DRAFT
ENVIRONMENTAL MANAGEMENT PROGRAMME FOR PROPOSED HOUSING PROJECT ON ERVEN 7752 AND 1003, LOUWVILLE, VREDENBURG

REF: 16/3/3/6/7/1/F4/9/3326/18

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Prepared for: Saldanha Bay Municipality
Private Bag X12
Vredenburg
7380
Tel: 022 701 7000
Fax: 022 715 1518
Email: mun@sbm.gov.za

Prepared by: Eco Impact Legal Consulting (Pty) Ltd
P.O. Box 45070
Claremont
South Africa
7735
Tel: 021 671 1660
Fax: 088 021 671 1660
Email: admin@ecoimpact.co.za

eco impact Environmental Health & Safety Legal Consulting	**Title:** **PROPOSED HOUSING PROJECT ON ERVEN 7752 AND 1003, LOUWVILLE, VREDENBURG** **2nd DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME**
Eco Impact No: 3326/18/DBAR	**Date:** 16 July 2019
Carried Out By: Eco Impact Legal Consulting (Pty) Ltd P.O. Box 45070 Claremont 7735 Tel: 021 671 1660; Fax: 088 021 67 11675 E-mail: admin@ecoimpact.co.za	**Client:** Saldanha Bay Municipality Private Bag X12 Vredenburg 7380 Tel: 022 701 7000 Fax: 022 715 1518 Email: mun@sbm.gov.za
Author: Lauren Abrahams	**Client Contact Person:** Municipal Manager

Verification	Capacity	Name	Signature	Date
By Author	EAP	Lauren Abrahams		16 July 2019

COMMITMENT AND DECLARATION OF UNDERSTANDING BY CONTRACTOR AND DEVELOPER FOR THE PROPOSED HOUSING PROJECT ON ERVEN 7752 AND 1003, LOUWVILLE, VREDENBURG

I, the undersigned ……., as duly authorized by the Contractor, have studied and understand the contents of this document. On behalf of the Contractor, I confirm that the Contractor undertakes to adhere to the conditions as set out herein, unless specifically otherwise agreed to in writing.

Signed at ……. on this …….. Day of ……20……

…….
For Contractor

I, the undersigned ……., as duly authorized by the Developer have studied and approve the contents of this document on behalf of the Developer, for implementation by all Contractors involved at the site.

Signed at ……. on this …….. day of ……20…….

…….
Developer's Representative

DEFINITIONS

Auditing:	A systematic and objective assessment of an organization's activities and services conducted and documented on a periodic basis based to a (e.g. ISO 19011:2011) standard.
Biodiversity:	The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.
Contractor:	An employer, as defined in section 1 of the Occupational Health and Safety Act 85 of 1993, who performs construction work and includes principal contractors
Environment:	A place where living, non-living and man-made features interact, and where life and diversity is sustained over time.
Evaporation:	The change by which any substance (e.g. water) is converted from a liquid state into and carried off as vapour.
Developer:	One who builds on land or alters the use of an existing building for some new purpose
Independent:	Is independent and has no interest in any business related to the development site, nor will receive any payment or benefit other than fair remuneration for the task undertaken
Groundwater:	Subsurface water in the zone in which permeable rocks, and often the overlaying soil, are saturated under pressure equal to or greater than atmospheric.
Landowner:	Holder of the estate in land with considerable rights of ownership or, simply put, an owner of land
Monitoring:	A systematic and objective observation of an organisation's activities and services conducted and reported on regularly.
Natural vegetation:	All existing vegetation species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on a site.
Pollution:	The result of the release into air, water or soil from any process or of any substance, which is capable of causing harm to man or other living organisms supported by the environment.
Protected Plants:	Plant species officially listed under the Threatened or Protected Species regulations as well as on the Protected Plants List (each province has such a list), and which may not be removed or transported without a permit to do so from the relevant provincial authority.
Red Data Species:	Plant and animal species officially listed in the Red Data Lists as being rare, endangered or threatened.
Rehabilitation:	Making the land useful again after a disturbance. It involves the recovery of ecosystem functions and processes in a degraded habitat. Rehabilitation does not necessarily re-establish the pre-disturbance condition, but does involve establishing geological and hydro logically stable landscapes that support the natural ecosystem mosaic.
Site:	Property or area where the proposed development will take place

ACRONYMS

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

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DEVELOPER's COMMITMENT

The Saldanha Bay Municipality ("SBM") has committed itself to a set of values that include the maintenance of good relations and transparent communications with all stakeholders, and the dynamic engagement of the larger community.

SBM undertakes to implement suitable management systems for all the areas and aspects of this operation. This will ensure that development itself and management of the project will comply with legal, technical, environmental and transformation policies and standards.

SBM, in drafting this EMP for implementation, intends to enable continuous improvement in legal compliance and the sustainable operation of the site.

This EMP intends to further guide the achievement of the strategic objectives of the organization at the project site and seeks to ensure that the basic requirements of ISO 14001: 2004 are satisfactorily met.

The EMP intends to change the way in which the owners, the construction process they have commissioned and the contractor plan for and manage resources to achieve sustainability.

The satisfactory implementation of the EMP on site will require both the full support and commitment of all personnel.

CHAPTER 1

1.1. Executive Summary

This EMP has been prepared principally in compliance with the requirements of section 24N and Section 34 of the National Environmental Management Act 107 of 1998. This document, together with the conditions in the Environmental Authorisation, must be adhered to.

The EMP must be included as part of all contract documentation for all contractors in the construction phase of the development.

The Author and Eco Impact Legal Consulting (Pty) Ltd ("Eco Impact")

Eco Impact is an independent consulting company and has no interest in any business related to the development site, nor will it receive any payment or benefit other than fair remuneration for the task undertaken, as required in terms of the NEMA Regulations.

Lauren Abrahams has completed her professional registration in terms of section 20(3) (b) of the Natural Scientific Professions Act, 2003 (Act 27 of 2003) as a Candidate Natural Scientist in the field of practice Biological Science (Registration number 100126/12). She obtained her B Tech in Oceanography at the Cape Peninsula University of Technology in 2010.

Lauren has trained as a Junior Environmental Assessment Practitioner since July 2015 and has been involved in the compilation, coordination and management of Basic Assessment Reports, Environmental Impact Assessments, Environmental Management Programmes, Waste Licence Applications, Water Use Licence Applications and Baseline Biodiversity Surveys for numerous clients. ***See attached hereto curriculum vitae of the EAP in Annexure B.***

The Saldanha Bay Municipality has appointed Eco Impact to prepare an Environmental Management Programme that meets the technical standards as required by DEA&DP.

1.2. Project Description

This section of the report is included in compliance with Section 24N (2) (c) of the National Environmental Management Act 107 of 1998.

Saldanha Bay Municipality proposes a housing development and associated infrastructure on erven 7752 and 1003 with a total development area of ±5.122 ha. The development proposes the following:

- ±154 residential erven (±120-160m^2);
- 3 open space erven (±1.1158ha) mainly along the southern border of the site which includes the concrete stormwater channel and its 1:100 year floodline area;
- Creche/church erf (±1989m^2);
- Road erf (±1.5539m^2); access roads to the development will be from Kootjieskloof street (250m from Maclon street) and Maclon street (127m from Kootjieskloof street); Proposed new roads situated in the 16m road reserves will be 5,0m wide, and new roads situated in the 10m road reserves will be 4,5m wide. The 5,0m wide roads will have kerbs installed on both sides, namely CK5 and MK10, while the 4,5m wide roads will have CK5 and edging (90mm).
- Internal Sewer main pipelines will be 160mm diameter uPVC Class 34, with a maximum capacity of 16 l/s; house connections will be 110mm diameter uPVC Pipes;
- Internal Water main pipelines will be 160mm/110mm diameter uPVC Class 12, with a maximum capacity of 17 l/s; house connections will be 25/20mm HDPe pipes;
- Internal underground stormwater pipelines will be 375mm/450mm diameter concrete pipes, with a maximum capacity of 150 l/s, the proposed stormwater system will drain to the existing stormwater concrete canal and connect to the existing canal at three points, the stormwater design will allow for the 1:2 and 1:50 year floods;
- Re-route 300mm diameter existing sewer main pipelines, with a maximum capacity of 100 l/s;
- All proposed infrastructure will connect to existing Municipal infrastructure;
- The 1:50 and 1:100 year floodline areas of the concrete stormwater channel running along the southern border of the site will be excluded as no-go/no-development area for the duration of the construction phase of the development unless activities relate to installation of service and road infrastructure or rehabilitation of disturbed area, and will eventually be fenced as a safety precaution with 2,4m high ClearVu fencing.
- Approximately 2ha of severely degraded and homogenous Saldanha Granite Strandveld indigenous vegetation listed as Endangered will be removed.

See the site development plans attached as Annexure C of the EMPr, please refer to additional details of services in GLS report located in Appendix K4 of the BAR and the Preliminary Engineering Services Report in Appendix K3 of the BAR

CHAPTER 2

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act 107 of 1998.

It deals with issues relating to the implementation of the EMP.

2.1 Organizational Structure

The organizational structure identifies and defines the responsibilities and authority of the various persons and organizations involved in the project. All instructions and official communications regarding environmental matters must follow the organizational structure.

The Environmental Official (EO), to whom the Engineer's Representative (ER) and/or Environmental Control Officer (ECO) must report and interact, must be the responsible client representative.

The EMP must be an agenda item at the monthly site and operations meetings and the responsible client representative(s) may attend these meetings in order to provide input with respect to compliance with the EMP.

2.2 Responsibilities and Functions of the Environmental Control Officer

The ECO will be responsible for monitoring, reviewing and verifying compliance with the EMP and/or EA by all contractors and site management during site visits.

The ECO duties in this regard will include the following:

With the assistance, where necessary of the ER, to ensure all necessary environmental authorizations and permits have been obtained and are available and visible on site at the ER offices.

- monitor and verify that the EMP and/or EA is adhered to at all times and by taking action if the specifications are not followed;
- conduct the initial environmental awareness training for construction employees before construction commences onsite;
- monitor and verify that environmental impacts are kept to a minimum;
- review and approve construction method statements, with input as appropriate from the ER;
- assist the contractor in finding environmentally responsible solutions to problems;
- report on the environmental issues at the site meetings and other meetings that may be called regarding environmental matters, if requested by ER;
- inspect the site and surrounding areas regularly with regard to compliance with the EMP and/or EA;
- monitor the environmental awareness training for all new personnel coming onto site;
- advise management on the removal of person(s) and/or equipment not complying with the specifications, after collaboration with the ER. Recommendations must be recorded by the ER in Site Instruction Book.
- ensure that activities on site comply with known legislation of relevance to the environment;
- recommend the issuing of penalties via the developer for contraventions of the EMP and/or EA;
- keep a photographic record of progress on site from an environmental perspective; and
- Undertake a continual internal review of the EMP and/or EA and submit a report to the developer and the responsible DEA&DP Environmental Official as according to EA conditions.

2.3 Agreed Work Plan and Site Visit Schedule of ECO

After initial construction start-up site visit it is recommended that an ECO site visit be conducted once a month during construction.

Information recording activity on site, and any guidelines or instructions emanating there from will be routinely made available electronically to the developer and applicable contractors and a copy of the report must be available at the site office.
Clearly matters of urgency or immediate action may be channelled appropriately on an urgent basis.

2.4 Site Manager

The site manager will have the following environmental control responsibilities:

- In conjunction with the ECO will present the environmental education programs to all persons employed on site.

- Consult with the ECO, landowner, developer and any contractor to resolve all environmental issues.
- Issue any instructions from the ECO to the management team via a formal site instruction book or appropriate management tool used for the purpose.
- Take responsibility for the penalty system. The ECO and developer recommendations must be considered when deciding whether or not to impose a penalty.
- The engineer will, via the ECO actions, be accountable for the overall implementation of the Environmental Management Programme.
- Keep a site diary and complaints register

2.5 Contractors

As part of any tender, the tendering contractor must submit a first draft of a contractor's programme, to the developer which must include the environmental considerations to be followed prior to appointment.

The appointed Contractor's representative will have the following responsibilities:

- Ensure that all staff is familiar with the Environmental Management Programme, which explains the environmental policy for the project.
- Allow for sufficient time between surveying the exact locations where services will be intended and actual construction, for the ECO to facilitate and instruct for the removal of plants, seeds and cuttings if necessary.
- The contractor must keep his personnel fully aware of environmental issues and ensure they show adequate consideration to all environmental aspects.
- Establish environmental signs to be erected on the construction site at locations identified by the ECO and approved by the engineer.
- Be responsible for the cost of the restoration of any damage caused, in environmentally sensitive areas, as a result of contractor responsibility regarding negligence. This must be done in accordance with the engineer / ECO's specifications.
- Take responsibility and active steps to avoid any increase in the fire hazard.
- The contractor must take responsibility for implementing all the relevant provisions of the EMP, or if he encounters difficulties with the specifications, he must discuss alternative approaches with the ECO and engineer prior to proceeding.

Failure to comply with the EMP may result in the application of fines as set out, and any reported non-compliance may result in the suspension of work or termination of a contract.

2.6. Record keeping of activities, inclusive of recording of non-compliances and corrective actions

The ECO or ER must keep a record of all activities relating to environmental matters on site, including:

- method statements received and approved;
- issues arising on site;
- cases of non-compliance with the EMP;
- corrective action taken and penalties issued.

This information will be recorded in an appropriate manner by the ECO or ER in a site diary, registers, issues/warning book, etc.

