



ENVIRONMENTAL MAINTENANCE MANAGEMENT PROGRAMME

for

UPGRADE OF FEROX STREET STORMWATER INFRASTRUCTURE

on

Erf 7284, Dana Bay

In terms of the

National Environmental Management Act (Act No. 107 of
1998, as amended) & 2014 Environmental Impact
Regulations (as amended)

Prepared for Applicant: Mossel Bay Municipality

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PURPOSE OF THIS REPORT:

Adoption of Environmental Maintenance Management Programme

APPLICANT:

Mossel Bay Municipality

CAPE EAPRAC REFERENCE NO:

MOS731/03

SUBMISSION DATE

14 September 2023

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Submitted for:

Stakeholder Review & Comment

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ORDER OF REPORT

Environmental Maintenance Management Programme

- Appendix 1** : Locality, Zoning & Biodiversity Plans
- Appendix 2** : Site Development Plan / Infrastructure Layout
- Appendix 3** :
➤ Construction Method Statement (V3 Consulting)
➤ Engineering Report (V3 Consulting)
- Appendix 4** :
➤ Aquatic Maintenance Management Plan / Report (Confluent Environmental)
➤ General Authorisation from Water Authority (DWS)
➤ Water Use Registration from DWS
- Appendix 5** : Terrestrial Biodiversity Compliance Statement (Hoare, 2022)
- Appendix 6** : Heritage Statement (Perception Planning, 2022)
- Appendix 7** :
➤ Screening Tool Report (DFFE)
➤ Site Sensitivity Verification Report (Cape EAPrac)
- Appendix 8** : EAP Company Profile

TABLE OF CONTENTS

1. INTRODUCTION	1
1.1 Proposed activity.....	2
1.2 Need for a EMMPr	7
1.3 Purpose of the EMMPr.....	9
1.4 Status of the EMMPr.....	9
1.5 Amendment of the EMMPr.....	9
2 EMMPR PHASING	10
2.1 Pre-Construction Phase	10
2.2 Construction Phase.....	10
2.3 Operational / maintenance Phase	10
2.4 Closure and Decommissioning Phase.....	10
3 LEGISLATIVE REQUIREMENTS.....	11
3.1 National Environmental Management Act (NEMA, Act 107 of 1998)	11
3.2 Environment Conservation Act, 1989 (ECA)	12
3.3 National Environmental Management: Biodiversity Act (NEM:BA) (Act 10 of 2004)	12
3.4 National Water Act (NWA, Act 36 of 1998).....	15
3.5 National Forest Act (Act 84 of 1998)	15
3.6 National Veld & Forest Fire Act (Act 101 of 1998)	16
3.7 National Heritage Resources Act (Act 25 of 1999)	17
3.8 National Waste Management Strategy.....	17
3.9 Occupational Health and Safety act (Act 85 of 1993)	18
4 ENVIRONMENTAL IMPACTS & MITIGATIONS	20
4.1 Terrestrial Compliance Statement (Dr David Hoare):	20
4.2 Aquatic / freshwater Report (Dr James Dabrowski).....	21
4.3 Mitigations.....	22
5 RESPONSIBILITIES	25
5.1 Holder of the EMMPr Approval.....	26
5.2 Engineers and Contractors	26
5.3 Ecological Control Officer (ECO).....	27
6 PRE-CONSTRUCTION DESIGN CONSIDERATIONS	28
6.1 Stormwater Management Preparation.....	28
6.2 Gabion Design	29
7 CONSTRUCTION CONSIDERATIONS.....	29
7.6 Stockpile Management	32
7.8 Minimising Erosion.....	35

7.9	Rehabilitation & Botanical Management.....	36
7.10	Fauna Management.....	37
8	OPERATIONAL/MAINTENANCE PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS.....	40
8.1	Stormwater Management.....	40
8.2	Rehabilitation.....	40
9	MONITORING, MAINTENANCE & VALIDTY OF EMMPR.....	41
9.1	Monitoring.....	41
9.2	Post - Construction Maintenance & Validityof EMMPr.....	41
9.3	Monitoring Timeframes Summary.....	42
9.4	Environmental Audits.....	42
9.5	Audit Reports Frequencies & Format.....	42
9.6	EXTERNAL AUDIT REQUIREMENTS.....	43
10	DECOMMISSIONING PHASE.....	45
11	NON-COMPLIANCE.....	45
11.1	Procedures.....	45
12	REFERENCES.....	47
13	DECLARATION.....	48

FIGURES

Figure 1:	Location Plan with Erf 7284 indicated as red polygon.	1
Figure 2:	Erf 7284 located between Ferox Street & Nerina Road, Dana Bay.....	1
Figure 3:	Failed gabion structure & bypass erosion gully undercutting eastern bank.....	2
Figure 4:	Failing bank stabilisation structure - view up & down eastern bank.	2
Figure 5:	Ferox Street culvert & erosion gully below it.....	3
Figure 6:	View below Ferox culvert where gabions to be removed & stepped spillway to be constructed.	3
Figure 7:	Downstream natural channel, above Nerina Road culvert.	4
Figure 8:	Upgraded stormwater infrastructure within watercourse channel (V3 Consulting). 5	
Figure 9:	Stepped Conveyance Channel Plan & Cross Section.	6
Figure 10:	Cross sections of stabilisation measures on eastern bank adjacent to chute.....	6
Figure 11:	View downstream onto eastern bank. Note thick Kukuyu grass.....	13
Figure 12:	View of Thicket vegetation on western bank.....	13
Figure 13:	View of downstream channel & pioneer Fynbos on bank.	13
Figure 14:	Nerina Road culvert choked by thick grass.....	13
Figure 15:	Bushbuck noted on western bank of Erf 7284.	14
Figure 16:	Family of Bushbuck noted below Nerina Road.	14
Figure 17:	Milkwood tree on lower channel to be trimmed.....	16
Figure 18:	Yellowwood tree on western boundary.....	16
Figure 19:	Real Yellowwood on Nerina Road reserve.	16
Figure 20:	Aerial image depicting downstream wetland seeps (Confluent, 2022).....	21
Figure 21:	Responsibilities.	25

TABLES

Table 1: Checklist in terms of Appendix 4 of Regulation 982 of 2014 EIA Regulations	viii
Table 2: Determination for the Need for a EMMPr (DEA&DP, 2022).	7
Table 3: Categorisation of Maintenance Activities (DEA&DP, 2022):	8
Table 4: The Listing Activities associated with the proposed activity.....	11
Table 5: List of Mitigation Measures & Associated Management Requirements	23
Table 6: Monitoring Timeframe Summary	42
Table 7: Audit Reports Timeframe Summary	43
Table 8: Environmental Audit Requirements.....	44

ENVIRONMENTAL MANAGEMENT & MAINTENANCE PROGRAMME REQUIREMENTS

Appendix 4 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Management & Maintenance Programme (EMMP). The checklist below serves as a summary of how these requirements were incorporated into this EMMP.

Table 1: Checklist in terms of Appendix 4 of Regulation 982 of 2014 EIA Regulations

Requirement	Description
Details and expertise of the EAP who prepared the EMMP; including curriculum vitae.	Ms Louise-Mari van Zyl for Cape Environmental Assessment Practitioners. See Appendix 4.
A detailed description of the aspects of the activity that are covered by the EMMP as identified by the project description.	<u>Section 1</u>
A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that must be avoided, including buffers	Appendix 1 & 2
A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all the phases of the development including – (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and where applicable post closure; and (v) Where relevant, operation activities.	<u>Section 4</u> – Environmental Impacts & Mitigations <u>Section 5</u> - Responsibilities <u>Section 6</u> – Pre-Construction Design <u>Section 7</u> – Construction Phase <u>Section 8</u> – Operation Phase
A description and identification of impact management outcomes required for the aspects contemplated above.	<u>Section 4</u>
A description of the proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be achieved and must, where applicable include actions to – (i) Avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practises; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.	<u>Section 4</u> <u>Section 6</u> <u>Section 7</u> <u>Section 8</u>
The method of monitoring the implementation of the impact management actions contemplated above.	<u>Section 9</u> <u>Section 11</u>
The frequency of monitoring the implementation of the impact management actions contemplated above.	<u>Section 9</u>

Requirement	Description
An indication of the persons who will be responsible for the implementation of the impact management actions.	<u>Section 5</u>
The time periods within which the impact management actions must be implemented.	Not Applicable
The mechanism for monitoring compliance with the impact management actions.	<u>Section 9</u>
A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	<u>Section 9</u>
An environmental awareness plan describing the manner in which – (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	<u>Section 5</u> <u>Section 6</u> <u>Section 7</u> <u>Section 8</u> <u>Section 9</u>
Any specific information that may be required by the competent authority.	Not Applicable.

ABBREVIATIONS AND ACRONYMS

BSP	Biodiversity Sector Plan - to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity.
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983) - provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
CBA	Critical Biodiversity Area - areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan.
DFFE	National Department of Forestry, Fisheries & the Environment – the national authority responsible for the sustainable environmental management and integrated planning.
DEA&DP	Department of Environmental Affairs and Development Planning – the provincial authority for sustainable environmental management and integrated development planning. The competent authority is this case.
DWS	Department of Water & Sanitation Affairs – National authority mandated to enforce the National Water Act (NWA).
EA	Environmental Authorisation – Authorisation obtained on completion of an Environmental Impact Assessment in terms of the National Environmental Management Act (NEMA).
ECA	Environment Conservation Act, 1989 - To provide for the effective protection and controlled utilization of the environment and for matters incidental thereto.
ECO	Ecological Control Officer – independent site agent appointed to observe and enforce the implementation of environmental policies and principles on a development site.
EIA	Environmental Impact Assessment - a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
EMMPr	Environmental Management Programme – an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented and that positive benefits of the projects are enhanced.
GIS	Geographic Information System - system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.
GPS	Global Positioning System - a radio navigation system that allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world.
NEMA	National Environmental Management Act (Act 107 of 1998, as amended) – national legislation that provides principles for decision-making on matters that affect the environment.

- NEM:BA** National Environmental Management: Biodiversity Act (Act No.10 of 2004) – provides for the management and conservation of South African biodiversity within the framework of NEMA.
- NFA** National Forestry Act (Act No.84 of 1998) - provides for the protection of forests, as well as specific tree species within South Africa.
- NSBA** National Spatial Biodiversity Assessment – aims to assess the state of South Africa’s biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors.
- NWA** National Water Act (Act No.36 of 1998) - ensures that South Africa's water resources are protected, used and managed.

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).

"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.

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

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

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

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

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

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

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

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

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

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

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

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

“**Watercourse**” means:

(a) a river or spring;

(b) a natural channel in which water flows regularly or intermittently;

(c) a wetland, lake or dam into which, or from which, water flows; and

any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and a reference to a watercourse includes, where relevant, its bed and banks.

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

1. INTRODUCTION

Cape Environmental Assessment Practitioners (Pty) Ltd. (Cape EAPrac) was appointed by the Applicant, Mossel Bay Municipality to develop an Environmental Maintenance Management Programme (EMMP) which will be used to promote and ensure environmental monitoring and control during all relevant phases (pre-construction, construction, operational, as well as maintenance) associated with the proposed activity. The proposed activity entails the repair and upgrade of the existing eroded **stormwater conveyance system and bank stabilisation** within the non-perennial watercourse located on Erf 7284, Dana Bay (Figure 1 & 2). The area of main concern is located below Ferox Street.



Figure 1: Location Plan with Erf 7284 indicated as red polygon.



Figure 2: Erf 7284 located between Ferox Street & Nerina Road, Dana Bay.

1.1 PROPOSED ACTIVITY

The eroded site is located within the designated urban edge of Dana Bay on land owned by the Mossel Bay Municipality. Erf 7284 is zoned **Public Open Space I**. This open space erf is designated to maintain a non-perennial watercourse within a developed residential area, as the upper catchment of a mapped ‘channelled valley-bottom wetland’ to the south. The watercourse is mapped as a combination of Aquatic Ecological Support Area (ESA) and degraded ESA (aquatic feature).

The existing stormwater gabion weir structures, within this 84m length of the non-perennial watercourse, have failed and require urgent upgrade and repair to mitigate the on-going erosion and undercutting of the eastern embankment in-particular (below private Erf 7285). This undercutting poses a direct threat of slope failure and the loss of private property above it.



