ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE GRASSROOTS GROUP DAM ON FARM HARTEBEESKRAAL 88 PORTION 8, TULBAGH DISTRICT

24 April 2019

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	Title: **GRASSROOTS GROUP DAM ON FARM HARTEBEESKRAAL 88 PORTION 8, TULBAGH DISTRICT** **1st DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME**
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Verification	Capacity	Name	Signature	Date
By Author	EAP	Lauren Abrahams		24 April 2019

COMMITMENT AND DECLARATION OF UNDERSTANDING BY CONTRACTOR AND DEVELOPER FOR THE GRASSROOTS GROUP DAM ON FARM HARTEBEESKRAAL 88 PORTION 8, TULBAGH DISTRICT

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 19011:2003) standard.
Biodiversity:	The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.
Contractor:	An employer, as defined in section 1 of the Occupational Health and Safety Act 85 of 1993, who performs construction work and includes principal contractors
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
EMPr:	Environmental Management Programme
EO:	Environmental Officer
ER:	Engineer's Representative
I&AP:	Interested and Affected Party
IEM:	Integrated Environmental Management
MMP:	Maintenance Management Plan
PM:	Project Manager
SANS:	South African National Standards

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DEVELOPER'S COMMITMENT

Grassroots Group (Pty) Ltd 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.

Grassroots Group (Pty) Ltd 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.

Grassroots Group (Pty) Ltd, in drafting this EMPr for implementation, intends to enable continuous improvement in legal compliance and the sustainable operation of the site. The EMPr 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 EMPr on site will require both the full support and commitment of all personnel.

CHAPTER 1

1.1. Executive Summary

This EMPr 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, Water Use Authorisation and MMP must be adhered to.

The EMPr 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")

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 curriculum vitae in Annexure A.***

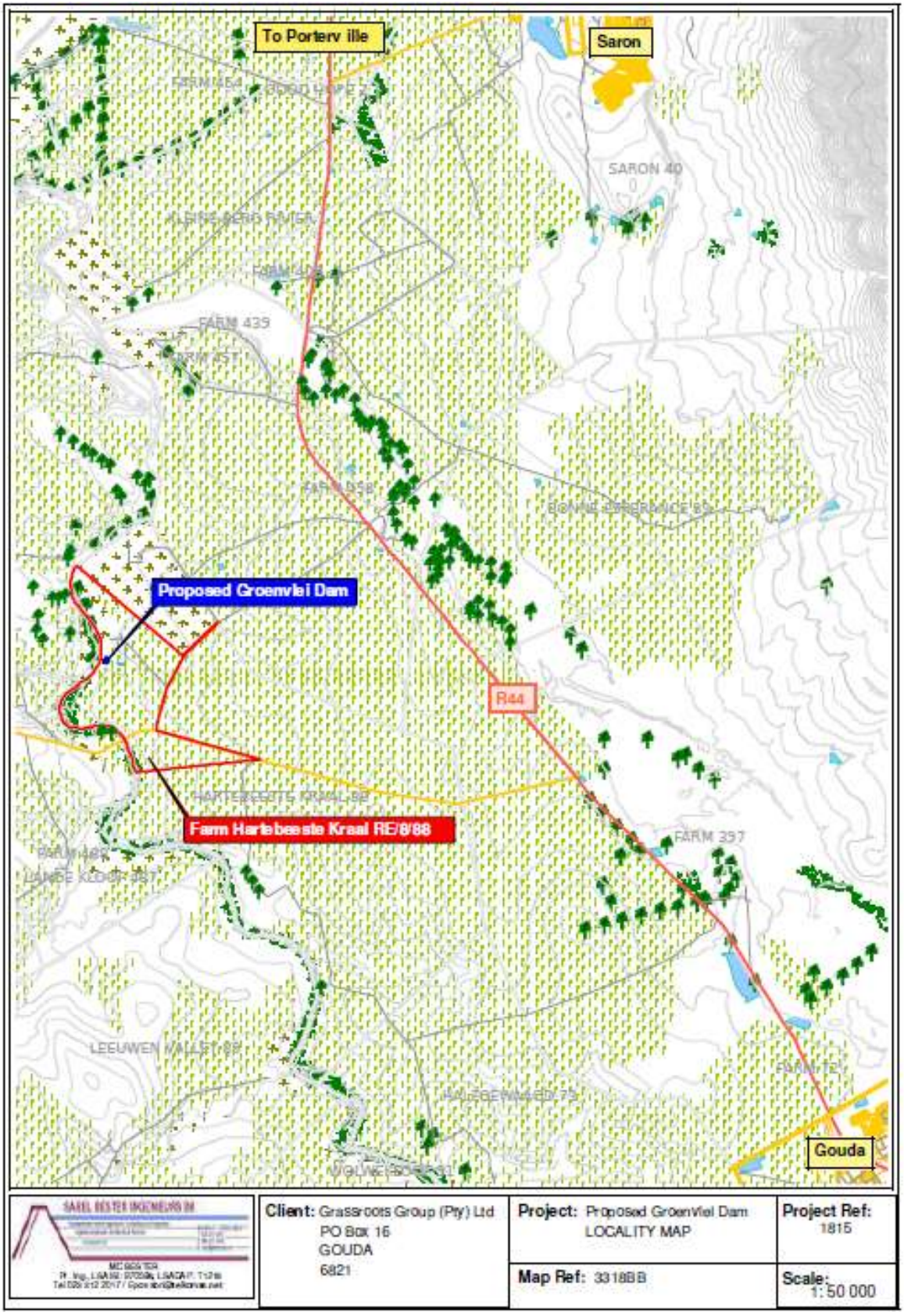
Grassroots Group (Pty) Ltd has appointed Eco Impact to prepare an EMPr that meets the technical standards as set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014 Published under GN R982 in GG 38282 of 04 December 2014 amended by GN 326 in GG 40772 of 07 April 2017.