2.7 Compliance with other legislation

It is important that all on site staff are aware of other relevant legislation that may relate to the activities taking place on site, especially local authority required compliances.

CHAPTER 3

Applicable Legislation, Policy and Environmental Principles

3.1. Applicable Legislation Identified

1. ADVERTISING ON ROADS AND RIBBON DEVELOPMENT ACT, 21 OF 1940
2. BASIC CONDITIONS OF EMPLOYMENT ACT, 75 OF 1997
3. COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 130 OF 1993
4. CONSERVATION OF AGRICULTURAL RESOURCES ACT, 43 OF 1983
5. CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996
6. EMPLOYMENT EQUITY ACT, 55 OF 1998
7. ENVIRONMENT CONSERVATION ACT, 73 OF 1989
8. ENVIRONMENT CONSERVATION ACT, 73 OF 1989: WESTERN CAPE NOISE CONTROL REGULATIONS
9. FENCING ACT, 31 OF 1963
10. HAZARDOUS SUBSTANCES ACT, 15 OF 1973
11. LABOUR RELATIONS ACT, 66 OF 1995
12. NATIONAL BUILDING REGULATIONS AND BUILDING STANDARDS ACT, 103 OF 1977
13. NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 107 OF 1998
14. NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 39 OF 2004
15. NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 10 OF 2004
16. NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 59 OF 2008
17. NATIONAL FORESTS ACT, 84 OF 1998
18. NATIONAL HEALTH ACT 61 OF 2003
19. NATIONAL HERITAGE RESOURCES ACT, 25 OF 1999
20. NATIONAL VELD AND FOREST FIRE ACT, 101 OF 1998
21. NATIONAL WATER ACT, 36 OF 1998
22. OCCUPATIONAL HEALTH AND SAFETY ACT, 85 OF 1993
23. SALDANHA BAY MUNICIPALITY: AIR QUALITY BY-LAW
24. SALDANHA BAY MUNICIPALITY: BY-LAW ON MUNICIPAL LAND USE PLANNING
25. SALDANHA BAY MUNICIPALITY: BY-LAW RELATING TO BOUNDARY WALLS AND FENCES
26. SALDANHA BAY MUNICIPALITY: BY-LAW RELATING TO PUBLIC NUISANCES
27. SALDANHA BAY MUNICIPALITY: BY-LAW RELATING TO ROADS AND STREETS
28. SALDANHA BAY MUNICIPALITY: BY-LAW RELATING TO WATER SUPPLY, SANITATION SERVICES AND INDUSTRIAL EFFLUENT
29. SALDANHA BAY MUNICIPALITY: FIRE SAFETY BY-LAW
30. SALDANHA BAY MUNICIPALITY: INTEGRATED WASTE MANAGEMENT BY-LAW
31. SALDANHA BAY MUNICIPALITY: OUTDOOR ADVERTISING AND SIGNAGE BY-LAW
32. SALDANHA BAY MUNICIPALITY: PARKING MANAGEMENT BY-LAW
33. SALDANHA BAY MUNICIPALITY: PUBLIC AMENITIES BY-LAW
34. SALDANHA BAY MUNICIPALITY: STORMWATER MANAGEMET BY-LAWS
35. TOBACCO PRODUCTS CONTROL ACT, 83 OF 1993
36. WATER SERVICES ACT, 108 OF 1997
37. WEST COAST DISTRICT MUNICIPALITY: AIR QUALITY MANAGEMENT BY-LAW
38. WEST COAST DISTRICT MUNICIPALITY: BY-LAW RELATING TO FIRE SAFETY
39. WEST COAST DISTRICT MUNICIPALITY: MUNICIPALITY HEALTH BY-LAWS

CHAPTER 4

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act 107 of 1998.

4.1. Monitoring and Auditing

4.1.1 Introduction

In keeping with current environmental and associated legislation, all environmental management procedures and actions must be reviewed and refined on an ongoing basis.

This is in accordance with the dynamic nature of environmental management and allows for the timeous identification and mitigation of issues as they come to light.

The process of review and refinement, built into the requirements of the EMP, is known as monitoring and auditing.

4.1.2. Roles and responsibilities

Efficient implementation of the performance specifications, effective monitoring and auditing, as well as clear responsibility and accountability allocation requires that various role-players be defined for the construction implementation project.

Depending on the nature and scale of a project, implementing teams could be composed of any number of role-players, each with their own specified responsibilities.

Therefore, for the purpose of this document, the following role-players are defined, based purely on responsibility and accountability allocation. The actual designation of role-players may vary, but the responsibilities will largely remain as stated.

4.1.2.1. Developer/landowner or custodian of the land

The developer/landowner or custodian of the land is the person or organization with decision making capacity for the land in question, and thus ultimately accountable for what takes place on that land and implementation of the EA and EMP requirements.

4.1.2.2. Contractor

Contractors are appointed to undertake the works as specified in the contract. It is the responsibility of the contractor to do whatever is necessary from their side to ensure that he or an appointed advisor is well versed in environmental studies, so that they may accurately and efficiently carry out the requirements of the environmental specification.

The contractor is liable for any and all remedial work required in terms of the environmental specification, resulting from his environmental negligence, mismanagement and / or non-compliance.

4.1.2.3. Environmental Control Officer

An environmental control officer will manage and undertake monthly environmental inspections for the duration of the construction phase of the project as required.

The contractors or line management are answerable to the ECO for non-compliance with the performance specifications. Issues of non-compliance raised by the ECO/EO must be taken up by the project manager, and resolved as per the conditions of his contract.

Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation and not allowed for in the performance specification) must be endorsed by the project manager.

4.2. The Monitoring Procedure

Environmental monitoring is the continuous evaluation of the status and condition of environmental elements. Its purpose is to detect change that takes place in the environment over time and involves the measuring and recording of physical, social and economic variables associated with development impacts.

Many techniques for environmental monitoring have been proposed, each detailing a specific protocol. Regardless of which technique is used, the ultimate aim is that each environmental management specification be checked by means of a system in which a score may be allocated for:

- Full compliance
- Satisfactory performance
- Unsatisfactory performance and
- No action taken

Completed monitoring reports will be submitted to the project engineer, developer/landowner and the contractor, who will attend to issues. These reports must be kept on file and be made available upon request by any environmental authority requesting such.

All persons employed, the contractor or his sub-contractors, must abide by the requirements of these performance specifications as they apply to the works. Any employees, the contractor or his sub-contractors found to be in breach of any of the environmental specifications, may be ordered to vacate the site forthwith and/or be subject to a disciplinary process.

The order may be given orally or in writing by the ECO. Confirmation of an oral order will be given as soon as practicable, but lack of confirmation in writing must not be a cause for the offender to remain on site, or not be subject to a disciplinary process. Supervisory staff, the contractor or his sub-contractor may not direct any person to undertake any activities which would place such person in contravention of the EMP, legislation and specifications.

The contractor and staff are deemed not to have complied with the performance specifications if:

- There is evidence of wilful or accidental contravention of any specification included in the specification;
- There is evidence of the contractor carrying out activities not permitted in terms of the EMP, contract and / or the specification;
- There is evidence of environmental negligence and / or mismanagement resulting in negative impacts on the environment;
- Has failed to meet with the requirements of the approved schedule.

The contractor and developer/landowner will be informed via ECO monthly reports, as well as by means of direct instruction (if necessary) as to what corrective actions are required in terms of environmental compliance.

Disregard for an instruction, and failure to respond adequately to complaints from the public will be construed as non-compliance. Non-compliance may lead to parties being penalised.

In more serious cases, the ECO may give notice, and halt operations until such a time that the corrective action is taken and the site complies with the performance specifications.

In cases of persistent non-compliance, the contractor or staff may be evicted from site after disciplinary process is followed. Only the developer/landowner may issue such instruction, retaining any costs required to remedy situations perpetuated by environmental negligence, mismanagement and / or non-compliance.

4.3. The Auditing Procedure

Environmental auditing is the process of comparing the impacts predicted with those which have actually occurred during implementation.

An environmental performance audit examines and assesses practices and procedures which, in the event of failure, would cause an environmental impact or result in an environmental risk. During each of the lifecycle phases, various issues will be monitored. The performance audit will ensure that the monitoring was correctly undertaken and that compliance was best achieved.

To these ends the project will be audited versus this EMP for effectiveness. ISO/SANS 19011:2011 auditing standards will be applied.

Audits will be undertaken annually and/or at completion of the construction phase. Audit reports will be submitted to management, who will attend to all noted issues, and to DEA&DP.

These reports must be kept on record and be made available upon request by the developer/landowner/custodian of the land and any environmental authority or I&AP requesting such.

4.4 Compliance Auditing and Monitoring Schedule/s

Construction Phase	**Submission of Audit Report To**
Monthly ECO compliance monitoring	Construction Site Manager
Annual ECO compliance monitoring	Developer and DEA&DP
Completion of Construction Phase ECO compliance monitoring	Developer and DEA&DP
Operational Phase	
Internal monthly compliance auditing to be conducted by municipality	Municipal Manager
Annual internal audit report to be compiled by municipality	Report back to community forum on results of internal compliance auditing

4.5 Retentions and Penalties

It is recommended that a penalty retention system be combined with the penalty system to both motivate and compel the contractor to adhere to the EMP for the duration of the contract.

In this way incentives may be created to perform (i.e. in the form of the retention amounts that will only be paid to the contractor at the end of the contract), without creating the misunderstanding that adherence to the EMP is optional.

Persistent non-compliance will not only result in the contractor forfeiting any retention amount, but he will also be fined.

Of importance is that the contract specifies exactly how the penalty and retention system will operate, as well as how any funds resultant from retentions and penalties will be utilised.

All such funds must be used to improve environmental conditions on the site in general.

4.5.1. The retention system

For this system, a percentage value for each of the sections priced for in the environmental bill of quantities is retained until the full completion of the contract works.

If the monitoring process reveals persistent and/or wilful non-compliance with any aspect of the environmental performance specifications, then the full retention associated with that particular item will be withheld.

The project may then apply these retained funds to rectify the problem on site possibly making use of other or alternate resources at his disposal.

At the end of the contract or action, all remaining environmental retention amounts will be paid out to the contractor or staff pending approval by the ECO, after having confirmed full compliance with the relevant performance and rehabilitation specifications.

4.5.2. Penalty System

A system of penalties will be introduced to reinforce environmentally sensitive and prudent behaviour. The maximum penalties that will be fined per incident that may be enforced are listed below. The penalty amount will be determined (inter alia) by the severity of the offence.

Non-compliance	R 5 000.00 (ex VAT) per non-compliant act, per day until compliance is achieved
Casual Litter on site resulting from operation	R250 / offence / day
Disposal of any litter or construction material in non-specified area or by non-compliant means	R5000 / m^3/per day
Dumping of cement, concrete, fuel or oil in an area or other than that authorised and suitable	R10 000 per offence/day
Failure to use portable / toilets	R100 / observed incident or evidence of human excrement on site

In addition to the above, all costs incurred by the client/developer to remedy any damage will be the responsibility of the offender.

Should the monitoring process reveal acts of persistent and / or wilful non-compliance with the environmental performance specifications, then the contractor or staff member will be fined according to the specified value of that item. The ECO will issue the fine to the offender on which the value of the fine will be prescribed. All penalties will be paid directly to an environmental charity / NGO as identified by the ECO.

4.6. Method Statements

Contractors must provide written statements if requested by the ECO on environmentally sensitive aspects of the contract. Environmentally sensitive aspects include by example excavations, work close to sensitive areas, collection and storage of top soil and vegetation, erosion control, wash water control, waste control, etc.

Methods Statement (MS) Content

Examples of sensitive aspects that may require method statements it requested by the ECO. It is important to note that the ECO may request further methods specification, if it be deemed necessary in his view.

- MS to specify the construction.
- MS to indicate the timing and sequence of events to follow in sensitive areas to give sufficient time for the ECO to survey these areas and remove plants.

The Method Statement must include a site plan, preparatory steps, materials, and supervision details.

Example of Environmental Method Statement Form:

METHOD STATEMENT

CONTRACT:……..…….……... **DATE:**…….……..

PROPOSED ACTIVITY (give title of method statement and reference number from the EMP):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:	End Date:

HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated maps and plans where possible):

Note: please attach extra pages if more space is required

DECLARATIONS

1) ENVIRONMENTAL SITE OFFICER/ ENGINEERS REPRESENTATIVE [select correct term]

The work described in this method statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

_____ _____
(signed) (print name)

Dated: _____

2) PERSON UNDERTAKING THE WORKS

I understand the contents of this method statement and the scope of the works required of me. I further understand that this method statement may be amended on application to other signatories and that the ECO / EO and ER will audit my compliance with the contents of this method statement

_____ _____
(signed) (print name)

Dated: _____

3) APPROVING AUTHORITY (Engineer)

The works described in this method statement are approved.

_____ _____ _____
(signed) (print name) (designation)

Dated: _____

CHAPTER 5

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act 107 of 1998.

5.1. Good Housekeeping

The developer/landowner will ensure the maintenance of “good housekeeping” practices during operations.

This will help avoid several disputes regarding responsibility and will allow for the smooth running of the operation as a whole.

Good housekeeping extends beyond the environmentally sensitive construction methods to include the care for and preservation of the surrounding environment.

General construction management and good housekeeping practices
Latent and general impacts which may affect the freshwater ecology and biodiversity, will include any activities which take place in close proximity to the proposed development that may impact on the receiving environment. Mitigation measures for these impacts are highlighted below and are relevant to the freshwater system identified in this report:

5.2 Record Keeping

The developer/landowner will ensure that a filing system, identifying all documentation related to the EMP, is established.