Figure 3: Failed gabion structure & bypass erosion gully undercutting eastern bank.

Due to lack of maintenance, the private residents have over the years tried to stabilise this embankment themselves, by means of concrete packed tyres and rubble infill etc., which is also on the verge of failing.



Figure 4: Failing bank stabilisation structure - view up & down eastern bank.

Having investigated the situation, the appointed Engineering Firm (V3 Consulting) proposes that the existing top two (of three) gabion weir structures, as well as the tyre / concrete embankment stabilisation, be removed and replaced with an upgraded stormwater conveyance system and bank stabilisation installed to better manage stormwater, as well as protect private property, the sensitive downstream watercourse and the environment into the future.

A hydrological analysis conducted by V3 Consulting Engineers (Beyi, 2021), revealed a high velocity and volume discharge into the watercourse which is the main cause of the gabion structure failure and associated erosion to the eastern embankment. Based on this analysis, a hydraulic design was carried out with a view to improve the attenuation and dissipation of stormwater runoff velocity and volume.

The improved recommended stormwater management systems include a **stepped spillway** as an **energy dissipation structure** to *reduce flow velocity* and a **stilling basin** with an **outlet weir sill** to *manage volume* (see Figures 8 – 10 below & Appendix 2). These are designed to ensure protection of the watercourse embankments and private property situated on the eroding banks. These measures will also **minimise attenuate stormwater flows** and **minimise the impact** on more sensitive downstream habitat.

1.1.1 Energy Breaker

To break the energy of the runoff entering the watercourse from the A. Ferox culvert, a **2m deep stilling basin** is recommended. The stilling basin will allow for water to fall on itself, creating a stilling effect and then slowly discharging it through the toe drains into the stormwater chute.



Figure 5: Ferox Street culvert & erosion gully below it.

1.1.2 Stepped Spillway

According to the hydraulic analysis, the energy breaker at entry will not be sufficient to manage all the energy of the runoff. Thus, further energy management and dissipation is required. A **stepped concrete spillway** ($\pm 9.96\text{m}$ long by 2.24m wide) will convey the runoff effectively whilst reducing the energy and velocity of the runoff.



The advantage of the step spillway structure is that it reduces the scale of further dissipation structures that are needed downstream. The calculations yielded a 10-step concrete spillway with sidewalls to prevent scouring.

Figure 6: View below Ferox culvert where gabions to be removed & stepped spillway to be constructed.

1.1.3 Stilling Basin

A final control structure is needed to transmit the flow from supercritical to subcritical. A stilling basin will produce a hydraulic jump and slowly discharge the controlled flow over the sill into the downstream bio-conveyance channel. The sill is reduced in size because of the efficacy of the step spillway that reduced energy before entering the stilling basin.

1.1.4 Bio-conveyance Channel



The downstream section between and the stilling basin and the outlet culvert on Nerina Road is a natural channel. Therefore, to promote groundwater regeneration and stormwater infiltration and reduction of peak discharge, a natural channel will be retained. This will protect the milkwood tree found in the bank of the channel. **Stone pitched walls will be used to define the channel** and protect the embankment from erosion and potential slope failure.

Figure 7: Downstream natural channel, above Nerina Road culvert.

According to the Method Statement (V3 Engineers), the downstream gabion weir will be removed, rehabilitated & replaced, while the Milkwood tree will require minor trimming (less than 25%) to allow access below it to define the stone-pitched channel. In addition, all grass will be removed from Nerina Road culvert.

1.1.5 Maintenance

The improved system has been designed with maintenance in mind, which is critical to the long-term function and lifespan of the stormwater infrastructure. The design allows for conveyance of silt to prevent build-up and, therefore, reduce clogging and blockages.

However, regular debris removal will need to take place together with cutting and removal of vegetation and overgrowth.

Further detailed Method Statements have been compiled for implementation aimed at mitigating impacts associated with the construction and operation of the proposed stormwater infrastructure are described below. These are aimed primarily at protecting more sensitive wetland habitat located further downstream of Erf 7284.

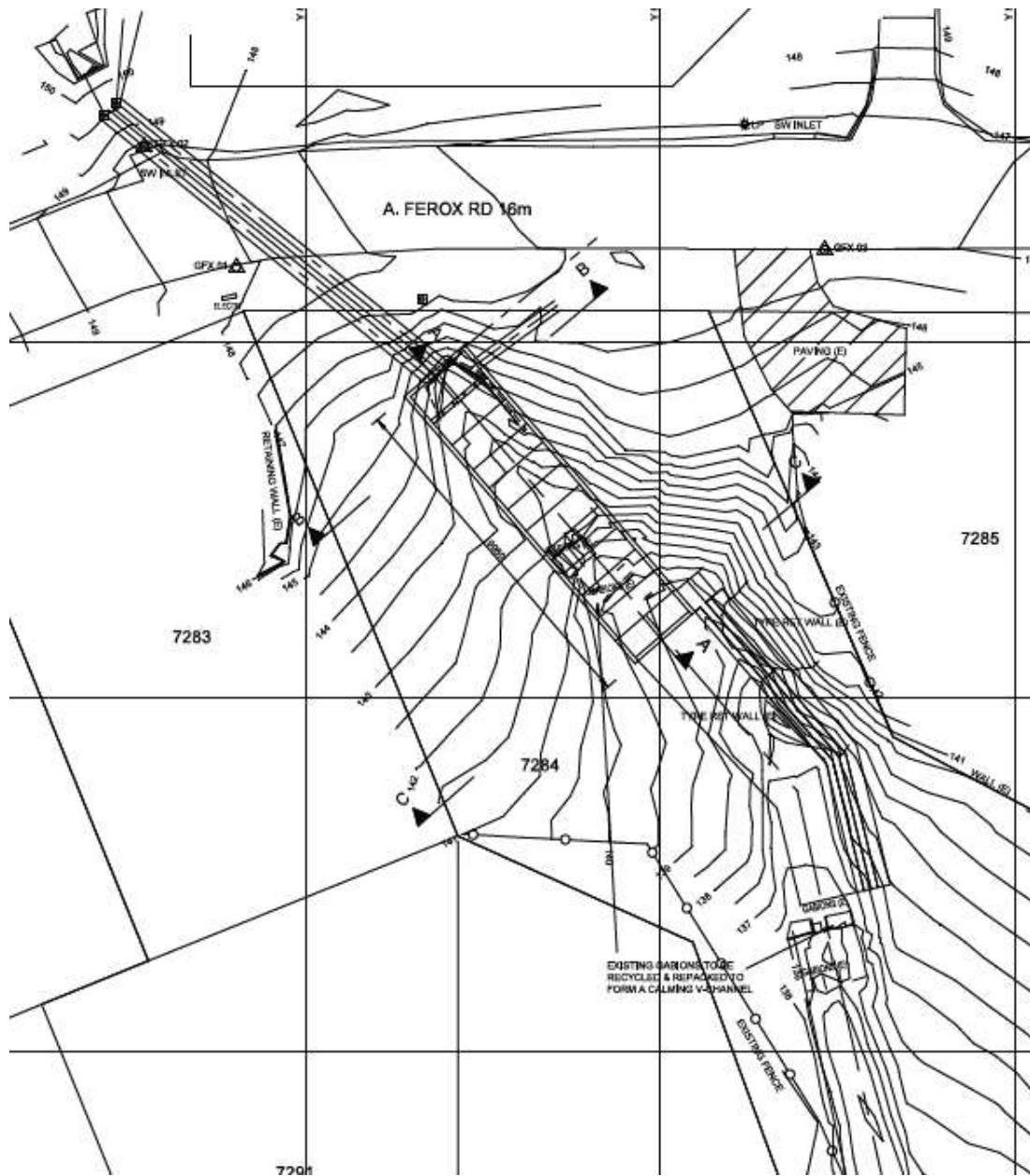


Figure 8: Upgraded stormwater infrastructure within watercourse channel (V3 Consulting).

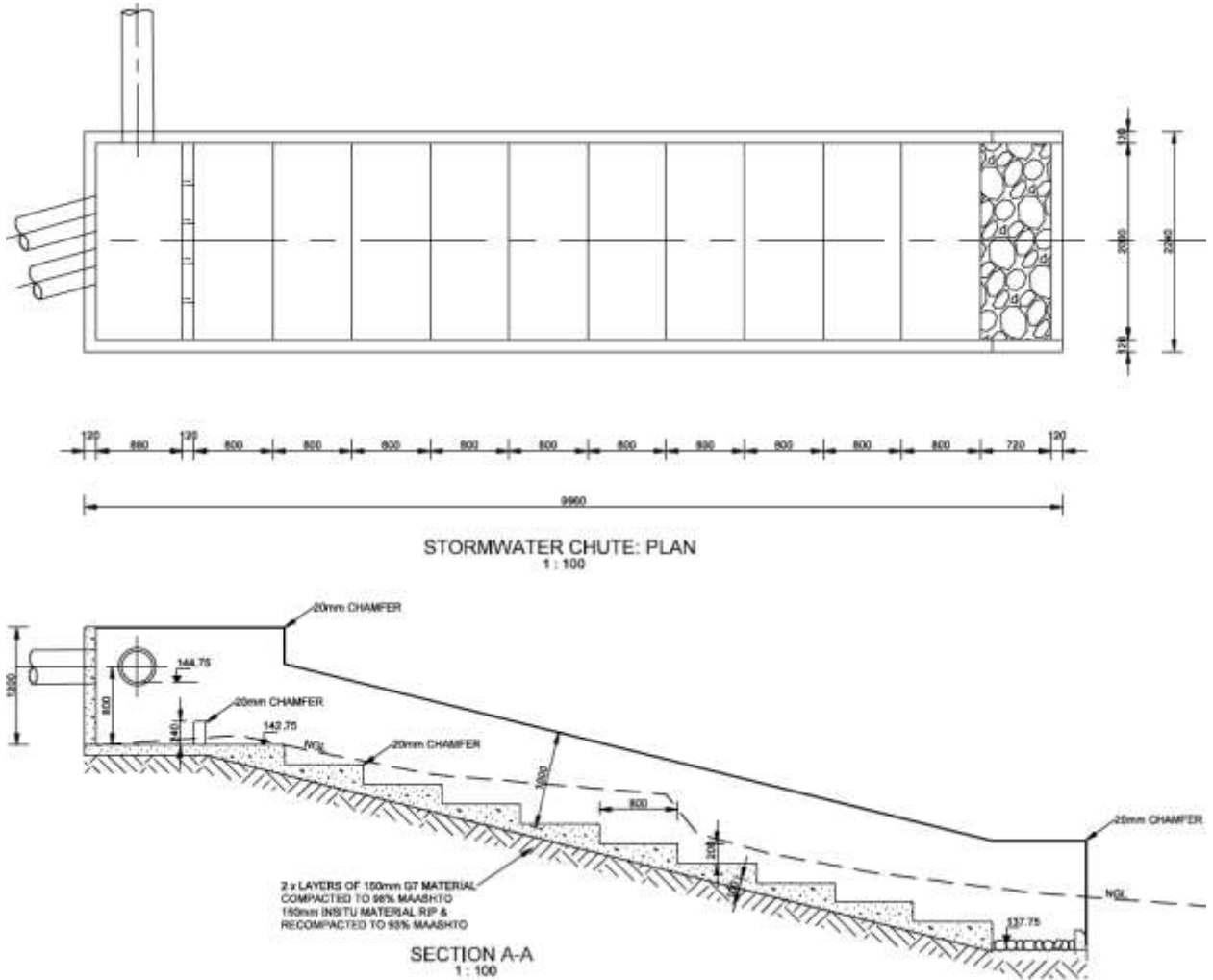


Figure 9: Stepped Conveyance Channel Plan & Cross Section.