1.2. Project Description

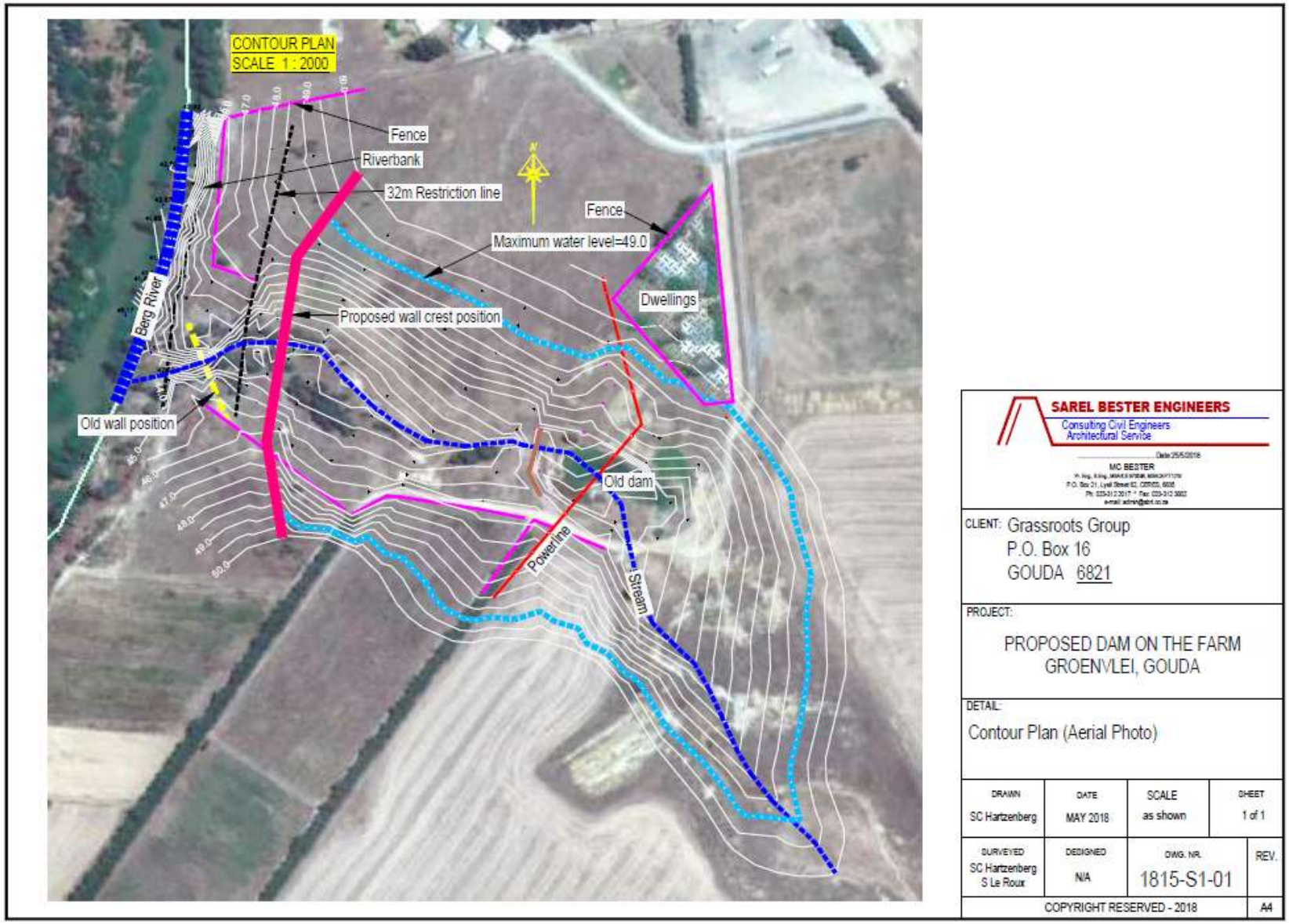
This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act, 107 of 1998.

The following is proposed:
The property is located on farm Hartebeeskraal 88 portion 8, Tulbagh district, approximately 9.4 km north west of the town Gouda on the eastern bank of the Berg River. The application is for the expansion of an existing instream dam. This will consist of the establishment of a new dam wall with the following specification:
Wall height = 4.9m
Crest length = 143m
Potential gross capacity = 55 000m^3
The applicant has an Existing Lawful Water Use for abstraction of water from the Bergriver as confirmed by the Lower-Bergriver Irrigation Board, dated 01 February 2017.

