance plant growth removed from the river channel and associated areas should not be dumped within the immediate areas surrounding the aquatic habitats or any indigenous vegetation removed from the site. Removed soil could be used to fill eroded areas
Remedial measures if mitigation measures are not implemented adequately on site.	There are no additional remedial mitigation measures other than those listed above. As such, all mitigation measures as outlined above should be implemented in full.	
Method of Access to the site	Access to the site could be gained using the access roads and selected demarcated areas.	
Time period of maintenance management activity	The maintenance management activity should be undertaken on a regular basis and in particular following significant rainfall events as well as prior to the onset of the winter rainfall period. This maintenance management activity will last for not more than 2 hours.	

Activity D	
Description of maintenance activity	**Erosion Protection and Storm Water Management along the drainage line, bridge crossing and the rehabilitated areas.**
Actions	The following actions are anticipated to be undertaken in order to prevent erosion and manage storm water runoff: • Storm water discharge from along the road should not be discharged into the stream at the structures as it is likely to result in erosion at the bridge. The road should be shaped to ensure that the concentration/intensity of runoff along the road is reduced to dissipate the energy and erosion potential of the flow from the road into the stream at the crossing and all stormwater channels should be kept clear of build-up and blockages to allow free flow of run-off water. • Regular monitoring of the effected site and surrounds for signs of erosion and if any is detected immediate rectification and preventative measures must be implemented according to rehabilitation methods as described in this report.
Impacts of actions	The following impacts are anticipated as a result of undertaking the maintenance activity: • Minor disturbance to the local indigenous vegetation as a result of maintaining storm water infrastructure • Temporary disturbance to the river banks, bed or surrounds due rehabilitation of eroded areas

Severity of impacts	Disturbance to the indigenous vegetation, river bed, banks and surrounds due to stormwater infrastructure maintenance and erosion rectification	If all mitigation measures are implemented, the severity of the impact will be Negligible.
Measures to mitigate the severity of the impact	Disturbance to the indigenous vegetation, river bed, banks and surrounds due to stormwater infrastructure maintenance and erosion rectification	Mitigation measures listed as follows: • The disturbance of aquatic habitats associated with the maintenance works should be limited (both temporal and spatial extents) as far as possible. • Work should preferably be undertaken by hand with no machinery driven into aquatic habitats. • Activities associated with the maintenance work should be undertaken during the low flow period before the onset of the high flows. • Storm water discharge from along the road should not be discharged into the stream at the structures as it is likely to result in erosion at the bridge. The road should be shaped to ensure that the concentration/intensity of runoff along the road is reduced to dissipate the energy and erosion potential of the flow from the road into the stream at the crossing and all stormwater channels should be kept clear of build-up and blockages to allow free flow of run-off water. • Regular monitoring of the effected site and surrounds for signs of erosion and if any is detected immediate rectification and preventative measures must be implemented according to rehabilitation methods as described in this report.
Remedial measures if mitigation measures are not implemented adequately on site.	There are no additional remedial mitigation measures other than those listed above. As such, all mitigation measures as outlined above should be implemented in full.	
Method of Access to the site	Access to the site could be gained using the access roads and selected demarcated areas.	
Time period of maintenance management activity	The maintenance management activity should be undertaken on a regular basis (at least 6 monthly). The maintenance management activity will last for approximately 1-2 days depending on type of rectification or preventative measures to be implemented.	

Activity E	
Description of	**Rehabilitation of disturbed drainage line area and surrounds**

maintenance activity		
Actions	The following actions are anticipated to be undertaken in order to rehabilitate disturbed sites and surrounds: • Immediately following the clearing of exotic and invasive alien plants, the banks should be revegetated with local indigenous riparian vegetation such as wild olive trees (Olea europaea subsp africana), Cape willows (Salix mucronata), wild almond (Brabejum stellatifolium), waterwitels (Brachylaena neriifolia), willow karee (Searsia augustifolia), lance-leaved myrtle (Metrosideros angustifolia), kruidjie-roer-my-nie (Melianthus major), fountain bush (Cliffortia strobilifera), water sedge (Isolepis prolifera), spiny rush (Juncus acutus), cobra lilies (Chasmanthes aethiopica), arum lilies and palmiet (Prionium serratum). • Clean topsoil (not containing invasive alien plant seed or rubble/waste) should be placed over the dumped bricks at the crossing and vegetated to cover the stabilised area adjacent to the crossing. A ground cover such as hottentot-fig (Carpobrotus edulis) or indigenous grass such as kweek could be planted in this area. • Should any additional disturbances occur due to maintenance activities and/or erosion etc. these areas must be rehabilitated with indigenous vegetation as described above.	
Impacts of actions	The following impacts are anticipated as a result of undertaking the maintenance activity: • Minor disturbance to the local indigenous vegetation as a result of rehabilitation activities • Temporary disturbance to the river banks, bed or surrounds due rehabilitation of eroded areas	
Severity of impacts	Disturbance to the indigenous vegetation, river bed, banks and surrounds due to rehabilitation activities.	If all mitigation measures are implemented, the severity of the impact will be Negligible.
Measures to mitigate the severity of the impact	Disturbance to the indigenous vegetation, river bed, banks and surrounds due to rehabilitation activities	Mitigation measures listed as follows: • The disturbance of aquatic habitats associated with the maintenance works should be limited (both temporal and spatial extents) as far as possible. • Work should preferably be undertaken by hand with no machinery driven into aquatic habitats. • Activities associated with the maintenance work should be undertaken during the low flow period before the onset of the high flows. • Immediately following the clearing of exotic and invasive alien plants, the banks should be revegetated with local indigenous riparian vegetation such as wild olive trees (Olea europaea subsp africana), Cape willows (Salix mucronata), wild almond (Brabejum stellatifolium), waterwitels (Brachylaena neriifolia), willow karee (Searsia augustifolia), lance-leaved myrtle (Metrosideros angustifolia), kruidjie-roer-my-nie (Melianthus major), fountain bush (Cliffortia strobilifera), water sedge (Isolepis prolifera), spiny rush (Juncus acutus), cobra lilies (Chasmanthes aethiopica), arum lilies and palmiet (Prionium serratum). • Clean topsoil (not containing invasive alien plant seed or rubble/waste) should be placed over the dumped bricks at the crossing and vegetated to cover the stabilised area adjacent to the crossing. A ground cover such as

		hottentot-fig (Carpobrotus edulis) or indigenous grass such as kweek could be planted in this area. • Should any additional disturbances occur due to maintenance activities and/or erosion etc. these areas must be rehabilitated with indigenous vegetation as described above.
Remedial measures if mitigation measures are not implemented adequately on site.	There are no additional remedial mitigation measures other than those listed above. As such, all mitigation measures as outlined above should be implemented in full.	
Method of Access to the site	Access to the site could be gained using the access roads and selected demarcated areas.	
Time period of maintenance management activity	Rehabilitation as proposed should be undertaken as soon as possible and immediately after alien vegetation clearance. The rehabilitation of the dumped brick areas must take place before the end of 2019. The maintenance management activity will be ongoing depending on success of the rehabilitation efforts.	

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.

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.

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:**	

DEFINITIONS

"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.

ACRONYMS

CBA	Critical Biodiversity Area
DEA&DP	Department of Environmental Affairs & Development Planning
DWS	Department of Water & Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
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)
PES	Present Ecological State
SANParks	South African National Parks Authority
WUA	Water Users Association
WULA	Water Use Licence Application

REFERENCE GUIDE FOR DRAFTING MMPs FOR A WATERCOURSE

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

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

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

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

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).

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 1st 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 1st 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 4th 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

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