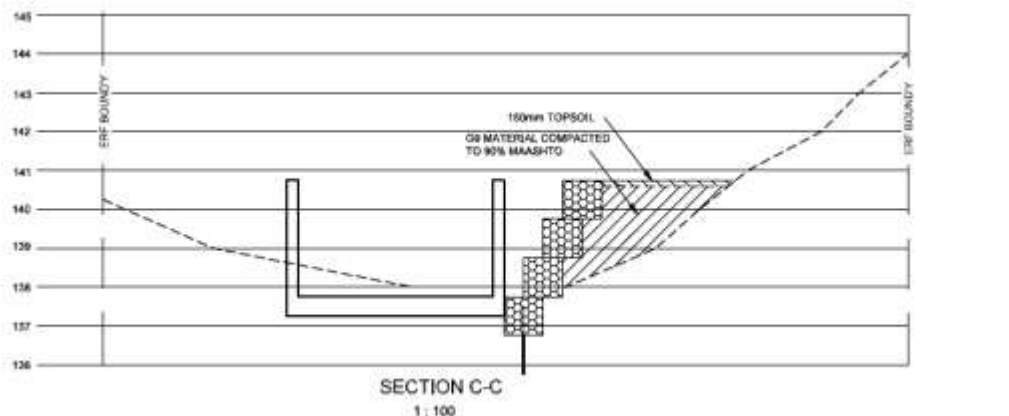
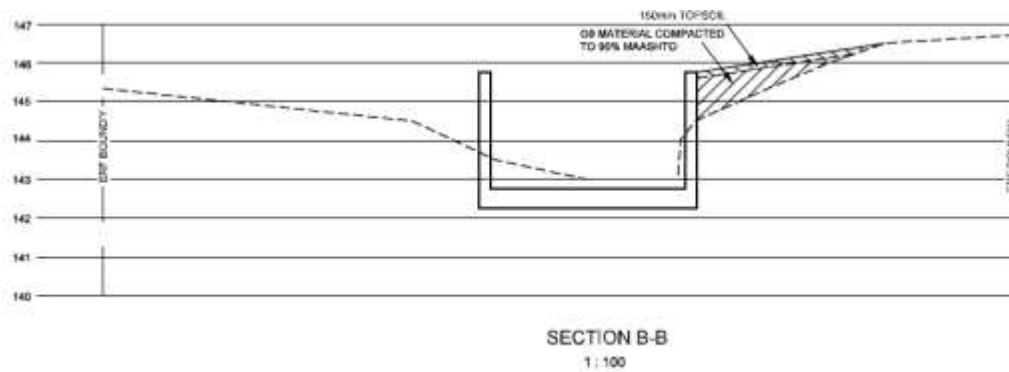


Figure 10: Cross sections of stabilisation measures on eastern bank adjacent to chute.

During construction and during periods of heavy rainfall, stormwater outflow may need to be temporarily diverted by placing sandbags in the proposed area of construction. After construction, the streambed and embankments will be re-instated and rehabilitated in accordance with the requirements of the General Authorisation (GA).

Temporary construction vehicle access to the site will be via Ferox Street, between the erven and the river channel within the Open Space, to allow machinery, to be used to remove and deliver materials, to access the site. This temporary access must be rehabilitated post construction. A basic Method Statement detailing the sequence of works have been provided by the Engineer for implementation (see *Appendix 3*). Additional mitigation measures / recommendations specific to each phase of works it detailed in Sections 6, 7 & 8 below.

This activity requires an **Environmental Authorisation** in terms of the National Environmental Management Act (NEMA, Act 107 of 1998)(see *Section 3.1 below*) for the adoption of a Maintenance Management Plan, as well as **General Authorisation** (GA) (see *Section 3.4 below*), before commencing, as well as for future maintenance and repairs of the structure.

This document provides forms part of a series of documents that will be circulated for stakeholder input, before it is to be provided to the provincial competent authority, the Western Cape Department of Environmental Affairs & Development Planning (DEA&DP) for decision making.

This EMMPr contains **management requirements** and **recommendations** made by *Cape EAPrac*, the appointed specialists, as well as in terms of the regulations contained in the **National Environmental Management Act** (NEMA, Act 107 of 1998), the **National Water Act** (NWA, 1998) and environmental best practice principles.

1.2 NEED FOR A EMMPR

It is recognized that within urban areas, sedimentation and erosion rates are significantly amplified as a result of hard-surfacing and development 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). The need for maintenance, while managing "unnaturally" high volumes & velocity of stormwater, through transformed environments, must be guided by mitigating risks and environmental impacts.

Table 2: Determination for the Need for a EMMPr (DEA&DP, 2022).

	Question	If the answer to any of the questions is YES, then a MMP may be applicable.
1	Is there a watercourse on or adjacent to the property?	YES A non-perennial watercourse flows through Erf 7284, Dana Bay.
2	Has there been a history of flood damage or vandalism to the existing infrastructure or watercourse – erosion and/or sedimentation?	YES The existing gabion structures have failed & ongoing erosion is undercutting the banks.
3	Is the infrastructure or any community at risk of being damaged by flooding?	YES Ongoing erosion is jeopardising stability of bank & adjacent private property.
4	Is the design of current infrastructure considered inadequate in terms of managing the risk of flooding, erosion and/or sedimentation?	YES The existing gabion structures have failed & ongoing erosion is undercutting the banks.
5	Would you consider an improved design to existing infrastructure to reduce maintenance needs?	YES

		V3 Consulting Engineers proposes an improved design to manage the high stormwater volumes & velocity in the watercourse.
6	Are there specific incidences where the watercourse is obstructed or blockages occur that alter the flow of the river during floods?	YES The failed gabion structures have become obstructions to flow, resulting in bypass, undercutting & erosion of river banks.
7	Is there an existing obstruction in the watercourse that has changed the flow of the river under normal conditions?	YES The failed gabion structures have become obstructions to flow, resulting in bypass, undercutting & erosion of river banks.
8	Is there a marked increase in the rate of erosion/sedimentation being experienced which threatens operations and assets?	YES The failed gabion structures have become obstructions to flow, resulting in bypass, undercutting & erosion of river banks.
9	Is there a presence of alien or bush encroachment vegetation within the watercourse and/or the presence of woody debris after flooding?	YES The presence of alien vegetation and dense Kukuyi grass mats have been noted in the watercourse.

The type of maintenance required in the watercourse can be categorized as follows:

Table 3: Categorisation of Maintenance Activities (DEA&DP, 2022):

Maintenance Category	Types of maintenance activities
Category A: Sediment removal as a result of deposition or sediment deposition as a result of erosion	<ul style="list-style-type: none"> • Clearing sediment or placing sediment at: <ul style="list-style-type: none"> ○ Stormwater outfall ○ Canalized urban rivers ○ Bridges, culverts and drifts • Prevent formation of islands in the channel of the river.
Category B: Emergency repairs – urgent action required to manage risk and damage to assets	<ul style="list-style-type: none"> • Repair to erosion of river bank or servicing infrastructure – stormwater management infrastructure & bank stabilisation structures. • Removal of material built up as a result of flooding/sedimentation and increasing risk to infrastructure. • Address damage or replacement of infrastructure – repair & replacement of gabion & bank stabilisation structures. • Manage the condition of existing structures such as gabions, canalized and stormwater system. • Installing temporary gravel approaches at flood-damaged river banks to enable vehicle removal & delivery of material during construction.
Category C: Managing alien invasive and bush encroachment plant species	Clearing of alien invasive vegetation out of the watercourse to reduce maintenance requirements as they relate to erosion and sedimentation.
Category D: Rehabilitation and restoration activities for maintaining ecological infrastructure	<ul style="list-style-type: none"> • Development and maintenance of ecological buffering systems to improve and/or restore functioning (stormwater flow-paths and detention). • Actively rehabilitating riparian zones through planting of locally indigenous species. • Bank grading and movement/removal of berms and barriers to flow.

1.3 PURPOSE OF THE EMMPR

The purpose of this EMMPr is to ensure that the environmental impacts and management of the various phases, of the proposed activity, on the receiving environment are managed, mitigated and kept to a minimum (ie. the **outcome** of implementing the EMMPr). The EMMPr must provide easily understood and clearly defined **actions** that must be implemented during each phase of the proposed activity. The EMMPr is a dynamic document that is flexible and responsive to new and changing circumstances. This MMP further aims 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.

The document is binding on the Applicant (the Mossel Bay Municipality), all contractors and sub-contractors to the site.

It must be included as part of any documents / agreements, as well as contractual documents between the Applicant and any contractors. Copies of this EMMPr must be kept on site and all **senior personnel** are expected to familiarise themselves with the content of this EMMPr.

Any changes or deviations to this EMMPr must be authorised by the competent authority in the event that any environmental outcomes are amended.

Any changes to, or deviations from the scope of the proposed activity must be accepted or approved, in writing, by the Competent Authority before such changes or deviations may be implemented. In assessing whether to grant such acceptance/approval or not, the Competent Authority may request information in order to evaluate the significance and impacts of such changes or deviations, and it may be necessary for the Applicant to apply for further authorisation in terms of the applicable legislation.

1.4 STATUS OF THE EMMPR

It is of utmost importance that this EMMPr be read in conjunction with any legally obtained authorisations, such as the General Authorisation (GA) from the Dept.of Water & Sanitation (DWS)¹. This EMMPr is viewed as a dynamic document that must be reviewed and updated on a continual basis.

The EMMPr is valid for the duration of the project (both for construction, as well as future maintenance) with each applicable phase corresponding to the identified requirements.

1.5 AMENDMENT OF THE EMMPR

The manner and frequency for updating the EMMPr is as follows:

- Any further amendments to the EMMPr, other than those mentioned above, must be approved in writing by the relevant competent authority.
- An application for amendment to the EMMPr must be submitted to the Competent Authority if any amendments are to be made to the impact management outcomes of the EMMPr. Such amendment(s) may only be implemented once the amended EMMPr has been approved by the competent authority.
- The onus is on the Applicant to confirm the legislative process requirements for the above scenarios at that time.

¹ General Authorisation (GA) obtained October 2022.

- Where an amendment to the impact **management outcomes** of an EMMPr is required before an environmental audit is required in terms of the environmental authorisation, an EMMPr may be amended on application by the Applicant.

2 EMMPR PHASING

2.1 PRE-CONSTRUCTION PHASE

The pre-construction phase refers to the design phase of the project. This will ensure that any requirements and best practise mechanisms are built into the planning / design phase to be developed in the construction and operational phases. In term of this application, the pre-construction can be considered as the site selection and engineering designs and mitigations.

2.2 CONSTRUCTION PHASE

The construction phase refers to the actual construction of the stormwater infrastructure and bank stabilisation on the property, and includes all earthworks (excavations, removal of soil & infill of materials) and installation of structures.

It is recommended that the construction activity be undertaken as far as possible during the dry season. Should this not be possible (given the extreme rain conditions experienced in the Southern Cape in the recent past), the activity may include temporarily and partially diverting the stream flow within the streambed, during periods of intermittent flow during heavy rain events, to facilitate the removal of existing gabions, construction of the conveyance channel & stabilisation of the eastern riverbank. The stormwater from the stormwater pipe below Ferox Street, that discharges into the valley (partially responsible for the eroded bank) may need to be diverted by placing sandbags in the proposed area of construction. After construction, the streambed and embankments will be re-instated and rehabilitated. Temporary access to the site will be via Ferox Street. This access will be rehabilitated once construction is complete.

2.3 OPERATIONAL / MAINTENANCE PHASE

The Operational Phase of this project relates to the ongoing management and maintenance required to ensure sustainable development. In terms of this application, this refers to all activities that are undertaken once construction is completed and the infrastructure is functional.

All future maintenance of the stormwater infrastructure & bank stabilisation (i.e., after flooding, erosion, breakage of gabions etc) must be implemented in accordance with this EMMPr (procedures for construction activities to be followed).

The Applicant must ensure that the Operational Phase maintains the underpinning principles 'Duty-of-Care-to-the-Environment' and ideals of sustainable development.

2.4 CLOSURE AND DECOMMISSIONING PHASE

Decommissioning refers to the process of removing the operating assets of any development after completion of the operating life cycle.

The decommissioning phase is not applicable because the proposed activity involves the repair and upgrade of existing stormwater infrastructure and rehabilitation of a river embankment and thus it is unlikely that the structure will be removed.

Should the need arise in future to remove the structure wholly, the Applicant must consult with the Competent Authority to ensure compliance with legislation applicable at the time.

3 LEGISLATIVE REQUIREMENTS

The project Applicant is required to comply with all necessary legislation and policies applicable to development and management of the development. These include but are not limited to:

3.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA, ACT 107 OF 1998)

The National Environmental Management Act (**NEMA**, Act 107 of 1998, as amended), makes provision for the identification and assessment of **activities** that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the provincial Department of Environmental Affairs & Development Planning (DEA&DP)) based on the findings of an Environmental Impact Assessment (EIA) or the submission of an Environmental Management Programme for adoption.