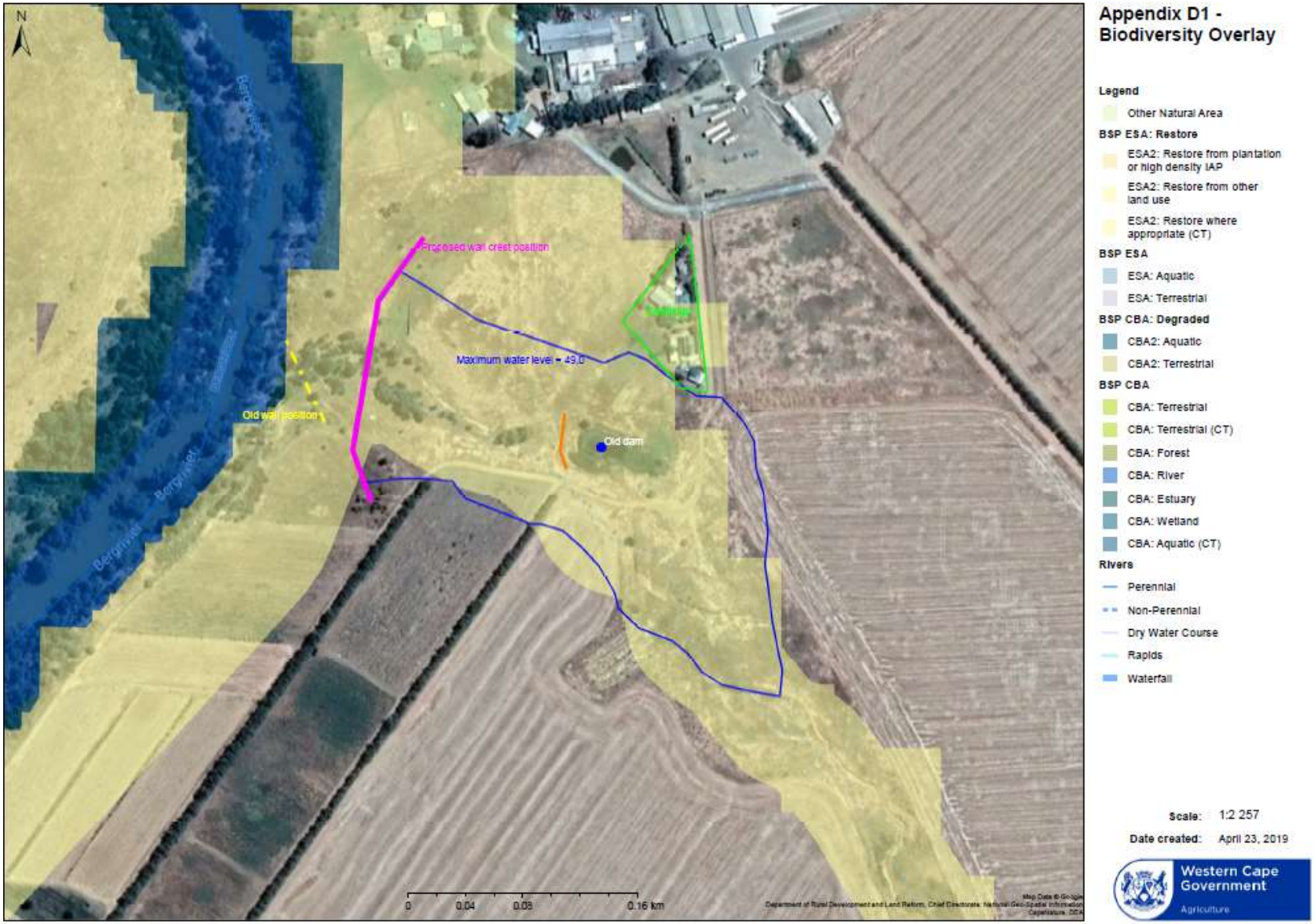
LOCALITY MAP



SITE DEVELOPMENT PLAN:



BIODIVERSITY OVERLAY MAP:



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 EMPr.

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 EMPr 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 EMPr.

2.2 Responsibilities and Functions of the Environmental Control Officer

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

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 Farms - Office located on site.

- monitor and verify that the EMPr and/or EA is adhered to at all times and by taking action if the specifications are not followed;
- 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 EMPr and/or EA;
- monitor the environmental awareness training for all 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 a 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 EMPr and/or EA;
- keep a photographic record of progress on site from an environmental perspective; and
- undertake a continual internal review of the EMPr and/or EA and submit a report to the developer and the responsible DEA&DP Environmental Official according to EA conditions.

2.3 Agreed Work Plan and Site Visit Schedule of ECO

Please note that the application is for the upgrading of the existing instream dam.

An ECO site visit should be scheduled for the initial pre-construction inspection and thereafter at the closure / ceasing of construction and clearing activities.

2.4 Site Manager

Please note that the application is for the upgrading of the existing instream dam.
The site manager (farm 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

Please note that the application is for the upgrading of the existing instream dam. Construction activities will only be for a limited period and will not go through a tender process for the appointment of the contractor. The contractor will only be on site for the dam expansion activities. Items listed below will be as and when applicable to the activity.

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 EMPr, 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 EMPr 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

Please note that the application is for the upgrading of the existing instream dam. The responsibilities as listed below will be as and when required by the activity conducted.

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

- meetings attended;
- method statements received and approved;
- issues arising on site;
- cases of non-compliance with the EMPr;
- corrective actions taken and penalties issued.

