



**Western Cape
Government**

Environmental Affairs and
Development Planning

Information Document for the Development of a Maintenance
Management Plan for a Watercourse

**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 expansion of the existing Dam 1 and Dam 2
(RE of P1 of the Farm 492 Melkhoutrivier), Malgas**

August 2025

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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.

- 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?	No
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?	Yes – Dam 1 and Dam 2
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?	All woody debris was removed from Dam 1 and Dam 2.

		Alien vegetation in drainage line.
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- 3) It is important to consider that the type of maintenance required will impact on the level of assessment needed in terms of the impact the activity will have on the system and how best to mitigate the impact. Types of maintenance can broadly be classified in the following categories, with recognition that maintenance activities vary across the rural and urban context:

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

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

- a. Watercourses experience a natural process of sedimentation and erosion, with varying rates depending on the geomorphology and the integrity of the land-uses within the catchment;
 - b. Manipulation of the watercourse results in increased erosion and/or deposition being experienced further downstream, perpetuating greater need for manipulation and more drastic and costly maintenance interventions;
 - c. Locally indigenous riparian and wetland vegetation assists in the stabilization of 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 because 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) ☐
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Name of person/authority who will undertake responsibility for the activity:	Melkhoutrivier Properties (Pty) Ltd		
Contact person (if other):	Booyesen, Jared Jakobus		
Postal address:	PO Box 979, Somerset West		
Telephone:	021 213 1219	Postal code:	7130
Fax:	n/a	Cell:	083 414 8468
Email:	hannes@jpbcivils.co.za; admin@jpbcivils.co.za		
Name of person who has prepared the MMP:	Amanda Fritz-Whyte and Lindsay Speirs (EAP) Input from Toni Belcher (Freshwater Ecological specialist) and Mr JJ Booyesen (landowner representative responsible for implementation of the MMP).		
Contact Person (if other):	n/a		
Postal address:	PO Box 1752, Hermanus		
Telephone:	028 312 1734	Postal code:	7200
Fax:	(086) 508 3249	Cell:	082 327 2100; 083 2898 727
E-mail:	amanda@phsconsulting.co.za ; ls@phsconsulting.co.za		
Expertise of EAP	Amanda: Twenty-four years' experience in Environmental Impact Assessments, Public Participation, auditing, water resource management, WULA applications and compilation of EMPr and MMP. Lindsay: 21 years of experience in Environmental Impact Assessments, Public Participation and compilation of EMPr and MMP.		
EAP Registrations/Associations	Amanda: IAIAAs, Pri.Sci.Nat (118385), WISA fellow; Registered EAP - 2019/367 (EAPASA) Lindsay: IAIAAs, Registered EAP – 2019/1470 (EAPASA)		
Name of landowner(s) on whose behalf the plan has been developed:	Mr JT Kemp		
Contact person(s):	Mr JJ Booyesen (083 414 8468)		

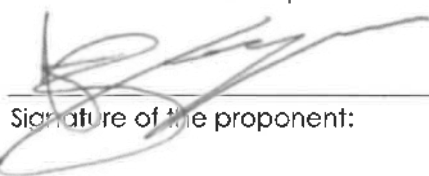
Postal address:	PO Box 287, Swellendam		
Telephone:	n/a	Postal code:	6740
Fax:	n/a	Cell:	083 479 9790
E-mail:	Happyhooves14@gmail.com		
Municipality for proposed project:	Swellendam Local Municipality		
Farm name(s), erf(s) and portion number(s) etc*:	RE of P1 of Farm 492		
Magisterial District or Town:	Swellendam		
Name(s) of watercourse(s) in question:	Drainage Line in which Dam 1 and Dam 2 resides.		

2. DECLARATION

THE PERSON THAT WILL BE UNDERTAKING THE MAINTENANCE

I JJ Booyesen, in my ~~personal capacity~~ or **duly authorised** (please circle the applicable option) by Melkhoutrivier Properties (Pty) Ltd (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).



20.08.2025

Signature of the proponent:

Date:

Melkhoutrivier Properties (Pty) Ltd

Name of institution/company:

3. BACKGROUND AND INTRODUCTION

This report aims to supply a Maintenance Management Plan for the unlawful expansion of Dam 1 and Dam 2 and the drainage line within which these dams are located on RE of P1 of Farm 492, Malgas. The site is situated approximately 2.5km southeast of Malgas adjacent to the Malgas Infanta Road Nr 268. (Refer Figure 1).