NEMA embraces the notion of sustainable development as contained in the Constitution of South Africa (Act 106 of 1996) in that everyone has the right:

- to an environment that is not harmful to their health or wellbeing; and
- to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures.

NEMA aims to provide for cooperative environmental governance by establishing principles for decision-making on all matters relating to the environment and by means of Environmental Implementation Plans (EIP) and Environmental Management Plans / Programmes (EMMP), of which this EMMP is one.

Principles contained in Section 2 of the NEMA, amongst other things, prescribe that environmental management must:

- In order of priority aim to: avoid, minimise or remedy disturbance of ecosystems and loss of biodiversity;
- Avoid degradation of the environment and avoid jeopardising ecosystem integrity;
- Pursue the best practicable environmental option by means of integrated environmental management;
- Protect the environment as the people's common heritage;
- Control and minimise environmental damage; and
- Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic or stressed ecosystems.

It is incumbent upon the landowner, to ensure that the abovementioned principles, entrenched in this EMMP are upheld and complied with.

Table 4: The Listing Activities associated with the proposed activity.

Activity #	Listing Notice 1	Description of portion of the proposed development related to listed activity
19 (b)	<i>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 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;</i>	Excavation & movement of material (soil, rock, gabion baskets etc.) within a watercourse required for maintenance purposes as covered by this EMMP.

	(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	
Activity #	Listing Notice 3	Description of portion of the proposed development related to listed activity
12 (iv)	The clearance of an area of 300m² or more of indigenous vegetation except where such clearance of indigenous vegetation is undertaken in accordance with a maintenance management plan. (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.	The removal of old stormwater infrastructure & failing retaining wall, and the construction of new water conveyance infrastructure and retaining wall, requiring the clearance of more than 400m ² of vegetation, within an open space.

3.2 ENVIRONMENT CONSERVATION ACT, 1989 (ECA)

The EIA regulations contained in the Environmental Conservation Act (ECA) have been replaced by NEMA. However, property owners must comply with the draft regulations pertaining to noise as published in the province of Western Cape Provincial Extraordinary Gazette as provision made in Section 25 of the ECA), as well as Section 24 of the ECA regarding waste management and Section 20 of the ECA dealing with waste management under Part IV, Control of Environmental Pollution.

3.3 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEM:BA) (ACT 10 OF 2004)

This Act controls the management and conservation of South African biodiversity within the framework of NEMA. Amongst others, it deals with the protection of species and ecosystems that warrant national protection, as well as the sustainable use of indigenous biological resources. Sections 52 & 53 of this Act specifically make provision for the protection of critically endangered, endangered, vulnerable and protected ecosystems that have undergone, or have a risk of undergoing, significant degradation of ecological structure, function or composition as a result of human intervention through threatening processes.

The National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No. 32689, 6 November 2009) was gazetted in 2016. The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the NSBA 2004, 2007 & 2011.

According to the SANBI BGIS VegMap (2018); the National Spatial Biodiversity Assessment (2016) and confirmed in the Terrestrial Biodiversity Compliance Statement (Hoare, 2022); the natural vegetation mapped for the property in question is the **Hartenbos Dune Thicket**, which according to the biodiversity threat assessment (2018) has an ecological status of **Least Concern**. The vegetation within the watercourse is however **dominated by alien invasive Kikuyu Grass**, with remnant patches of sedges including Basket Grass (*Cyperus textilis*) downstream. The vegetation on the banks includes Thicket species: Milkwood (*Sideroxylon inerme*)(Protected, National Forest Act), Taaibos (*Seasia lucida* & *S.crenata*), Wild Olive (*Olea exasperata*), Spike-thorn (*Gymnosporia buxifolia*), Bitou (*Chrysanthemoides monilifera*), Krantz Aloe (*Aloe arborescens*), *Protasparagus sp.* etc., interspersed with pioneer Fynbos species: Blombos (*Metalasia sp.*), Silver-bush (*Helichrysum petiolare*) etc. A Milkwood tree is growing in the lower reaches of the stream (to be avoided), while Wild Plum (*Harpephyllum caffrum*) and Yellowwood trees (*Afrocarpus latifolius* & *A.falcatus*) (Protected, National Forest Act) were noted on the property boundaries bordering private property (to be avoided).



Figure 11: View downstream onto eastern bank. Note thick Kukuyu grass.



Figure 12: View of Thicket vegetation on western bank.



Figure 13: View of downstream channel & pioneer Fynbos on bank.



Figure 14: Nerina Road culvert choked by thick grass.



3.3.1 Garden Route Biodiversity Spatial Plan (GRBSP)

A Biodiversity Spatial Plan (BSP) provides a way forward in reconciling the conflict between transformation / development and the maintenance of natural systems. The Garden Route BSP forms part of the Western Cape BSP (WCBSP, 2017). Central to the Garden Route BSP is the **Critical Biodiversity Area (CBA) Map**, which together with its associated guidelines and GIS maps, have been consulted as background to this EMMP.

The Critical Biodiversity Area (CBA) mapping for Dana Bay, aims to guide sustainable development by providing a synthesis of biodiversity information to decision makers. It serves as the common reference for all multi-sectoral planning processes (between CapeNature / SANParks, DFFE, DEA&DP, the Department of Water & Sanitation and District and Local Municipalities etc.), advising which areas can be lost to transformation / development, and which areas of critical biodiversity value and their support zones, should be protected against any impacts.

- CBAs incorporate: (i) areas that need to be safeguarded in order to meet national biodiversity thresholds (ii) areas required to ensure the continued existence and functioning of species and ecosystems, including the delivery of ecosystem services; and/or (iii) important locations for biodiversity features or rare species.
- Ecological Support Areas (ESAs) are supporting zones required to prevent the degradation of Critical Biodiversity Areas and Protected Areas. An ESA may be an ecological process area that connects and therefore sustains CBAs or a terrestrial feature, for example the riparian habitat surrounding and supporting aquatic Critical Biodiversity Areas.

According to the 2017 GRBSP CBA Map, the watercourse with Erf 7284 Dana Bay is mapped as a combination of **Aquatic Ecological Support Area (ESA)** and **degraded ESA** (aquatic feature). According to the abovementioned guidelines, degraded areas should be rehabilitated and only low-impact, biodiversity-sensitive land-uses are appropriate.

As watercourses serve as **important ecological corridors** within the existing urban context of the area, faunal habitat, biodiversity and ecological processes must be safeguarded, through the **control of alien vegetation** within and surrounding them and the **rehabilitation of the environment** to a near-natural state. The importance of this open space corridor was highlighted by the sighting of Bushbuck on the property, as well as in the valley south / below Nerina Road.



Figure 15: Bushbuck noted on western bank of Erf 7284.



Figure 16: Family of Bushbuck noted below Nerina Road.

This ecosystem should thus be afforded the highest degree of protection and should thus be rehabilitated to a near-natural state, where and as far as possible. See *Appendix 1 attached for Biodiversity Maps*.

3.3.2 Alien Invasive Species Regulations & List, 2020 (GNR. 1020)

Along with the abovementioned National List of Threatened Ecosystems (2014 & 2016), NEM:BA provides a 'List of Alien and Invasive Plant Species (2016 & 2020)', which require control or management.

Chapter 5 of NEM:BA deals specifically with these species which may pose a threat to biodiversity and aims to – '**to prevent the unauthorized introduction and spread of alien species and invasive species to ecosystems and habitats where they do not naturally occur; to manage and control alien species and invasive species to prevent or minimize harm to the environment and to biodiversity in particular; and to eradicate alien species and invasive species from ecosystems and habitats where they may harm such ecosystems or habitats**'.

Control and management of Alien Invasive Plant Species, within the ambit of the NEM:BA, is guided by the definition of different categories or lists according to their current invasive state and potential to become invasive. Several alien invasive plant species and garden escapees are noted on the property: *Acacia cyclops* (NEMBA Category 2), *Acacia saligna** (NEMBA Category 2), *Cestrum laevigatum** (NEMBA Category 1b), and *Lantana camara** (NEMBA Category 1b), as well as *Yukka*, *Manatoka*, *Goose-berry*, *Brazilian Pepper*, *Sword-fern* etc.

As these alien invasive species occur **within a designated watercourse** and open space erf, they are all considered to be **categorised for required control** (removal & destruction) i.e. no permit to keep these species will be issued by the DFFE, irrespective of their listed category. The removal of these species has been recommended where they fall with the proposed activity area. However, the on-going removal of those alien plants falling outside the work area, in the remainder of the property

and open space area, remains the responsibility of the landowner, the Mossel Bay Municipality, in compliance with the NEM:BA Alien Invasive Species Regulations.

3.4 NATIONAL WATER ACT (NWA, ACT 36 OF 1998)

The National Water Act (NWA) gives effect to the constitutional right of access to water. The Act's overall purpose is to ensure that South Africa's water resources are protected, used and managed in ways which take into account a number of factors, including inter-generational equity, equitable access, redressing the results of past racial and gender discrimination, promoting sustainable and beneficial use, facilitating social and economic development, and providing for water quality and environmental protection.

The NWA makes persons who own, control, occupy or use land responsible for taking measures to prevent pollution of water resources, and empowers Government authorities to take measures to enforce this obligation.

Given the low sensitivity of the site and low impact associated with all activities, and according to Government Notice 509 of August 2016 (RSA, 2016) of the National Water Act, the proposed development of Erf 7284 is to be **Generally Authorised for Section 21 (c) and (i) water uses and does not require a Water Use License**. The water use activity should still be **registered** with the DWS. An application for registration of water use(s) within the ambit of a General Authorisation in terms of section 39 of the National Water Act, 1998 (Act 36 of 1998) was submitted and subsequently approved by the Breede-Gouritz Catchment Management Agency (BGCMA).

The Department of Water & Sanitation has issued the required **General Authorisation & Water Use Registration** in **October 2022** - attached in Appendix 4.

Implementation, as well as compliance and monitoring of the GA is the responsibility of the BGCMA. Although this EMMPr reflects on general conditions and best practice it does not cover the full spectrum of GA conditions. The Applicant must ensure compliance with the applicable GA conditions (attached in Appendix 4).

3.5 NATIONAL FOREST ACT (ACT 84 OF 1998)

The NFA provides for the **protection of forests**, as well as **specific tree species**, quoting directly from the Act: "no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated". The Department of Forestry, Fisheries & the Environment (DFFE) is responsible for the implementation and enforcement of the NFA, which includes **prohibition of damage to indigenous trees in any natural forest without a licence** (Section 7 of the NFA), as well as the prohibition of the cutting, disturbing, damaging destroying or removing **protected trees** without a licence (Section 15 of the NFA).

Although several protected trees were noted on the property, Erf 7284 Dana Bay, **none will be destroyed by the proposed activity**. Two (2) Milkwoods are noted on the eastern bank close to Nerina Road. The larger of the two is currently overhanging the watercourse channel and will require minimal trimming of lower branches (less the 25% of tree) to allow access to re-instate downstream gabion weir. The appointed ECO must confirm the level of trimming require prior to such happening to ensure that the work is done lawfully, or advise on the need for a Forestry License.



Figure 17: Milkwood tree on lower channel to be trimmed.

Two Outeniqua Yellowwood trees (one on lower eastern bank & the other on the boundary of private erven on western bank, beside a large Pine) and one Real Yellowwood tree (on Nerina Road reserve) will not be affected.



Figure 18: Yellowwood tree on western boundary.



Figure 19: Real Yellowwood on Nerina Road reserve.

Should any tree saplings to found within the proposed area of works, these should be rescued and transplanted outside the construction site, lower down in the municipal open space erf.

3.6 NATIONAL VELD & FOREST FIRE ACT (ACT 101 OF 1998)

The purpose of the National Veld and Forest Fire Act is to **prevent and combat veld, forest and mountain fires** throughout the RSA and to provide institutions, methods and practices for achieving this purpose. Institutions include the formation of such bodies as **Fire Protection Associations (FPA's)** and **Working on Fire**. The Act provides the guidelines and constitution for the implementation of these institutions as well as their functions and requirements.