This information will be recorded in an appropriate manner 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. CAPE WINELANDS DISTRICT MUNICIPALITY: FIRE SAFETY BY-LAW
4. CAPE WINELANDS DISTRICT MUNICIPALITY: MUNICIPAL HEALTH BY-LAWS
5. COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 130 OF 1993
6. CONSERVATION OF AGRICULTURAL RESOURCES ACT, 43 OF 1983
7. CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996
8. DRAKENSTEIN LOCAL MUNICIPALITY: BY-LAW ON MUNICIPAL LAND USE PLANNING
9. DRAKENSTEIN LOCAL MUNICIPALITY: INTEGRATED WASTE MANAGEMENT BY-LAW
10. DRAKENSTEIN LOCAL MUNICIPALITY: OUTDOOR ADVERTISING AND SIGNAGE BY-LAW
11. DRAKENSTEIN LOCAL MUNICIPALITY: REFUSE REMOVAL
12. DRAKENSTEIN LOCAL MUNICIPALITY: THE PREVENTION OF ATMOSPHERIC POLLUTION
13. DRAKENSTEIN LOCAL MUNICIPALITY: THE PREVENTION OF PUBLIC NUISANCES AND THE KEEPING OF ANIMALS
14. DRAKENSTEIN LOCAL MUNICIPALITY: WATER SERVICES BY-LAW
15. EMPLOYMENT EQUITY ACT, 55 OF 1998
16. ENVIRONMENT CONSERVATION ACT, 73 OF 1989
17. ENVIRONMENT CONSERVATION ACT, 73 OF 1989, WESTERN CAPE NOISE CONTROL REGULATIONS
18. FENCING ACT, 31 OF 1963
19. HAZARDOUS SUBSTANCES ACT, 15 OF 1973
20. LABOUR RELATIONS ACT, 66 OF 1995
21. NATIONAL BUILDING REGULATIONS AND BUILDING STANDARDS ACT, 103 OF 1977
22. NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 107 OF 1998
23. NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 39 OF 2004
24. NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 10 OF 2004
25. NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 59 OF 2008
26. NATIONAL FORESTS ACT, 84 OF 1998
27. NATIONAL HEALTH ACT 61 OF 2003
28. NATIONAL HEALTH ACT 61 OF 2003 REGULATIONS RELATING TO THE MANAGEMENT OF HUMAN REMAINS
29. NATIONAL HERITAGE RESOURCES ACT, 25 OF 1999
30. NATIONAL VELD AND FOREST FIRE ACT, 101 OF 1998
31. NATIONAL WATER ACT, 36 OF 1998
32. OCCUPATIONAL HEALTH AND SAFETY ACT, 85 OF 1993
33. TOBACCO PRODUCTS CONTROL ACT, 83 OF 1993
34. WATER SERVICES ACT, 108 OF 1997

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.

Compliance

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 EMPr, 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.

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. 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 EMPr, 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 EMPr, 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 EMPr for effectiveness. ISO/SANS 19011:2011 auditing standards will be applied.

Audits will be undertaken at completion of the construction phase. Audit reports will be submitted to management, who will attend to all noted issues.

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 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 EMPr 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 EMPr 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.

4.4.1. 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.

4.4.2. 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.

4.5 Method Statements

Contractors must provide written statements for discussion with 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.

Method statements regarding the dam expanion must be provided for discussion with the ECO.

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.

5.2 Record Keeping

The developer/landowner will ensure that a filing system, identifying all documentation related to the EMPr, 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 EMPr, MMP, 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.;
- Material data sheets of all chemicals utilised on site;

- Crisis communication manual;
- Disciplinary procedures;
- Monthly site meeting minutes during construction;
- All relevant permits;
- All method statements for all phases of the project.

All registers and records should be kept on site and must be made available to the department on request.

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

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. All complaints receive by the facility must be documented.

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.

Goal for Planning and Design (PD)

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

- Ensures that the design of the upgrade of the dam expansion 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 dam expansion 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 commence.

A site meeting between the contractors and the representatives of the developer/landowner must take place at least 5 days prior to commencement of construction work / vegetation clearing to:
- Demarcate micro construction sites, services routes, access routes, working boundaries and **no-go areas**;
- 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 / vegetation clearing areas;
- 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/vegetation clearing is due to start (***as and when required***):
- Sufficient and suitable ablution 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.

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 THE DESIGN OF THE DAM EXPANSION RESPONDS TO THE IDENTIFIED ENVIRONMENTAL CONSTRAINTS AND OPPORTUNITIES

Project Component/s	Storm water structures; Access roads; Laydown areas and construction camp area; No-go areas.

Potential Impact	Design fails to respond optimally to the environmental consideration.
Activities/Risk Sources	Poor planning and design of storm water and drainage structures. Poor consideration of the natural landscape features.
Mitigation: Target/Objective	Ensure that the design of the residential development responds to the identified environmental constraints and opportunities.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Plan and conduct pre-construction activities in an environmentally acceptable manner.	Developer	Pre-construction
Access roads to be carefully planned to minimise the impacted area and prevent unnecessary over compaction of soil.	Developer	Design phase
As far as possible, existing roads must be used.	Developer	Design phase
The holder of an environmental authorisation has the responsibility to notify the competent authority of any alienation, transfer and, change of ownership rights in the property on which the activity is to take place.	Developer	Pre-construction
Fourteen (14) days written notice must be given to the Department that the activity will commence. The notification must include a date on which the activity will commence as well as the reference number.	Developer	Pre-construction
ECO to be appointed prior to the commencement of any authorised activities. Once appointed the name and contact details of the ECO must be submitted to the DEA&DP.	Developer	Pre-construction

Performance indicator	Design meets objectives and does not degrade the environment. Design responds to the mitigation measures and recommendations in the BA report. Minimal impact on the surrounding agricultural land and residential development.
Monitoring	Ensure that the design implemented meets the objectives and mitigation measures in the BA report through review of the design by the Project Manager, Developer and the Contract or prior to the commencement of construction.

CONSTRUCTION AND REHABILITATION PHASE

Goal for Construction Phase for the expansion of an existing instream dam.

Overall Goal for Construction (C):
Undertake the dam expansion 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, farming practices, 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.

Mitigation Measures to be implemented in accordance with the Ecological Assessment:
Essential mitigation measures during the construction phase:

- Limit the footprint area of the construction activity to what is absolutely essential in order to minimise the loss of aquatic habitats in the area.

- Keep all demarcated sensitive zones outside of the construction area off limits during the construction phase of the project. The non-impacted areas of the water courses and wetlands, its riparian zones and 32m buffer areas is regarded as no go and no impact areas.
- Contractor laydown areas and stockpiles to be established outside of the 100m Zone of Regulation implemented around the water courses and wetlands.
- Vehicles to be serviced at the contractor laydown area and all re-fuelling is to take place outside of all relevant zones of regulation
- Care must be taken to ensure that all concrete mixing is done on batter boards or within suitably bunded areas and no cement laden run-off may enter into the preferential surface flow pathway or the downstream ephemeral stream
- Allow only essential construction personnel within 32m of all riparian systems;
- Restrict construction activities to the drier summer months, if possible, to avoid sedimentation and siltation of riparian features in the vicinity of the proposed development.
- Invasive vegetation to be removed during construction (the material that cannot be used for fire wood) to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation.
- At no point may construction equipment stand unauthorised within or near the river.
- All excess sediment removed from the watercourses must be utilised as part of the building activities or be removed from site. At no point may this material be dumped on site or within any of the other freshwater features identified within the surrounding area. Topsoil will have a high density of alien invasive seeds which will need to be controlled into the operational phase.
- Soil surrounding the wingwalls must be suitably backfilled and sloped (minimum of a 1:3 ratio) and concrete aprons as well as gabion mattresses should be installed both up and downstream for energy dissipation and sediment trapping.

OBJECTIVE C1: CONTRACTOR'S CAMP / LAYDOWN AREA

Project Component/s	Development site; Access roads.
Potential Impact	Degradation of the natural environment inside/outside of the development area.
Activities/Risk Sources	Setting up and operation of the contractor's camp.
Mitigation: Target/Objective	Construction camp must be neatly fenced and construction site must be neat and tidy.

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. Contractor laydown areas and stockpiles to be established outside of the 100m Zone of Regulation implemented around the water courses and wetlands. Vehicles to be serviced at the contractor laydown area and all re-fuelling is to take place outside of all relevant zones of regulation	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 C2: ALIEN/INVASIVE PLANTS

Project Component/s	Dam expansion and no-go areas.
Potential Impact	Alien/invasive plant species can spread into natural/indigenous vegetation areas.
Activities/Risk Sources	Construction activities.
Mitigation:	To protect and mitigate impacts on the environment. Eradicating and

Target/Objective	preventing the spread of weeds / alien invasive species.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
A contractor appointed by the developer and engineer shall 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 shall occur. Such should be removed from the site to a suitable dumping site from which seed cannot escape.	Contractor	Construction phase
According to Conservation of Agricultural Resources Act, (Act 43 of 1983), Regulation 15E methods of controlling weeds and alien plants are as follow: • Uprooting; felling; cutting or burning • Treatment with a weed killer that is registered for use in connection with such plants in accordance with the directions for the use of such • Biological control carried out in accordance with the stipulations of the Agricultural Pests Act,(Act no 36 of 1983) Combination of one or more methods mentioned above, and any action taken to control alien plants shall be executed with caution and in a manner that will cause least possible damage to the environment.	Developer / Contractor	Construction and operational phase

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 C3 ARCHAEOLOGY AND PALAEONTOLOGY MANAGEMENT

Project Component/s	Development areas.	
Potential Impact	The loss of cultural or heritage resources.	
Activities/Risk Sources	Activities associated with the dam expansion (building of the dam wall).	
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.	Developer / Contractor	Construction and operational phases
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 C4: ANTI-EROSION MEASURES

Project Component/s	Construction of the dam wall.
Potential Impact	Wind/water erosion as a result of construction/clearing activities.
Activities/Risk Sources	Activities associated with facility construction.
Mitigation:	Reduce the impact of erosion by implementing anti-erosion measures.

Target/Objective	

Mitigation: Action/Control	Responsibility	Timeframe
The contractor shall 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 dam expansion the contractor shall 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.	Developer / Contractor	Construction and operational phases
Measures that may be applicable is: • Access to roads and other areas must be controlled to avoid disturbance of areas outside the development footprint. Personnel should be restricted to the immediate construction areas only. • Monitor construction areas frequently for signs of erosion and if signs of erosion are detected implement repair and preventative measures immediately. • Strict compliance with the EMPr and MMP.	Developer / Contractor	Construction and operational phases

Performance indicator	All possible erosion impacts are controlled and appropriately 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 C5: HERBICIDES, PESTICIDES AND FERTILIZERS

Project Component/s	Adjacent property/land/farming activities.
Potential Impact	Adjacent land/property, cultivated areas or natural environments contaminated by the application of herbicides, fertilizers and pesticides.
Activities/Risk Sources	Control of alien invasive species or weeds.
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 shall 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. **Disposal of equipment associated to herbicides and pesticides:** All equipment associated to herbicides and pesticides	Developer / Contractor	Construction phase

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 to accept this type of waste (i.e. hazardous waste disposal facility). Disposal of all redundant and empty containers may not be disposed of at a WDF licenced to receive general waste, and may not be burned, or buried. Such containers should rather be returned to the supplier for processing, or triple rinsed and delivered to a licenced recycling company in the vicinity (further information is provided here: http://www.avcasa.co.za/index.php?layout=edit&id=10). If this is not possible, the containers may be disposed of at the Vissershok WDF in the City of Cape Town, which is licenced to receive hazardous waste.		

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 C6: MEASURES TO PROTECT HYDROLOGICAL FEATURES SUCH AS STREAMS, RIVERS, PANS, WETLANDS, DAMS AND THEIR CATCHMENTS, AND OTHER ENVIRONMENTAL SENSITIVE AREAS FROM CONSTRUCTION IMPACTS

Project Component/s	Loss of freshwater ecological habitat
Potential Impact	Habitat destruction is the alteration of a natural habitat to the point that it is rendered unfit to support the species dependent upon it as their home territory. Many organisms previously using the area are displaced or destroyed, thereby reducing biodiversity. Modification of habitats for agriculture as well as surface mining and urban development are the main causes of habitat destruction in this case. Additional causes of habitat destruction include water pollution, introduction of alien species and overgrazing. The non-perennial riverine systems have very low flows as part of their annual hydrological cycles and are particularly susceptible to changes in habitat condition. The proposed development project has the potential to lead to habitat loss and/or alteration of the aquatic and riparian resources on the study area. It is however important to note that the freshwater ecology, and especially aquatic habitats of most of the systems has been impaired or impacted already as a result of existing dams, road crossings, channelization upstream and historical agricultural impacts and as such the risk to the receiving environment as a result of the proposed project is reduced to some degree.
Activities/Risk Sources	***Riparian zone*** Earthworks in the vicinity of drainage systems leading to increased runoff and erosion and altered runoff patterns. Construction of the dam wall. Alien invasive vegetation encroachment. ***Instream zone*** Loss of aquatic refugia. Altered substrate conditions due to the deposition of silt. Altered depth and flow regimes in the non-perennial river.
Mitigation: Target/Objective	To protect and mitigate impacts on the environment and hydrological features.

Mitigation: Action/Control	Responsibility	Timeframe
Essential mitigation measures: • Limit the footprint area of the construction activity to what is absolutely essential in order to minimise the loss of aquatic habitats in the area. • Keep all demarcated sensitive zones outside of the construction area off limits during the construction phase of the project. The non-impacted areas of the non-perennial river, its riparian zones and 32m buffer areas is regarded as no-go and no impact areas. • On-going aquatic ecological monitoring must take place as per the water use authorization by a suitably qualified assessor. • Contractor laydown areas and stockpiles to be established outside of the 100m Zone of Regulation implemented around the watercourses. • Vehicles to be serviced at the contractor laydown area and all re-fuelling is to take place outside of all relevant zones of regulation. • Care must be taken to ensure that all concrete mixing is done on batter boards or within suitably bunded areas and no cement laden run-off may enter into the preferential surface flow pathway or the downstream ephemeral stream. **Recommended mitigation measures** • Permit only essential construction personnel within 32m of all riparian systems; • Restrict construction activities to the drier summer months, if possible, to avoid sedimentation and siltation of riparian features in the vicinity of the proposed development and aim for completion in early spring at which time revegetation should take place allowing for a full summer growing season to become established.	Developer / Contractor	Construction phase

Performance indicator	Impacts on freshwater ecological habitats 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 C7: DEGRADATION / LOSS OF NATURALLY OCCURRING / INDIGENOUS FLORA AND HABITATS

Project Component/s	Degradation / loss of naturally occurring / indigenous flora and habitats
Potential Impact	A localised loss of riparian habitat and modification of the stream bed or banks of the watercourse at the dam site and immediately downstream is likely to occur as a result of the dam construction as well as the pipeline construction. This impact is however likely to be small due to the fact that the habitat within the watercourse for the preferred dam site as well as the watercourse and dam basin catchment that will be impacted by the dam are already moderately to largely modified. Special precaution is to be taken during the construction of the infrastructure that falls within the regulated area as determined in the NWA. Construction activities must be controlled to ensure that the river and its buffer areas are not negatively impacted.
Activities/Risk Sources	None as a result of the degraded habitat at the proposed dam impact area.
Mitigation: Target/Objective	To protect and mitigate impacts on vegetation and habitats.

Mitigation: Action/Control	Responsibility	Timeframe
• Undertake construction activities only in identified and specifically demarcated areas. • Invasive vegetation to be removed during construction to be disposed of at landfill site if not use for fire wood, in such a manner that seeds must not be able to spread from the disposal site or during transportation. • At no point may construction equipment stand unauthorised within or near the river. • All excess sediment removed from the watercourses must be utilised as part of the building activities or be removed from site. At no point may this material be dumped on site or within any of the other freshwater features identified within the surrounding area. Topsoil will have a high density of alien invasive seeds which will need to be controlled into the operational phase. • Soil surrounding the wingwalls must be suitably backfilled and sloped (minimum of a 1:3 ratio) and concrete aprons as well as gabion mattresses should be installed both up and downstream for energy dissipation and sediment trapping.	Developer / Contractor	Construction phase

Performance indicator	Impacts on vegetation and habitats 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 C8: WATER QUALITY IMPAIRMENT

Project Component/s	Water quality impairment
Potential Impact	There is a potential for some sedimentation and contaminated run-off to impact on the aquatic features during the construction phase activities.
Activities/Risk Sources	Contamination and degrading of the water quality downstream of the proposed dam in the non-perennial river and Berg River.
Mitigation: Target/Objective	To protect and mitigate impacts on water quality.

Mitigation: Action/Control	Responsibility	Timeframe
The water quality impacts during the construction phase in particular should be addressed through the Construction Environmental Management Plan (CEMP) for the project and implemented by an on-site Environmental Officer (EO). Contaminated runoff from the construction site should be prevented from directly entering the water features. Construction should also preferably take place during the drier months when flow in the streams and run off from the surrounding land is low.	Developer / Contractor	Construction phase

Performance indicator	Impacts on water quality 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 C9: DIESEL FUEL AND LUBRICANT HANDLING PROGRAMME

Project Component/s	Dam expansion.
Potential Impact	Contamination of soil, storm and ground water resources as a result of an oil/diesel/lubricant spill/leak.
Activities/Risk Sources	Refuelling of equipment. Accidental spill.
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. 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	Contractor	Construction phase

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.

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 4 are specified goals:

Goal 1: Water Quality and Storm Water Management
Goal 2: Safety, Security and Emergency Procedures (including Fences)
Goal 3: Vegetation Management, inclusive of Alien management and Landscaping
Goal 4: Waste Management
Goal 5: Flow Modification
Please refer to the MMP in Appendix H2 for operational maintenance requirements pertaining to the dam.

General Mitigation Measures to be implemented in accordance with the Ecological Assessment:

- The amount abstracted from the Berg River should be reduced by the amount impeded from the catchment.
- Monitoring of the volume abstracted from the Berg River and that stored within the dam should be undertaken.

Goal 1: Water Quality and Storm Water Management Measures

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
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 ground water 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. Corrective and preventative measures taken will depend upon the type and extent of erosion and/or degradation occurring.	Audits of operations vs EMPr to identify those requirements that are not being met. **Responsibility:** Landowner/Developer	Adequate annual Budgets. 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 the ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. • Depending on the type and extent of pollution or erosion that occurred specialists may be contacted to provide specific recommendations. • An incident report to be compiled and sent to the municipal and relevant governmental authorities.

Goal 2: 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, and budget).	Pollution, fire, security and health risks; infrastructure failure.	1. The site should be fenced and access allowed at controlled points (where reasonably practicable). 2. Any emergency incident, originating at the development site, which falls within the definition of section 30(1)a 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. 3. In the event of any incident the facility must ensure containment by the responsible person. 4. On-site emergency plans should be reviewed regularly.	Six monthly at start and then yearly audits of operations vs EMPr to identify those requirements that are not being met. **Responsibility:** Landowner/Developer	Adequate annual Budgets. On-going employment of staff.	To be determined when required.

Goal 3: Vegetation Management, Inclusive of Alien Vegetation and Landscaping

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocations of sufficient resources (E.g. staff, equipment, budget) for ongoing alien and vegetation management. *Please refer to Regulation 15 of the CARA which defines the weeds that falls under category 1 which is not tolerated on land neither in rural nor urban areas. The weed and other weeds and invasive plants present on the farm need to be controlled and removed annually through continuous monitoring and maintenance programs as they can cause damage any natural vegetation surrounding the development / farm.*	Loss of conservation worthy species, fire and health.	1. All alien infested areas should be cleared and followed up. 2. All areas to be kept clear of aliens. According to Conservation of Agricultural Resources Act, (Act 43 of 1983), Regulation 15E methods of controlling weeds and alien plants are as follow: • Uprooting; felling; cutting or burning • Treatment with a weed killer that is registered for use in connection with such plants in accordance with the directions for the use of such • Biological control carried out in accordance with the stipulations of the Agricultural Pests Act,(Act no 36 of 1983) Combination of one or more methods mentioned above, and any action taken to control alien plants shall be executed with caution and in a manner that will cause least possible damage to the environment.	Six monthly at start and then yearly audits of operations vs EMPr to identify those requirements that are not being met. **Responsibility:** Landowner/Developer	Adequate annual Budgets. On-going employment of staff.	To be determined when required.

Goal 4: Waste Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure allocation of sufficient resources for on-going waste management (E.g. staff, equipment, and budget).	Pollution, fire, security and health risks; infrastructure failure.	1. Should more than 100m^3 of general waste or 80m^3 of hazardous waste be stored for longer than 90 days on site, the storage of such waste should adhere to the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended, (NEM:WA) "National Norms and Standards for the Storage of Waste", as contained in Government Notice 926 of 29 November 2013. 2. No burning of waste is allowed on site. 3. Although nothing is mentioned about composting in the Report, the applicant is reminded that composting is considered a form of treatment of waste and as such, should more than 10 tons a day be composted, the applicant is required to have a waste management licence in place for composting.	Six monthly at start and then yearly audits of operations vs EMPr to identify those requirements that are not being met. **Responsibility:** Landowner/Developer	Adequate annual Budgets. On-going employment of staff.	To be determined when required.

Goal 5: Flow Modification
The proposal is to store 55 000 cubic meters of allocated water from the Berg River in a newly constructed dam that would be constructed within a minor tributary of the Berg. Flow within the minor tributary would only occur for a short period of time in winter.

Cumulative Impacts:
There is only likely to be surface water runoff from the catchment of the minor tributaries between the months of April/May and October. The Environmental Water Requirement of the watercourses within the study area for the recommended ecological category for these streams of a C category (moderately modified) would be approximately 20% of the Mean Annual Runoff (MAR) of the watercourses. This would equate to an environmental flow requirement of approximately 6 600 m^3. There is however only a very short stretch of the watercourse (about 45m) downstream of the proposed dam that would benefit from any environmental flow release.

Objectives	**Risks**	**Actions**	**Monitoring**	**Criteria/Targets**	**Remedial Actions**
Ensure allocation of sufficient resources for on-going monitoring.	Flow modification	• The tributary in which the dam is proposed as well as that associated with the pump station and pipeline still contains some indigenous vegetation within the watercourse but also contains invasive alien plants. • It is important that the disturbed area is rehabilitated and that ongoing monitoring and management of invasive alien plants with the watercourses are undertaken. • The erosion within the watercourse in which the dam is proposed should be addressed and where possible re-vegetated with suitable vegetation. • Follow up work should be carried out after rehabilitation to ensure that no invasive alien plants establish themselves within the watercourse adjacent to the dam as well as downstream of the dam.	Six monthly at start and then yearly audits of operations vs EMPr to identify those requirements that are not being met. **Responsibility:** Landowner/Developer	Adequate annual Budgets. On-going employment of staff.	To be determined when required.

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

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:

.....

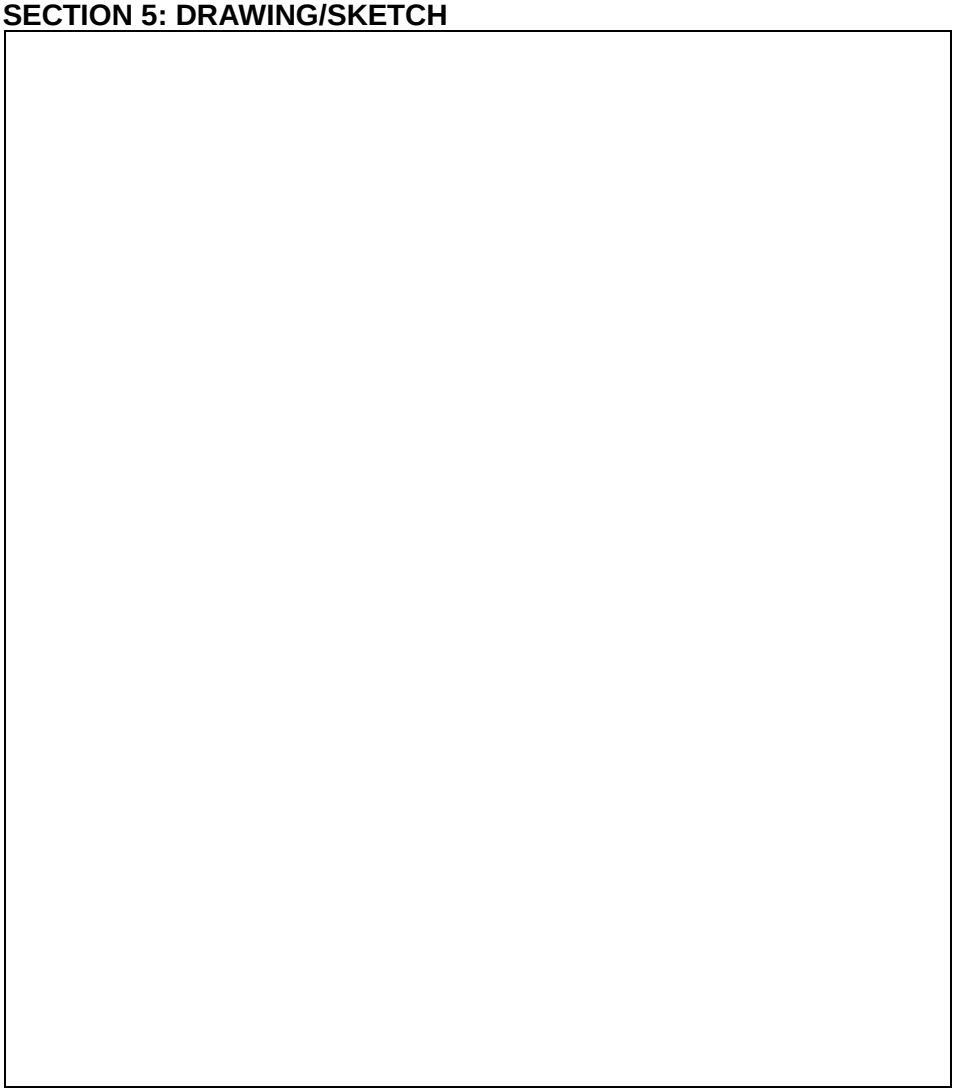
Name:
Date:

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 EMPr 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 EMPr 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

Post Construction Rehabilitation:

The construction areas 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 if required.

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.

Any rehabilitation and remedial action in relation to soil erosion in the event it does occur needs to be in accordance with regulation 14 of the CARA. According to Regulation 14 (1*) "If a land user disturbs or denudes any land on his farm unit for purposes other than prospecting or mining activities; (c) - such land user shall by means of as many of the following measures as are necessary in his situation, effectively restore and reclaim that disturbed or denuded land. (i) Topsoil shall be removed and kept separate with a view to replacing it later on the disturbed or denuded land. (ii) Topsoil shall be used to stabilize the sides of a hollow that has been caused by the exploitation or removal of material and, where possible, to reclaim part of the disturbed or denuded land. (iv) The flow pattern of run-off water, the topography and the slope shall, depending on the volume of material exploited or removed, be restored as closely as possible to the original condition. (v) Suitable vegetation shall be established on the land concerned in order to expedite the restoration and reclamation thereof. (vii) A suitable soil conservation work shall be constructed and thereafter be maintained in order to protect the land concerned against excessive soil loss through the action of water and wind or in order to collect sediment from run-off water. "*

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 EMPr, MMP 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, EMPr and MMP.

CHAPTER 13

UPDATING/ADAPTING THE EMPr

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 EMPr. Only those additions to, or amendments of, this EMPr 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 EMPr 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. Version 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

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.
