

Draft Maintenance Management Plan - Kayamandi Northern Extension Water Supply Pump Station, Pipelines and a Reservoir, Western Cape


DEADP reference: 16/3/3/1/B4/22/1070/20

Stellenbosch Local Municipality

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List of Acronyms

Acronym	Description
BA	Basic Assessment
CA	Competent Authority
CBA	Critical Biodiversity Area
DWAF	Department of Water Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIS	Environmental Importance and Sensitivity
EMPr	Environmental Management Programme
EMS	Environmental Management System
EO	Environmental Officer
GNR	General Notice Regulations
HGM	Hydrogeomorphic
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
HWC	Heritage Western Cape
I&APs	Interested and Affected Party(s)
IMS	Integrated Management System
ISO	International Organization for Standardization
ISP	Internal Strategic Perspective
IUCN	International Union for Conservation of Nature
LM	Local Municipality
NCR	Non-Conformance Report
NEM: BA	National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)
NEM: WA	National Environmental Management: Waste Act (No. 59 of 2008)
NEMA	National Environmental Management Act (Act No. 107 of 1998) as amended
NHRA	National Heritage Resources Act (No. 25 of 1999)
NWA	National Water Act (No. 36 of 1998)
MMP	Maintenance Management Plan
MW	Megwatt
OHSA	Occupational Health and Safety Act (Act No. 85 of 1993)
PES	Present Ecological State
PPE	Personal Protective Equipment
QA/QC	Quality Assurance and Quality Control
QMS	Quality Management System
SAHRA	South African Heritage Resources Agency
SAICE	South African Institution of Civil Engineering
SANAS	South African National Accreditation System
SANS	South African National Standards
SAPS	South African Police Services
SDF	Spatial Development Framework
SHEQ	Safety, Health, Environment and Quality
SLM	Stellenbosch Municipality
WC: DEA&DP	Western Cape Provincial Department of Environmental Affairs and Development Planning
WMA	Water Management Area

Glossary of Technical Terms

Term	Description
Clearing	Means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified.
Construction camp	Is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management.
Contractor	The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.
Hazardous Substances	Is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;
Heritage Remains	Heritage remains include: archaeological remains (including fossil bones and fossil shells); coins; indigenous and/or colonial ceramics; any articles of value or antiquity; marine shell heaps; stone artefacts and bone remains; structures and other built features; rock art and rock engravings; shipwrecks; and graves or unmarked human burials.
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
Method Statement	<p>Means a written submission by the Contractor to the Project Manager in response to this EMP or a request by the Project Manager and ECO. The Method Statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification.</p> <p>The Method Statement shall cover applicable details with regard to:</p> <ol style="list-style-type: none"> i. Construction procedures; ii. Plant, materials and equipment to be used; iii. Transporting the equipment to and from site; iv. How the plant/ material/ equipment will be moved while on site; v. How and where the plant/ material/ equipment will be stored; vi. The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur; vii. Timing and location of activities; viii. Compliance/ non-compliance; and ix. Any other information deemed necessary by the Project Manager.
Slope	Means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units.
Solid waste	Means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).
Spoil	Means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works.
Topsoil	Means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil.
Works	Means the Works to be executed in terms of the Contract.

1. Introduction

This document serves as the Maintenance Management Plan (MMP) for the Kayamandi Northern Extension Water Supply project (Ref: 16/3/3/1/B4/22/1070/20) situated within Stellenbosch, Western Cape. The MMP is informed by the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) and standards and requirements defined by competent authority, the Department of Environmental Affairs and Development Planning of the Western Cape Government (DEADP) (Refer to Appendix G).

1.1 Background

The Stellenbosch Local Municipality (SLM) is undertaking planning and infrastructure provision for the establishment of the Kayamandi Bulk Water Supply Pipe and Reservoir (the Project). The project entails the construction of a 75 to 154 litre per second (ℓ/s) pump station and a 10 megalitre (1600m²) reservoir as well as the construction of two (2) pipelines namely a rising main pipeline and 560m pipeline. The pipelines will traverse an unchanneled valley bottom wetland (referred to as HGM 3 in Appendix B-Wetland Baseline and Impact Assessment) and project footprint will require clearance of an area of more than 300 m² indigenous vegetation within a Conservation Biodiversity Area (CBA). As a result, Activity 19 of Listing Notice 1 (LN1), Government Notice Regulation (GNR) 983, and Activity 12 of Listing Notice 3 (LN3), Government Notice Regulation (GNR) 985 of the EIA Regulations, 2014 (as amended), respectively, have been included as part of the triggered activities.

The project will may also require maintenance works undertaken by the proponent (SLM) which may once again trigger Activity 19 (LN1) and Activity 12 (LN3). These future maintenance activities would typically require an additional Environmental Authorisation (EA) to be in place prior to the undertaking of such future maintenance activities, unless they are included in an approved MMP.

Therefore, and as suggested by the DEADP, the proponent has appointed AECOM to develop an MMP that covers future maintenance activities that will trigger Activity 19 (LN1) and Activity 12 (LN3) for approval as part of the current Basic Assessment Process (BA) being undertaken for the full Project.

Activities that might trigger Activity 19 (LN1) or Activity (LN3), requiring excavation with a water course or clearance of > 300 m² of vegetation, respectively, include repair of burst pipes or pipes damaged through vandalism.

The Department of Water and Sanitation risk rating, conducted as part of the Wetland Baseline and Impact Assessment, 2019 (refer to Appendix B), was determined to be low and it was thus recommended by the aquatic specialist that a General Authorisations for Section 21 activities (c) and (i) of the National Water Act 1998 (Act 36 of 1998) would be applicable.