While the proposed activity is located within the urban area and does not require any form of firebreak, it is recommended that all plant material / biomass generated during site clearance be removed from the property or chipped to reduce fire risk to neighbouring landowners and prevent obstruction of the watercourse.

3.7 NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

The purpose of the National Heritage Resources Act (NHRA) is to:

- Introduce an integrated and interactive system for the management of the national heritage resources;
- Promote good government at all levels,
- Empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations;
- To lay down general principles for governing heritage resources management throughout South Africa;
- To introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa;
- To establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level;
- To set norms and maintain essential national standards for the management of heritage resources in South Africa and to protect heritage resources of national significance;
- To control the export of nationally significant heritage objects and the import into South Africa of cultural property illegally exported from foreign countries;
- To enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources;
- To provide for the protection and management of conservation-worthy places and areas by local authorities; and
- To provide for matters connected therewith.

The proposed **works do not trigger any of the development activities listed in terms of Sections 34(1) and 38(1) of the National Heritage Resources Act, 1999 (Act 25 of 1999) (“NHRA”)**. Due to the nature of the proposed activity, the location of the site and the transformed nature of the surroundings, it is not likely that any heritage or archaeological features will be impacted upon. The works do not trigger any “Permit” application (Section 34 of the NHRA) or a “Notice of Intent to Develop” application (Section 38 of the NHRA) to the competent authority (being Heritage Western Cape) in this case (*see Heritage Statement attached as Appendix 6*).

Notwithstanding this, should any heritage remains be exposed during excavations or any other actions on the site, these must immediately be reported to Heritage Western Cape. Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from Heritage Western Cape. Heritage remains may only be disturbed by a suitably qualified heritage specialist working under a directive from the relevant Heritage Resources Authority.

Heritage remains include: meteorites, archaeological and/or paleontological remains (including fossil shells and trace fossils); 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 with heritage significance; rock art and rock engravings; shipwrecks; and/or graves or unmarked human burials including grave goods and/or associated burial material.

3.8 NATIONAL WASTE MANAGEMENT STRATEGY

The National Waste Management Strategy presents the South African government's strategy for integrated waste management for South Africa.

It deals among others with: Integrated Waste Management Planning, Waste Information Systems, Waste Minimisation, Recycling, Waste Collection and Transportation, Waste Treatment, Waste Disposal and Implementing Instruments.

It is advisable that an integrated waste management system be adopted, which includes waste minimisation, waste recycling and the proper storage and disposal of waste, which does not impact of the health of the environment and human health.

All waste must be collected and disposed of at a registered waste facility. No waste material may be left on site once construction / maintenance is completed.

3.9 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

The Occupational Health and Safety Act aims to provide for the health and safety of persons at work for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work. Health & Safety on site is the responsibility of the contractor and the proponent. Although this is not the function of the ECO, it is a standard requirement for building construction and must be monitored and evaluated by a suitably qualified Health & Safety person. It will not form part of any environmental audit in the future.

In terms of this Act, a Health and Safety Officer and Protocol must be implemented on any site. The appointment of a Health and Safety Officer is the responsibility of the proponent and contractor and is included in this report to ensure due diligence on construction sites. It is the responsibility of the appointed HSO to conduct any required audits and as such only the appointment of an HSO will be auditable in terms of this document.

The Contractor must ensure compliance with the Occupational Health and Safety (No. 85 of 1993). Of key importance is the following (Section 8 of the aforesaid act):

8. General duties of employers to their employees:

- Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees.
- Without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include in particular-
 - the provision and maintenance of systems of work, plant and machinery that, as far as is reasonably practicable, are safe and without risks to health;
 - taking such steps as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to the safety or health of employees, before resorting to personal protective equipment;
 - making arrangements for ensuring, as far as is reasonably practicable, the safety and absence of risks to health in connection with the production, processing, use, handling, storage or transport of articles or substances;
 - establishing, as far as is reasonably practicable, what hazards to the health or safety of persons are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in his business, and he shall, as far as is reasonably practicable, further establish what precautionary measures must be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons, and he shall provide the necessary means to apply such precautionary measures;
 - providing such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of his employees;
 - as far as is reasonably practicable, not permitting any employee to do any work or to produce, process, use, handle, store or transport any article or substance or to operate any plant or machinery, unless the precautionary measures contemplated in paragraphs (b) and (d), or any other precautionary measures which may be prescribed, have been taken;

- taking all necessary measures to ensure that requirements of this Act are complied with by every person in his employment or on premises under his control where plant or machinery is used;
- enforcing such measures as may be necessary in the interest of health and safety;
- ensuring that work is performed and that plant or machinery is used under the general supervision of a person trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented; and
- causing all employees to be informed regarding the scope of their authority as contemplated in section 37 (1) (b).

4 ENVIRONMENTAL IMPACTS & MITIGATIONS

The National Dept.of Forestry, Fisheries & the Environmental (DFFE) Screening Tool Report was generated for this activity (see *Appendix 7 for Screening Tool Report (DFFE) & responsive Site Sensitivity Verification Report (Cape EAPrac)*). The following features were identified to have low sensitivity and thus no further investigation / specialist assessment was undertaken:

- **Agriculture** - Low sensitivity: Erf 7284 Danabaai is located within an established urban environment and never been used for agricultural uses.
- **Civil Aviation** – High sensitivity: Stormwater infrastructure upgrades / activities within a watercourse, inside the urban edge, will not require any permits for obstacles by the CAA. The CAA will be included as a stakeholder given that the sensitivity is screened as high. The airfield in question is the Still Bay Airfield which is a small municipal airfield located approximately 4.16kms to the north. The airfield is a registered parachute dropzone.
- **Defence** – Low Sensitivity: The property is located inside the urban edge of Danabaai, there are no defence installations in the vicinity.
- **Palaeontology** – Medium sensitivity: The probability of encountering archaeological and/or palaeontological occurrences within the study area is very low, given the resultant erosion from concentrated volumes and velocity of surface water run-off draining through this urban catchment area.

The Screening Report indicated the following features requiring specialist input:

- **Aquatic / Freshwater** - *Very High sensitivity*. A Freshwater / Aquatic Management & Maintenance Plan was compiled by Dr James Dabrowski of Confluent Environmental (see *Appendix 4 attached*).
- **Biodiversity** - *Very High sensitivity* (incl. Plant sp. – Low & Animal sp. - Medium). A Terrestrial Biodiversity Compliance Report was compiled by Dr. David Hoare of David Hoare Consulting (Pty) Ltd. (see *Appendix 5 attached*).
- **Heritage** - *Low sensitivity*. A Heritage Statement was compiled by Stefan de Kock of Perception Planning (see *Appendix 6 attached*).

The following findings / assessment of the site and the proposed activity were identified and considered during the compilation on this EMMPr, based on which the associated mitigation measures were recommended for implementation (to reduce negative impacts & enhance positive ones):

4.1 TERRESTRIAL COMPLIANCE STATEMENT (DR DAVID HOARE):

In its current state, the site has LOW sensitivity, especially the areas within the channel in the centre of the site. Unless stormwater erosion is better managed, this poses a threat to downstream areas. Areas on the margin of the channel have some ecosystem support value, but the banks need to be stabilized to protect the long-term value of these areas.

Findings:

1. The site consists of **degraded vegetation** within an **eroded drainage valley** with low indigenous diversity. The drainage channel is dominated by exotic kikuya grass and other exotic species. The margins of the eroded channel consist of a mixture of indigenous and alien invasive shrubs.
2. It is verified that the site does not occur within any mapped Listed Ecosystem, as listed in The National List of Ecosystems (GN1002 of 2011). The site therefore has **LOW sensitivity** with respect to this attribute.
3. The site is designated as a combination of Ecological Support Area (ESA) 1 and ESA 3. The habitat is not considered to be representative of any natural ecosystem. Although it contains some indigenous species, these are **not representative of the ecosystem type**, and are post-disturbance colonisers in combination with alien invasive species.

4. **No plant species of concern** were found on site and, based on the available habitat, it is considered unlikely that any would occur there. None are flagged for the site.
5. The site is **not considered to be good habitat for any of the animal species** flagged for the site.
6. The proposed project is to stabilize the channel to prevent further erosion. This will have a positive impact on both the remaining vegetation on site, as well as all downstream areas. The development is therefore supported.

Recommendations:

- It is recommended that the proposed project be authorised so that the landscape can be properly stabilised. This will promote the ecological support value of the site.
- **Rehabilitation of disturbed areas**, as well as previously invaded areas, should promote planting and establishment of site-appropriate indigenous thicket species.
- An **ongoing alien invasive plant management** programme should take place on site. This will protect surrounding sensitive habitats from degradation and allow indigenous species to flourish on site.

4.2 AQUATIC / FRESHWATER REPORT (DR JAMES DABROWSKI)

Findings:

The property is located within the urban area of Dana Bay and is bisected by a non-perennial drainage line. Below Erf 7284, the drainage line passes through a relatively large undeveloped area, characterised by a steep, meandering valley, which is mapped as a seep wetland.



Figure 20: Aerial image depicting downstream wetland seeps (Confluent, 2022).

The majority of instream habitat has been replaced by the gabion weir structures. Only a small section (approximately 20m) of the lower reach of the watercourse is unaffected. The bed and banks of this section are **heavily invaded by kikuyu grass (*Pennisetum clandestinum*)** and the channel provides **very limited instream functional aquatic habitat**.

The non-perennial drainage line, which only receives intermittent flow, lasting a few hours to a few days, following heavy rainfall events. Given its location with an urban area and the high coverage of

hardened surfaces in a steep catchment area, the drainage line receives relatively frequent stormwater inputs following rainfall events, but does not flow permanently. The drainage line receives **high stormwater inputs** via a culvert on Ferox Street, due to an alteration in the hydroperiod of the watercourse, causing an **increase in the frequency, magnitude and velocity of flood events**, which has required the **need for engineering interventions to mitigate associated erosion** of the channel

A series of gabion weirs had previously been constructed within the watercourse to attenuate high stormwater inputs. The volume and velocity of the discharge of the flow from the Ferox Street culvert enters the watercourse at a higher energy than the gabion weir structures can manage. As a result, the most upstream structures have failed and do not attenuate or absorb the energy of stormwater flows into the watercourse. A relatively deep eroded channel has formed along the upper eastern embankment, which completely by-passes the gabion structure. This has resulted in **undercutting and erosion of the eastern embankment**. The most downstream gabion weir has silted up which renders the structure semi-functional as it is unable to attenuate the capacity of the upstream flow. The eroding eastern embankment presents a risk of slope failure to properties immediately adjacent to the watercourse. As such the embankments have been stabilised using a combination of tyres, building rubble and wire mesh.

While the impacts described above are severe, they are localised to a specific section of the stream alignment that falls within Erf 7284. When considered against the entire length of the drainage line the **Present Ecological State (PES) of the watercourse is D - Largely Modified**.

According to the Western Cape Biodiversity Spatial Plan (WCBSP), the majority of the watercourse is categorized as aquatic ESA1, with small pockets as ESA2. The proposal to construct stormwater infrastructure is planned to replace existing infrastructure that have failed (and is causing further degradation to the stream and broader hydrological network) and will **not result in further loss of functional aquatic habitat**. In addition, the proposals to **address slope failure** will also prevent further degradation of the watercourse in the short to long term.

4.2.1 Risks Associated with Construction & Future Maintenance

Generic impacts are associated with the presence / operation of workers, machinery and materials required for maintenance activities within the watercourse include the following:

- **Pollution of watercourses** through leakage of fuels, oils, and other pollutants from vehicles and machinery, or from washing of equipment and vehicles;
- The presence of workers on site will require the need for appropriate ablution facilities. Poor management of these facilities could potentially lead to **sewage spills** or leaks which could contaminate the watercourse;
- **Storage of materials** or the temporary lay-down of equipment within an area that drains in the direction of the watercourse;
- **Dumping** of excavated material into the watercourse;
- Poor management of **waste generated** during maintenance activities; and
- Mixing of **concrete or cement** in or in close proximity to the watercourse.