A list of reports likely to be generated during the project is set out below.

All applicable documentation must be included in the environmental filing system catalogue or document retrieval index.

- Approved EMP, authorizations, licenses or permits;
- Final design documents and diagrams issued;
- All communications detailing changes of design/scope that may have environmental implications;
- Daily, weekly and monthly site monitoring reports;
- Complaints register;
- Environmental training manual;
- Environmental training attendance registers;
- Incident and accident reports;
- Emergency preparedness and response plans;
- Copies of all relevant environmental legislation;
- Permits and legal documents as part of emergency preparedness teams e.g. fire teams, etc.;
- Crisis communication manual;
- Disciplinary procedures;
- Monthly site meeting minutes during construction;
- All relevant permits;
- All method statements for all phases of the project.

5.3 Document Control

The developer/landowner will be responsible for establishing a procedure for document control.

The document control procedure must comply with the following requirements:

Documents must be identifiable by organisation, division, function, activity and contact person;

Every document must identify the person and their positions, responsible for drafting and compiling the document, for reviewing and recommending approval, and final approval of the document for distribution;

All documents must be dated, provided with a version number and reference number, filed systematically, and retained for a specified period.

The owner will ensure that documents are periodically reviewed and revised where necessary, and that current versions are available at all locations where operations essential to the functioning of the EMP are performed. All documents will be made available to the external auditor.

5.4 Reporting Requirements

All advice and recommendations made by the ECO must with the project engineer/engineers compliance be recorded on site in the site instruction book/ suitable register for his attention.

All hazardous spills will need to be documented and reported to DWS and other relevant authorities.

The applicant must ensure that "Any emergency incident, originating at the facility, which falls within the definition of section 30(1) of the National Environmental Management Act (NEMA), Act 107 of 1998, must be dealt with by the facility in accordance with Section 30 of NEMA". In the event of any incident the facility must ensure containment by the responsible person and report the incident to the West Coast District Municipality, Saldanha Bay Local Municipality and DEA&DP (Mr. Simon Botha, 021-4830752, Simon.Botha@westerncape.gov.za).

CHAPTER 6

6.1. Public Communication Protocols

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act 107 of 1998.

The developer/landowner must be responsible for regulating public access to information and compliance reporting.

The developer/landowner must respond to third party or public queries and complaints.

The developer/landowner must also be responsible for maintaining the compliance register to record complaints received and action taken.

CHAPTER 7

This section of the report is included in compliance with Section 24 N 2 (d - g) and 3 (a - b) of the National Environmental Management Act 107 of 1998.

Specialist and Engineer Recommendations to be adhered to before and During Commencement of Construction, Operational and Decommissioning Phases

Phase 1 Geotechnical Site Investigation. February 2019. Core Geotechnical Investigations

Executive Summary

The investigated site is roughly a triangular-shaped piece of land approximately 5.1 ha in area, located in the Vredenburg suburb of Louwville. It is bordered by Klooitjieskloof Street to the north, Maclons Street to the west and Louwville High School to the south. The site is currently undeveloped. Vegetation consists of mostly small shrubs, grasses and weeds. In terms of topography, the site is fairly flat lying with a slight slope down from the west towards the south-east. A stormwater channel lies to the south of the site and forms the boundary between Louwville High School and the investigated site. The general geology of the area consists primarily of Tertiary Aged consolidated and unconsolidated limestone and lime rich sands (calcretes) overlain by sand and sandy soils. There are

scattered outcrops of course grained porphyritic Vredenburg Granite (550-500 Ma) within the surrounding area, but these are not found within the site boundaries. Fill encountered across the entire site comprises gravelly clayey sand and variable amounts of builders and domestic waste. The waste is however mostly scattered and is generally less than 10 % of the fill profile. The fill ranges from 0.30 m deep (in test pit TP1) to approximately 0.8 m (in TP4) deep. Gravelly and clayey sands of transported origin underlie the fill and extend to a depth in excess of 2.90 m below ground level (bgl). The transported soils are relatively granular and coarse grained near surface increasing in clay content and becoming more clayey with depth. Residual soils and rock were not encountered on site. With depth, weathered residual granite soils and granite rock can be expected. Groundwater was encountered in TP2 at a depth of 2.8 m bgl. TP2 was located in the south-western corner of the site and is near the stormwater channel indicated earlier. The water in TP2 is potentially seepage from the nearby channel. Groundwater was not encountered in any of the other test pits. Highly compressible sandy fill soils are expected to have an impact on subsidy housing development and subsidy variations. A schedule of generic subsidy variations applicable to the site is outlined in Table 6.2. The Residential Site Class Designation (after Watermeyer & Tromp and the Joint Structural Division) is set out in Table 7.1. The entire site is classified as P(fill)/S/H, that is, compressible sandy fill material which in turn overlie moderately compressible sandy and clayey transported soils. This Phase 1 geotechnical site investigation indicates that the site is broadly suitable for project linked subsidy housing development, provided that aspects of concern relating to the geotechnical character of the site are addressed.

Foundation recommendations and solutions
The following founding options may be considered for single and possibly double storey structures with a bearing pressure not exceeding 120 kPa:
a) Found using strip foundations at approximately 0.50 - 1.0 m bgl in medium dense to dense soils. Settlement should not exceed 10 mm with a maximum allowable bearing pressure of 120 kPa. Surface beds may be founded conventionally on compacted sub-grade at terrace level after the removal of any unsuitable fill.
b) Structures could be founded using stiffened concrete raft foundations, founded at nominal depth on recompacted clayey sands (transported) and suitable recompacted fill soils. Rafts can be expected to reduce differential movement, depending on raft stiffness. Settlement of raft structures are raft type, stiffness and bearing pressure depended. The maximum allowable bearing pressure for raft foundations is 80 kPa.

Drainage
Close attention to drainage and the effective collection and disposal of storm water run-off is required throughout the site, as part of surface erosion management. Roads should also be constructed with adequate drainage to minimize the possible deleterious effects of seasonal shallow perched ground water and surface water run-off and to prevent deterioration of the upper layer works (base course and sub base layers). This may include subsurface drainage in low-lying areas, or where shallow groundwater is anticipated unless levels can be raised sufficiently to ensure that shallow groundwater is kept well below road layer works. Further measures that need to be considered include grading of slopes to promote run-off and discourage ponding of water around buildings and effective collection and disposal of storm water and water from down pipes.

Special precautionary measures
Apart from the measures outlined above, and relating to fill treatment, roadbed sub-grade, drainage and foundation design, no special precautions with regard to infrastructure design are considered to be required.

Conclusions
The Phase 1 geotechnical site investigation indicates that the site is suitable for project linked subsidy housing development, although some design precautions will need to be considered in view of the nature of the site, including the presence of uncontrolled fill and compressible sandy soils.

Terrestrial Biodiversity Impact Assessment. July 2019. Eco Impact

Concluding Remarks and Recommendations

The vegetation and ecology within the study area has been heavily disturbed for a long time, and no significant patches of intact natural vegetation remain within the site or immediate surrounds.

Terrestrial botanical diversity is very low to non existent.

Essentially the whole study site can be considered transformed and significantly degraded due to previous and ongoing urban development and associated human activities.

The original vegetation type occurring within the area is Saldanha Granite Strandveld listed as Endangered. However the site has no remaining natural vegetation in good condition (i.e. no viable populations of threatened or localised plant species). All ecological processes on the site have been significantly impacted by soil disturbance (excavations, site clearance, urban development etc.), inappropriate fire regimes, loss of pollinators and seed dispersers, alien-, weed- and garden plant invasion, habitat fragmentation due to urban development and the creation of the concrete storm water drainage line along the southern border. The heavily disturbed and isolated site also present a very difficult conservation and/or rehabilitation challenge, and formal conservation or rehabilitation of the site is therefore highly unlikely and not feasible.

It is expected that less than 2ha of indigenous vegetation species (mainly consisting of grass and herbaceous species associated with disturbed veld) will be cleared during the proposed development)

No indigenous fauna or avifauna species were recorded during the survey and due to the location of the site within an active urban setting as well as the significant transformed state of the natural habitat on site it is not expected that any indigenous fauna or avifauna of conservation concern inhabits this site and may only occasionally visit the site for short periods of time.

No specific botanical mitigation is required for this project, other than demarcating and restricting the proposed development from impacting negatively on the hydrological functioning of southern stormwater channel.

As can be seen from Figure 2 in the report approximately 2ha of the south and south-eastern sections of the site is mapped as terrestrial Critical Biodiversity Area, Ecological Support Areas and Ecological Support Area 2 (Restore).

There are no natural habitat nor flora or fauna species of conservation concern remaining on site, only a concrete storm water channel along the southern border of the site.

The hydrological functioning of the stormwater channel along the southern border is to be maintained due to the supporting role which it plays in replenishing water resources which in turn maintains ecological functioning of remaining undeveloped areas surrounding Louwville, therefore this area has been mapped as important to maintain current hydrological functioning. The concrete stormwater channel and its associated 1:100 year floodline area which includes most of the mapped CBA, ESA and ESA2 areas on site have been excluded from the proposed development area (accept for required services infrastructure i.e. the access road which will be along existing access road over the channel) to be maintained as Public Open Space and therefore hydrological functioning of the stormwater channel will be maintained.

Although development of the Low terrestrial botanical sensitivity area previous mapped as Endangered Saldanha Granite Strandveld has been rated as having a potential Medium negative significance at a regional scale if other factors such as ongoing human disturbances and urban development, alien plant encroachment, low ecological connectivity etc. are taken into consideration it is believed that the entire proposed development will have a Low negative significance on the terrestrial biodiversity features of the site and surrounds. If is therefore concluded that the proposed development could therefore be authorised without causing significant negative terrestrial biodiversity impacts.

Summary of recommendations as listed in the report and additional general impact mitigation measures to be implemented:

Planning considerations and constraints-

- The construction and final development footprints should be demarcated and all proposed activities should be restricted to the proposed development area and outside of any no-go areas

identifeed.

Construction, Operational and Rehabilitation phases -

- The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the construction, operational and decommission/rehabilitation phases.
- Undertake development activities only in identified and specifically demarcated areas as proposed.
- The southern concrete stormwater channel and its associated 1:100 year floodline area are to be demarcated as a “no-go” area for the duration of the construction phase of the development unless activities relate to installation of service and road infrastructure or rehabilitation of disturbed area.
- No construction related disturbance should be allowed outside of the proposed development areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance.
- Demarcate no-go areas before any land clearing occurs under the supervision of an ECO. Demarcation must be clearly visible and effective and no-go area must remain demarcated throughout construction phase.
- Personnel should be restricted to the construction camp site and immediate construction areas only.
- Remove and conserve topsoil layer and overburden material for rehabilitation after construction activities have ceased
- Implement site specific erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the development footprint area and surrounds.
- Proper waste bins to be provided during construction and operation and all waste to be regularly (at least once a week) removed to municipal landfill site.
- If any fuel or hazardous materials is spilled on site it must be treated as according to EMP requirements.
- The cement mixing area must be at least 32m away from the edge of the stormwater channel and is only to take place within demarcated cement mixing area that is impermeable and has a berm so that no cement mix runoff water escapes from cement mixing area.
- The landowner/s must adhere to his/her legal obligations to actively eradicate and manage alien vegetation infestations present on the applicable and surrounding properties.
- Monitor soil erosion on a regular basis and rehabilitate impacted areas as soon as possible under supervision of appointed ECO.
- Storm water discharge flow must be managed and restricted in such a manner that it does not cause erosion or flooding.
- Frequent (three monthly and/or after heavy rains) litter and debris removal from the stormwater channels must be conducted to prevent potential flooding, erosion and improve water quality.
- Only use topsoil as derived and conserved from the proposed development areas to be rehabilitated after development activities have ceased on the property.
- Only use vegetation indigenous to the area to rehabilitate impacted/decommissioned areas and implement ongoing monitoring of the rehabilitated areas until successful rehabilitation has taken place.
- After topsoil has been replaced ongoing monitoring and removal of alien vegetation regrowth must be conducted to ensure effective rehabilitation of indigenous vegetation.
- Decommissioned areas must be rehabilitated and planted with indigenous vegetation immediately after built structures have been removed.
- Engineered contour structures reinstated and maintained.
- Monitor rehabilitation of areas impacted outside of the proposed development areas or decommissioned areas on a 6 monthly basis until effective/successful rehabilitation has been obtained.
- If erosion is detected during or after rehabilitation implement erosion rectification and preventions measures as guided by an ECO

Eco Impact is of the opinion, and based on the survey and desk study done, that the proposed development activities; if designed and implemented according to the recommendations as

provided in this report, will not have an unacceptable significantly negative impact on the environmental aspects of the site and surrounds as assessed in this report.

Floodline Report for Proposed Development of Erf 7752 and Portion of Erf 1003. November 2018. iX Engineers

SUMMARY AND RECOMMENDATIONS
The floodlines represent the most severe conditions possible during a 1:50 and 1:100 year return period flood,
as it is assumed that the storm will occur over the full catchment and that the stream will convey a peak flood.

According to the survey the low point on Maclon Street is approximately 25m north of the start of the channel. To ensure that the maximum peak flow reaches the existing channel, an open drain or a berm is recommended to divert the overland flow towards the channel. Refer to Drawing 301038-00-SW-DAL-0002-001 for position of the drain.

It is recommended that the proposed development be constructed above the expected 1:50 and 1:100 year flood levels and that the floor levels specifically be above the expected 1:100 year flood peak. As a result of the rather steep gradients of the existing channel and the stream vegetation, high flow velocities, above 1.5 m/s, can be expected. This will result in the 1:50 year and 1:100 year floodlines to be quite close to one another. It is thus proposed that the 1:100 year floodlines be used for planning purposes. As a result of the high flow velocities during large interval flood events, erosion on the unlined channel side slopes above the concrete section can be expected. For this reason it is proposed that these unlined side slopes be protected against erosion by the placing of concrete erosion blocks on geotextile to mitigate this possibility.

It is further recommended that any disturbance of vegetation or soil, below the 1:50 and 1:100 year floodline, during the construction works, be re-vegetated and protected against possible erosion.

CONCLUSION
Any enquiries with regards to flood levels can be referred directly to iX engineers.
We trust that the investigation and recommendations contained in this report will be to the satisfaction of the Saldanha Bay Municipality.
We thank you for the opportunity to submit this report

This section of the report is included in compliance with Section 24 N 2 (d - g) and 3 (a - b) of the National Environmental Management Act, 107 of 1998.

Goal for Planning and Design

Overall Goal for Planning and Design: Undertake the planning and design phase of the development in a way that:

- Ensures that the design of the development responds to the identified environmental constraints and opportunities.
- Ensures that pre-construction activities are undertaken in accordance with all relevant legislative requirements.
- Ensures that adequate regard has been taken of any landowner concerns and that these are appropriately addressed through design and planning (where appropriate).
- Ensures that the best environmental options are selected for the project.
- Enables the development construction activities to be undertaken without significant disruption to other land uses in the area.
- In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE PD1: PRE-CONDITIONS

The following pre-conditions must be fully met before any construction activities may commence.

A site meeting between the contractors and the representatives of the developer must take place at least 5 days prior to commencement of construction work to:

- Demarcate micro construction sites, services routes, access routes, working boundaries and no-go areas; All areas falling within the 1:100 year floodline area as per the SDP must be demarcated a no-go areas under the supervision of the ECO. Only activities relating to the installation of services and road infrastructure and rehabilitation may occur within this area and no construction material, equipment or waste may be stored nor cement mixing may occur within this area. Demarcation method will be determined by the ECO and demarcation of the no-go area must be maintained throughout the construction phase.
- Discuss methods of stockpiling (vegetation, topsoil, sub-soil, shell-grit, etc);
- Check required toilets and fire-fighting facilities to be in place;
- Discuss and agree restricted access to construction site;
- Sign the Declaration of Understanding (Contractors);
- Discuss and agree communication channels including contact details;
- Discuss and agree areas of responsibility;
- Discuss and agree the demarcation and control of construction and building sites.

Minutes of this site meeting must be kept, and are to be distributed to all parties.

The following equipment must be on every micro or sub site before any construction work is due to start:

- Sufficient and suitable chemical toilet facilities.
- Sufficient refuse bins, which are weather and wind proof, with proper lids.
- 1 x type ABC (all purpose) 12.5 kg fire extinguisher

This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

As the Western Cape is a Water stressed province the use of municipal water for construction and operation must as far as reasonably practicable is to be done in accordance with Circular C1 of 2018: Water Crisis Response Guidelines for the Western Cape.

OBJECTIVE PD2: LAYOUT PLAN CONTROLS

The contractor must ensure that a copy of the signed approved layout plan is available at the office on site at all times for inspection by the developer or his representative(s). Any variation to the approved layout plan must be submitted to the developer for signed approval and may only be implemented once the approved variation is available to the contractor and available on site at the office. The variation of changes to the layout must be approved by the competent authority as per the EA conditions.

This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE PD3: ADVERTISING

The contractors may place no advertising material on the property unless prior formal written permission has been obtained from the landowner.

This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE PD4: ENSURE EFFECTIVE COMMUNICATION MECHANISMS WITH THE VARIOUS STAKEHOLDERS

On-going communication with affected and surrounding landowners and key departments is important to maintain during the construction and operational phases of the development. Any issues and concerns raised should be addressed as far as possible in as short a timeframe as possible.

Project Component/s	Storm water structures;

	Access roads.
Potential Impact	Impacts on affected and surrounding landowners and land uses.
Activities/Risk Sources	Activities associated with facility construction; Activities associated with facility operation.
Mitigation: Target/Objective	Effective communication with affected and surrounding landowners; Addressing of any issues and concerns raised as far as possible in as short a timeframe as possible.

Mitigation: Action/Control		**Responsibility**	**Timeframe**
Compile and implement a grievance mechanism procedure for the public to be implemented during both the construction and operational phases of the facility. This procedure should include details of the contact person who will be receiving issues raised by interested and affected parties, and the process that will be followed to address issues.		Developer	Pre-construction, construction and operational phase
Performance indicator	Effective communication procedures in place.		
Monitoring	An incident must be reported in the site book and monitored by the ECO.		

CONSTRUCTION AND REHABILITATION PHASE
CIVIL CONTRACTOR

Goal for Construction Phase

Overall Goal for Construction:
Undertake the construction the development infrastructure in a way that:

- ensures that construction activities are properly managed in respect of environmental aspects and impacts;
- enables construction activities to be undertaken without significant disruption to other land uses in the area, in particular concerning noise impacts, dust, traffic and road use, and effects on local residents;
- minimises the impact on the surrounding area;
- minimises impacts on avifauna and other fauna using the site; and
- minimises the impact on the heritage and historical value of the site
- minimise possible health impacts.

Objectives
In order to meet this goal, the following objectives have been identified, together with the necessary actions and monitoring requirements.

OBJECTIVE C1: WORKING HOURS

Civil & Construction Sites	
Mondays to Fridays	08h00 – 17h00
Saturdays	08h30 – 16h00
No work on Sundays and Public Holidays	

Project Component/s	Development site;
Potential Impact	Surrounding landowners and residents are exposed to noise generated from the development site.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	Effective communication with affected and surrounding landowners; Addressing of any issues and concerns raised as far as possible in as short a timeframe as possible.

Mitigation: Action/Control	**Responsibility**	**Timeframe**

Contractors may only be present on the site during the public time hours.	Developer and contractor.	Construction and operational phase.

Performance indicator	Effective communication and procedures in place.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C2: SAFETY AND SECURITY

Project Component/s	Development site and surrounds;
Potential Impact	Safety of surrounding landowners and residents; Safety of personnel working on site.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	To protect all involved from incidents and injury.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Telephone numbers of emergency services, including the local fire-fighting services, must be posted conspicuously in the contractor's office and near the telephone. No firearms are permitted on the construction site, other than those authorised by the developer for the property security service provider if needed. Notices should be displayed at all public entrances to the property, warning visitors that they are entering a construction site.	Contractor	Construction
Security risks can be mitigated through community awareness and by having a community policing forum / neighbourhood watch to assist with policing within the community.	Contractor	Construction

Performance indicator	Effective communication and procedures in place.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C3: SPEED LIMIT

Project Component/s	Development site.
Potential Impact	Speeding motorists and construction vehicles could injure personnel, members of the public or cause damage to property/infrastructure. Dust.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation; Dust may be generated as a result of speeding vehicles on the development site.
Mitigation: Target/Objective	To protect all involved from incidents and injury. Regular maintenance of access roads and low speed limits must be undertaken to minimize dust pollution.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
For security and safety reasons the speed limit on the property for all contractors' vehicles is 30 km per hour. The contractor is responsible for ensuring that all his employees, sub-contractors and delivery vehicles adhere to this rule. Dust control must be implemented to ensure that dust	Contractor	Construction and operational phase

does not become a nuisance to the public during construction activities.		

Performance indicator	Effective communication and procedures in place.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C4: CONTRACTOR'S CAMP

Project Component/s	Development site;
Potential Impact	Degradation of the natural environment inside/outside of the development area.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	To protect and mitigate impacts on the environment.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
The contractor's camp will be indicated by and to landowner management and the ECO on the site. The final location of the contractor's camp will be authorized by the ECO and landowner.	Developer / Contractor	Construction phase

Performance indicator	ECO in conjunction with the landowner will approve construction camp area.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C5: DELIVERIES TO CONTRACTORS AND TRAFFIC

Project Component/s	Use of access roads and impacts on existing traffic in surrounding residential areas
Potential Impact	Increased traffic, congestion and noise for surrounding landowners / residents and other road users. Impact on the natural environment.
Activities/Risk Sources	Activities associated with site construction;
Mitigation: Target/Objective	To protect and mitigate impacts on the environment, surrounding land uses, landowners, and personnel working on site.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Contractors will at all times be responsible for compliance by their delivery service providers as engaged. Delivery times will be limited to working times as defined in this document. Contractors have the responsibility of advising the property security staff of deliveries expected and to be executed. Contractors must further ensure that drivers of service providers are informed of all procedures and restrictions e.g. which access road to use, speed limits, no-go areas, demarcated construction areas, and maximum allowed vehicle mass etc., as applicable before their first visit to site. Washing of service provider delivery vehicles and equipment will not be allowed on the property and must be carried out elsewhere. **Vehicle Access:**	Contractor	Construction phase

All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into the topsoil; In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss; and All spills should they occur, should be immediately cleaned up and treated accordingly.		
Work within regulated working hours	Contractor	Construction phase
All drivers to make use of existing access roads to the site and may not create "new" access roads or "shortcuts".	Contractor	Construction phase
All drivers to obey to traffic laws at all times	Contractor	Construction phase

Performance indicator	Site is secure and there is no unauthorised entry. No members of the public/ landowners injured. No additional access road created and minimal impact on current traffic conditions
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C6: ALIEN/INVASIVE PLANTS

Project Component/s	Development site.
Potential Impact	Alien/invasive plant species are allowed to spread into surrounding natural/indigenous vegetation areas.
Activities/Risk Sources	Activities associated with facility construction; Activities associated with facility operation.
Mitigation: Target/Objective	To protect and mitigate impacts on the environment. In terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) ("CARA") landowners must prevent the spread of alien invasive plants on the property. in terms of the Alien and Invasive Species Regulations, NEM: BA[6],2014, specific alien plant species (e.g. *Acacia cyclops*) are either prohibited or listed as requiring a permit; aside from restricted activities concerning, *inter alia*, their spread, and should be removed.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
A contractor appointed by the developer and engineer must be tasked to ensure that all weeds and alien/invasive species are removed as instructed and approved by the ECO. No on-site burying, dumping or stockpiling of any weeds and aliens or invasive species must occur. Such should be removed from the site to a suitable dumping site from which seed cannot escape. Proliferation of alien and invasive species is expected within any disturbed areas. Whilst not considered severe at this time, the vegetation component within the freshwater environment is already transformed to an extent as a result of alien plant invasion; therefore, these species should be eradicated and controlled to prevent their spread beyond the project footprint. Alien plant seed	Contractor	Construction phase

dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, has to be controlled; Removal of the alien and weed species encountered within the freshwater resources must take place in order to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 and Section 28 of the National Environmental Management Act, 1998). Removal of species should take place throughout the construction, operational, and maintenance phases; and **Species specific and area specific eradication recommendations:** Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used; Footprint areas should be kept as small as possible when removing alien plant species; and No vehicles should be allowed to drive through designated sensitive wetland areas during the eradication of alien and weed species. Vegetation that has been cleared should be considered to chipping (mulching) or composting.		

Performance indicator	All possible introduction and spreading of alien invasive plant species are controlled.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C7: ARCHAEOLOGY AND PALAEONTOLOGY MANAGEMENT

Project Component/s	Development site;
Potential Impact	The loss of cultural or heritage resources.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	To protect and mitigate the potential loss of cultural and heritage resources.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Should any heritage or fossil remains be exposed during any excavation or related activities, these must immediately be reported to the provincial heritage resource authority of the Western Cape, Heritage Western Cape (in terms of the National Heritage Resources Act, 1999 (Act No.25 of 1999) via the ECO. Heritage remains uncovered or disturbed during earthworks must not be disturbed until inspection and verified by the professional. Graves located within the proposed development area must be clearly demarcated prior to commencement of any clearing or ground-breaking activities.	Contractor	Construction phase

Performance indicator	Protection of heritage resources
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C8: ANTI-EROSION MEASURES (STORMWATER MANAGEMENT)

Project Component/s	Development site; Access roads.
Potential Impact	Wind/water erosion as a result of construction/operation activities.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	Reduce the impact of erosion by implementing anti-erosion measures.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
The contractor must take all appropriate and active measures to prevent erosion, especially wind and water erosion, resulting from operations and activities, specifically of storm water control measures to the satisfaction of the ECO/ER. During construction the contractor must protect areas susceptible to wind and water erosion, by installing all the necessary temporary and permanent works. Measures can include brush packing, anchovy net stabilisation, etc. Where required erosion protection measures must be installed. Aspects normally covered in construction contracts in terms of protection of works are standard and are not to be confused with those under environmental legislation. Development footprint must be minimised to ensure minimal disturbance. All areas disturbed during construction must be immediately rehabilitated and stabilised. Create single access points to all construction sites to restrict trampling and erosion.	Contractor	Construction and operational phase
Demarcate the development footprint area and stay within the area throughout the construction phase	Contractor	Construction phase
Demarcate 1:100 year floodline area of the concrete stormwater channel along the southern border and maintain demarcation throughout the construction phase	Contractor	Construction phase
Control access to roads and other areas to avoid disturbance of areas outside the development footprint.	Contractor	Construction phase
Undertake dust suppression as needed.	Contractor	Construction phase
Personnel should be restricted to the camp site and immediate construction areas only.	Contractor	Construction phase
Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.	Contractor	Construction phase
Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion**.**	Contractor	Construction phase

Performance indicator	All possible erosion impacts are controlled and rehabilitated.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C9: CONSTRUCTION MATERIAL

Project Component/s	Development site;
Potential Impact	Aesthetically displeasing or causing a nuisance to surrounding landowners/residents.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	Reduce the visual impact or nuisance to the surrounding landowners/residents.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Construction material will be stored at the contractor's camp, as well as on the construction site within the demarcated working areas at each construction point. Special permission may be obtained from the ECO/ER to store material on suitable substitute or ancillary locations should the need arise, and as communicated by the project engineer. **Rehabilitation** Construction rubble (which cannot be reused / recycled on site) must be collected and disposed of at a suitable landfill site; and All alien vegetation in the footprint area as well as immediate vicinity of the proposed development should be removed. Vegetation that has been cleared should be considered to chipping (mulching) or composting.	Contractor	Construction phase

Performance indicator	To minimise the impact on the surrounding land users.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C10: FIRES

Project Component/s	Development site;
Potential Impact	Uncontrolled fire on/off site, resulting in damage to the environment, property, injuries/death to personnel on site, or injuries/death to the public.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	To protect and mitigate the safety of people, property, and the environment on and off site.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
No open fires will be allowed on site and adequate firefighting equipment should be available on site in good working order at all times as prescribed by the fire management protocols.	Contractor	Construction phase

Performance indicator	No fire occurred to damage the surrounding environment and land uses and management actions are in place should a fire occur.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C11: HERBICIDES, PESTICIDES AND FERTILIZERS

Project Component/s	Development site;

	Adjacent property/land.
Potential Impact	Adjacent land/property or natural environments contaminated by the application of herbicides, fertilizers and pesticides.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	To protect and mitigate impacts on the environment and surrounding land users.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
The contractor must make sure of, and allow, all legal requirements regarding herbicide application procedures. It is vital that the contractor becomes familiar with all the information detailed on every herbicide label before using it. The instructions on the label must be strictly followed throughout. The contractor must take all necessary precautions to prevent overspray of herbicides outside of the demarcated construction areas and onto natural veld. All personnel working with any herbicide, pesticide or fertilizer must be registered and comply with the requirements set in these registrations. The contractor must put a system in place to control the use of herbicides and pesticides. All equipment associated to herbicides and pesticides must be maintained in accordance to the set standards. The disposal of all redundant and empty containers of herbicides and pesticides must be controlled and disposed of at a waste management facility licensed under the National Environmental Management: Waste Act. The applicant/contractor must ensure that evidence of all disposed contaminated products, waste or residues, which have been generated during construction, is documented.	Contractor	Construction phase

Performance indicator	Herbicide, pesticides and fertilizer use is controlled to prevent impacts on the environment and surrounded land uses.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C12: AN EFFECTIVE MONITORING SYSTEM TO DETECT ANY LEAKAGE OR SPILLAGE OF ALL HAZARDOUS SUBSTANCES DURING THEIR TRANSPORT, HANDLING USAGE AND STORAGE. THIS MUST INCLUDE PRECAUTIONARY MEASURES TO LIMIT THE POSSIBILITY OF OIL AND OTHER TOXIC LIQUIDS FROM ENTERING THE SOIL OR STORM WATER SYSTEMS.

Project Component/s	Development site.
Potential Impact	Contamination of soil, storm water and ground water resources by hazardous substances.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	Prevention and mitigation of the environment contaminated as a result of exposure to hazardous substances.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
The EA holder, Landowner, Site Environmental Officer and Environmental Control officer will do daily, weekly and monthly inspections and report and monitor compliance with the management actions included in the EMPr and EA conditions. These monitoring and reporting requirements are recorded in several sections of the EMPr. Monitoring will focus on signs of spillages and	Contractor	Construction phase

procedures during handling and storage of dangerous goods as described in the EMPr. The section on storage and handling of dangerous goods in the EMPr will be enforced. Work within site boundaries with no construction activities outside the boundary of the proposed development. During the construction phase of the project, the impact on the no go areas should be kept to a minimum. After the construction phase, any impacted areas outside the development area should be rehabilitated.		

Performance indicator	Impacts on hydrological features minimized and mitigated
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C13: DIESEL FUEL AND LUBRICANT HANDLING PROGRAMME

Project Component/s	Development site;
Potential Impact	Contamination of soil, storm and ground water resources as a result of an oil/diesel/lubricant spill/leak.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	To protect and mitigate impacts of contaminants on the environment and hydrological features.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Servicing of construction vehicles and machinery to take place of site. All vehicles must be in a good condition with no leakages leading to possible contamination of soil or water supplies. The following conditions related to the temporary fuel tanks must be implemented: The fuel tanks must be designed and installed in accordance with relevant Oil Industry standards and SANS codes where applicable for the aboveground storage tanks. The tanks must be located within a bund (110 % of the tanks capacity) in order to contain potential spills. During fuel tanker delivery, the tanker driver must be present at all times during product offloading. Should an incident occur the supply vehicle emergency cut-off switch must be activated to immediately stop fuel delivery. Flexible hoses with dry-break couplings and emergency isolation must be used. All spillage incidences and actions taken consequent thereto must be reported to the ECO and recorded in the site register. All fuel and flammable liquids should be stored under secure and fenced conditions and in a bunded site with the volume of the bunding capable of holding 110% of the liquid. The applicant must ensure that effective stock inventory monitoring and regular auditing take place for the early identification of possible leaks. The requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), must be adhered to.	Contractor	Construction phase

Within three months of the tanks ceasing to be used the tanks must be removed at the expense of the applicant, and the site, including all associated infrastructure must be rehabilitated to the satisfaction of the relevant authority. **Refuelling:** Refuelling of equipment must be conducted from the bunded fuel tank and pump at the contractor's camp. Fuel tanks must be bunded and supplied with a concrete apron. The concreted refuelling apron will be constructed with a drain along its extremities to collect any diesel contaminated run-off and channel it to the oil trap where separated oil will be collected and disposed of in the oil recycling container and process. Any spills on the concrete apron of floor below the tank are to be treated with OT8 or Spillsolve or equivalent as per the product instructions. A 500 litre drawn trailer to convey diesel to the equipment for re-fuelling may also be used. Such trailer will be drawn by a specified vehicle and driver, with alternate nominated as approved by the Project Engineer. Such tow vehicle may travel at 20kms per hour maximum at any time, be clearly identifiable as such, and may only tow the diesel cart should the pre requisite drip trays and emergency equipment be on the vehicle at the time. In situ refuelling activity may only take place during a standard specified daily time slot as displayed in the construction office, unless specific per day permission has been given to refuel at any other time by the ECO. This must be pre-recorded in the site record book. Staff will require instruction in the identification of diesel and oil leaks and the use of Spillsolve (or equivalent) products. **On-Site emergency repairs:** Only small mobile plant and emergency repairs are to take place on site. These will require the provision of drip trays and funnels to ensure that no oil or fuel leakages occur onto the ground. Should such spill take place, then the oil saturated soil is to be placed in suitable containers and disposed of at a hazardous waste disposal site. Any contamination of soil is to be treated with Spillsolve or similar product. Contaminated water as a result of an oil or fuel spillage on the area should similarly be treated in appropriate way, and the polluted water should not be specifically removed and not allowed to merge with run-off water collected in the trap collecting all run offs from the slab. **Collection of contaminated spares and waste oils:** Contaminated spares, oil filters, gaskets, water, etc. will be collected in separate holders at the designated storage facility for disposal at a licensed H:h site. Staff will require instruction in: • Deleterious effects of oil / fuel on the environment • Identification of oil leaks • Handling of oil / fuel leaks into soil • Location and method in storage of contaminated spares		

• Fire prevention and emergency drills in case of an accident		

Performance indicator	Ensure that no spillages occur and if it does occur that it is handled and cleaned up accordingly.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C14: APPROPRIATE HANDLING AND STORAGE OF CHEMICALS, HAZARDOUS SUBSTANCES AND WASTE (WASTE MANAGEMENT PLAN)

The construction phase will involve the storage and handling of a variety of chemicals including adhesives, abrasives, oils and lubricants, paints and solvents. The main wastes expected to be generated by the construction of the facility will include will include general solid waste and liquid waste, and may include hazardous waste.

Project Component/s	Construction camp; Storage areas; Development site; Adjacent land and environmental systems.
Potential Impact	Incorrect storage, handling, transporting and disposing of hazardous substances resulting in the contamination of soil, storm and ground water resources. Incorrect storage, handling, transporting and disposing of general solid waste resulting in litter, storm water pollution, and creating a nuisance to adjacent landowners/residents. Incorrect storage, handling, transporting and disposing of effluent/liquid waste resulting in the contamination of the storm water system, adjacent property, or hydrological systems. Incorrect storage, handling, transporting and disposing of garden waste, alien vegetation or natural vegetation during the clearing phase of the development site. Poor waste management practices, resulting in waste not being reduced, re-used or recycled.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation; Vehicles associated with site preparation and earthworks; Packaging and other construction waste; Hydrocarbon use and storage; Material from excavation, earthworks and site preparation; Incorrect disposal of waste; Using unregistered waste transporters / facilities.
Mitigation: Target/Objective	Protect and mitigate impacts on the environment and hydrological features; Ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons; Ensure that the storage and maintenance of machinery on-site does not cause pollution of the environment or harm to persons; Comply with waste management guidelines; Minimise production of waste; Ensure appropriate waste storage and disposal; Avoid environmental harm from waste disposal; Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below

	ground level; Vegetation that has been cleared should be considered to chipping (mulching) or composting.

Mitigation: Action/Control	Responsibility	Timeframe
Implement a site specific waste management plan during the construction phase. Specific areas must be designated on-site for the temporary management of various waste streams, i.e. general refuse, construction waste (wood and metal scrap) and contaminated waste as required. Location of such areas must seek to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage and vermin control. Where practically possible, construction and general wastes on-site must be reused or recycled. Bins and skips must be available on-site for collection, separation, and storage of waste streams (such as wood, metals, general refuse etc.). All waste generated during the construction process be separated into the different waste streams for recycling purposes, prior to removal by a reputable contractor from the construction site and disposed of at an appropriate licensed landfill facility. Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors and disposal at appropriately licensed waste disposal sites. The National Information Systems Regulation must be adhered to in terms of registering and reporting of hazardous waste generated on site via the Integrated Pollutant Waste Information System (IPWIS). All stored fuels to be maintained within a sealed bund and on a sealed surface. The bund must be at least 110% of the volume of the total containers. Adjacent fuelling areas situated around fuel tanks must be provided with an impervious layer or drip trays must be used during refuelling; Areas around fuel tanks must be appropriately bunded or contained in an appropriate manner as per the requirements of SABS 089:1999 Part 1; Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function; Oily water from bunds at the substations must be removed from site by licensed contractors; The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded, and stored in compliance with MSDS files;	Contractor	Construction phase

Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be compiled with and copies kept on site in the environmental file; Transport of all hazardous substances must be in accordance with the relevant legislation and regulations Construction sub-contractors must provide specific detailed waste management plans to deal with all waste streams; Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants. Corrective action must be undertaken immediately if a complaint is received, or potential/actual leak or spill of polluting substance identified. This includes stopping the contaminant from further escaping, cleaning up the affected environment as much as practically possible and implementing preventive measures. Implement an effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation, handling, use and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems. Leakage of fuels must be avoided at all times and if spillage occurs, it must be remediated immediately. In the event of a major spill or leak of contaminants, the relevant administering authority must be immediately notified as per the notification of emergencies/incidents Spilled cement, fly ash and concrete must be cleaned up as soon as possible and disposed of at a suitably licensed waste disposal site. Any contaminated/polluted soil removed from the site must be disposed of at a licensed hazardous waste disposal facility. Hydrocarbon waste must be contained and stored in sealed containers within an appropriately bunded area Waste and surplus dangerous goods must be kept to a minimum and must be transported by approved waste transporters to sites designated for their disposal and copies of the safe disposal slips must be kept in the environment file on site. Documentation (waste manifest) must be maintained detailing the quantity, nature, and fate of any regulated waste. Waste disposal records must be available for review at any time. An incident/complaints register must be established and maintained on-site. The sediment control and water quality structures used on-site must be monitored and maintained in a fully operational state at all times; An integrated waste management approach that is based on waste minimisation must be used and must incorporate		

reduction, recycling, re-use and disposal where appropriate; Upon the completion of construction, the area must be cleared of potentially polluting materials; Dispose of all solid waste collected at an appropriately registered waste disposal site. Waste disposal must be in accordance with all relevant legislation and under no circumstances may waste be burnt on site; Where a registered waste site is not available close to the construction site, provide a method statement with regard to waste management. The storage of waste must comply with the National Environmental Management: Waste Act, (Act No. 59 of 2008) National Norms and Standards for Storage of Waste, 2013. Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level.		

Performance indicator	Limited chemical spills outside of designated storage areas; No water or soil contamination by spills; No complaints received regarding waste on site or indiscriminate dumping; Internal site audits ensuring that waste segregation, recycling and reuse is occurring appropriately; Provision of all appropriate waste manifests for all waste streams.
Monitoring	Observation and supervision of chemical storage and handling practices and vehicle maintenance throughout construction phase; A complaints register must be maintained, in which any complaints from the community will be logged; Observation and supervision of waste management practices throughout construction phase; Waste collection will be monitored on a regular basis; Waste documentation completed; A complaints register will be maintained, in which any complaints from the community will be logged; Complaints will be investigated and, if appropriate, acted upon; An incident reporting system will be used to record non-conformances to the EMPr; This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C15: EFFECTIVE MANAGEMENT OF CONCRETE BATCHING PLANTS

Project Component/s	Concrete batching plant.
Potential Impact	Dust emissions; Release of contaminated water; Generation of contaminated wastes from used chemical containers; Inefficient use of resources resulting in excessive waste generation.
Activities/Risk Sources	Operation of the batching plant; Packaging and other construction waste; Hydrocarbon use and storage; Spoil material from excavation, earthworks and site preparation.

Mitigation: Target/Objective	To protect and mitigate impacts on the environment and surrounding land users. To ensure that the operation of the batching plant does not cause pollution to the environment or harm to persons.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Concrete batching plants to be sited such that impacts on the environment or the amenity of the local community from noise, odour or polluting emissions are minimised; Access and exit routes for heavy transport vehicles should be planned to minimise noise and dust impacts on the environment; The concrete batching plant site should demonstrate good maintenance practices, including regular sweeping to prevent dust build-up; The prevailing wind direction should be considered to ensure that bunkers and conveyors are sited in a sheltered position to minimise the effects of the wind; Aggregate material should be delivered in a damp condition, and water sprays or a dust suppression agent should be correctly applied to reduce dust emissions and reduce water usage; the applicant must consider the best available environmental method in terms to ensure dust suppression during the construction phase. The site should be designed and constructed such that clean storm water, including roof runoff, is diverted away from contaminated areas and directed to the storm water discharge system; Any liquids stored on site, including admixtures, fuels and lubricants, should be stored in accordance with applicable legislation; Contaminated storm water and process wastewater should be captured and recycled where possible. A wastewater collection and recycling system should be designed to collect and filter contaminated water; Process waste water and contaminated storm water collected from the entire site should be diverted to a settling pond, or series of ponds, such that the water can be reused in the concrete batching process. The settling pond or series of ponds should be lined with an impervious liner capable of containing all contaminants found within the water they are designed to collect; Areas where spills of oils and chemicals may occur should be equipped with easily accessible spill control kits to assist in prompt and effective spill control; Ensure that all practicable steps are taken to minimise the adverse effect that noise emissions. This responsibility includes not only the noise emitted from the plant and equipment but also associated noise sources, such as radios, loudspeakers and alarms; Where possible, waste concrete should be used for construction purposes at the batching plant or project site; The batching plant to be monitored by the ECO to ensure that the	Contractor	Construction phase

plant is operating according to its environmental objectives and within legislative requirements. The use of municipal water for construction and operation must as far as reasonably practicable is to be done in accordance with Circular C1 of 2018: Water Crisis Response Guidelines for the Western Cape.		

Performance indicator	No complaints regarding dust or contamination; No water or soil contamination by chemical spills; No complaints received regarding waste on site or indiscriminate dumping.
Monitoring	Observation and supervision of chemical storage and handling practices and vehicle maintenance throughout construction phase. A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon. A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon. An incident reporting system will be used to record non-conformances to the EMPr. Developer or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.

OBJECTIVE C16: SURFACE AND GROUNWATER RESOURCES PROTECTION

Project Component/s	Development site; Adjacent property/land.		
Potential Impact	Surface or ground water resources polluted due to construction activities		
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.		
Mitigation: Target/Objective	To protect and mitigate impacts on the environment and surrounding land users.		
Mitigation: Action/Control		**Responsibility**	**Timeframe**
Ensure that all construction activities take place in a manner that will not cause surface water or groundwater pollution.		Contractor	Construction phase

Performance indicator	Construction activities are controlled to prevent impacts on the environment and surrounded land uses.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C17: NOISE MANAGEMENT

Project Component/s	Development site and surrounding residential areas;
Potential Impact	Construction activities and construction personnel on the sites, and construction vehicles moving to and from the sites would cause an increase in noise in the area, which may impact negatively upon the adjoining landowners..
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.

Mitigation: Target/Objective	To protect all involved from excessive noise disturbance.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Adhere to regulated normal working hours	Contractor	Construction
All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels.	Contractor	Construction
All plant and machinery are to be fitted with adequate silencers.	Contractor	Construction
No sound amplification equipment such as sirens, loud hailers or hooters may be used on site, after normal working hours, except in emergencies	Contractor	Construction
If work is to be undertaken outside of normal work hours, permission must be obtained from the Local Authority	Contractor	Construction

Performance indicator	Effective noise control
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C18: TERRESTRIAL BIODIVERSITY, CBA AND ESA PROTECTION

Project Component/s	Terrestrial habitat and areas mapped as CBA and ESA
Potential Impact	The loss of indigenous vegetation and areas mapped as CBA and ESA
Activities/Risk Sources	Activities associated with site construction
Mitigation: Target/Objective	To protect and mitigate the potential loss of indigenous vegetation and CBAs and ESAs

Mitigation: Action/Control	**Responsibility**	**Timeframe**
The southern concrete stormwater channel and its associated 1:100 year floodline area are to be demarcated as a “no-go” area for the duration of the construction phase of the development unless activities relate to installation of service and road infrastructure or rehabilitation of disturbed area.	Contractor	Construction phase
No construction related disturbance should be allowed outside of the proposed development areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance.		
Implement site specific erosion and storm water runoff management measures to prevent (or if prevention is not possible limit) any erosion from occurring on the development footprint area and surrounds.		

Performance indicator	Protection of natural habitats, CBAs and ESAs
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OPERATIONAL PHASE

This following section defines the management programme for each of the identified goals during the operational phase. The programme is presented in the form of a table, which includes the components described. This programme consists of the following components:

Goals
Over-arching environmental goals for the management phase.

Objectives
The objectives are in place in order to meet these goals. These take into account the findings from existing studies and monitoring programmes.

Management Actions
The actions needed to achieve the objectives, taking into consideration factors such as responsibility, methods, frequency, resources required and prioritisation.

Monitoring
*K*ey actions to verify that objectives are being achieved, taking into consideration responsibility, frequency, methods, and reporting.

Criteria/ Targets
The criteria or targets indicate the efficacy of the management programme. The targets should be readily measurable, understandable to the layperson, cost-effective to monitor, and meet legal requirements.

Remedial Actions
Specifies actions needed to be taken if the targets are not met; or if there is an unforeseen event.

Goals
The following 10 are specified goals:

Goal 1: Waste Management
Goal 2: Pollution Control
Goal 3: Water Quality and Storm Water Management Measures
Goal 4: Fire Management
Goal 5: Soil control
Goal 6: Safety, Security and Emergency Procedures
Goal 7: On-going Monitoring of social environmental impacts
Goal 8: Vegetation Management inclusive of alien vegetation
Goal 9: Heritage management
Goal 10: Water and Electricity demand management

Goal 1: Waste Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocation of sufficient resources for on-going Integrated Waste Management e.g. staff, equipment.	Pollution and odours	1. No solid waste may be incinerated on the property. 2. All vehicles transporting waste must be closed to avoid possible pollution of waste on transport routes. 3. Waste needs to be sorted and recycled as far as possible by the municipality. The municipality must provide recycle bags and training/information to residents of proposed housing development to encourage recycling. Municipality to collect recyclables on a weekly basis and dispose of recyclables at recycle companies/projects etc. 4. Domestic waste not suitable for compost or bio electricity generation needs to be stored in skips for transport to the Local Authorities registered Landfill site. 5. Squatting and rubble dumping adjacent to the new development must be controlled and regular inspections conducted to ensure control. 6. Waste accumulated at the stormwater outlet/discharge point must be removed by the municipality at least monthly and after heavy rains. 7. A integrated waste management approach must be implemented on site, based on waste minimisation, reduction, recycling, re-use and disposal where possible	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets. 2. Ongoing employment of in-house maintenance staff	If pollution on site is detected immediate actions must be taken to contain the pollution. Within 24hours of detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. Depending on type and extent of pollution occurred specialists may be contacted to provide specific recommendations. An incident report to be compiled and sent to municipal and governmental authorities.

		8. During the event of an accidental leak or spillage of fuel or any other hazardous substances, reporting to all the relevant authorities including the Directorate Pollution Management must be done within 14 days as per Section 30(10) of NEMA.			

Waste Management

Waste is defined as any matter for which the current user has no further purpose, or any matter, gaseous, liquid, or solid or any combination thereof originating from any residential, commercial or industrial use, which has been discarded, accumulated, or stored.

It further is worth noting that on average 80% of waste management costs accrue to transport.

Principally three types of waste occur-

- Gaseous	Open fires
- High moisture (effluent)	sewerage/waste water/ petroleum products
- Low moisture (solid/semi solid)	glass/plastic/ cardboard/ paper/ domestic/ chemical

Some potential consequences-

- Salination of ground/surface/ river water.
- Eutrophication (nutrient enrichment) of natural areas.
- Microbiological contamination of natural areas.
- Sediment & silt migration inflows.
- Harmful inorganic/organic compounds introduction into soil.

Chemical residues and empty containers are required as per purchase contract to be removed ex site by the original supplier. The supplier is asked to further declare that such waste is disposed of within accepted Waste Management Programs standards.

Identified Waste Streams:
Components-
Sewerage (black water)
Sewerage (grey water)
Wet refuse
Dry refuse
Bottles & glass

Tins/cans
Plastic/polypropylene
Garden refuse
General other waste

Integrated Waste Management Strategy:
Waste Avoidance-
Objective is to promote the concept of minimisation in the generation of any waste in all activities and sites.

Waste Reduction-
To promote the reduction of all waste by ensuring that nothing that can be decomposed is disposed of to waste as opposed to recycling.

Waste Recycling-
Re-using waste or selling waste to recycling companies as far as and if possible to prevent re-usable waste from going to municipal landfill site.

Waste Disposal-
To store, dispose or treat all waste that cannot be avoided, recycled, or composted at licensed facilities within regular operational and environmental monitoring and always in accordance with regulatory requirements.

Storm water Pollution Management-
Storm water and effluent systems must be separated by cut-off trenches to ensure that storm water is not contaminated by effluent water.

Goal 2: Pollution Control

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocation of sufficient resources for on-going Integrated Waste and pollution control Management e.g. staff, equipment, budget.	Pollution and odours	1. Waste to be stored on the property appropriate containers or facilities as provided by the municipality 2. All vehicles transporting waste must be closed to avoid pollution of transport routes. 3. Sewerage system should be monitored and any leakages or overflows attended to immediately.	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets. 2. On-going employment of in-house maintenance staff	If pollution on site is detected immediate action must be taken to contain the pollution. Within 24hours of detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. Depending on type and extent of pollution occurred specialists may be contacted to provide specific recommendations. An incident report to be compiled and sent to municipal and governmental authorities.

Goal 3: Water Quality and Storm Water management measures

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
1] Ensure allocation of sufficient resources for on-going Water Quality and Storm Water Management *e.g. staff, equipment, budget*	Pollution, odours, erosion and illegal quality of waste water discharge	1. Ensure no pollution of any water resources, including surface water, storm water and groundwater takes place as a result of any activities on the site. 2. Ensure that no water other than storm water be discharged in the storm water system. 3. The storm water channels must be monitored and maintained on a regular basis by the municipality. All waste within the channels must be removed on a weekly base and at the discharge points on a monthly base and after heavy rains. If any erosion and/or degradation of the storm water channel or surrounds are noticed immediate action must be taken by the municipality to rectify the situation. (Corrective and preventative measures taken will depend upon type and extent of erosion and/or degradation occurring). 4. Litter-traps must be installed on all storm water outlets, which are to be monitored and cleaned on an ongoing regular basis. 5. Storm water should be directed away from the roads and into the existing natural flow paths on site. 6. The use of municipal water for construction and operation must as far as reasonably practicable is to be done in accordance with Circular C1 of 2018: Water Crisis Response Guidelines for the Western Cape.	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets 2. On-going employment of in-house maintenance staff	If pollution or erosion is detected immediate action must be taken to contain the pollution or erosion. Within 24hours of detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. Depending on type and extent of pollution or erosion occurred specialists may be contacted to provide specific recommendations. An incident report to be compiled and sent to municipal and governmental authorities.

		7. Disturbed and open space areas must be rehabilitated and planted with indigenous vegetation to promote rehabilitation. 8. If erosion is detected implement erosion rectification and preventions measures as guided by an ECO			

Goal 4: Fire Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
1] Ensure allocations of sufficient resources e.g. staff, equipment, Budget,) for On-going fire management	Pollution, fire, damage to property and health risks.	1. Sufficient Fire Fighting equipment to be on site or available at nearest fire station. 2. Yearly pre-fire season clearing and maintenance of fire breaks (where applicable). 3. Yearly pre-season testing and servicing of fire-fighting equipment.	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets approved. 2. on-going employment of maintenance staff	If a fire is detected immediate action must be taken to contain the fire. Within 24hours of detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. Depending on type and extent of fire occurred specialists may be contacted to provide specific recommendations. An incident report to be compiled and sent to municipal and governmental authorities.

Fire Management Legislation

Legislation applies to the open countryside beyond urban limits and puts in place a range of legal requirements.

The responsibilities of people who own or control land:
The landowner on whose land a fire may start, or from whose land it may spread across boundaries, must have in place:

- Prepared firebreaks on your boundary, if there is a reasonable risk of fire.
- Have available such equipment, protective clothing and trained personnel required to extinguishing such fire as may occur.
- Take all reasonable steps to notify the fire chief of the local authority should a fire break out.
- Do everything in their reasonable power to stop the spread of the fire.

The Act also requires that should the owner be absent, a known and identified other person responsible needs to be present on or near this land to:

- Extinguish a fire if one breaks out, or assist or instruct others to do so
- Take all reasonable steps to alert the neighbours and Fire Chief.
- The owner may appoint an agent to act on his or her behalf to perform these duties.

Goal 5: Erosion Control

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocation of sufficient resources) for on-going erosion control management (e.g. staff, equipment, budget	Erosion, sink-holes and or blocking of storm water systems. Damage to Infrastructure.	1. Ongoing control and management of roads, roadways and areas susceptible to erosion. 2. Ensure suitable vegetation cover or surface on non-hardened surfaces. 3. Control runoff of storm water to prevent soil erosion. 4. Avoid the formation of sink-holes on sensitive soils. 5. Management and control of erosion on housing area and surrounding natural areas. 6. Vegetation that has been cleared should be considered to chipping (mulching) or composting.	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets approved. 2. On-going employment of maintenance staff	If erosion is detected immediate actions must be taken to contain the erosion. Within 24hours of detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. Depending on type and extent of erosion occurred specialists may be contacted to provide specific recommendations. An incident report to be compiled and sent to municipal and governmental authorities.

Erosion Control

Erosion control and maintenance will be an on-going process, especially erosion developing on or as a result of roads. The municipality must implement erosion control measures to ensure that no erosion occurs on site. The area must also be regularly monitored and erosion maintenance measures implemented to prevent erosion.

Goal 6: Safety and Security Measures and Emergency Procedures

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocation of sufficient resources for on-going safety, security and emergency procedures. e.g. staff, equipment, budget	Pollution, fire and health risks.	1. Security access control to action fire drill protocols as/ if needed 2. All dangerous goods as classified under SANS 10228:2006 to be identified upon receipt and stored to the required standards. 3. Emergency plan in case of flooding to be compiled and implemented by the municipality. Local community members to be informed and made aware of emergency flooding protocols to be followed. 4. Traffic control to be implemented such as speed restrictions / speed humps. The implementation of stop streets and traffic control to regulate traffic and maintain flow in Kootjieskloof Road. 5. Pedestrian safety can be increased by placing lights along footpaths. Safety awareness should be increased within the community and with the community policing forums to the extent that they exist. 6. Security risks can be	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets approved. 2. On-going employment of maintenance staff	To be determined, depending on type of emergency occurred. The applicant must ensure that "Any emergency incident, originating at the facility, which falls within the definition of section 30(1) of the National Environmental Management Act (NEMA), Act 107 of 1998, must be dealt with by the facility in accordance with Section 30 of NEMA". In the event of any incident the facility must ensure containment by the responsible person and report the incident to the West Coast District Municipality, Saldanha Bay Municipality, and DEA&DP (Mr. Simon Botha, 021-4830752, Simon.Botha@westerncape.gov.za).

		mitigated through community awareness and by having a community policing forum / neighbourhood watch to assist with policing within the community.			

Goal 7: On-going Monitoring of Social Environmental Impacts

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocation of sufficient resources for on-going monitoring of environmental impacts. e.g. staff, equipment, budget	Pollution, nuisances and health risks.	1. Internal formal management inspections on a monthly basis. 2. Annual report back to community forum on results and outcomes of the monitoring and audit. 3. Keep a complaint register and attend to issues recorded immediately. 4. In order to avoid noise and disturbance to the community during the construction/operational phase, all work must take place during specified work hours. No construction to take place during week-ends. The working hours must be stipulated in the Environmental Management Programme (EMP). 5. Local law enforcement to maintain noise levels according to acceptable	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets approved. 2. On-going employment maintenance staff	Remediate and improve management immediately once public complaints are recorded.

		residential noise levels.			

Goal 8: Vegetation Management, inclusive of Alien Vegetation

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocations of sufficient resources e.g. staff, equipment, Budget,) for On-going alien and vegetation management	Degradation and replacement of indigenous ecosystem characteristics i.e. indigenous flora and fauna.	1. All areas disturbed during construction which lack indigenous vegetation or possess vegetation of poor quality should be rehabilitated with locally occurring indigenous species, and kept clear of alien vegetation. 2. Open spaces should also be maintained and activities which may cause erosion and other degradation should be prevented so that the space will become of value to the residents. Natural vegetation should be allowed to naturally rehabilitate in the open space areas. 3. Implement an ongoing alien vegetation clearing and monitoring programme within adjacent remaining indigenous vegetation areas. Progress of the alien vegetation monitoring and clearing programme must be monitored by the appointed ECO. 4. In terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) ("CARA") landowners must prevent the spread of alien invasive plants on the property. 5. In terms of the Alien and Invasive Species Regulations, NEMBA 2014, specific alien	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	• Adequate annual Budgets approved. • On-going employment of maintenance staff	No remedial actions required, only ongoing alien vegetation clearing and monitoring as indicated.

		plant species (e.g. Acacia cyclops) are either prohibited or listed as requiring a permit; aside from restricted activities concerning, inter alia, their spread, and should be removed. 6. As much indigenous terrestrial vegetation should be included into the landscape plan for the open space areas. Indigenous vegetation will reduce the irrigation requirements as well as fertilizers. 7. Care must be taken when using herbicides and pesticides in gardens and open space areas, especially during the rainy season when storm water runoff is high. These chemicals must be used in accordance with the prescribed quantities to prevent contamination of the storm water system. 8. Ongoing protection and maintenance of the southern stormwater channel to ensure hydrological functioning is maintained.			

Goal 9: Heritage Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions

Ensure allocation of sufficient resources for on-going heritage resources management	Theft, damage and degradation of heritage finds and sites on the property.	1. Should any human remains, heritage artefacts or fossils be found, exposed or uncovered during excavations and earthworks, these should immediately be reported to the South African Heritage Resources Agency	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets 2. On-going employment of internal maintenance staff. 3. Trained guides	Remedial actions to be determined by heritage specialist.

Goal 10: Water and Electricity Demand Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocation of sufficient resources e.g. staff, equipment, Budgets, for on-going water, energy and resource demand management and efficiency.	Excessive utilization of natural resources.	The following technological alternatives to reduce water and electricity demands are within the proposed project designs: 1. Ensure that the buildings are constructed so as to be tightly sealed, to prevent unwanted air flows. Doors and windows must be appropriately sized and fitted with seals 2. Energy efficient installations should be used 3. Energy saving light bulbs such as CFLs and LEDs must be installed instead of incandescent bulbs except where the quality of the light is not sufficient for high precision work and reading. 4. Implement engineer recommendations as per engineer services report as well as recommendations within the GLS report in order to ensure that there is sufficient capacity within the municipality services infrastructure to meet the additional services demand	Annual audits of operations vs EMP to identify those requirements that are not being met. **Responsibility:** Municipality	1. Adequate annual Budgets 2. On-going employment of maintenance staff	To be determined

CHAPTER 8

ENVIRONMENTAL REPORTING

In order to ensure that the necessary environmental issues are adequately addressed and recorded, the following environmental reporting shall be undertaken:

- Incident reporting; and
- Compliance reporting

The applicant must ensure that "Any emergency incident, originating at the facility, which falls within the definition of section 30(1) of the National Environmental Management Act (NEMA), Act 107 of 1998, must be dealt with by the facility in accordance with Section 30 of NEMA". In the event of any incident the facility must ensure containment by the responsible person and report the incident to the West Coast District Municipality, Saldanha Bay Municipality, and DEA&DP (Mr. Simon Botha, 021-4830752, Simon.Botha@westerncape.gov.za).

See below for a template of an Incident Report to serve as a guideline for the recording and addressing of emergency incidents as and when they occur.

ENVIRONMENTAL INCIDENT REPORT

DATE:	**File Ref:**
NAME:	**Copy to:**
EXACT LOCATION OF INCIDENT:	

SECTION 1 : DESCRIPTION OF INCIDENT

SECTION 2 : REMEDIAL ACTION REQUIRED

Remedial Action Due Date:
Confirmation of implementation: **Name:** **Date:**

SECTION 3 : RELEVANT DOCUMENTATION

SECTION 4 : SIGNATURES

Municipal Engineer:

.....

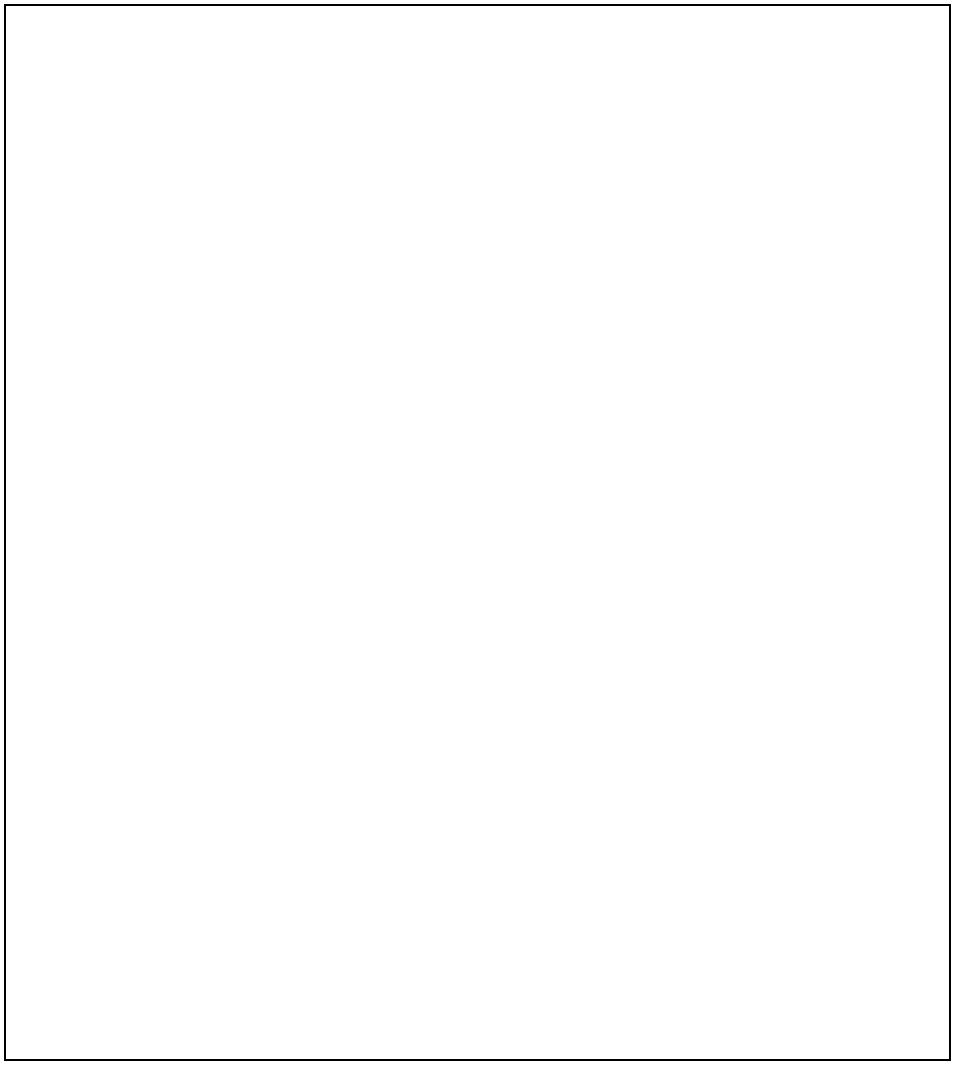
Name:
Date:

ECO:

.....

Name:
Date:

SECTION 5 : DRAWING/SKETCH



CHAPTER 9

DECOMMISSIONING PHASE

As the final phase in the project cycle, decommissioning may present positive environmental opportunities associated with the return of the land for alternative use and the cessation of impacts associated with operational activities. However, depending on the nature of the operational activity, the need to manage risks and potential residual impacts may remain well after operations have ceased.

The decommissioning phase EMP provides specific guidance with respect to the management of the environmental risks associated with the decommissioning stage of a project.

Closure and decommissioning impacts are likely to be similar to the construction phase impacts. The management actions and control under the construction phase EMP need to be implemented to mitigate the negative impacts on the environment and to restore the property to its natural state.

A decommissioning phase is where a structure is removed or otherwise modified to make it incapable for re-use for the original design purpose.

The results of environmental monitoring during the decommissioning phase will be used to assess the impact of the decommissioning on the surrounding environment and demonstrate compliance with regulatory requirements.

The actual scope of the decommissioning environmental monitoring will be established following consultation with the regulatory authorities. The format of decommission management strategy will probably be similar to that of earlier development phases and consist of the following:

- Management Principles

  - Develop monitoring procedures in accordance with standard protocols and the requirements of the environmental legislation.
  - Undertake environmental monitoring during the decommissioning phase as shown below.

Environmental monitoring during the decommission phase will include terrestrial flora rehabilitation monitoring.

CHAPTER 10

REHABILITATION SPECIFICATIONS AND SITE CLEAN-UP

The contractors must ensure that all temporary structures, equipment, materials and facilities used or created on site for, or during construction activities, are removed once the project has been completed. The construction sites must be cleared, and cleaned to the satisfaction of the developer.

Stabilisation and rehabilitation must take place immediately after construction operations have been completed. No vehicles or unauthorised personnel must be allowed onto areas that have been rehabilitated.

The areas impacted during construction must be stabilised and shaped according to the natural surrounding contours. If topsoil was removed during construction the topsoil must be used to stabilise the impacted areas.

The impacted areas must be re-vegetated with indigenous vegetation species within 3 months after completion of construction activities. Rehabilitated areas must be irrigated as and if required to ensure successful establishment of planted indigenous vegetation.

The rehabilitation of the site must ensure that the final conditions of the site is environmentally acceptable and that there will be no adverse long term effects on the surrounding environment especially the water resources.

The rehabilitated areas must be monitored on a monthly basis and after heavy rains for signs of erosion. If erosion occurred the ECO must be informed immediately who will then recommend erosion mitigation measures to be implemented.

Alien vegetation monitoring of the rehabilitated areas and surrounds must be conducted on an annual basis and if alien vegetation is detected the ECO must be informed immediately who will then recommend eradication methods.

CHAPTER 11

ENVIRONMENTAL AWARENESS INDUCTION COURSE MATERIAL

This section of the report is included in compliance with Section 24N (3) (c) of the National Environmental Management Act 107 of 1998.

WHAT IS THE ENVIRONMENT?

- Soil
- Water
- Plants
- People
- Animals
- Air we breathe

WHY MUST WE LOOK AFTER THE ENVIRONMENT?

- It affects us all as well as future generations
- We have a right to a healthy environment
- A Policy and System will be signed

HOW DO WE LOOK AFTER THE ENVIRONMENT?

- Report problems to your supervisor/ foreman
- Team work
- Follow the rules in the EMP

WORKING AREAS

Workers & equipment must stay inside the site boundaries at all times

RIVERS & STREAMS

- Do not swim in or drink from streams
- Do not throw oil, petrol, diesel, concrete or rubbish in the stream
- Do not work in the stream without direct instruction
- Do not damage the banks or vegetation of the stream

ANIMALS

- Do not injure or kill any animals on the site
- Ask your supervisor or Contract's Manager to remove animals found on site

TREES AND FLOWERS

- Do not damage or cut down any trees or plants without permission
- Do not pick flowers

SMOKING AND FIRE

- Put cigarette butts in a rubbish bin
- Do not smoke near gas, paints or petrol
- Do not light any fires without permission
- Know the positions of fire fighting equipment
- Report all fires
- Do not burn rubbish or vegetation without permission

PETROL, OIL AND DIESEL

- Work with petrol, oil & diesel in marked areas
- Report any petrol, oil & diesel leaks or spills to your supervisor
- Use a drip tray under vehicles & machinery
- Empty drip trays after rain & throw away where instructed

DUST

Try to avoid producing dust

NOISE

- Do not make loud noises around the site, especially near schools and homes
- Report or repair noisy vehicles

TOILETS

- Use the toilets provided
- Report full or leaking toilets

EATING

- Only eat in demarcated eating areas
- Never eat near a river or stream
- Put packaging & leftover food into rubbish bins

RUBBISH

- Do not litter – put all rubbish (especially cement bags) into the bins provided
- Report full bins to your supervisor
- The responsible person should empty bins regularly

TRUCKS AND DRIVING

- Always keep to the speed limit
- Drivers – check & report leaks and vehicles that belch smoke
- Ensure loads are secure & do not spill

EMERGENCY PHONE NUMBERS

Know all the emergency phone numbers:

- Ambulance:
- Fire:
- Police: 10111

FINES AND PENALTIES

- Spot fines of between R20 and R2000
- Your company may be fined
- Removal from site
- Construction may be stopped

PROBLEMS - WHAT TO DO!

- Report any breaks, floods, fires, leaks and injuries to your supervisor
- Ask questions!

ATTENDANCE REGISTER FOR ……	
PLACE ……..	TRAINER……
NAME & SURNAME	SIGNED
SIGNED ……..	DATE & TIME ……

CHAPTER 12

COMPLIANCE WITH THE ENVIRONMENTAL AUTHORISATION

All conditions of the Environmental Authorisation must be adhered to onsite during the construction-, operational-, decommissioning- and rehabilitation phases of the proposed project. A copy of the Environmental Authorisation must be available on site together with the EMP and all contractors on site must sign the Declaration of Understanding as proof of awareness and understanding of all the conditions to be adhered to on site in terms of the EA and EMP.

CHAPTER 13

UPDATING/ADAPTING THE EMP

Although care has been taken to address all known relevant environmental issues for the development, it will become necessary to add or amend certain procedures or instructions to improve the efficiency of the EMP. Only those additions to, or amendments of, this EMP that will either improve environmental protection or can be proven not to have any negative effects would be considered to be included, and any amendments to the EMP must first be approved by the ECO and competent authority/ies i.e. DEA&DP.

REFERENCES

City of Cape Town (2002) Environmental Management Programme (Version 5) for Civil Engineering Construction Activities.

DEA&DP: ENVIRONMENTAL MANAGEMENT PROGRAMME. VER 5 (04/2002). Guideline Document for the ECO / ESO and the ER

Department of Water Affairs and Forestry, February 2005. Environmental Best Practice Specifications: Construction Integrated Environmental Management Sub-Series No. IEMS 1.6. Third Edition. Pretoria.

ANNEXURE A
STORMWATER MANAGEMENT PLAN
(OPERATIONAL PHASE)

INTRODUCTION

The plan addresses groundwater recharge, storm water quantity, and storm water quality impacts by incorporating storm water design and performance standards for the new development. The main component or output of this plan is **a design** that includes appropriate mitigation strategies. Specific storm water management measures are identified to lessen the impact of the proposed development.

GOALS OF THE SWMP

The goals of the SWMP are to:

- reduce flood damage, including damage to life and property;
- minimize, to the extent practical, any increase in storm water runoff from any new development;
- reduce soil erosion from any development or construction project;
- assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
- maintain groundwater recharge;
- prevent, to the greatest extent feasible, an increase in nonpoint pollution;
- minimize pollutants in storm water runoff from new and existing development;
- protect public safety through the proper design and operation of storm water infrastructure.

TECHNICAL INFORMATION

A desk top study of the surface hydrology on a proposed site was conducted and a variety of engineering calculations done in order to determine potential flow rates etc. Following this a storm water layout was developed. Hydrology is used in stormwater management for the design. The climate, historical storm rainfall, etc. was used in the run-off calculations. Refer to Pre-liminary Engineering Report dated April 2019 attached Appendix K3 of the Basic Assessment Report.

THE DESIGN

The following stormwater management designed have been recommended by iX Engineers in their Pre-liminary Engineering Report dated April 2019. Also refer to the stormwater management layout attached as Annexure 5 of the EMPr:

Surface drainage will be accommodated on the streets and will consist of a CK5 kerb. Storm water runoff will be discharged on surface and into kerb inlets will be provided at certain positions. The proposed 375mm Ø underground stormwater pipe system with grid inlets will be constructed to ensure sufficient drainage from the area. The proposed stormwater system will drain to the existing stormwater concrete canal and connect to the existing canal at three points. The stormwater design will allow for the 1:2 and 1:50 year floods.

POLLUTION PREVENTION

This section deals with pollution prevention, and in particular the situation where pollution of a water resource occurs or might occur as a result of activities on land. The person who owns, controls,

occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources.

- Ensure no pollution of any water resources, including surface water, storm water and ground water takes place as a result of any activities on the site.

- Ensure that no water other than storm water be discharged in the storm water system.

- The stormwater drains and channels must be monitored, maintained and cleaned by the municipality of debris and waste at least on a three monthly basis and after heavy rains.

- All waste within the channels/detention ponds must be removed.

- If any erosion and/or degradation of the storm water channel or surrounds are noticed immediate action must be taken by the municipality to rectify the situation. (Corrective and preventative measures taken will depend upon the type and extent of erosion and/or degradation occurring).

MAINTENANCE

Storm water infrastructure must be maintained, if signs of leakage, breakage or infrastructure failure are detected it must be repaired immediately and preventative measures must be put in place to prevent re-occurrence.

ANNEXURE B

Curriculum vitae of Lauren Ruth Abrahams
Environmental Assessment Practitioner
Eco Impact Legal Consulting (Pty) Ltd

Personal Details
Nationality: South African
ID: 8904250105082
Address: 70 Flintdale Road, Southfield, 7800
Date of Birth: 25.04.1989
Marital Status: Married
Health: Excellent
Language Proficiency: English - Excellent: speaking, reading, writing Afrikaans- Second language, moderate skill
Driver's license: Yes
Cell: 066 210 9892
Email: lauren@ecoimpact.co.za

Lauren Abrahams has completed her professional registration in terms of section 20(3) (b) of the Natural Scientific Professions Act, 2003 (Act 27 of 2003) as a Candidate Natural Scientist in the field of practice Biological Science (Registration number 100126/12).

Lauren has successfully completed an Ergonomics Risk Auditors course, which would allow her to conduct ergonomic risk assessments as well as the development and implementation of an ergonomic programme for the workplace.

Work Experience
August 2014 - Current – Environmental Assessment Practitioner and Online Legal Database Administrator at Eco Impact Legal Consulting (Pty) Ltd.
June 2013 - July 2014 - Research Assistant at SANParks Cape Research Centre, Tokai.
July 2012 - May 2013 - Research Assistant at SEAON, Egagasini Offshore Node, Cape Town.
October 2011 - May 2012 - Benthic Biodiversity Internship at SEAON, Egagasini Offshore Node, Cape Town.
May 2011 - July 2011 - Research Assistant at University of Cape Town, Department of Zoology.
June 2010 - November 2010 - Technical Assistant at Bayworld Research Centre for Research and Education.
April 2009 - March 2010 - Internship at Department of Environmental Affairs and Tourism.

Key Responsibilities:
Environmental Assessment Practitioner

- Drafting / Completing Application forms for Basis Assessment Reports and Full Scoping Environmental Impact Reports
- Drafting / Completing draft and final Basis Assessment Reports and Full Scoping Environmental Impact Reports
- Public participations process
- Drafting Environmental Management Plans
- Engaging with Departments / Stakeholders
- Conducting site visits

Projects successfully completed

- Application for Environmental Authorisation Low Cost Housing - Robertson Heights (30 September 2016)
- Application for Environmental Authorisation UISP Housing - Robertson Nkanini (10 March 2017)
- Application for Environmental Authorisation Malmesbury External Sewer Pipeline (07 November 2017)
- Application for Environmental Authorisation and WULA - Vegetation Clearing and Dam Expansion, Worcester (09 November 2017)

Online Legal Registers (ISO14001, OSHAS18001, ISO22000 and ISO50001)

- Keeping Legislation registers up to date in terms of amendments to law
- Build / compile legislation registers
- Summarising national, provincial and local legislation

Auditing (ISO14001; OHSAS18001; Sustainability)

- Schedule pre-audit meeting with the client and Send pre-audit meeting agenda to client
- Schedule audit dates with the client and Send audit schedule
- Drafting / write up audit reports
- Compiling of close out reports

Ergonomics Risk Auditing

- Conduct ergonomic risk assessments
- Develop and implement ergonomic programmes
- Provide training regarding ergonomic risks in the workplace

Other

- Compile “Aspects and Impacts Registers” for client’s sites
- Compilation of Integrated Waste Management Plans and Corrective Action Plans
- Water Use Applications
- Waste Licence Applications
- Environmental Permits / Licence Applications

Education

2010 - Cape Peninsula University of Technology
Degree Baccelaureus Technologiae Oceanography
Course work subjects: Applied Marine Biology; Fisheries Environment; Research Methodology: Natural Sciences; Economics.
Btech’s thesis - “Semi-automated classification of Sole eggs using the ZooScan/ZooProcess/Plankton Identifier System.”

2009 - Cape Peninsula University of Technology
National Diploma Oceanography
Course work subjects: Marine Biology; Conservation Ecology; Mathematics; Physics; Computer Skills; Chemistry; Communication Skills; Digital Systems; Statistics; Electronics; Oceanographic and Fishing Gear Technology; Oceanographic Instrumentation; Physical and Chemical Oceanography; Marine Science Practice.

2002 - 2006 - South Peninsula High School, Cape Town, Subjects: Mathematics, English, Afrikaans, Geography, Biology, Physical Science.

Additional courses

1. 2017 - Ergonomics Risk Auditor

Lauren has successfully completed an Ergonomics Risk Auditors course, which would allow her to conduct ergonomic risk assessments as well as the development and implementation of an ergonomic programme for the workplace.

2. 2013 - Molecular Mining of Archive Samples Workshop UCT, South Africa 2013

Workshop provided by The Oceans & Coasts Research Group, Department of Environmental Affairs (DEA) in association with The Marine Biological Association of the UK (MBA) and the Marine Research Institute (Ma-Re, UCT) and co-funded by the Partnership for the Observation of Global Oceans (POGO) and the Scientific Committee on Oceanic Research (SCOR). The workshop provided a combination of taught and hands-on practical's, within the format of a lab-based workshop, to illustrate "best practice" in acquiring molecular data from archived marine samples.

3. 2012 - CAD Training Centre

Microsoft Access

4. 2011 - Marc Picheral (Engineer for the C.N.R.S. (Centre National pour la Recherche Scientifique) - *Developer of the ZooScan (CNRS patented) and Image Analysis Software*)

Automated ZooScan system training course. The key objective of the system and its associated image analysis software is to facilitate the automation of the identification, size distribution and enumeration of zooplankton species and sediments in the waters of the world.

5. 2009 - I&J

SAMSA Approved seagoing familiarisation course in accordance with Section A - VI/1.1 of the S.T.C.W code of 1995.