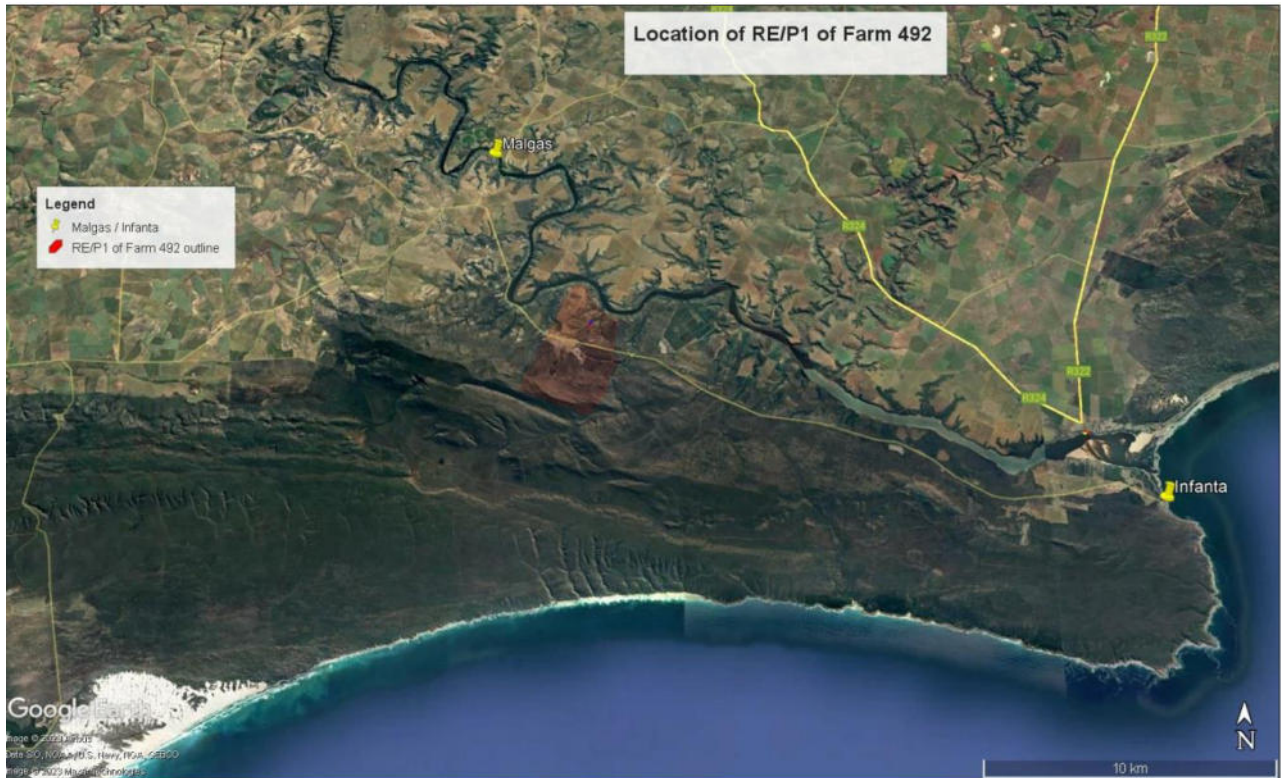


Figure 1: Location of site in proximity to Malgas

Dam 1 and Dam 2 have been in existence since approximately 1967 but were left to become overgrown and silted up in the years to follow. The dams were cleaned and expanded in 2021/2022, and a S24G process for this unlawful activity is in process. The capacity of the two dams is estimated at 1800m³ (Dam 1) and 315m³ (Dam 2).



Figure 2: Site map indicating the location of the drainage line, spring, and dams (Belcher 2023).

The purpose of the MMP is to ensure that the environmental impacts associated with the proposed activities during the maintenance phase are managed, mitigated and kept to a minimum. Possible maintenance is anticipated, associated risk identified, and these are mitigated/ managed to minimise the impact. It also provides clear guidance to the person responsible for the maintenance in future to avoid possible transgressions in terms of NEMA listed activities. In this way maintenance is also minimised and directional when it occurs.

NOTE: This MMP is applicable to Activity 19 of Listing Notice 1 where infilling or depositing of any material of more than 10m³ into, or the dredging, excavation, removal or moving of soil, sand, pebbles or rock of more than 10m³ from a watercourse occurs.

The MMP must form part of all contractual documents for maintenance projects in the future. The approval of the MMP by DEA&DP will require that the applicant/ landowner and all appointed contractors must comply with the requirements therein. Any amendments/ changes/ upgrades to the MMP required will require submission to and approval by DEA&DP.

This MMP is linked to a S24G application process for the following scope of works:

The proposed work which has not commenced:

Building of a lodge within the old quarry and natural area, in the northeastern section of the farm. The development footprint will be approximately 1292m².