4.3 MITIGATIONS

4.3.1 Site Clearance & Topsoil Stockpiling

The site will be cleared to create a clear working area for the stockpiling of materials & construction of stormwater infrastructure. Site clearance will involve the dismantling of the upstream gabion structure and the removal of the tyre embankment. Site clearance will expose the embankments and bare soil up to an area of approximately 400 m². This exposed soil is vulnerable to erosion which could cause sedimentation of the downstream wetland area. Suitable temporary stormwater and erosion control measures (sand bags, biddum fences, strawbale check dams etc.) must be installed to manage stormwater and surface runoff flows over the cleared area and prevent silting / sedimentation of more

sensitive wetland habitat located further downstream. The appointed ECO, and it necessary the freshwater ecologist, should be consulted for advice on the most suitable control measures.

Construction of stormwater infrastructure will involve activities such as mixing of cement and concrete and the establishment of laydown areas and stockpiles of construction materials, which if not managed appropriately, could lead to unnecessary impacts on the watercourse.

The following Table details the mitigation measures recommended respond to the abovementioned risks & impacts.

Table 5: List of Mitigation Measures & Associated Management Requirements

MITIGATION	Pre-Construction Phase	Construction Phase	Operational /Maintenance Phase
Construction activities must be timed to coincide with a dry period as far as possible. Due to the emergency state of this project and the SCape's unpredictable weather changes, it is advised that the holder of the EMMP first contact with the ECO & aquatic specialist to determine whether it is the right time to start construction (based on the most recent weather reports).	✓		
A temporary check dam (using sandbags) should be established upstream of the construction to create dry working conditions should work not be undertaken during a the wet season period.		✓	✓
A flexible pipe should be used to transfer water from the upstream check dam around the area of works.		✓	
Temporary straw-bales can be placed across the channel (downstream of the streambank) to trap high levels of sediment in the event of a high rainfall.		✓	✓
Since the gabions will be installed against the embankment where erosion potential is high, construction must be sequenced with minimum possible delay . Disturbance of areas where gabions are to be placed should be undertaken only when final preparation and placement can follow immediately behind the initial disturbance.	✓	✓	✓
A construction schedule must be developed and clearly defined so as to avoid multiple sites being exposed and unattended to at any moment in time . The completion date for each phase of development must be indicated and all clearing, excavation, and stabilisation operations must be completed before moving onto the next phase.	✓	✓	✓
Cement / concrete batching must not be mixed on bare ground or within the watercourse. An impermeable / bunded area must be established in such a way that cement slurry, runoff and cement water will be contained & will not flow into the surrounding environment, the stream or riparian zone or contaminate the soil;		✓	✓
The laydown area & stockpiles of construction materials must be place outside of the channel of the watercourse (on as flat an area as possible) and protected (e.g. through use of sandbags and/or tarpaulins) to prevent materials being washed into the watercourse	✓	✓	✓
Areas where instream maintenance activities will take place must be confined to clearly demarcated areas so as to prevent unnecessary disturbance of instream habitat outside of these areas.	✓	✓	✓
Excavators and all other machinery and vehicles must be checked daily for oil and fuel leaks . No machinery or vehicles with leaks are permitted to work in the watercourse;		✓	✓
No fuel storage, refuelling or vehicle maintenance to be allowed within the watercourse;		✓	✓

MITIGATION	Pre-Construction Phase	Construction Phase	Operational /Maintenance Phase
Refuelling and fuel storage areas, and areas used for servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths and must be located more than 20m away from the delineated area of the watercourse.		✓	✓
Stockpiling areas selected for temporary storage of imported building materials should be demarcated , and notices put up declaring what must be stockpiled where. No materials must be stockpiled within the channel of the watercourse;	✓	✓	✓
Chemical toilets must be provided for labour working on site (1 toilet / 15 persons). These toilet MUST be placed on a level surface and tied down to prevent blowing over.		✓	✓
Sewerage from chemical toilets must be removed & disposed of regularly (at least once a week) in a responsible manner by a registered waste contractor;		✓	✓
Cement/concrete batching must not be mixed on bare ground or within the watercourse. An impermeable / bunded area must be established to contain cement slurry, runoff and cement water and will not flow into the surrounding environment, the stream or riparian zone or contaminate the soil;		✓	✓
Areas of instream maintenance activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance of instream habitat outside of these areas;	✓	✓	✓
Excavated material, sediment and vegetation cleared from stormwater infrastructure (that cannot be used for backfill) must not be dumped in the channel of the watercourse and must be disposed of at a suitable waste collection facility; and		✓	✓
Applicant must appoint an ECO to oversee construction.	✓	✓	✓
Workers must be properly instructed (environmental induction by ECO) in the proper care of the environment, especially with respect to poaching, disturbance of nesting and roosting areas, disposal of human waste, garbage etc.	✓	✓	✓
The river reach must be routinely monitored to ensure that any barriers / obstructions to flow (dumped waste, felled trees, stormwater debris) are removed from the channel.		✓	✓
A schedule must be drawn-up to prompt inspection & monitoring of the stormwater infrastructure (at least once a month for the first six months and then once every six months thereafter), so that maintenance activities can be undertaken timeously so as to prevent damage to infrastructure and deterioration of the watercourse;			✓
After long-term monitoring, determine if additional protection is necessary.			✓
Prevent uncontrolled access of vehicles into the watercourse.		✓	✓
Post-construction rehabilitation must entail the replacement of topsoil on exposed banks which must be stabilised by planting with indigenous vegetation.		✓	✓
Kukuyu grass should be removed from the streambanks and a 5m riparian buffer, consisting of appropriate indigenous plants must be re-established along the length of the banks post-construction. It should be noted that a lot of factors including municipal budget and the property owners along this embankment might hinder this mitigation.			✓
Gabions will be packed by manual labour and not by machine.		✓	✓
All waste generated on-site must be adequately managed.		✓	

MITIGATION	Pre-Construction Phase	Construction Phase	Operational /Maintenance Phase
Separation and recycling of different waste materials should be supported.		✓	
Scouring or undercutting must be rehabilitated following the inputs of an aquatic ecologist.			✓
Any construction camp, storage, washing and maintenance equipment, storage of construction materials, or chemicals, as well as any sanitation and waste management facilities – (a) is located outside the 1 in 100-year flood line or riparian habitat of the river. (b) is removed within 30 days after the completion of any works.		✓	✓
Construction must start upstream and proceed in a downstream direction.		✓	
All excavated material from the banks of the watercourse must be stored and clearly demarcated until the works have been completed. The excavated material must be backfilled.		✓	✓
Following completion and during annual inspection to determine the need for maintenance, ensure that all disturbed areas are – (a) cleared of construction debris and other blockages; (b) re-vegetated with indigenous vegetation suitable to the area.			✓
Gabions must be inspected regularly and after every large storm, to detect damages or abnormalities (e.g. differential settlement). Any vegetation growing out of the gabion boxes must be removed. Broken or damaged panels can be repaired on site. If several gabion baskets are broken advice should be sought from the Engineer and maintenance must be undertaken under supervision of an ECO.			✓
Construction work must take place during normal work hours.		✓	✓
Traffic management must be in place during construction		✓	

5 RESPONSIBILITIES

This section deals with the responsibilities of various parties during the Construction Phase of any development.

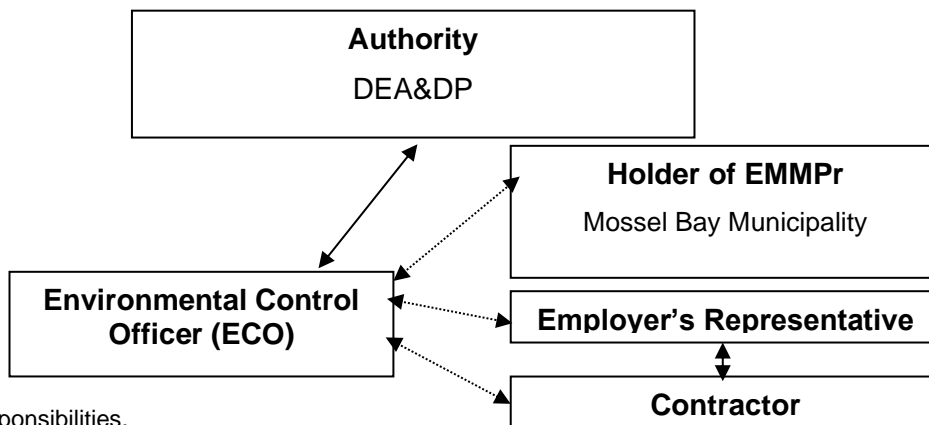


Figure 21: Responsibilities.

5.1 HOLDER OF THE EMMPR APPROVAL

The holder of the Approval / property owner is the overseeing entity responsible for ensuring that all activities undertaken on the property comply with the Environmental Management & Maintenance Programme (EMMPr), the General Authorisation (GA) (& any other approval / licence / permit), as well as the management and maintenance of the open space areas and river habitat.

The responsibilities of the holder of the Approval / property owner include, but are not limited to the following:

- Ensure that **all tender documentation** include reference to, and the need for compliance with, the EMMPr as well as any other legally binding documentation, which include and are not limited to Approval/s.
- Be conversant with, and ensure that all Contractors, Sub-contractors, Engineers (and future senior site managers / personnel) are made aware of, and understand the conditions and recommendations, contained in the abovementioned documentation;
- Ensure that all Contractors, Sub-contractors and Engineers (during construction activities) are made aware of their '**Duty of Care to the Environment**' and that any damage or degradation of the natural environment within the bounds of the property will be not be tolerated and must be dealt with / remedied at the cost of the perpetrator;
- Take remedial and/or disciplinary action in circumstances where persons are found to be in contravention of the abovementioned legally binding documentation.

5.2 ENGINEERS AND CONTRACTORS

The Engineers and Contractors are often the parties responsible for physically carrying out the activities for which majority of the recommendations in this EMMPr are intended. Service providers and Contractors include: services, building contractors, 'handy-men' and engineers overseeing the installation and maintenance of services etc. The responsibilities indicated here are also relevant to Sub-Contractors.

The responsibilities of these parties include but are not limited to the following:

- Be conversant and compliant with the EA, the EMMPr, and any relevant License, Permit or any legally binding documentation relevant to their operations;
- Have a responsibility to adhering to any conditions and recommendations laid out in above mentioned documentation;
- Prevent actions that may cause harm to the environment;
- Be responsible for any remedial activities in response to an environmental incident within their scope of influence;
- Liaise with the holder of the Approval & GA in complying with the EMMPr, and in the event that any industry regulated standards are in contradiction with the EMMPr or any other authorisations.
- Review and amend to any construction activities to align with the EMMPr and Best Practice Principles;
- Ensure compliance of all site personnel and / or visitors to the EMMPr and any other authorisations.
- Ensure that a copy of the EMMPr, the GA, any independent assessments of financial provision for rehabilitation and environmental liability, audit reports and compliance monitoring reports must be kept at the site of the authorised activities and be made available to anyone on request.

5.3 ECOLOGICAL CONTROL OFFICER (ECO)

It is recommended that a suitably qualified Environmental Control Officer (ECO) be appointed to oversee all activities for the duration of the construction phase (i.e. construction activities, rehabilitation), as well as any maintenance work that to be undertaken that will involve earthworks or machine works. The ECO must have at least 3 years' experience and proven competency as an ECO.