1.2 Motivation

The SLM's IDP and Spatial Development Framework (SDF) have identified the need for housing opportunities for the Kayamandi area. Kayamandi is currently subjected to pressure for outward expansion, mainly from new residents moving to Stellenbosch from elsewhere. This migration of people causes increased pressure on municipal services such as water, sanitation and electricity supply. Stellenbosch currently receives two thirds of its water from the City of Cape Town (CoCT) sources, which includes the Theewaterskloof Dam, the Wemmershoek Dam and the Steenbras Dam.

Therefore, to supply Kayamandi, as well as the future housing and development schemes in Kayamandi with sufficient water, it is proposed that the municipality upgrade its bulk water supply network. The proposed Project is thus critical for development and continued security of water supply within the Stellenbosch area.

Additionally, the Berg Water Management Area (WMA) Internal Strategic Perspective (ISP) (completed in 2004) serves to guide the strategic management of water resources in this WMA until such time as a Catchment Management Agency is in place and has developed its Catchment Management Strategy. The Berg WMA ISP includes a Strategic Objective that relates to the maintenance activities being assessed, which states: The Western Cape System Model of the water supply components must be updated regularly.

1.3 Project Location and Geographic Scope for the MMP

The study area falls within the SLM which is a Category B1 municipality situated in the Western Cape Province and forms part of the Winelands District Municipality. The proposed Project is located approximately 3 km north of the western edge of the town of Stellenbosch town, Western Cape province. The Project is adjacent to the existing Papegaaiberg, Kleinvallei and Kayamandi reservoirs (Figure 1-1).

Maintenance activities that trigger Activity 19 (LN1) (excavation in a watercourse) would only be applicable at the proposed only wetland crossing located at 33°55'10.02"S 18°50'8.07"E whilst maintenance activities that trigger Activity 12 (LN3) (clearance of > 300 m² of indigenous vegetation) is limited to the Papegaaiberg Nature Reserve.

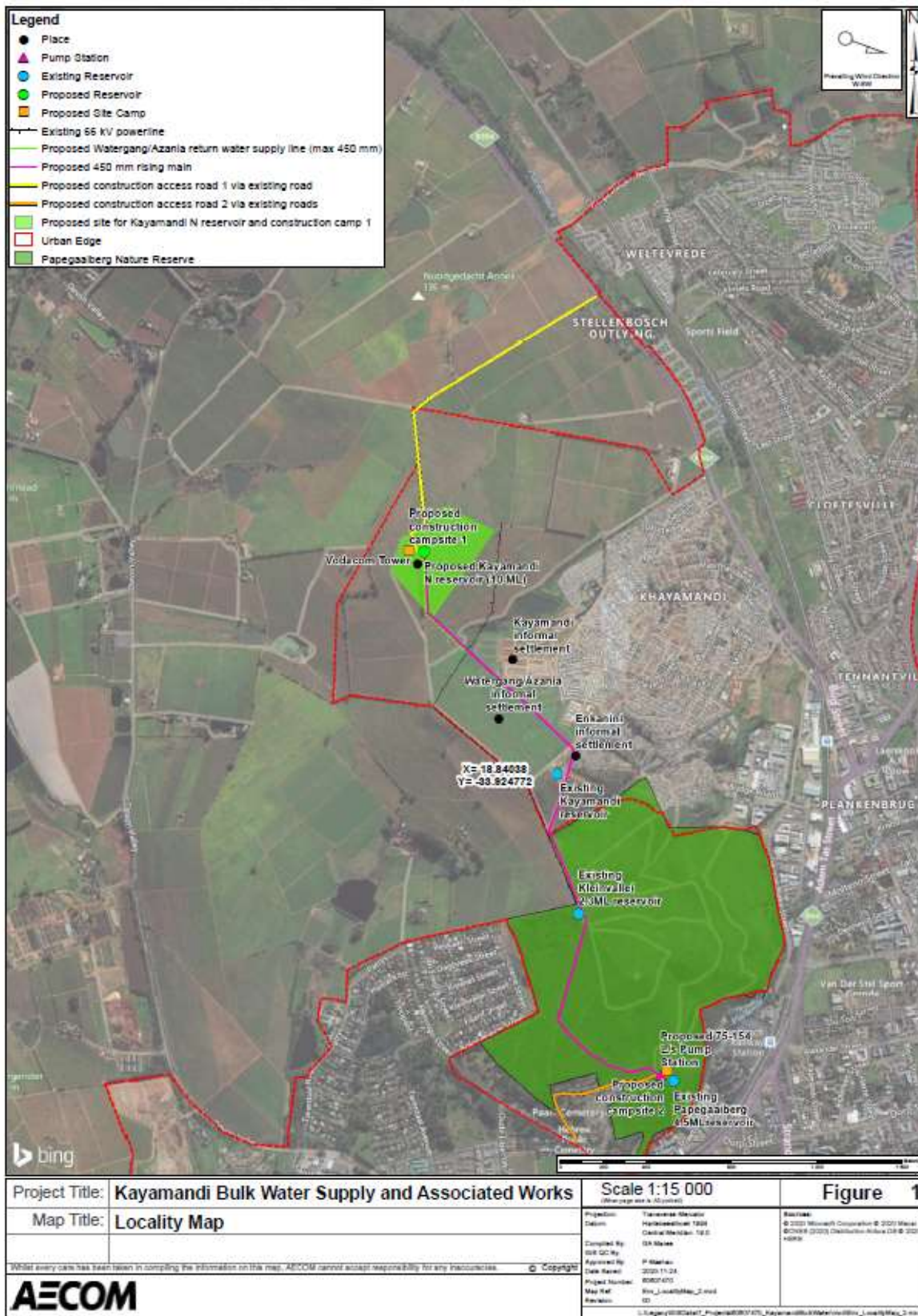


Figure 1-1: Locality Map

1.4 Project Details

The proposed Project entails the construction of:

- 75 to 154 litre per second (ℓ/s) pump station located at the existing Papegaaiberg Reservoir and pump station site;
- with associated infrastructure associated infrastructure such as valve chambers and flow meters;
- including two (2) back-up diesel generators, each with a generation capacity of 0.8 megawatt (MW), collectively generating approximately 1.6 MW;
- installation of above-ground diesel storage of approximately 12 m³ to fuel the back-up generators;
- pump station footprint, including generators, diesel storage and associate infrastructure estimated at 3000 m²; and
- associated with the pump station will be a satellite construction camp of an estimated 400 m².

Rising main pipeline:

- with associated scour chambers (5-7 small chambers, each estimated 10 m²);
- to take water from proposed new pump station at the existing Papegaaiberg Reservoir to the proposed new Kayamandi Northern Reservoir;
- approximately 3 200 m in length;
- internal diameter of estimated 450 mm;
- footprint of the infrastructure is estimated at 3200 m x 1 m = 3 200 m²;
- footprint of construction (trench) will be 6-6.5 m wide (20 800 m²); and
- a proposed pipeline corridor of 50 m wide will be applied for along the length of the pipeline route, within which a 15-20 m construction corridor is required (64 000 m²), except:
 - Wetland crossing – within the wetland buffer area (15 m on either side of the delineated wetland) no application corridor applies. A construction corridor of a maximum of 6.5 m is applied for;
 - Azania/Watergang informal settlement - pipeline passes between the newly established Watergang / Azania Township and the Kayamandi Township, where space is limited to the jeep track and walking path through this area – the pipeline will be placed in the available space (roughly a 6.5 m width), and
 - Enkanini informal settlement (East of existing Kayamandi Reservoir) – the pipeline route runs southwards and follows the gravel road past the eastern side of the existing Kayamandi Reservoir. In this section, a small informal settlement has established on both sides of this road and available space is <6m wide, constricting to 3-4m wide in places due to dwellings/structures encroaching on the road. A minimum construction corridor of 6.5m is required. The SLM Housing Department is in the process of engaging resident with regards to relocating identified structures in the area to make way for the proposed pipeline. A social impact assessment has been done to assess the potential impact of the pipeline on the structures and people that may need to be relocated. Once complete a 6-6.5m pipeline servitude will need to be kept clear of development, however there will be no surface footprint, except for markers and scour chambers and a construction scar that will fade over time.

560 m pipeline:

- from the proposed Kayamandi Northern reservoir back along the rising main pipeline to Azania / Watergang (i.e. in parallel to the northern section, thus total length of the pipeline footprint is still 3200 m);
- internal diameter of estimated 450 mm or less; and
- footprint is included in that of the rising main.

Kayamandi Northern reservoir:

- with associated infrastructure such as valve chambers and flow meters,
- that will be fed from the existing Papegaaiberg Reservoir via the proposed new rising main,
- with 10 mega litre (Mℓ) maximum capacity,
- with a 1600 m² footprint
- including a construction camp with laydown area of a maximum of 4000 m² footprint,
- the proposed reservoir and campsite will be located within the surveyed area for the proposed reservoir site, as indicated in the Locality Map (Figure 1-1)

The total footprint of the development is 30 000 m² (pump station) plus 20 800 m² (pipeline) plus 1600 m² (reservoir) which is equal to 25 400 m² (2.5 ha). Access will be via existing tar and dust roads.

The pipeline will further cross a watercourse, for which a General Authorisation will be required in terms of the National Water Act (Act 36 of 1998), which will be applied for from the Department of Water and Sanitation (DWS).

[**Note** the original reservoir size was 11 Mℓ but was reduced to 10 Mℓ. Additionally, the original scope proposal included an 8 ℓ/s pump station with associated pipework to serve area S82 (also known as Azania or Watergang), with approximate pumping head of 45 m, which has since been removed from the proposed project currently being applied for. The specialist studies still refer to the 10 Mℓ volume and the 8 ℓ/s pump station however these changes do not represent material/substantive changes to the project impact nor the specialist assessments, which are still valid for the updated project description].

1.5 Responsible Parties for Implementation of the MMP

The SLM will be ultimately responsible for the implementation of the MMP, which should be implemented in terms of the Environmental Authorisation (EA) and Final (Approved) EMPr for the proposed development, once approved by DEADP. Authority in this regard is delegated to:

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The SLM will be able to delegate activities to enable it to comply with this responsibility to parties as described in the Final EMPr (refer to the Draft EMPr that is currently out for public review, which is included as Appendix H in the Draft BA Report Version 2 documentation).

1.6 Legislation

In terms of the proposed maintenance activities, Activity 19 of Listing Notice 1 (GNR 983) and Activity 12 of Listing Notice 3 (GNR 985) of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) will be triggered. However, since these activities fall under 'maintenance activities', provision has been made in the EIA Regulations, 2014 (as amended) to exclude an additional EIA to be undertaken if an approved MMP from the competent authority is in place. Table 1-1 indicates the triggered listed activities and applicable of the MMP.

Table 1-1: EIA Regulations Listing Notices 1 and 3 of 2014 (as amended) in relation the MMP

Listed Activity No(s):	Listing Notice 1 (GN No. R. 983)	Portion of the development that relates to the applicable maintenance activities as per the project description.
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where	The proposed pipeline route will cross a wetland. The construction footprint of the pipeline in the wetland will be 325 m ² and the depth of construction will be approximately 2 m deep (thus 650 m ³). Thus, more than 10 m ³ of soil/sand might be excavated from the watercourse during construction.

	<p>such infilling, depositing, dredging, excavation, removal or moving—</p> <ol style="list-style-type: none"> will occur behind a development setback; is for maintenance purposes undertaken in accordance with a maintenance management plan; falls within the ambit of activity 21 in this Notice, in which case that activity applies; occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies. 	<p>During maintenance activities (of the pipeline crossing a wetland), 10 m³ of soil/sand may be excavated from the watercourse, most of which will then be replaced after repairs are undertaken to fill the excavation.</p>
Listed Activity No(s):	Listing Notice 3 (GN No. R. 985)	Portion of the development that relates to the applicable maintenance activities as per the project description.
12	<p>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 maintenance management plan.</p> <p>i. Western Cape</p> <ol style="list-style-type: none"> Within any CR 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 CR in the National Spatial Biodiversity Assessment 2004; Within critical biodiversity areas identified in bioregional plans. 	<p>Clearance of an area of more than 300 m² indigenous vegetation will be required for the proposed Kayamandi Bulk Water Project. Indigenous vegetation is present in the Papegaaiberg Nature Reserve. Outside of the reserve, the vegetation is degraded.</p> <p>There are two (2) vegetation types within the Papegaaiberg Nature Reserve and have been classified as follows:</p> <ul style="list-style-type: none"> CR – Swartland Granite Renosterveld (FRg2) (Government Gazette, 2011)¹. CR – Swartland Shale Renosterveld (FRs9) (Government Gazette, 2011). <p>Project maintenance activities within the reserve that might trigger this activity would be the replacement of pipeline due to burst or vandalism.</p>

Note, the following activities for which an MMP can also be applied, are not applicable to the proposed Project:

- Activity 27, Listing Notice 1 – the project is a linear activity and falls within the exemption for this activity
- Activity 15, Listing Notice 2 - the project is a linear activity and falls within the exemption for this activity
- Activity 24, Listing Notice 2 – not extracting peat

Thus, this MMP is only applicable to the above activities, as per the description given. It is the responsibility of the SLM to assess all future maintenance activities to determine if they are covered by this MMP or need any additional environmental authorisation.

¹ Government Gazette. (2011). *National list of ecosystems that are threatened and in need of protection*. Pretoria: Department of Environmental Affairs.

2. Maintenance Activities

Activities that might trigger Activity 19 (LN1) or Activity (LN3), requiring excavation with a water course or clearance of > 300 m² of vegetation, respectively, **including repair of burst pipes or pipes damaged through vandalism.**

There may be other maintenance activities anticipated as part of regular maintenance during the operational phase of the project, **that do not trigger Activity 19 (LN1) or Activity 12 (LN3).** It is the responsibility of the SLM to assess all future maintenance activities to determine if they are covered by this MMP or need any additional environmental authorisation.

Furthermore, these activities fall within Category B of the maintenance categories stipulated in the DEADP information document for the development of a MMP for a watercourse. Please refer to Table 2-1.

Table 2-1: Maintenance categories

Maintenance Category	Types of maintenance activities
Category B: Emergency repairs – urgent action required to manage risk and damage to assets	<ul style="list-style-type: none"> • Repair of burst pipes • Repairs of pipeline sections damaged by vandalism (or accidental damage)

All maintenance activities that are undertaken in line with this MMP must also comply with the EA and EMP_r (refer to Appendix F) develop for the Project.

3. Stakeholder Engagement Process

As described in Section 1, this MMP has been developed for the Proposed project within the formal application for EA, which is currently underway. The EA process required a BA process to be conducted to assess the potential impacts of the full project, including Activity 19 (LN1) and Activity 12 (LN2) (refer to Draft BA Report Version 2 for the full project description and associated NEMA EIA Listed Activities).

As part of the BA process, the original of the Draft BA Report (i.e. Version 1) was made available for public review and comment, as per the requirement of the EIA Regulations (2014, as amended) for 'Public Participation'. This was done from 10 Dec 2020 to 1 Feb 2021 and included notification of the availability of the Draft BA Report through public notifications (newspaper adverts and site notices), as well as Interested and Affected Parties (I&APs) directly affected and registered on the Projects list of I&APs. This commenting period allowed I&AP's to review the report and associated information as well as provide comments, concerns and suggestions for consideration before preparing the Final BA Report that needs to be submitted to DEADP, for consideration towards EA.

As part of the Public Participation Process (PPP), the DEADP was also provided the Draft BA Report, and one of their recommendations during this period was to include an MMP to authorise and guide future maintenance measures that may trigger Activity 19 (LN1) and Activity 12 (LN3). Thus, this MMP has been prepared in response to the DEADPs recommendation.

In line with the NEMA EIA regulations, Draft BA Reports that are substantively changed after a first round of PPP, must once again be made available to registered I&APs to enable them to see the changes to the documents and provide any further comments related to these changes. As per this requirement, a second (revised) version (Draft BA Report i.e. Version 2) was made available for public review for a further 30 days, and this MMP formed part of the associated documentation made available for review, as required by the NEMA EIA regulations.

Registered I&APs who were provided with the Draft BA Report Version 2 for review include:

- Owners of the land (in this case all and is owned by the SLM);
- Adjacent Landowners within 100 m of the proposed project activities (indirectly affected);
- Provincial and Local Government;
- Ward councillors, community leaders and ratepayer's association; and
- Occupiers, organisations and individuals who have been registered on the I&AP database.

Full details on the PPP Process followed is documented in the Draft BA Report Version 2, which includes the PPP Plan, I&AP database, Proof of Notifications and Comments and Response Report.

Comments received on the Draft BA Report Version 2, inclusive of the MMP, on conclusion of the 30-day PPP will be considered and included in the Final BA Report that will be submitted to DEADP.

4. Wetland Baseline and Impact Assessment

4.1 Terms of Reference and Results

A wetland baseline and impact assessment was undertaken by a Wetland & Aquatic Ecologist from The Biodiversity Company during December 2019, which included the following terms of reference:

- The delineation, classification and assessment of wetlands within 500 m of the project area;
- Implementation of WET-Health for determination of Present Ecological State (PES) of wetland areas;
- Implementation of WET-EcoServices for determination of ecosystem services for the wetland areas;
- Determine the Environmental Importance and Sensitivity (EIS) of wetland systems;
- Conduct risk assessments relevant to the proposed activity;
- Recommendations relevant to associated impacts; and
- Report compilation detailing the baseline findings.

The Wetland Baseline and Impact Assessment has been included under Appendix B.

The wetland areas were delineated in accordance with the Department of Water Affairs and Forestry (DWAf) (now named the Department of Water and Sanitation (DWS)) (2005) guidelines and assessed all identified water courses within 500 m of the proposed pipeline route. A total of three (3) hydrogeomorphic (HGM) units were also identified, delineated and assessed for the project. A series of drainage lines were also identified and delineated for this assessment. The proposed pipeline will however traverse only a single HGM unit, namely HGM 3. The remaining two (2) HGM units will not be traversed and are at a lower risk due to the distance of these systems from the proposed infrastructure (> 100 m). The maintenance activities will only impact the wetland crossing at HGM 3 (Figure 4-2). A photographic record, including a timeseries of the affected wetland, HGM 3, is included in Figure 4-3 and Figure 4-4.

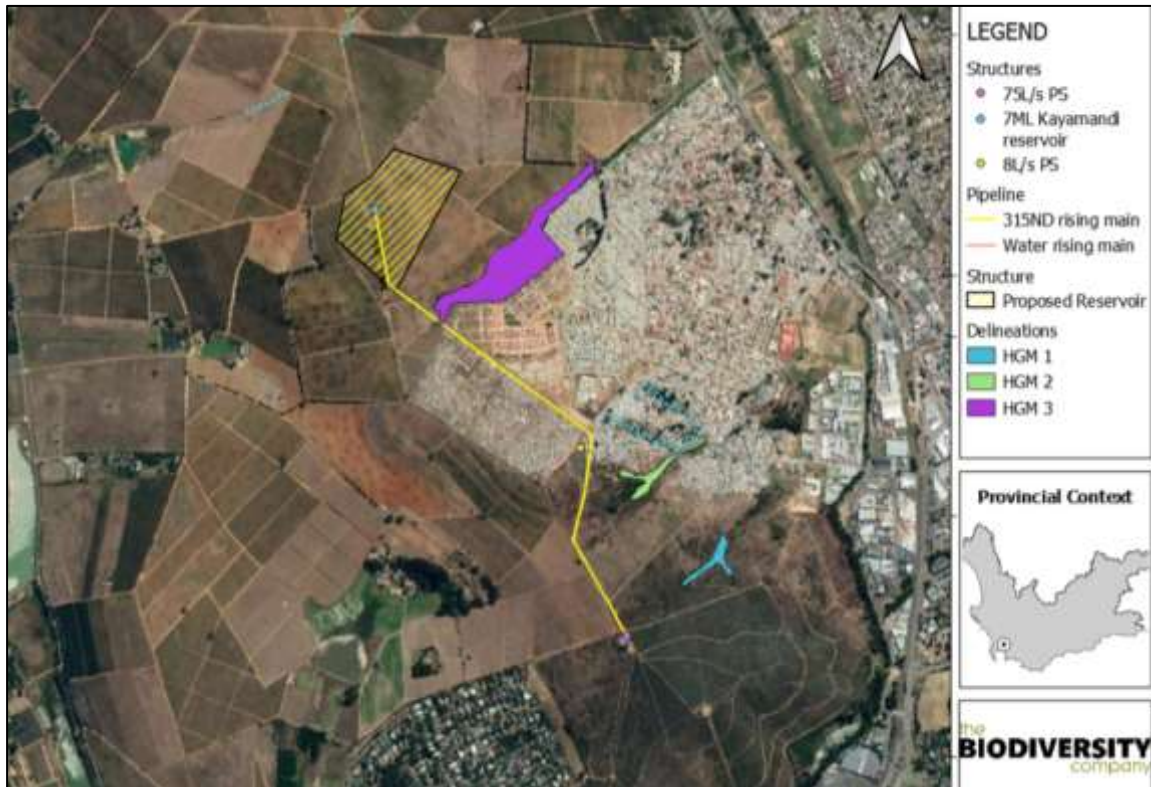


Figure 4-1: Delineation of wetlands within Kayamandi Bulk Water Project area

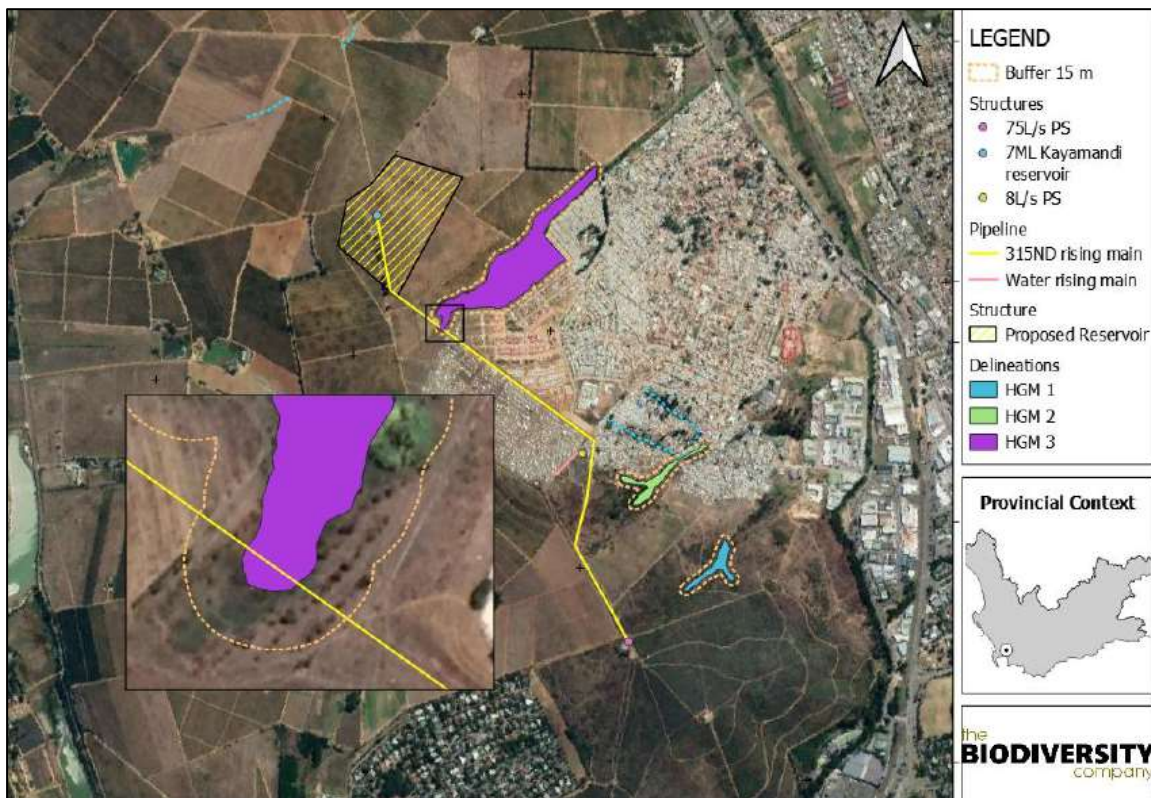


Figure 4-2: Delineation of wetlands within Kayamandi Bulk Water Project area



Figure 4-3: Photographic record of HGM 3

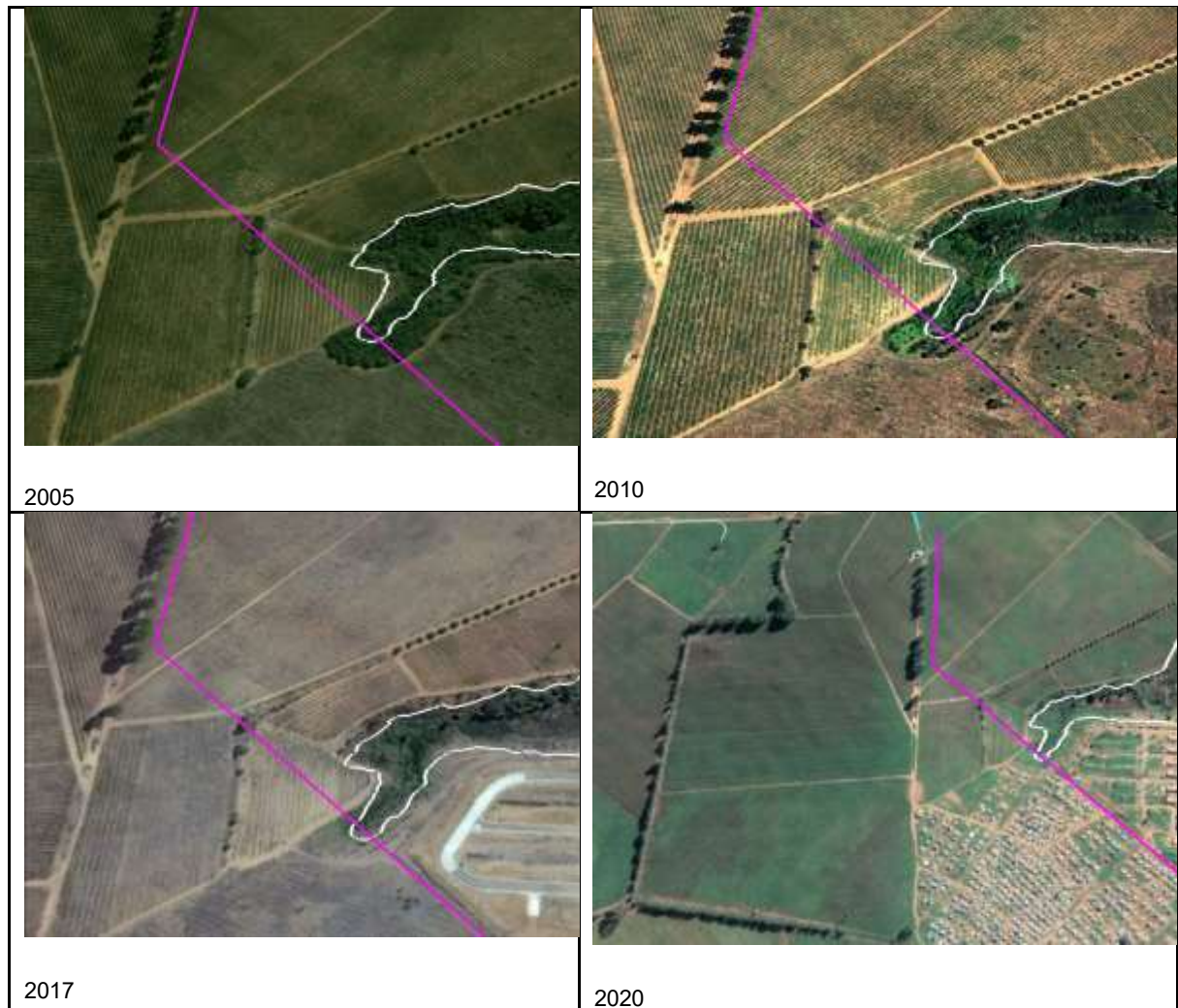


Figure 4-4: Timeseries aerial imagery of HGM 3 for 2005, 2010, 2017 and 2020

Key findings of the Wetland Baseline and Impact Assessment in Appendix B are summarised as follows:

- Refer to Section 8.6 for the assessment of ecosystem services, which rates HGM 3 as “**Intermediate**”.
- Refer to Section 8.7 for the assessment of PES, which rates HGM 3 as “**Largely Modified**”.
- Refer to Section 8.8 for the assessment of EIS, which rates HGM 3 as “**Moderate**”.
- Refer to Section 9.1 of for the DWS Risk Assessment which considers the impact/threat of potential future maintenance activities under the operational phase assessment. The report indicates that during the operational phase “*very little impacts are expected for infrastructure, with increased run-off, traffic and the odd (occasional) maintenance work potentially affecting sensitive receptors*”. Potential Impacts that were considered for the project in general, including maintenance activities, are indicated below. The overall risk rating in terms of DWS’ Risk Matrix for construction and operational aspects as ‘**Low**’ risk after mitigation.
 - Impeding streamflow;
 - Siltation of wetlands;
 - Erosion of channels and wetlands;
 - Loss of vegetation;
 - Direct loss of wetlands areas;
 - Decrease in functionality;
 - Additional water quality impairment;
 - Compaction;
 - Altering hydromorphic soils;
 - Drainage patterns change; and
 - Altering overland flow characteristics
- Refer to Section 3 of Appendix E – Aquatic Rehabilitation Plan for maintenance management activities and associated mitigation measures.

4.2 Management Objective

The management required objective/description, according to the DWS Risk assessment Matrix for a “Low Risk” (low impact) activities is as follows:

“Acceptable risk as is or consider requirement for mitigation. Impact to watercourse and resource quality small and easily mitigating.”

Note that the DWS management objective/description for low risk activities also indicates that wetlands may be excluded from the management description, however due to the low rating and short duration of the impact, this management objective was deemed appropriate.

The Wetland Baseline and Impact Assessment (Appendix B) thus provides mitigation measures for potential impacts specific to the wetland crossing applicable to both construction and maintenance activities. In addition to this, and as per request from Cape Nature, an Aquatic Rehabilitation Plan has also been prepared for construction and maintenance activities associated with the proposed pipeline route through HGM 3. Refer to the Draft EMP, which is included as Appendix F.

5. Botanical Baseline and Impact Assessment

5.1 Terms of Reference and Results

A Botanical Impact Assessment was undertaken by a botanical specialist from NCC Environmental Services during March 2020, which included the compilation of a specialist botanical impact assessment report for the portion of the project that traverses the Papegaaiberg Nature Reserve. The specific terms of reference followed for this botanical impact assessment are as follows:

- Identify and describe biodiversity patterns at community and ecosystem level (main vegetation type², plant communities in the vicinity and threatened/vulnerable ecosystems), at species level (species of conservation concern³, presence of alien species⁴) and in terms of significant landscape features;
- Assess the local and regional importance of the vegetation communities and plant species within the affected areas based on the relevant biodiversity plans, bioregional planning documents and Environmental Management Frameworks;
- Identify any areas not suitable for development or related activities (No-Go Areas) and related buffers that should be observed.

The Botanical Impact Assessment has been included under Appendix C.

A portion of the proposed pipeline falls within the Papegaaiberg Nature Reserve which comprises indigenous vegetation known as Swartland Granite Renosterveld and Swartland Shale Renosterveld. However, the pipeline corridor only falls within the Swartland Granite Renosterveld spatial extent as per the South African National Biodiversity Institute 2018 Vegetation Map of South Africa, Lesotho and Swaziland.

Any maintenance activities which could potentially trigger Activity 12 (LN3) will only impact a portion of Swartland Granite Renosterveld, and would only likely occur should a section of pipeline need to be removed and replaced due to burst or vandalism.

Key findings of the Botanical Impact Assessment and Botanical Rehabilitation Plan are summarised as follows:

- Refer to Section 8 of Appendix C – Botanical Impact Assessment for a description of the historical and current state of vegetation on site;
- Refer to Section 9 of Appendix C – Botanical Impact Assessment which details an assessment of the associated impacts to the Papegaaiberg Nature Reserve; and
- Refer to Section 12 of Appendix D – Botanical Rehabilitation Plan for the associated mitigation measures.

² South Africa's immensely rich flora is reflected in a wide range of vegetation types. These vegetation types have been identified and mapped, with 440 types described (for South Africa, Lesotho and Swaziland, and the sub-Antarctic Prince Edward Islands).

³ The Red List of South African Plants (Raimondo et al. 2009) has assessed all plant species in South Africa, and all indigenous species are now technically Red Data Book species, and thus it is preferable to use the term Species of Conservation Concern to refer to species that are listed as either Threatened or Rare.

⁴ According latest NEMBA classifications in accordance with the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) Alien and Invasive Species Lists, 2016

6. The No-Go Option

The status quo implies that the proposed development (installation of the pipeline) is not undertaken. The potential benefits and / or positive impacts associated with undertaking the project would not be realised. Therefore, the future water supply network to supply Kayamandi, as well as the future housing and development schemes in Kayamandi is compromised in relation to the integrity and longevity of the infrastructure. The proposed maintenance activities are part of the operational activities of the proposed development which is critical for the development and continued security of water supply within the Stellenbosch area. Not undertaking the proposed development (and any associated maintenance activities) would also mean the project will be unable to provide a safe and reliable means of accessible water supply as well as the social and economic benefits associated with the project. Refer to the Draft BA Report for more information.

7. Mitigation Measures

A Draft EMPr was prepared as part of the Basic Assessment process and has been included in Draft BA Report Version 2 documentation currently out for public review. This includes mitigation measures for general construction activities, as well as the specific mitigation measures prescribed by the Wetland Baseline and Impact assessment (refer to Appendix B) and the Botanical Impact Assessment (refer to Appendix C). Additionally, the Vegetation Rehabilitation and Aquatic Rehabilitation Plans were prepared for construction and maintenance related activities under Appendix C and Appendix D, respectively. Mitigation measures specific to Activity 12 (LN1) and Activity 19 (LN2) triggered by the removal and replacement of pipeline at the wetland or in the Papegaaiberg Nature Reserve are included in the Draft EMPr (Appendix E).

It should be noted however that additional activities associated with removal and replacement of sections of pipeline (which cannot be determined at this point) will still need to comply with the Final (approved) EMPr. Thus, when implementing any maintenance activities, an Independent Environmental Control Officer (ECO) should be consulted to determine the activities in the Final EMPr that will be applicable to the maintenance proposed and set up an auditing checklist to monitor the SLM and Contractor's compliance with the MMP, EA and Final EMPr. The Independent ECO will need to be appointed by the Stellenbosch Municipality or the Consulting Engineer to audit maintenance activities. Refer to Section 9 for more on Monitoring and Auditing Requirements.

8. Method Statements

Method statements for the maintenance activities identified (i.e. replacement of burst or vandalised/damaged pipeline infrastructure that specifically trigger Activity 12 (LN1) and Activity 19 (LN3) cannot be developed at this point in time as maintenance work will only be needed if a pipeline needs replacing and not as a regular maintenance measure. Method statements are usually developed by the contractor that is appointed to undertake the work.

Note, however, that instead of Final Method Statements being presented at this point, guidelines have been developed as part Draft EMPr (included in the Draft BA Report) and these are the same guidelines that must be followed for and the MMP. Please refer to Draft EMPr Appendix E – Method Statements, which includes a guideline of how method statements should be developed by the contractor/ responsible parties.

Before starting maintenance activities, the SLM or Contractor will need to prepare Method Statements for its activities, which will need to be reviewed by the ECO. NOTE: Method statement will also need to be reviewed by DEADP, SLM Environmental Department and CapeNature.

9. Monitoring and Auditing

Monitoring and Auditing (including reporting) of compliance with the MMP should comply with Sections 6 to 9 of the Draft EMPr. The Draft EMPr requires weekly monitoring by an Environmental Officer appointed by the contractor, as well as monthly auditing by an Independent ECO appointed by SLM of the Contracting in Engineer.

Please refer to Sections 6 to 9 of the Draft EMP. The Draft EMP for detail.

The DEADP requirements for monitoring for an MMP also includes the following Forms A and B, which are to be considered as a guideline in terms of the type of information required by the competent authority. 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. The landowner is responsible to ensure a record of all maintenance activities is recorded as per Form A & B below. Form A and B must also be sent to the Provincial Department of Agriculture, Directorate: Sustainable Resource Management.

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 (m²)	Volume of material (m³)
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 (m²)	Volume of material (m³)
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 A Proof of Stakeholder Engagement

NOTE: Refer to the Draft Basic Assessment (BA) Report Version 2 and BA report Appendix F for information on Stakeholder engagement and Public Participation. The Draft BA Report Version 2, inclusive of the MMP, has been made available for review for 30-days. When (if) Environmental Authorisation (EA) is given for this project, this Appendix should refer to the Final EMPr for how engagement (including notification of activities and receiving and dealing with complaints) must be undertaken during implementation.

Appendix B Wetland Baseline and Impact Assessment

Refer to Draft Basic Assessment Version 2, Appendix G for the Wetland Baseline and Impact Assessment. When (if) the project is approved the Wetland Baseline and Impact Assessment should be appended here.

Appendix C Botanical Impact Assessment

Refer to Draft Basic Assessment Version 2, Appendix G for the Botanical Impact Assessment. When (if) the project is approved the Botanical Impact Assessment should be appended here.

Appendix D Botanical Rehabilitation Plan

Refer to Draft Basic Assessment Version 2, Appendix I for the Botanical Rehabilitation Plan. When (if) the project is approved the Botanical Rehabilitation Plan should be appended here.

Appendix E Aquatic Rehabilitation Plan

Refer to Draft Basic Assessment Version 2, Appendix I for the Aquatic Rehabilitation Plan. When (if) the project is approved the Aquatic Rehabilitation Plan should be appended here.

Appendix F Environmental Management Programme

Refer to the Draft BA Report Version 2 Appendix H for the Draft EMP. When (if) Environmental Authorisation (EA) has been issued for the proposed development, the Final EMP should be appended here.

The final EMP should include the EA and Aquatic Rehabilitation and Vegetation Rehabilitation Plans.

Appendix G Appendix F- DEADP Guidline for MMP for water course