And for work already completed on site includes:

- 1) Access road to dams (4 020m²)
- 2) Single track farm road (1500m²)

- 3) Cleaning and expansion of Dam 1 (4 343m²)
- 4) Cleaning and expansion of Dam 2 (1 685m²)
- 5) Construction of firebreak road / access road on eastern boundary (2011) (5 250m²)
- 6) Expansion of a firebreak road/ servitude road on eastern boundary (2022) (1 200m²)
- 7) Construction of 2 new landowner's cottages of 150m² each and a parking/ utility building of 160m² (460m²/disturbance footprint of 2700m²)
- 8) Installation of solar pump adjacent to the dam to pump water from the dam (less than 100m²)

MMP process project team:

Team member	Expertise	Role
Amanda Fritz-Whyte	EAP – MMP compilation	Compilation of MMP
T Belcher	Freshwater Ecologist	Compiled Freshwater Ecological report and detail for MMP
JJ Booysen	Landowner Representative responsible for implementation of MMP	Input into MMP

3.1 DEFINITIONS OF TERMS AND ACRONYMS

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.

"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:

BOCMA	Breede-Olifants Catchment Management Agency
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
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
PPP	Public Participation Process
REC	Recommended Ecological Category
RQO's	Resource Quality Objectives
SANParks	South African National Parks Authority
S24G	Section 24G application
WCBSP	Western Cape Biodiversity Spatial Plan
WUA	Water Users Association
WULA	Water Use Licence Application

4. ENGAGEMENT PROCESS

4.1 AUTHORITY ENGAGEMENT

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

- ☐ Department of Water and Sanitation
- X Catchment Management Agency (BOCMA)
- X CapeNature
- ☐ SANParks
- X Western Cape Department of Agriculture, Directorate: Landuse Management
- X Overberg District Municipality
- X Swellendam Local Municipality
- X Heritage Western Cape
- ☐ Department of Agriculture, Forestry and Fisheries
- X Department of Environmental Affairs & Development Planning
- X Other (please list):
 - a) Western Cape Transport and Public Works

The above authorities will be consulted for their input during the S24G process PPP and comments received will be captured in a Comments and Responses report to be submitted with the final application to DEA&DP. Amendments to the MMP will be included in the final MMP submitted for approval to DEA&DP.

4.2 PUBLIC PARTICIPATION

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	<i>Landowner included in list of IAPs</i>
(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	<i>Electronic communications to adjacent landowners</i>
(iii) Stakeholder meeting held for adjacent landowners, in which MMP is presented. This must include an opportunity for adjacent	Yes /	<i>Adjacent landowners to</i>

landowners to provide comment.	No	<i>provide comment</i>
(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	<i>Electronic communications will be sent to organs of state</i>
(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	<i>Electronic communications will be sent to organs of state</i>

5. DATA COLLECTION AND ASSESSMENT

Activities during Maintenance Phase:

- Removal of vegetation along the edge of the dams, around equipment or in drainage lines,
- Erosion control measures associated with the dams, infrastructure and areas exposed during vegetation removal,
- Alien invasive vegetation removal and debris removal from drainage line,
- General maintenance of the dam areas, infrastructure, and the road over the Dam 1 wall,
- Silt removal from the dams when needed and placement of this silt.

NOTE: The information provided in this section is largely provided by the Freshwater Ecological Study by T Belcher (June 2023), as provided in Appendix A of this report. The Risk Matrix for the S21(c) and (i) activities are provided in the Freshwater Ecological report and used for the water use applications and registrations associated with the maintenance activities. The Terms of Reference for the specialist appointment is also provided for in the Freshwater Ecological report attached as Appendix A.

REFER Appendix B with coordinates for all site(s) at which maintenance activities will take place.

Catchment context:

The property lies at the foot of the northern slopes of the Potberg, between the De Hoop Nature Reserve and the Breede River Estuary (Quaternary catchment H70H) and forms part of the Breede Water Management Area. Runoff from the study area itself drains into the Breede River. A minor tributary of the Breede Estuary drains the northern extent of the property. The larger Melkhout Tributary of the Breede Estuary lies to the East of the property and the Stoffels River to the West of the farm. Within the property, several smaller watercourses drain into the tributary which drains from the lower slope of Potberg in the South, towards the estuary in the North.

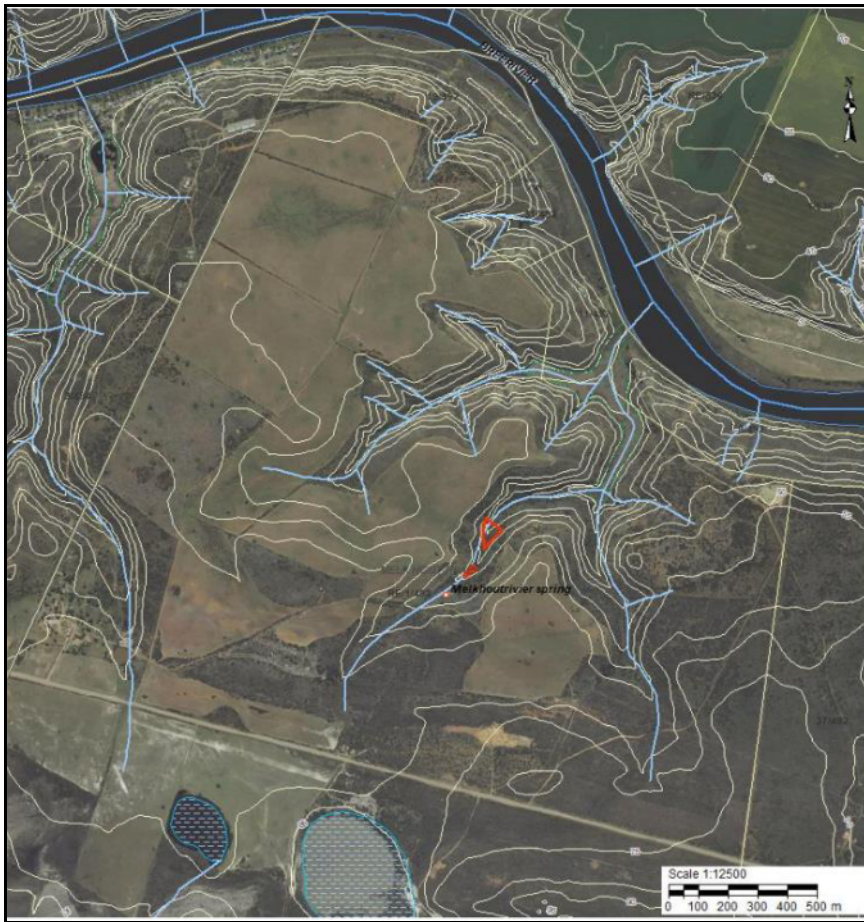


Figure 3: Topographical map of the study site and the surrounding area (*Belcher June 2023*) note the two dams are shown in red outline, drainage lines in light blue

ECOLOGICAL MANAGEMENT CATEGORY

According to the Freshwater Ecologist, in terms of the proposed water resource classes for the Breede Olifants Water Management Area, the Target Ecological Category for the downstream Breede River Estuary in DWS quaternary catchment H70H is a B category within a Class II (moderate protection and utilisation) integrated unit of analysis area (Lower Breede Renosterveld). The recommended ecological condition of the watercourse at the site is that it is maintained within the ecological category of B/C (largely natural / moderately modified). This could be achieved by removing the invasive alien vegetation within the corridor and ensuring the environmental flow requirements of the downstream aquatic ecosystem are maintained.

The study area is located largely within a wider area considered of Very High Aquatic Biodiversity Sensitivity. This is due to:

- Aquatic Critical Biodiversity Areas (CBAs) and Aquatic Ecological Support Areas (ESAs) in the lower Melkhout River and in the downstream Breede Estuary;
- Breede Estuary, which is mapped in the National Freshwater Ecosystem Priority Area (NFEPA) Wetlands layer as well as a National Wetland Map version 5 (NWM5) mapping, and

- Valley bottom and depression wetland mapping along the lower tributary in the NFEPA and NWM5 mapping.

REGIONAL AND NATIONAL CONSERVATION CONTEXT

In terms of the **2017 Western Cape Biodiversity Spatial Plan** the lower river system within the site is mapped primarily as an aquatic CBA, where there is a valley bottom wetland associated with the river (Refer Figure 4). Aquatic ESAs are also mapped along the larger river system and its tributaries, as the watercourses provide important ecological services as aquatic corridors within an increasingly transformed landscape. This area is also mapped as terrestrial CBAs that should not be developed, lost or impacted, as they support critical habitat and species, and appropriate land uses should be low impact and biodiversity sensitive. This aspect has been assessed by the botanical specialist for the project.



Figure 4: Western Cape Biodiversity Spatial Plan in the vicinity of the site (Belcher, June 2023)

In terms of the National Freshwater Ecosystem Priority Areas (FEPA) mapping, which provides strategic spatial priorities for conserving freshwater ecosystems in South Africa, the study area is within a FEPA River Sub-catchment associated with the lower Breede River (Refer Figure 5). The valley bottom wetlands mentioned above as well as the large depression wetlands (Soutpan and Varsvlei) that are upslope of the gravel road and the site are mapped as natural FEPA Wetlands and a Wetland Cluster in the case of the depression wetlands.

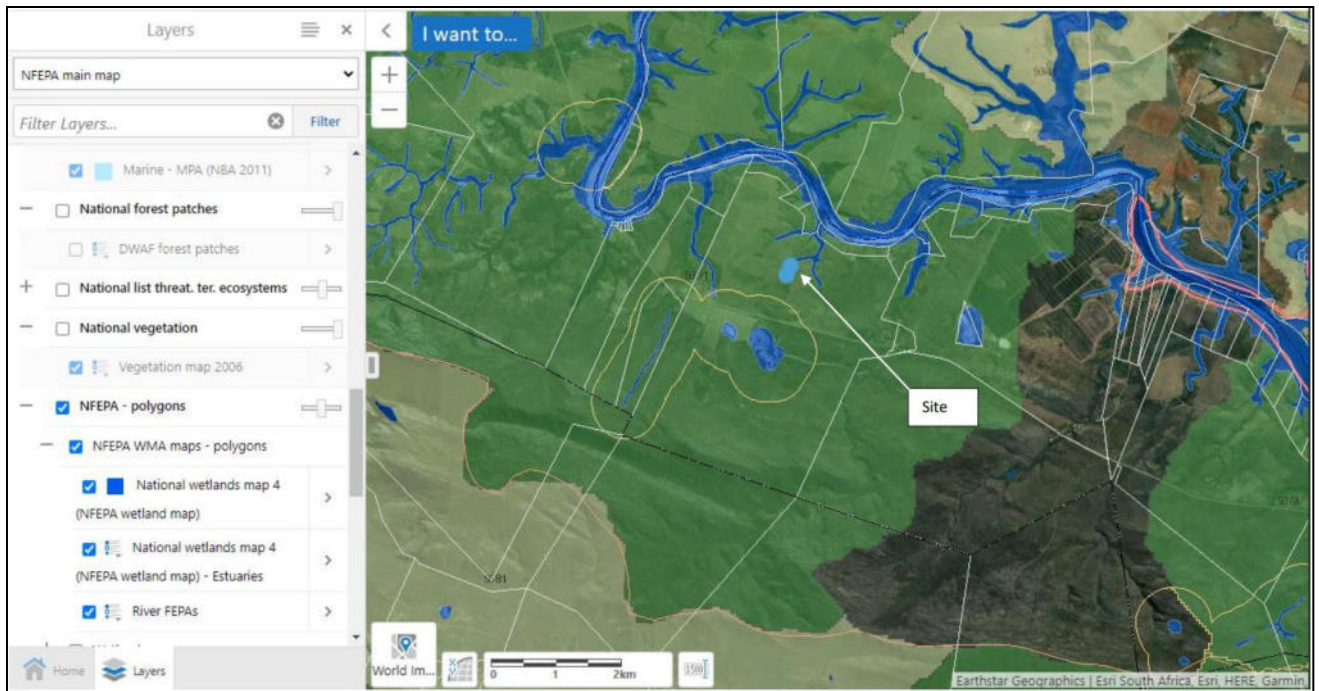


Figure 5: NFEPA mapping for the dam sites (blue dots) and surrounding area (Belcher, June 2023)

The wetlands referred to above are also mapped within the National Wetland Map version 5 (Refer Figure 6), which is the third mapping initiative that provides a national map of the extent and ecosystem types of the estuarine and inland wetlands.

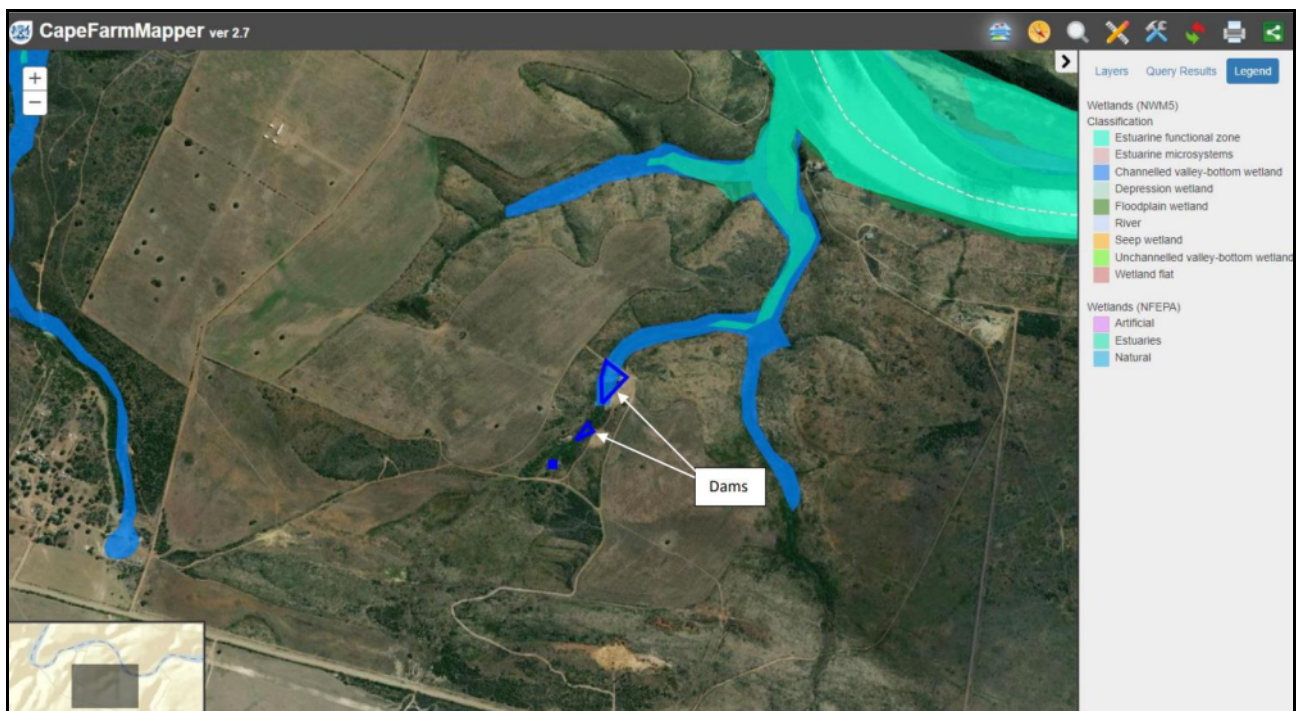


Figure 6: FEPA Wetlands and National Wetland Map for the site (Belcher, June 2023)

PRESENT ECOLOGICAL STATE

Evaluation of Index of Habitat Integrity (IHI) provides a measure of the degree to which a river has been modified from its natural state. This assessment was undertaken for the watercourse at the site by the Freshwater Ecologist.

The instream and riparian habitat integrity of the stream are considered to be moderately modified.

This is due to the impact of the invasion of alien vegetation in the riparian zone as well as the flow and habitat modification associated with the dams.

INSTREAM HABITAT INTEGRITY	Score	RIPARIAN ZONE HABITAT INTEGRITY	Score
Water Abstraction	8	Vegetation Removal	8
Flow Modification	10	Exotic Vegetation	11
Bed Modification	7	Bank Erosion	6
Channel Modification	5	Channel Modification	5
Water Quality	5	Water Abstraction	7
Inundation	8	Inundation	8
Exotic Macrophytes	5	Flow Modification	10
Exotic Fauna	0	Water Quality	5
Rubbish Dumping	1		
INTEGRITY CLASS	C	INTEGRITY CLASS	C

Table 2: Index of Habitat Integrity Assessment results and criteria assessed (*Belcher, June 2023*)

Ecological Importance and Sensitivity

The watercourse is considered of moderate ecological importance and sensitivity, with the wetland habitat associated with the watercourse considered sensitive to flow and water quality modification. The watercourse provides a link between the pan features on the foot of the Potberg as well as the De Hoop Nature Reserve, and the habitat is also likely to provide refuge to amphibians such as the clicking stream frog (*Strongylopus grayii*), Cape River frog (*Amietia fuscigula*), painted reed frog (*Hyperolius marmoratus*), southern dainty frog (*Cacosternum australis*) and raucous toad (*Sclerophrys capensis*).

All of these species are listed as being of 'Least Concern' on the IUCN Red List of Threatened Species.

It is unlikely that any fish species are present in the watercourse. Bird species such as cormorants (*Microcarbo africanus*), grey herons (*Ardea cinerea*), dabchicks (*Tachybaptus ruficollis*), and red bishops (*Euplectes orix*) were observed in the bulrushes on the dams. The result of the assessment is presented in Table 3.

Biotic Determinants	Score
Rare and endangered biota	1
Unique biota	1.5
Intolerant biota	1
Species/taxon richness	1
Aquatic Habitat Determinants	
Diversity of aquatic habitat types or features	2
Refuge value of habitat type	2
Sensitivity of habitat to flow changes	2.5
Sensitivity of flow related water quality changes	2.5
Migration route/corridor for instream and riparian biota	1.5
National parks, wilderness areas, Nature Reserves, Natural Heritage sites, Natural areas, PNEs	2
EIS CATEGORY	Moderate

Table 3: Results of the EIS assessment for the watercourse assessed (Belcher, June 2023)

RECOMMENDED ECOLOGICAL CATEGORY (REC)

The recommended ecological condition of the watercourse at the site is that it is maintained within the ecological category of B/C (largely natural/moderately modified). This could be achieved by removing the invasive alien vegetation within the corridor and ensuring the environmental flow requirements of the downstream aquatic ecosystem are maintained.

ENVIRONMENTAL WATER REQUIREMENTS

The watercourse in which Dam 1 and Dam 2 lie, is fed from surface water runoff as well as groundwater. The estimated runoff of the catchment is about 120 000m³/a with a groundwater contribution of more than 500m³/month. Given the high variability and uncertainty in the runoff, it is recommended that the environmental water requirement is rather expressed as a percentage of the flow where at least 25% of the flow entering the dams is allowed to continue downstream to feed the downstream wetland areas.

MITIGATION ACCORDING TO FRESHWATER ECOLOGICAL REPORT

- It is preferred that water be obtained from the surface water and out of the dams than drawing down the groundwater table through the abstraction of a borehole in the area. The contact springs on the property and surrounding areas are essential in supporting many groundwater-dependent ecosystems.
- The dams need not be removed but should be mitigated by implementing aquatic ecosystem related mitigation measures as outlined below.
- A programme should be put in place to remove the invasive alien trees along the riverbanks in this area. The main invasive alien vegetation currently occurring within the disturbed areas on the farm include Port Jackson willows (*Acacia saligna*), rooikrans (*Acacia cyclops*), black wattle (*Acacia mearnsii*), thistle (*Cirsium vulgare*) and wild tobacco (*Nicotiana glauca*).
- Indigenous vegetation observed along the watercourse that is suitable for revegetation of cleared riparian areas comprises *Searsia lucida*, *Gymnosporia buxifolia*, *Osteospermum moniliferum*, *Morella serrata*, *Ficinia nodosa*, *Cyperus textilis* and *Isolepis prolifera*.
- At least 25% of the flow in the watercourse that enters the dams should be allowed to continue downstream. This downstream flow requirement is important to maintain the downstream wetlands that provide habitat for amphibians and birdlife. The downstream flow requirement should largely be achieved passively by not drawing down the water level in the dam such that it drops below the lower culvert in the dam wall. The culverts should also be kept open and not blocked.

- Monitoring of the flow from the culverts in the lower dam wall should be recorded, as well as abstraction from the dam.
- It is recommended that there is an approved Maintenance Management Plan in place for the farm that would guide any maintenance activities undertaken in the watercourses.

RISKS ASSOCIATED WITH NOT IMPLEMENTING THE MMP:

The following risks were identified should the MMP not be implemented:

- 1) Uncoordinated maintenance on dams and infrastructure could lead to degradation of infrastructure over time and even failure through neglect.
- 2) Ad hoc clearing of drainage line could lead to siltation downstream and water quality impairment downstream.
- 3) Alien vegetation encroachment into sensitive areas due to non-removal of alien vegetation or ineffective methods.
- 4) Possible siltation of dams over time through not timeously removing the build-up of silt.
- 5) Water quality impacts caused by spillage from heavy vehicles accessing drainage line or dams for cleaning purposes.
- 6) Loss of riparian vegetation from heavy vehicles through movement within sensitive areas, outside of demarcated access routes.
- 7) Water quality impairment and siltation downstream if maintenance work conducted during wet season, or if silt removed is placed too close to drainage line.
- 8) Loss of channel or dam capacity if maintenance not carried out timeously.

6. METHOD STATEMENT

- 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.
 - 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.

MS 1: Disturbance of instream habitat and potentially increased risk of erosion as a result of periodic vegetation removal (alien vegetation removal included)

Description of activity	Disturbance of instream habitat and potentially increased risk of erosion because of periodic vegetation removal
Actions	The following general sequence of actions are required to remove and control alien vegetation: 1) Identify alien invasive species; 2) Cutting or pulling of target plants, or application of appropriate herbicide; 3) Treatment of plant remainders with appropriate herbicide or treatment of herbaceous plants that cannot be manually removed; 4) Follow-up work to prevent regrowth and the production of seed remaining in the soil; and 5) Revegetation of areas with indigenous vegetation where necessary.
Impacts of actions	Disturbance to aquatic habitat and vegetation and potential risk of erosion
Severity of impacts	If all mitigation measures are implemented the severity of the impact will be Negligible.
Measures to mitigate the severity of the impact	• Identify alien plants and trees to be removed; • Avoid trampling or clearing indigenous vegetation by using established paths where possible; • Indigenous vegetation observed along the watercourse that is suitable for revegetation of cleared riparian areas comprises <i>Searsia lucida</i>, <i>Gymnosporia buxifolia</i>, <i>Osteospermum moniliferum</i>, <i>Morella serrata</i>, <i>Ficinia nodosa</i>, <i>Cyprus textilis</i> and <i>Isolepis prolifera</i>. • Clear alien vegetation according to the methods and herbicides/biological control recommended on the Working for Water website: http://www.dwaf.gov.za/wfw/. Kikuyu should be poisoned with a foliar herbicide (e.g., Agil) during the summer growing season (before end March); • 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; • Remove cleared alien vegetation from the aquatic features and dispose of at a suitable point; • Where necessary revegetate cleared areas with suitable indigenous vegetation

	as identified by the Freshwater Ecologist. Planted areas may require irrigation and care for a period following planting. The irrigation requirements will be determined by the season in which planting takes place and the plant species planted. Planting of the new vegetation at the start of the wet season can assist in ensuring that the new vegetation is kept wet whilst establishing itself; and • Ongoing monitoring and clearing of regrowth of alien plants within these areas will be required. • Undertake dam maintenance during the dry summer months (October to end of April) and ensure that no excavations or infilling take place during the rainy winter period; • Restrict all stockpiling and works to the area within and immediately upslope and downslope of the dams. Stockpiles may be no closer than 30m from the edge of the watercourse.
Remedial measures	There are no additional remedial mitigation measures other than those listed above if implemented in full.
Method of Access	Existing access roads should be utilised as far as possible.
Period of activity	The period of the maintenance management activity will vary depending on the level of infestation. The activity will be ongoing.

MS 2: Sediment removal from dams

Description of activity	Removal of sediment which, if left unmanaged, would build up over time and reduce the storage capacity of the dams. The removal of sediment could not realistically be undertaken manually and would necessitate the operation of an excavator (or similar machinery) within and alongside the dams.
Actions	The following general sequence of actions are required: • Access dam basin with heavy vehicle and remove silt; • Place silt temporarily on area adjacent to dam; • Remove silt to area suitable for placement; • Rehabilitate area adjacent to dam from where heavy vehicles accessed the dam or where silt was placed.
Impacts of actions	The following impacts are anticipated because of undertaking the removal activity: 1) Sedimentation of downstream reaches if work is conducted during rainy season, 2) Maintenance activities within or in close proximity to dams can cause water quality impairment through operation of heavy vehicles (e.g., as result of fuel spills or leakage). 3) Loss of Biota- Loss of biota as a result of maintenance activities would be likely if large machinery were used for maintenance (e.g., for sediment removal) and if vehicles were required to access the site to remove materials (e.g., sediment). Faunal mortality and flora damage because of being crushed would be the main way in which biota loss would occur.
Severity of impacts	Removal of sediment - The temporary duration of the impact, limited scale and assumed low impact intensity results in the impact significance being rated as Low (-ve). If the excavation of sediment is limited to the dry summer months, then the impact significance rating would be reduced to Very Low (-ve). Water quality impairment- Such impacts would be of a temporary nature and would be localized, due to the containment effect of the dam walls. As such, the potential impact is rated of Low (-ve) significance if unmitigated and Very Low (-ve) if mitigated through restricting maintenance activities to the dry summer months and the implementation of standard construction management specifications. Biota Loss: Given the very infrequent requirement for the use of machinery and vehicles to undertake dam maintenance (assumed to be after 5 years or more), the

	impact has been rated as of a low intensity and short-term duration and as a result the impact significance is rated to be Low (-ve) without mitigation and Very low (-ve) with mitigation.
Measures to mitigate the severity of the impacts	<u>Essential mitigation measures:</u> • Undertake dam maintenance activities during the dry summer months only; • Ensure that all excavators and other vehicles remain outside of the drainage line and cross the drainage line only on the existing road; • Dispose of sediment outside of any watercourse or other areas of ecological sensitivity, and such that it will not wash into such watercourse; • Ensure appropriate maintenance and refuelling of machinery and the appropriate containment of hazardous substances and chemicals (if required) at least 50m from the nearest watercourse, on a bunded surface. • Restrict maintenance activities to outside of bird breeding season (November to end of March) • Restrict vehicle and machinery operation to previously disturbed areas and ensure that material stockpiles are set-back from the watercourse by a minimum distance of 30m.
Remedial measures	There are no additional remedial mitigation measures other than those listed above if implemented in full.
Method of Access	Existing access roads should be utilised as far as possible.
Period of activity	The period of the maintenance management activity will vary depending on amount and frequency of siltation. The activity will be ongoing.

MONITORING AND REPORTING

The Applicant is responsible for overseeing the monitoring of maintenance and management activities under this MMP. The table on the following page lists ongoing monitoring that would take place to pro-actively address any potential impacts to the ecological integrity of the aquatic ecosystems associated with the MMP as well as the specific monitoring required during MMP activities.

All activities undertaken **outside the scope** of the MMP, will be subject to Section 24(F) of NEMA and appropriate enforcement and compliance requirements will follow.

Form A must be completed by the relevant person(s) **before** maintenance activities are undertaken and Form B **after** a maintenance activity has been completed.

The Applicant is responsible to ensure a record of all maintenance activities is recorded as per Form A & B. Copies of Form A and B must also be sent to the Provincial Department of Agriculture, Directorate: Sustainable Resource Management.

DEA&DP 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 after** 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). The type and reference code relates to 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:				

Appendix B: MMP maintenance coordinates

Description	Co-ordinates		Comment
Dam 1	34°21'33.44"S	20°37'45.15"E	Middle of dam
Dam 2	34°21'37.67"S	20°37'42.76"E	Middle of dam
Road across Dam 1 wall	34°21'31.93"S	20°37'44.71"E	Western start point of dam wall
	34°21'33.16"S	20°37'46.85"E	Eastern end point of dam wall
Pumpstation with solar panels	34°21'32.10"S	20°37'44.25"E	Pumpstation point
Drainage Line within which the dams are located	34°21'57.69"S	20°37'24.82"E	Start point near road
	34°21'28.92"S	20°37'59.96"E	Point where another drainage line joins
	34°21'15.97"S	20°38'0.59"E	End point near boundary
Spring	34°21'40.26"S	20°37'39.46"E	Approx. point