The responsibilities of the ECO include but are not limited to the following:

- Provide environmental induction training to Contractors on site prior to construction activities commencing
- Provide maintenance, update and review of the EMMPr, if necessary;
- Liaison between the Project Holder of the Approval, Contractors, Authorities and other lead stakeholders on all environmental concerns, including the implementation of the EMMPr;
- Compilation of Environmental Control Reports (ECR) to ensure compliance with the EA, EMMPr and duty of care requirements, where necessary;
- Compilation of the Environmental Audit Report or Environmental Completion Statement, after completion of construction (or as otherwise defined in the EMMPr Approval), where necessary;
- Ensuring / guiding and monitoring compliance with the EMMPr and any legally binding documentation;
- Facilitating consultation with relevant environmental authorities (e.g. DEA&DP, DFFE, CapeNature or Municipality);
- Facilitating the application for any required amendment of the EMMPr;
- Provide guidance and interpretation of the EMMPr where necessary;
- Issuing site instructions to the contractor for corrective actions required;
- The ECO is required to conduct regular site visits for the duration of the construction period, in order to ensure the Contractor receives the necessary induction and that all procedures are in place. Additional visits may be undertaken in the event of any unforeseen environmental accidents;
- The duration and frequency of these visits may be increased or decreased at the discretion of the ECO;
- Attendance of site meetings if required;
- Maintain a record of environmental incidents (e.g. spills, impacts, legal transgressions etc.) as well as corrective and preventative measures taken. This information must also be included in the ECR;
- Maintain a public complaints register in which all complaints and action taken must be recorded. This information must also be included in the ECR.
- Remain employed until all development activities are concluded, and the post construction rehabilitated, and monitoring requirements are finalised

5.3.1 ECO Site Visit Frequency

The following site frequency for ECO site visits is recommended:

- Weekly (minimum) during all earthworks and installation of the gabions/reno mattresses, or work undertaken in the river channel – in the event that the ECO deems more frequent site inspection to be necessary it must be accommodated by the Applicant.
- Bi-weekly during rehabilitation.
- Operational/Maintenance activities must be monitored on an ad hoc basis depending on the type of maintenance, as a minimum:
 - Any obvious damages noted following heavy rains;

- In the event that the Municipality or their appointed engineer becomes aware of any failure of the stormwater infrastructure or obstructions/barriers to flow are noted;
- Once a year to be checked by an ECO for a minimum period of five (5) years from date of implementation.

Ad hoc site visits may be undertaken in the event of any incidents or specific requests from the project holder or project team.

5.3.2 Environmental Induction & Training

The holder of the EA in consultation with the Contractor shall ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an induction presentation on the importance and implications of the EMMPr. The presentation shall be conducted, as far as is possible, in the employees’ language of choice. The Contractor must provide a translator from their staff for the purpose of translating, if this is deemed necessary.

As a minimum, training must include:

- Explanation of the importance of complying with the EMMPr and the employees accountability;
- Discussion of the potential environmental impacts of construction activities;
- The benefits of improved personal performance;
- Employees’ roles and responsibilities, including emergency preparedness ;
- Explanation of the mitigation measures that must be implemented when carrying out their activities;
- Explanation of the specifics of this EMMPr and its specification (no-go areas, etc.);
- Explanation of the management structure of individuals responsible for matters pertaining to the EMMPr.

Where staff turnover is high and with additional appointment of sub-contractors, it may be necessary to undertake additional induction training sessions. The Contractor must keep records of all environmental training sessions, including names, dates and the information presented.

6 PRE-CONSTRUCTION DESIGN CONSIDERATIONS

In addition to the abovementioned mitigation measures / management requirements, it is recommended that sustainable design considerations are implemented during the planning phase to ensure that the impacts associated with the development are avoided, minimised or managed before construction commences.

6.1 <u>STORMWATER MANAGEMENT PREPARATION</u>	
Management Statement	Impacts & Risks Avoided
To prepare the site to minimise the negative impacts of stormwater	Damage to the environment caused by stormwater runoff
Management Actions	
Final design of the stormwater system must take place prior to construction to ensure timeous implementation. Refer to Site Development Plan & Method Statement compiled by V3 Consulting Engineers (Appendix 3).	

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site Plans	Once off	Engineer	Prior to construction	Audit	Once off

6.2 GABION DESIGN					
Management Statement			Impacts & Risks Avoided		
To prepare the site to minimise the negative impacts of erosion			Damage to the environment caused by further erosion		
Management Actions					
Final design of gabions must take place prior to construction to ensure timeous implementation. V3 Consulting Engineers designed the gabions in as a stepped spillway to prevent increased stream velocity and consequent further erosion.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site Plans	Once off	Engineer	Prior to construction	Audit	Once off

7 CONSTRUCTION CONSIDERATIONS

These Construction Phase requirements are aimed at using Best Practise Principles and / or specialist recommendations to manage the impacts on the environment during the construction of the development.

7.1 STORMWATER MANAGEMENT					
Management Statement/Outcome			Impacts & Risks Avoided		
To minimise the generation of contaminated stormwater during periods of high rainfall & intermittent stormwater flow.			Minimise sedimentation, erosion and / or undercutting		
Management Actions					
Divert stormwater by placing sand bags in the proposed area of construction which prevent saturated soil (silt) from washing downstream before or while placing gabions.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance

Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
<p>Any areas that are identified by the ECO as being prone to erosion must be suitably protected. During construction, the contractor shall protect all areas susceptible to erosion by installing temporary works (e.g., sandbags, strawbales ec.) and by taking any other measures necessary to prevent stormwater from concentrating in streams and scouring slopes, banks, etc.</p> <p>In areas where construction activities have been completed and where no further disturbance would take place, rehabilitation and re-vegetation should commence as soon as possible. A suitable rehabilitation method statement and indigenous plant species list must be submitted to the ECO for approval.</p>					
7.2 <u>DUST CONTROL</u>					
Management Statement/Outcome			Impacts & Risks Avoided		
To ensure there is no health risk or loss of amenity due to emission of dust to the environment.			Ensure land coverage with biomass chips / vegetation / damping to suppress dust.		
Management Actions					
Implement a dust prevention strategy, developed at the project planning stage					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
<p>The strategy should include the following amongst others:</p> <ul style="list-style-type: none"> • Speed control to minimise dust on site. • Exposed stockpile materials must be adequately protected against wind (covered) and should be sited taking into consideration the prevailing wind conditions. • Trucks bringing in materials must be covered to prevent dust and small particles escaping and potentially causing damage to people and property. 					
7.3 <u>NOISE</u>					
Management Statement/Outcome			Impacts & Risks Avoided		
To ensure nuisance from noise and vibration does not occur.			Nuisance impacts to neighbours and visitors.		
Management Actions					
Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly.	Contractor	During construction and operation	Audit	As required

	As required if complaints registered.				
Enclose noisy equipment such as generators and pumps.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	<i>As above</i>	Contractor	During construction	Audit	As required
Provide noise attenuation screens, where appropriate.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	<i>As above</i>	Contractor	During construction	Audit	As required
Where an activity is likely to cause a noise nuisance to nearby residents, restrict operating hours to between 7 am and 6 pm weekdays and 7 am to 1 pm Saturday, except where, for practical reasons, the activity is unavoidable.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	As required if complaints registered.	Contractor	During construction	Audit	As required
7.4 <u>TRAFFIC CONTROL</u>					
Management Statement/Outcome			Impacts & Risks Avoided		
To manage and minimise the nuisance effect created by construction traffic.			Construction vehicles will access the site via Ferox Street along the western bank of the river channel. Construction traffic is likely to temporarily affect road users & residents along Ferox Street.		
Management Actions					
Implement a traffic management strategy during construction.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Daily	Contractor	During construction	Audit	As required

- Construction related activities should be timed where possible to avoid peak periods.
- No construction workers, apart from security personnel, should be allowed to stay on site overnight.
- Contractors appointed by the developer must ensure that workers are transported to & from the site daily.
- Construction related activities should comply with all relevant building regulations. Activities on site should be restricted to between 07h00 and 18h00 during weekdays and 08h00 and 13h00 on Saturdays. No work should be permitted after 13h00 on Saturdays and on Sundays.
- Temporary construction access to be rehabilitated once construction is complete.

7.5 WASTE MANAGEMENT

Management Statement/Outcome		Impacts & Risks Avoided			
To minimise the waste load discharged to the environment.		Improve waste disposal methods during construction. Reduce waste volumes to landfill sites			
Management Actions					
Reduce waste by selecting, in order of preference, avoidance, reduction, reuse and recycling.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Record of volumes of material removed	As required	Contractor	As required	Audit	Records
Provide adequate bins & waste receptacles on site. Maintain a high level of housekeeping and ensure that materials (especially cement bags & litter) are not left where they can be washed or blown away.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	Weekly	Contractor	As required	Audit	Records
Provide bins for construction workers and staff at locations where they consume food.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	Weekly	Contractor	As required	Audit	Records
Conduct ongoing awareness with staff of the need to avoid littering.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Induction	Once off	Contractor	As required	Audit	Attendance register

7.6 STOCKPILE MANAGEMENT

Management Statement/Outcome	Impacts & Risks Avoided
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To manage soil stockpiles so that dust and sediment in run-off are minimised.			Pollution due to dust and sediment run off		
Management Actions					
Minimise the number of stockpiles, and the area and the time stockpiles are exposed. Demarcate & contain stockpiles as far as possible.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	As required	Contractor	As required	Audit	Records
Keep topsoil and underburden / waste / subsoil stockpiles separate.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	Daily when stripping topsoil	Contractor	Continuously during construction	Audit	Records
Ensure that stockpiles and batters are designed with slopes no greater than 2:1 (horizontal/vertical).					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
Stabilise stockpiles and batters that will remain bare for more than 28 days by covering with mulch or anchored fabrics or seeding with sterile grass.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly

Establish sediment controls around unstabilised stockpiles and batters.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
Suppress dust on stockpiles and batters, as circumstances demand.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
7.7 <u>STORING FUELS & CHEMICALS</u>					
Management Statement/Outcome			Impacts & Risks Avoided		
To ensure that fuel and chemical storage is safe, and that any materials that escape do not cause environmental damage.			Avoid hydrocarbon pollution to soil and watercourses / coastal environments		
Management Actions					
Minimise fuels and chemicals stored onsite.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Install bunds and take other precautions to reduce the risk of spills.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance

Method statement	As required	Contractor	As required	Audit	Method statement records
Implement a contingency plan to handle spills, so that environmental damage is avoided.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
7.8 <u>MINIMISING EROSION</u>					
Management Statement/Outcome			Impacts & Risks Avoided		
To minimise the quantity of soil lost during construction due to land-clearing.			Avoid overland flow of silt by trapping & filtering run-off by installing silt traps (sandbags, biddum fences, strawbale bunds etc.		
Management Actions					
Schedule measures to avoid and reduce erosion by phasing the work program to minimise land disturbance in the planning and design stage.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Keep the areas of land cleared to a minimum, and the period areas remain cleared to a minimum					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records

Base control measures to manage erosion on the vulnerability of cleared land to soil loss, paying particular attention to protecting slopes.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Mulch, roughen and seed cleared slopes and stockpiles where no works are planned for more than 28 days, with indigenous or sterile grasses.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
Keep vehicles to well-defined haul roads.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site plan	As required	Contractor	As required	Audit	Final site plan
Rehabilitate cleared areas promptly.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	As required	Contractor	Continuously during construction	Audit	Final Rehabilitation statement
7.9 REHABILITATION & BOTANICAL MANAGEMENT					
Management Statement/Outcome			Impacts & Risks Avoided		

To ensure that degradation to existing botanical/aquatic components are minimised and that any rehabilitation is undertaken with conservation orientated approach.			To minimise the disturbance to existing flora To minimise the introduction and/or spread of weed species		
Management Actions					
Demarcate sensitive areas to avoid damage during construction.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor / Owner	Continuously	Audit	Visual / photographic
Rehabilitation and landscaping may only make use of indigenous vegetation.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	As required	Contractor / Owner	Continuously	Audit	Visual / photographic
7.10 FAUNA MANAGEMENT					
Management Statement/Outcome			Impacts & Risks Avoided		
To ensure that impacts to native faunal species is minimised and / or avoided.			To minimise the impact to fauna		
Management Actions					
Prevent unnecessary mortalities of indigenous fauna					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Ad hoc	As required	Contractor	Continuously	Audit	Visual / photographic
7.11 SOCIAL REQUIREMENTS					

Management Statement/Outcome			Impacts & Risks Avoided		
To ensure equitable, fair and safe social interaction on construction sites			Loss of employment opportunities to the region		
Management Actions					
It is strongly recommended that the Contractor make use of local labour as far as possible for the construction phase of the project.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Employment records	Ad hoc	Contractor	Ad hoc	Audit	Once off
a. Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the Developer and the Contractor.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site records	Ad hoc	Contractor	Ad hoc	Audit	Once off
<p>Targets</p> <ul style="list-style-type: none"> - The contractor must endeavour to source local suppliers. - The contractor must ensure that suitable procurement policies are in place that supports local economic growth. - Locally manufactured products must be used as far as possible. <p>Site Security</p> <p>Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the developer and the contractor.</p> <p>Considering this, contractors need to be proactive in order to curtail theft and crime on and resulting from the construction site. It is recommended that the contractor develop a jobsite security plan prior to commencement of construction. This jobsite security plan should take into account protection of the construction site from both internal and external crime elements as well as the protection of surrounding communities from internal crime elements. All incidents of theft or other crime should be reported to the South African Police Service, no matter how seemingly insignificant.</p>					
7.12 <u>METHOD STATEMENTS</u>					
Management Statement/Outcome			Impacts & Risks Avoided		

To ensure efficient communication mechanisms in the implementation of environmental performance requirements		Prevention of potential impacts are avoided during construction by means of correct communication			
Management Actions					
Method statements are written submissions by the Contractor to the ECO in response to the requirements of this EMMP or to a request by the ECO. The Contractor shall be required to prepare method statements for several specific construction activities and/or environmental management aspects.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	Ad hoc	Contractor	As required	Audit	Once off
<p>Based on the specifications in this EMMP, the following method statements are required as a minimum (more method statements may be requested as required at any time under the direction of the ECO):</p> <ul style="list-style-type: none"> • Demarcation of No-Go areas • Site clearing • Stormwater Management and Water Quality Control. • Erosion Control. • Post-construction rehabilitation. 					

8 OPERATIONAL/MAINTENANCE PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The Operational/Maintenance Phase of this EMMPr refers to the day to day management activities that are required to ensure sustainability and the achievement of the principles and objectives of the development. The requirements are applicable to the proponent, any HOA that is put in place, all employees and all visitors to the property.

8.1 <u>STORMWATER MANAGEMENT</u>					
Management Statement/Outcome			Impacts & Risks Avoided		
To ensure management of stormwater during operation phase			To prevent erosion, bank failure & sedimentation in downstream environment.		
Management Actions					
Following completion and during annual inspection to determine the need for maintenance, ensure that all disturbed areas are – (a) cleared of construction debris and other blockages; (b) re-vegetated with indigenous vegetation suitable to the area.					
Minimum annual inspection by ECO for first five (5) years thereafter audit frequencies.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Regular inspection	Should damages to be noted by the Municipality or appointed Engineer	Municipality	Should damages to be noted by the Municipality or appointed Engineer	Audit	Audit
<ul style="list-style-type: none"> Concentration of stormwater runoff will be minimised through the application of regular maintenance & repair, removal of built-up vegetation & debris & removal of alien vegetation. 					

8.2 <u>REHABILITATION</u>	
Management Statement/Outcome	Impacts & Risks Avoided
To ensure that indigenous vegetation is encouraged within watercourse areas in urban contexts.	<ul style="list-style-type: none"> Ongoing spread of alien invasive species. Loss of biodiversity, protected species & faunal habitat.
Management Actions	

Municipality must implement ongoing alien invasive plant management.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	Ongoing	Owner	As required	Audit	Audit
Retain and manage protected and indigenous vegetation & maintain rehabilitated Indigenous vegetation on the Ferox embankments.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	Ongoing	Owner	As required	Audit	Audit
<ul style="list-style-type: none"> Rehabilitate with appropriate indigenous vegetation as directed by the ECO. Replace vegetation if it dies off. 					

9 MONITORING, MAINTENANCE & VALIDITY OF EMMPR

9.1 MONITORING

Monitoring is an important tool in determining the effectiveness of management actions by measuring changes in the environment. These could be in the form of fixed-point photography where an area is photographed on a regular / seasonal basis to ascertain changes, monitoring of a particular aspect such as landscape integrity parameters, recordings of animal movement from fixed point etc. The most important aspect of any monitoring programme is **consistency and continuity**. This will ensure a level of scientific accuracy to determine baselines / thresholds and measure changes / deviations, which then drive management reactions.

Any required monitoring reports must be made available to the competent authority as required.

The type and frequency of monitoring must include:

- During construction photographs must be taken from pre-identified fixed points and a comprehensive record maintained by the ECO;
- Incident Reports;
- Site meeting minutes.

9.2 POST - CONSTRUCTION MAINTENANCE & VALIDITY OF EMMPR

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

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

The following is recommended:

- Conduct an As-built survey of the completed structure and Municipality to keep this on record for future maintenance work.

- Any reports of damage to the structure to be followed-up by Municipality.
- Municipality to conduct visual inspection post heavy rains / flooding for any damage to the structure. Detect damages / abnormalities (bulging, broken components, corrosion of mesh baskets, vegetation growth or vandalism). Remove any vegetation growing out of the gabion boxes.
- DEADP & BGCMA to be notified, seven (7) days in advance, of any maintenance work.
- Appoint an ECO to monitor maintenance work.
- Holder of the EMMPr Approval must supply ECO with a Method Statement for maintenance work in order to determine inspection frequency.
- ECO completion report once maintenance is complete.
- Maintenance work to be undertaken in line with EMMPr & as-built survey (engineer to confirm compliance with “as-built”).

Gabion structures are typically very robust and have a long lifespan (20-30 years).

This EMMPr must be valid for a minimum of twenty (20) years to cover future maintenance activities.

9.3 MONITORING TIMEFRAMES SUMMARY

Table 6: Monitoring Timeframe Summary

MONITORING TIMEFRAMES		
Type	Frequency	Criteria
ECO visits	As per section 5.3	Site photographs / site diary
Record keeping	Monthly	Site photographs, method statements, site meeting minutes (if applicable)
	3 month post construction	Completion Statement to be submitted to the DEADP
Operational	Annually for the first five (5) years of operation	Compliance Report to be submitted to the DEADP
Auditing	As per the EA conditions	Compliance with the EMMPr, municipal permits. Note that GA compliance is the responsibility of the BGCMA.

9.4 ENVIRONMENTAL AUDITS

A final construction phase Completion Statement must be submitted within 3 months of completion of construction / site handover.

This Completion Statement must include the monitoring results as above, where applicable to construction.

An independent Environmental Audit must be undertaken and compiled in terms of the conditions set forth in the Environmental Authorisation.

9.5 AUDIT REPORTS FREQUENCIES & FORMAT

The table below provides a summary of the timeframes for the various Audit Reports recommended in this EMMPr.

Table 7: Audit Reports Timeframe Summary

ENVIRONMENTAL INTERNAL AUDIT TIMEFRAMES (to be undertaken by the appointed ECO)		
Type	Frequency	Criteria
Construction audit	Within three (3) months of the conclusion of the construction, stabilization, rehabilitation, and monitoring requirements thereof.	Compliance with the Environmental Regulations for Audits (in terms of chapter 5 of regulation 982). Compliance with the provisions of the EMMPr.
Future audit reports.	Annually for a period of five years from implementation	Compliance with the Environmental Regulations for Audits (in terms of chapter 5 of regulation 982). Compliance with the conditions of the EMMPr.

The Environmental Audit Report(s) must-

- be prepared and submitted to the Competent Authority, by an independent person with the relevant environmental auditing expertise.
- provide verifiable findings, in a structured and systematic manner, on-
 - the level of compliance with the conditions of the environmental authorisation, EMMP and the EMMPr and whether this is sufficient or not; and
 - the ability of the measures contained in the EMMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.
- identify and assess any new impacts and risks as a result of undertaking the activity;
- evaluate the effectiveness of the EMMPr or both;
- identify shortcomings in the EMMPr;
- identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMMPr;
- indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation;
- indicate the date on which the operational phase was commenced with and the progress of the rehabilitation;
- include a photographic record of the site applicable to the audit; and
- be informed by the ECO reports.

9.6 EXTERNAL AUDIT REQUIREMENTS

In terms of the 2014 EIA Regulations, external Audit Reports must be submitted to the registered Interested & Affected Parties within 7 days of submission to the competent authority.

The external Audit may not be undertaken by the EAP responsible for the EMMPr, or the acting ECO. It must be undertaken by an external party with sufficient experience and knowledge of similar type activities.

In order to comply with the 2014 EIA Regulations, any external audits must be undertaken using the following format:

Table 8: Environmental Audit Requirements

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report.	
Objective	Description
The objective of the environmental audit report is to -	
(a) Report on – (i) the level of compliance with the conditions of the environmental authorisation and/or the EMMP, and where applicable, the closure plan; and (ii) the extent to which the avoidance, management and mitigation measures provided for in the EMMP, and where applicable, the closure plan achieve the objectives and outcomes of the EMMP, and closure plan.	
(b) Identify and assess any new impacts and risks as a result of undertaking the activity.	
(c) Evaluate the effectiveness of the EMMP, and where applicable, the closure plan.	
(d) Identify shortcomings in the EMMP, and where applicable, the closure plan.	
(e) Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMMP, and where applicable, the closure plan.	
Requirement	Description
(1) An Environmental audit report prepared in terms of these Regulations must contain -	
(a) Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.	
(b) A declaration that the independent auditor is independent in a form as may be specified by the competent authority.	
(c) An indication of the scope of, and the purpose for which, the environmental audit report was prepared.	
(d) A description of the methodology adopted in preparing the environmental audit report.	
(e) An indication of the ability of the EMMP, and where applicable the closure plan to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) Ensure compliance with the provisions of environmental authorisation, EMMP, and where applicable, the closure plan.	

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report.

Objective	Description
(f) A description of any assumptions made, and any uncertainties or gaps in knowledge.	
(g) A description of an consultation process that was undertaken during the course of carrying out the environmental audit report.	
(h) A summary and copies of any comments that were received during any consultation process.	
(i) Any other information requested by the competent authority.	

Any other requirements of the GA or any other authorisations must be incorporated into an Audit where necessary.

10 DECOMMISSIONING PHASE

Not Applicable.

11 NON-COMPLIANCE

Any person is liable on conviction of an offence in terms of regulation 49(a) of the National Environmental Laws Second Amendment Act (Act 30 of 2013) to imprisonment for a period not exceeding ten (10) years or to a fine not exceeding R10 million or an amount prescribed in terms of the Adjustment of Fines Act, 1991 (Act No. 101 of 1991).

It is the responsibility of the ECO to report matters of non-compliance to the Employer's Representative or the Holder of the EMMPr Approval if no representative is in place. It is the responsibility of the Holder of the EMMPr Approval, and not the ECO, to report such matters of non-compliance to the competent Authority.

11.1 PROCEDURES

The Holder of the EMMPr Approval must comply with the environmental specifications and requirements of this EMMPr, any Approval / License (the GA) issued and Section 28 of NEMA, on an on-going basis and any failure on his part to do so will entitle the authorities to **impose a penalty**².

In the event of gross non-compliance the following recommended process shall be followed:

- The ECO must issue a written warning to the Applicant informing of the non-compliance and the Applicant must be afforded an opportunity to rectify the matter within a agreed period of time;
- Failing which the non-compliance must be reported to the Competent Authority and the competent authority has the discretion to issue a **Notice of Non-compliance** to the Holder of the EMMPr Approval, stating the nature and magnitude of the contravention.

² A penalty may not necessarily be a monetary fine but could also be a stoppage in work time, additional mechanisms to prevent pollution or degradation at the cost of the proponent or even a directive to cease activities from the competent authority.

- The Holder of the EMMPr Approval must **act to correct the transgression** within the period specified in by the authority/ECO.
- The Holder of the EMMPr Approval must provide the competent authority/ECO with a **written statement** describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions.
- In the case of the Holder of the EMMPr failing to remedy the situation within the predetermined time frame, the competent authority may recommend halting the activity.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the competent authority shall be entitled to undertake or to cause to be undertaken such **remedial works** as may be required to make good such damage at the cost of the Project applicant.
- In the event of a dispute, difference of opinion, etc. between any parties in regard to or arising out of interpretation of the conditions of the EMMPr, disagreement regarding the implementation or method of implementation of conditions of the EMMPr, etc. any party shall be entitled to require that the issue be referred to **specialists and / or the competent authority** for determination.
- The competent authority shall at all times have the right to **stop work** and/or certain activities on site in the case of non-compliance or failure to implement remediation measures.

12 REFERENCES

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Western Cape Department of Environmental Affairs & Development Planning, 2022. *Information Document for the Development of a Maintenance Management Plan for a Watercourse.* Dorp Street, Cape Town.

13 DECLARATION**The PERSON THAT WILL BE UNDERTAKING the Maintenance**

I ... **Soundrajan Naidoo** ..., in my personal capacity or **duly authorised** by ... **Mossel Bay Local Municipality**... thereto hereby declare that I/we:

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

Signature of the proponent:



Date: 19/09/2023 .

Mossel Bay Municipality

Name of institution/company: