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DRAFT

PRE-CONSTRUCTION, CONSTRUCTION AND POST-
 CONSTRUCTION PHASE

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE

**THE PROPOSED SCHOOL AND HOSPITAL DEVELOPMENT ON THE REMAINDER
 OF THE FARM VAALE VALLEI 219, HARTENBOS, MOSSEL BAY LOCAL
 MUNICIPALITY, GARDEN ROUTE DISTRICT MUNICIPALITY, WESTERN CAPE.**

APPLICANT:	HARTLAND LIFESTYLE ESTATE (PTY) LTD
ENVIRONMENTAL ASSESSMENT PRACTITIONER:	SHARPLES ENVIRONMENTAL SERVICES CC RESPONSIBLE EAP: MADELEINE KNOETZE (EAPASA REG: 2021/3230) OVERSEEING EAP: BETSY DITCHAM (EAPASA REG: 2020/1480)
SES REFERENCE NUMBER:	CT27/HSH/EMPR/06/26
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APPENDIX 4 OF THE EIA REGULATIONS 2014 (AS AMENDED 2017).

This Environmental Management Programme has been drafted in accordance with Appendix 4 of the Environmental Impact Assessment Regulations 2014 (as amended 2017). The table below shows how the requirements of Appendix 4 have been included within this Environmental Management Programme.

(1) An EMPr must comply with section 24N of the Act and include— (a) details of— (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Appendix A
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Appendix B - E
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Appendix C
(d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including— (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Section 6 - 10
(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 7 -12 Appendix H
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	
(m) an environmental awareness plan describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 14 Appendix C
(n) any specific information that may be required by the competent authority.	



COMPLIANCE WITH SECTION 24N OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998, AS AMENDED (ACT 107 OF 1998)

(1) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may require the submission of an environmental management programme before considering an application for an environmental authorisation.	This Environmental Management Programme (EMPr) has been compiled in accordance with the requirements of the Environmental Impact Assessment Regulations and is currently being circulated for public review purposes.
(1A) Where environmental impact assessment has been identified as the environmental instrument to be utilised in informing an application for environmental authorisation, or where such application relates to prospecting, mining, exploration, production and related activities on a prospecting, mining, exploration or production area, the Minister, the Minister of Minerals and Energy, an MEC or identified competent authority must require the submission of an environmental management programme before considering an application for an environmental authorisation.	
(2) The environmental management programme must contain-	
(a) information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts or objectives in respect of- (i) planning and design; (ii) pre-construction and construction activities; (iii) the operation or undertaking of the activity in question; (iv) the rehabilitation of the environment; and (v) closure, if applicable;	Sections 8, 9, 0 and 11
(b) details of- (i) the person who prepared the environmental management programme; and (ii) the expertise of that person to prepare an environmental management programme;	Section 4
(c) a detailed description of the aspects of the activity that are covered by the environmental management programme;	Section 5
(d) information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a);	Section 7 Appendix E
(e) information in respect of the mechanisms proposed for monitoring compliance with the environmental management programme and for reporting on the compliance;	
(f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and	Sections 8, 9, 0 and 11
(g) a description of the manner in which it intends to- (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) remedy the cause of pollution or degradation and migration of pollutants; and (iii) comply with any prescribed environmental management standards or practices	Sections 8, 9, 0 and 11
(3) The environmental management programme must, where appropriate-	
(a) set out time periods within which the measures contemplated in the environmental management programme must be implemented;	Section 6 - 10
(b) contain measures regulating responsibilities for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting area or mining area in question; and	Section 7 and 12 Appendix E
(c) develop an environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.	Sections 13 and 14
(4) The Minister of Minerals and Energy may not grant an environmental authorisation, unless he or she has considered any recommendation by the Regional Mining Development and Environmental Committee	Not applicable to the project
(5) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may call for additional information and may direct that the environmental management programme in question must be adjusted in such a way as the Minister, the Minister of Minerals and Energy or the MEC may require.	All comments obtained from Stakeholders will be incorporated into this document upon conclusion of the Public Participation Process.
(6) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may at any time after he or she has approved an application for an environmental authorisation approve an amended environmental management programme.	Not applicable to the project at this stage



(7) The holder and any person issued with an environmental authorisation-	
<i>(a) must at all times give effect to the general objectives of integrated environmental management laid down in section 23 (Of the NEMA);</i>	Section 12 Appendix E
<i>(b) must consider, investigate, assess and communicate the impact of his or her prospecting or mining on the environment;</i>	
<i>(c) must manage all environmental impacts-</i> <i>(i) in accordance with his or her approved environmental management programme, where appropriate; and</i> <i>(ii) as an integral part of the reconnaissance, prospecting or mining, exploration or production operation, unless the Minister of Minerals and Energy directs otherwise;</i>	
<i>(d) must monitor and audit compliance with the requirements of the environmental management programme;</i>	
<i>(e) must, as far as is reasonably practicable, rehabilitate the environment affected by the prospecting or mining operations to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and</i>	
<i>(f) is responsible for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of his or her prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting or mining area to which such right or permit relates.</i>	



1. DOCUMENT DETAILS

SES Project Ref. No:	CT27/HSH/EMPR/06/26
Conditions of Use:	<p>This report is the property of the sponsor, <i>Sharples Environmental Services cc (SES)</i>, who may make allowance to publish it, in whole provided that:</p> <p>Approval for copy is obtained from <i>SES</i>. <i>SES</i> is acknowledged in the publication. <i>SES</i> is indemnified against and claim for damages that may result from publication of specifications, recommendations or statements that is not administered or controlled by <i>SES</i>. That approval is obtained from <i>SES</i> if this report is to be used for the purposes of sale, publicity or advertisement.</p> <p><i>SES</i> accepts no responsibility for failure to follow the recommended program.</p>
Disclaimer	<p><i>*This Environmental Management Programme has been compiled in line with Appendix 4 of Environmental Impact Assessment (EIA) Regulations of 2014, as amended (GNR 326 of 2017). This EMPr has been submitted to the Competent Authority as part of the EIA process followed in terms of the EIA Regulations of 2014, as amended. Even though numerous renditions of this report exist, this report (in its final state), aims to replace any other version of this document, upon authorisation of the project by the Western Cape Department of Environmental Affairs and Development Planning (DEADP).</i></p> <p><i>*All technical developmental information contained in this EMPr was provided by Hartland Lifestyle Estate (Pty) Ltd and SES does not take any responsibility regarding the accuracy of the information.</i></p> <p><i>*This EMPr and the preliminary impacts identified is based on the expected sensitivity of the receiving environment based on the observations made by the appointed Environmental Assessment Practitioner (EAP) and the specialists qualified to make such interpretations.</i></p>

2. ABOUT THIS EMPr

This document is intended to serve as an implementing guideline to be used by *Hartland Lifestyle Estate (Pty) Ltd* during the pre-construction, construction, and post-construction phases of the proposed school and hospital development. This document provides measures that must be implemented to ensure that any environmental degradation that may be associated with the proposed development is avoided, or where such impacts cannot be avoided entirely, are minimised and mitigated appropriately.

This Environmental Management Programme (EMPr) has been prepared in accordance with Appendix 4 of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended (Government Notice Regulation [GNR] 326 of 2017; GNR 517 of 2021), which stipulates the minimum requirements of an EMPr, Section 24N of the National Environmental Management Act, 1998, as amended (Act No. 107 of 1998), and with reference to the "Guidelines for Environmental Management Programmes" published by the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP, 2005).

In line with the mitigation hierarchy (see Figure 1), the overarching goal of this EMPr is to anticipate and provide measures that must be implemented to ensure that any environmental impact that may be associated with the development is avoided. Where such impacts cannot be avoided entirely, such environmental impacts must be minimised and mitigated appropriately. The mitigation hierarchy was considered during the BAR planning process, to appropriately manage environmental impacts.

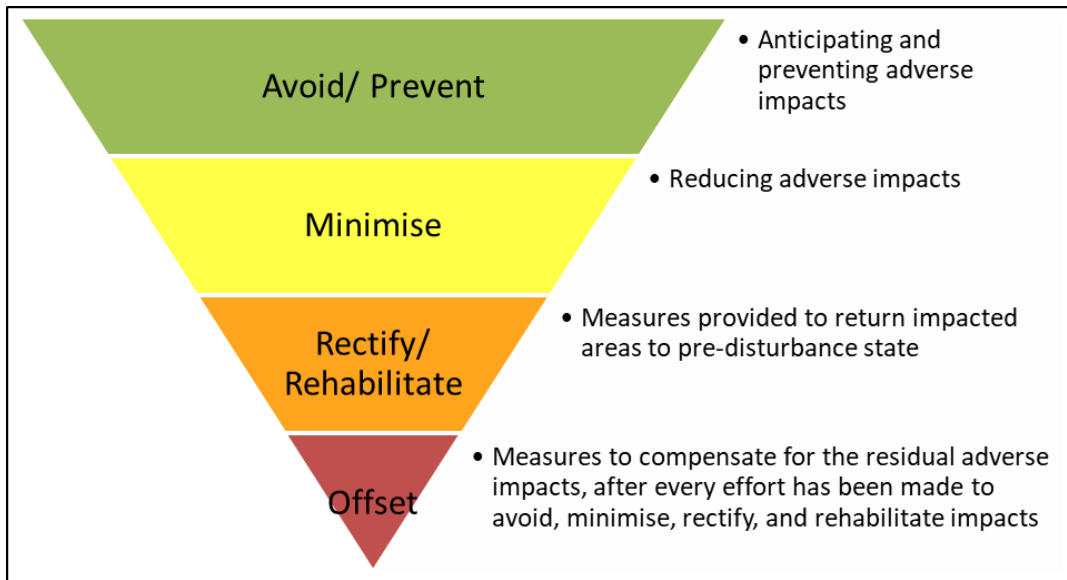


Figure 1. Mitigation hierarchy

The rehabilitation, mitigation, management and monitoring measures prescribed in this EMPr must be seen as binding to the *Proponent*, and any person acting on its behalf, including but not limited to agents, contractors, employees, associates, guests or any person rendering a service to the development site.

2.1. Environmental legislative requirements of the proposed development

The EIA Regulations of 2014, as amended (GNR 326 of 2017; GNR 517 of 2021), as promulgated in terms of the National Environmental Management Act, 1998 (NEMA; Act No. 107 of 1998), gives effect to the Constitution of the Republic of South Africa by providing a framework for co-operative environmental governance and the environment. NEMA requires that an environmental authorisation (EA) be granted by a competent authority (CA) before the commencement of an activity listed in terms of the EIA Regulations of 2014, as amended.

Since this development proposal triggered listed activities in terms of the EIA Regulations of 2014, as amended, in terms of Listing Notice 1 and 3 of 2014, as amended, a Basic Assessment Process was undertaken. This EMPr acts as a standalone document submitted with the Basic Assessment Report submitted to the Department of Environmental Affairs and Development Planning (DEADP) for the purpose of obtaining Environmental Authorisation.

The following listed activities will be triggered in terms of the relevant Listing Notices:

Table 1. Listed Activities triggered in terms of Listed Notice 1 and 3 of 2014, as amended.

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1
9	The development of infrastructure exceeding 1 000 metres for the bulk transportation of water or stormwater – (i) with an internal diameter of 0.36 metres or more; or (ii) with a peak throughput of 120 litres per second or more.
12	The development of – (i) dams or weirs where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) Infrastructure or structures with a physical footprint of 100 square metres or more; Where such development occurs- (a) Within a watercourse.
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.



27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.
28	Residential, mixed retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after April 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.
Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3
4	The development of a road wider than 4 metres with a reserve less than 13.5 metres. i. Western Cape: ii. Areas outside urban areas: (aa) Areas containing indigenous vegetation.
12	The clearance of an area of 300 square metres or more of indigenous vegetation. i. Western Cape: i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004. ii. Within critical biodiversity areas identified in bioregional plans.
14	The development of (ii) infrastructure or structures with a physical footprint of 10 square metres or more where such development occurs- (a) within a watercourse; or (c) if no development setback has been adopted, within 32 metres of a watercourse measured from the edge of a watercourse. i. Western Cape: i. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.
Note: The listed activities specified above must reconcile with activities applied for in the application form. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted. Where additional listed activities have been identified, that have not been included in the application form, and amended application form must be submitted to the competent authority.	

2.2. Important caveat to the report

In the past, some developments have had a devastating impact on the environment even though they have had EMPs in place, while other developments have had a low impact even though no management plans have been compiled.

The Implementing Agent and the attitude of the construction team play an integral role in determining the impact a development will have on the environment. The independent Environmental Control Officer (ECO) needs to ensure that all role-players are aware of the constraints that the EMP places on the development and the construction team and are prepared to be actively involved in implementing these constraints. The end result relies on co-operation, mutual respect and understanding of all parties involved.

3. HOW TO USE THIS DOCUMENT

It is essential that this EMP be carefully studied, understood, implemented, and adhered to as far as reasonably possible, throughout all phases of the proposed development. The *Proponent* must retain a copy of this EMP, and an additional copy must be kept on site at all times during the pre-construction, construction and post-construction / rehabilitation phases of the proposed upgrade project.

This EMP must be included in all contracts compiled for engineers, contractors and subcontractors employed by the *Proponent*, as this EMP identifies and specifies the procedures to be followed by engineers and other contractors to ensure that the adverse impacts of construction and maintenance activities are either avoided or reduced. Appointed contractors must make adequate financial provision to implement the environmental management measures specified in this document.

This EMPr must be seen as a working document, which may be amended as and when needed accommodate changing circumstances on site or in the surrounding environment, or to accommodate requests/ conditions issued by the DEADP. Amendments to this EMPr must first be approved by the Competent Authority, in writing, before being implemented.

4. DETAILS OF THE EAP

This EMPr was compiled by Sharples Environmental Services cc (SES). SES was established in 1998 and has been actively engaged in the fields of environmental planning, assessment and management. SES advises on private, corporate and public enterprises on a variety of differing land use applications ranging from large-scale residential estates and resorts to golf courses, municipal service infrastructure installations and the planning of major arterials. Our consultants have over 60+ years of combined experience and we operate in the Southern, Eastern, Northern and Western Cape regions.

A brief description of the Environmental Assessment Practitioners (EAP) has been included below, as per Table 1, and a detailed Curriculum Vitae has been included in Appendix A.

Table 1: EAP Details.

Role:	Name:	E-Mail Address:	Qualifications:	Registration/ Memberships	YEARS OF EXPERIENCE
Responsible EAP	Ms. Madeleine Knoetze	madeleine@sesc.net	B.Sc. Environmental Sciences (Geology and Geography) (NMMU)	IAIA (SA) EAPASA (Reg nr. 2021/3230)	10+ years
Overseeing EAP	Mrs. Betsy Ditcham	betsy@sesc.net	B.Sc. Honours (Wildlife Management) (UP) B.Sc (Zoology and Ecology) (UCT)	IAIA (SA) EAPASA (Reg Nr. : 1480)	16+ years

5. DESCRIPTION OF THE ACTIVITY

Hartland Lifestyle Estate (Pty) Ltd proposes the development of a school and hospital on a portion of the Remainder of the Farm Vaalevalley No. 219, Hartenbos, Mossel Bay Local Municipality, Garden Route District Municipality, Western Cape.

The description of the proposed development will be divided into three portions:

- The school:
 - o The school yard will be divided into two main areas:
 - The first will be the Secondary School inclusive of a School hostel, an Admin building and Main Hall. This portion of the development will also house the Clubhouse and the Rugby fields/Athletics Track. A total number of three rugby fields will be established within the proposed development site. The secondary school will be large enough to accommodate approximately 2600 students.
 - The second will be the Tertiary Education Centre (that will be able to accommodate approximately 450 students) and Student Accommodation (that will accommodate approximately 136 students), which will also house the Action Sports Fields, and Action Sports Courts.
- The hospital:
 - o The third section of the proposed development constitutes the proposed hospital and associated infrastructure. This will include the Future Staff Accommodation and the helicopter landing pad.

- o Internal and external auxiliary infrastructure:
- o The proposed development will see to the construction of a network of internal roads and parking bays catered specifically toward the portion of the proposed development to be serviced. The number of parking bays allocated to the proposed development aligns with the requirements of the Mossel Bay Municipal Zoning Scheme;
- o It is proposed to install a new sewer pump station on site.
- o The access roads will have a width of between 5.2 m and 7.4 m with the widest reserve being 20 m.

All services (water, sewer, electricity, and solid waste) will be serviced by the Mossel Bay Local Municipality. No additional bulk water infrastructure will be required, as there is a Ø500 mm bulk supply line leading from the 7Mℓ Jakkalskop Reservoir along the southern boundary of the proposed development site which the project will tie into.

The image below provides the development footprint of the proposed development.

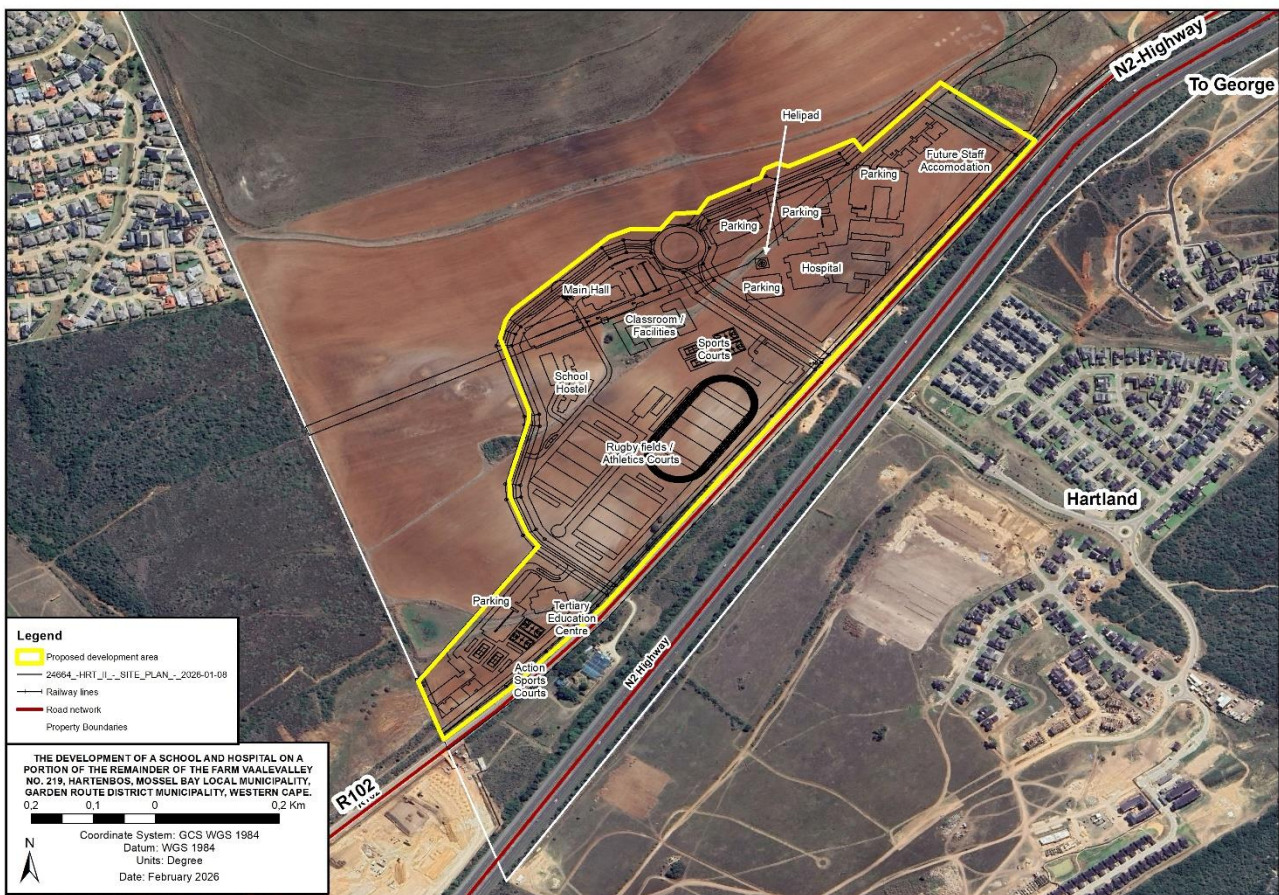


Figure 2. Proposed development layout.

6. GENERAL ENVIRONMENTAL MANAGEMENT

The following general management measures are intended to protect environmental resources from pollution and degradation during all phases of the project life cycle. These measures must be implemented as and where applicable, reasonable and practicable during the pre-construction, construction and post-construction rehabilitation and operational (maintenance) phases of the proposed development.

6.1. Code of Conduct

The purpose of the Code of Conduct (CoC) is to minimise the impact of the activities associated with the construction phase on the environment. The rules and regulations prescribed in this CoC are intended to ensure that the impacts on the environment are not prejudiced by the construction activities. Failure to adhere to, or any breach of the conditions within the CoC will result in a fine being levied against the offending or defaulting party / individual.

Labourers appointed during the construction phase must conserve the natural environment, endorsing the principles of sustainable use and minimum impact. They must also be sensitive to the impact of their operations on the environment within which they work and, in doing so, minimise any adverse impacts.

This EMPr forms an integral part of the activities during the construction phase and as such, is legally enforceable. In addition to the restrictions and controls provided for in this EMPr, the environmental controls comprise of the following:

- **Engineers**
Unless otherwise stated by the *Holder* of the Environmental Authorisation (hereafter referred to as the *Holder*), only a registered engineer must be appointed for the construction phase of the project. The engineer must provide work or services of quality and scope, and to a level, which are commensurate with accepted standards and practices. The engineer must be impartial in decision-making, provision of advice and judgement.
- **Contractors and sub-contractors**
Unless otherwise determined, only appropriately registered contractors must be appointed. It will be the responsibility of the *Holder* / engineer to ensure that the contractors abide by and comply with the rules and regulations of the Code of Conduct. Contractors shall be responsible for their sub-contractors and employees whilst they are on the development property at all times.
- **Rules and Regulations**
It is of vital importance that engineers, and contractors understand and acknowledge that they are working on a site that has undergone an environmental assessment, and if authorised will require compliance with all relevant permits/licenses and this EMPr. The role players should agree to conform to all environmental controls specified in this EMPr, and any additional environmental permits/licenses, as well as any additional input by the ECO.

In addition to the EMPr, the environmental controls comprise of the following:

- **Plan Controls**
A copy of the approved and signed project plans must be available on site during the construction phase of the proposed development. Variations of the building plans must be approved by the engineer / *Holder* prior to being implemented.
- **Site Tidiness**
The contractor must always keep the appearance of the site neat and tidy. Building rubble must be removed from site at regular intervals, and litter must be removed from the site daily (if not, stored in appropriate receptacles). Refuse bins must be available on site which waste can be placed in. The bins must be emptied on a regular basis, as required, and the waste taken to a licenced local waste disposal facility.

- **Safety**

The contractor must comply with the Health and Safety Act (Act No. 85 of 1993), as amended (OSHA), together with such regulations promulgated thereunder. Please note, monitoring matters relating to safety, unless stipulated by a specialist appointed to the project, will not be the onus of the Environmental Control Officer (ECO).

Telephone numbers of emergency services, including the local firefighting service, shall be displayed conspicuously in the Contractor's office near a telephone. No weapons (firearms, airguns, daggers etc.) are permitted on site.

6.2. Site Access and Traffic Management

All construction vehicles need to adhere to traffic laws and regulations. The speed of construction vehicles and other heavy vehicles must be strictly controlled on site to avoid dangerous conditions and indirect environmental impacts such as dust pollution therefore visual impacts as a result of construction related activities. As far as possible, care must be taken to ensure that the local traffic flow pattern is not significantly disrupted, and vehicle operators need to be educated in terms of "best-practice" operation in order to minimise unnecessary traffic congestion or dangers.

During the construction phase of the proposed development, a traffic management plan must be compiled by the appointed contractor.

Adequate signage that is both informative and cautionary to passing traffic must be erected to warn other road users (motorists and pedestrians) about the presence of construction vehicles, particularly at the point where construction vehicles enter/ exit the site. Signage would need to be clearly visible and include, amongst others, the following:

- Identifying the working area as a construction site;
- Cautioning against relevant construction activities;
- Prohibiting access to the construction site;
- Clearly specifying possible detour routes and / or delay periods;
- Possible indications of time frames attached to the construction activities, and;
- Listings of which contractors are working on the site.

Other mitigation measures include:

- The ECO must do awareness training with the contractors and all labourers that will be working on site and must highlight the traffic related risks before construction commences.
- Where possible, construction traffic that may obstruct traffic flow on the surrounding roads must be scheduled outside of peak traffic times.
- If needed, appropriate traffic management measures and/ or traffic marshals must be utilised to assist vehicles entering/ exiting the site.

6.3. Site Demarcation

The working areas should be clearly demarcated by appropriate means during the pre-construction or construction phases of the development, as appropriate.

- **Construction Working Area**

Prior to the commencement of any land-clearing or construction activities, the ECO must be advised of the project programme providing an indication of when clearance and earthworks will commence.

Prior to the commencement of any land clearance or construction activities, the outer boundary of the working area must be surveyed and demarcated by means of an appropriate method. This demarcation boundary is to ensure that land clearing and construction activities are restricted to only the area strictly required for the proposed activities, and to prevent unnecessary disturbance of soil surfaces and vegetation outside of the approved footprint.

The demarcation should be retained and maintained for the duration of the construction period or up until the conclusion of the rehabilitation phase. If changes to the extent of the working areas are required, such changes may only be applied once the approval of the appointed ECO, Site Engineer or where applicable, the Competent Authority (the Western Cape Department of Environmental Affairs and Development Planning) has been obtained.

- **No-Go Areas**

Due to the Agriculturally sensitive nature of the area surrounding the proposed development, all areas beyond the approved areas of clearance must be considered "no-go" areas. This approach aims to avoid disturbance activities from expanding beyond the approved proposed development footprint.

It is recommended that the working areas be demarcated with a suitable material that can be easily identified and noticed. The method of demarcation is to be determined by the ECO and the appointed Contractor. Danger tape flagging (pieces of danger tape tied to twine or rope) may be utilised as a short-term solution. However, the use of only danger tape is not recommended for long-term demarcation as this will easily become degraded and blown away by the wind resulting in pollution.

For the purpose of this project, all areas beyond the working areas stipulated above are considered no-go areas.

No-go areas must be considered as off-limits to all construction workers, vehicles and machinery during all phases of the development. No vegetation may be cleared beyond the working areas as stipulated above (unless in accordance with an approved alien invasive management plan and under the supervision of the ECO), and no dumping of any material (waste, topsoil, subsoil etc.) may occur in these areas. Construction workers must be informed of the no-go areas, and if necessary appropriate signage can be used to enforce the demarcation. Any interaction with no-go Areas must be consulted with between the Contractor and ECO prior to any actions.

No vegetation clearing shall take place without approval of the method statement by the RE. No vegetation clearing shall take place until the site boundaries and "No-Go" areas are clearly demarcated. Before clearing of vegetation, the Contractor shall ensure that all litter and non-organic material is removed from the area to be cleared. Vegetation clearing of the site shall be limited as far as possible. Clearing may not extend beyond the approved proposed development footprints assessed as part of the Basic Assessment Process. If large areas are to be cleared, consideration should be given to a phased clearing approach to limit potential impacts resulting from large areas standing cleared for extended period of time. Indigenous plant material can be removed from cleared areas and may be stockpiled for mulching.

Alien vegetation may be used for mulching if it is not in seed. All remaining alien invasive vegetation must be removed and disposed of at an approved landfill site.

- **Demarcation of the Site Camp**

The area chosen for the site camp and associated facilities must be the minimum area reasonably required to accommodate the site camp facilities, and which will involve the least disturbance to the environment. It is recommended that easily accessible, transformed areas must be used for the site camp. Site selection must be done in consultation with the ECO.

6.4. Site Camp and Associated Facilities

The set up and organisation of the site camp is paramount to ensuring compliance with the requirements of the EA, if approved, and the EMPr. An environmental site file is to be created by the contractor and must be situated within the site camp throughout the construction phase and must be kept by the *Holder* following the conclusion of the construction phase. The environmental file is to include the following as a minimum requirement;

- A copy of the Environmental Authorisation and all other permits and applicable licences.
- A copy of the approved EMPr.
- Updated waste slips (waste transporter accreditation certificate, manifest and safe disposal certificate).
- Disposal slips or cleaning slips (ablution cleaning).
- All Environmental Monitoring Reports (EMRs) and ECO instructions.
- Copies of Environmental induction register/s.
- The Protocol for Chance Palaeontological Findings.
- A Complaints Register.
- Updated method statements.
- Any and all emergency procedure/s applicable to site activities.
- An Incident Register.

The file can be stored virtually, however, access must be freely available (i.e. available to all).

Method Statements (MS) are written submissions by the Contractor to the Resident Engineer (RE) engineer assigned to the project) (with input from the ECO) in response to the requirements of this EMPr or to a request by the RE or ECO. A minimum requirement will consist of the listed MS's below.

The ECO and / or Competent Authority have the authority to request method statements for activities, including but not limited to:

- Establishment of site camp and stockpile area (including measures to preserve, as appropriate, and utilise top- and subsoil during construction).
- Site clearing
- Cement/ concrete batching, disposal and emergency contingencies.
- Topsoil and sub-soil storage/ stockpiling.
- Storage of fuels and hazardous chemicals and emergency contingencies.
- Waste management system.
- Storm water management and control.
- Dust Mitigation
- Alien invasive plant species management.
- Fire Control & Fire Emergency Plan.
- Emergency preparedness plan / emergency response procedure.
- Post-construction rehabilitation.

Further MS's may be requested by the RE or ECO. The Contractor shall be required to prepare method statements for several specific construction activities and/or environmental management aspects as specified.

It is the Contractors responsibility to ensure that the required method statements are drafted and submitted. The Contractor shall not commence with an activity for which a method statement is required until the **RE and the ECO** has approved the relevant method statement.

Method statements must be submitted at least seven (7) business days prior to the date on which approval is required (start of the activity).

Should an MS be rejected this will be done so with comment. The seven-day submission period will commence once again on re-submission of the MS.

Failure to submit a MS (either required in terms of the EMP, or as required before specific works highlighted by the ECO or RE), may result in suspension of the activity concerned until such time as a MS has been submitted and approved. An approved MS shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract. However, any damage caused to the environment through activities undertaken without an approved MS shall be rehabilitated at the contractor's cost and to the satisfaction the ECO and RE.

The method statements shall cover relevant details with regard to:

- Construction procedures (including vegetation clearance, earthworks, and installation of services) and location of the construction site.
- Start date and duration of the procedure.
- Materials, equipment and labour to be used.
- How materials, equipment and labour would be moved to and from the site as well as on site during construction.
- Storage, removal and subsequent handling of all materials, excess materials and waste materials of the procedure.
- Emergency procedures in case of any reasonably potential accident / incident which could occur during the procedure.
- Mitigation measure that will be employed.
- Compliance / non-compliance with the EMP Specification and motivation if non-compliant.

The following general management measures pertaining to the set-up, operation and closure of a site camp must be applied where appropriate, reasonable and practicable:

6.5. Fencing & Security

The site camp area must be secured to prevent any unauthorised individuals from entering the site camp and possibly getting injured or posing a safety and/or security risk. Adequate signage must be displayed, designating the site office / camp as a restricted area accessible only to personnel appointed to the construction works of the project. If required, the boundary of site camp should be clearly demarcated and the camp access controlled through the use of a gate or other approved method. A site register is recommended to record any daily visitors and activities, for record keeping purposes.

- **Fire Fighting Equipment**

Fire-fighting equipment should be present on site in line with the applicable legislation.

Open fires should be prohibited on site. However, it is noted that despite this, incidents may arise where fires are created after hours by security, and labour may attempt to smoke on site. In these cases, measures should be taken to ensure that activities are managed appropriately. Therefore, should a fire be created on site after hours, the following procedure must be followed:

- Ensure that the security is aware that creating fires within the site boundaries are prohibited.

Should the contractor choose to, he/she may designate a smoking area within the site camp, of which the contractor is solely responsible for the management of this activity on site, and any incidents that may occur. It must contain the following features:

- Appropriate signage.
- A barrel/bucket filled to 50% capacity with sand, or other appropriately approved mechanism, for disposal of used cigarettes.
- The bin and designated area must be positioned in such a manner that it is not directly affected by heavy winds.
- This bin must be emptied as is necessary and must not be allowed to reach 75% capacity.

In the case of accidental fires, the contractor must (if required/significant) alert the Local Authority's Fire Department as soon as a fire starts prior to the fire becoming uncontrollable.

- **Waste Storage Area**

Sufficient bins for the temporary storage of construction related waste must be provided inside the site camp and/or at the working area and must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Sufficient signage and awareness must be created to ensure that these bins are properly used.

- **Hazardous Substances Storage Area, spills and leaks**

Hazardous substances such as diesel, oil and detergents will be present on site throughout the construction phase of the project. Hazardous substances pose a greater risk to the surrounding environment than general substances and therefore need to be managed accordingly. Fuels, chemicals, lubricants and other hazardous substances must be stored in a demarcated, secured, bunded and clearly sign-posted area within the site camp. It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage. Ensure that when substances are transferred, this is done on an impermeable and/or bunded surface, to contain any spillage. Spillage, should it occur, must be disposed of appropriately. Appropriate storage of hazardous substances is important while drip trays / impermeable surfaces that can contain the substances should always be utilised when decanting of hazardous substances and when refilling chemical/ fuel storage tanks.

Hazard signs and data sheets indicating the nature of the stored materials shall be displayed on the storage facility or containment structure. Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger" are to be provided, and are to conform to the requirements of SABS 1186, or other applicable standards.

Fuel storage tanks are permitted to be temporarily established on site for construction purposes provided that the contractor ensures full compliance with the following:

- All local by-laws relating to community and fire safety must be complied with. Most local authorities require that a permit be obtained from the relevant Fire Department. This permit should be kept on file.

- The storage tank capacity may not exceed 9000 litres.
- The storage tank may not be on the premises for a period exceeding that stipulated by the local authority.
- The tanks must be removed on completion of construction or the once the contractor responsible for the tanks has completed their work on site.
- A tank must be erected at least 3.5 metres from boundaries, buildings and other flammable substances or combustible materials.
- A temporary tank must have a bund wall with 110% capacity of the tank's total storage capacity.
- The floor and wall of the bund area shall be impervious to prevent infiltration of any spilled / leaked fuel into the soil.
- The floor of the bund shall be sloped towards an oil trap or sump to enable any spilled fuel to be removed.
- The sump must have a lock off valve that can only be opened in an emergency.

Should a mini-mobile type trailer tank or bowser be used on site, the following specifications apply:

- The tank will be maintained by the fuel suppliers and/or Contractor and is to be kept clean and leak free.
- The trailer is to be kept on site with a drip tray at all times and is to be removed from site at the end of every day unless it is kept in a bund area of 110% of the tank volume.

A hydrocarbon bioremediation product approved by the RE with input from the ECO must be stored on site and near the fuel stores for any emergencies. Once a purpose manufactured hydrocarbon spill remediation product has been used or has been used to treat contaminated materials (soil, rubble etc.) it must be disposed of, with the treated material, at a facility licensed to receive such waste.

All empty drums and externally dirty drums shall be sealed and stored in the bunded area. If fuel is dispensed from 200 litre drums, the proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. The dispensing mechanism of the fuel storage tank shall be stored in a waterproof container or within the bund area when not in use.

The location of suitable areas for maintenance and refuelling must be identified by the RE in collaboration with the ECO. The ECO must be involved in the decision and must provide guidance from an environmental perspective prior to commencement of the proposed action.

Any significant accidental release of a hazardous substance during the construction and post-construction phase of the project must be reported to the relevant authorities, including the Western Cape Department of Environmental Affairs and Development Planning's Directorate: Pollution and Chemicals Management, in terms of Section 30(3) of the NEMA.

The contractor shall ensure that all employees are aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the RE and ECO. The Contractor shall ensure that the necessary spill response hydrocarbon remediation materials and equipment for dealing with spills and leaks are available on site at all times. The source of the spillage shall be isolated. The Contractor shall contain the spillage using sand berms, sandbags, pre-made booms, sawdust or absorbent materials. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the RE.

The Contractor shall submit his emergency procedure prior to bringing on site any such substances. All spills or accidents involving such materials are to be recorded by the Contractor. The Contractor is responsible for ensuring that these records are submitted to the ECO. The cleanup of spills and any damage caused by the spill shall be for the Contractor's account.

- **Potable Water**

An adequate supply of potable water must be provided to construction workers at the site camp. It is the Contractor's duty to ensure that the labour has adequate access to potable water throughout construction phase, and to monitor weather conditions, to ensure that labour has enough drinking water on hotter days.

No water may be abstracted from streams, rivers, wetlands or boreholes unless the necessary water use authorisations are in place. If water is stored on site, drinking water and multi-purposed water storage facilities shall be clearly distinguished and demarcated. All pipes, taps and associated infrastructure, where made available to the Contracting team for use, are to be maintained in good working order. Any leaks must be reported and repaired immediately.

- **Ablution Facilities**

Chemical toilets present a risk to the surrounding environment and must be managed accordingly. Chemical toilets must be kept at the site camp, on a level surface and secured from blowing over, and must be located in such a way so as to ensure that the toilets will not cause any form of pollution. The supply toilet facilities must comply with the requirements of the SABS and the OSHA.

The ablution facilities must not be linked to drainage lines in any way. Toilets must be serviced regularly and kept in an orderly state. The contractor must ensure that no spillage occurs when the toilets are cleaned, serviced or moved. The toilet facilities must be emptied on a weekly basis, or as appropriate by an appropriately registered service provider. Proof of this weekly servicing must be obtained and filed in the Environmental File on site. The contractor shall ensure that chemical toilets are emptied before the builders' holidays. All contents must be removed from the site. Under no circumstances may waste be discharged into the environment or be buried on site.

Performing ablutions outside of the provided toilet facilities is strictly prohibited and the ECO would need to regularly inspect the state of the chemical toilets to ensure compliance.

All temporary portable toilets shall be secured in such a manner so as to prevent them toppling due to wind or any other cause. Plumbed toilets must have no leaks or malfunctioning valves. No chemicals, oils or similar construction related materials are to be disposed of via the toilets on site.

- **Eating & Rest Area**

A dedicated area within which construction workers can rest and eat during breaks must be provided within the site camp. Alternatively, a designated area must be identified within the proposed development area to make allowance for these activities. This area must be agreed upon by the RE, ECO and the *Holder*. Seating, shaded areas and waste bins must be provided. If none is available, the Contractor shall provide adequate temporary shade within the construction areas to ensure that site personnel do not move off site to eat. The Contractor shall provide adequate refuse bins with lids at all eating areas to the satisfaction of the RE. The bins must be weatherproof and scavenger proof and approved by the RE. If deemed necessary by the RE, the Contractor shall demarcate designated eating areas.

No feeding of wild animals shall be permitted. Food and food products are to be stored in such away so as not to attract scavenging animals.

- **House-Keeping**

The site camp and associated site camp facilities must be kept neat and orderly at all times, in order to prevent potential safety risks and to reduce the visual impact of the site during construction.

6.6. Protection of Fauna

Construction workers are to be sensitised to the fact that they may encounter fauna during the construction period. This must be included in the environmental awareness training completed with all site personnel before any construction commences. Environmental Awareness Training must educate labour on conduct in terms of faunal management throughout construction phase, including but not limited to:

- No person/s may harm, kill, capture or keep any fauna.
- Appropriate access control must be put in place to reduce the risk of animal species gaining access to the development area.
- Where possible, avoid interactions, particularly with fauna that can inflict harm. If such fauna is identified on site contact local SPCA or other animal protection and removal services.
- No domestic animals are permitted on the sites.
- Maintain good housekeeping, so that fauna cannot hide amongst waste and material.

If any fauna is encountered by construction workers, the ESO or ECO is to be notified. If the ESO or ECO is not on site, the site manager is to be informed. Rescued fauna must be released into a nearby area of similar habitat away from any construction. Contact details for animal rescue services and/or snake wrangler, from the local area, should be available on site, in case of an emergency.

6.7. Indigenous Vegetation Clearing and Protection.

The following measures must be implemented:

- It is important that clearing activities are kept to the minimum and take place in a phased manner. This allows animal species to move into safe areas and prevents alien invasive encroachment, and wind and water soil erosion of the cleared areas. Blanket clearing of vegetation must be limited to the approved development footprint.
- Any alien vegetation that is cleared must be disposed of in accordance with the Alien Invasive Management Programme and in consultation with the ECO. Chipping of alien invasives must occur immediately and must not be stored on site for more than 90-days.
- Workers are NOT allowed to collect any flora species. All flora remains the property of the landowner and must not be disturbed, upset or used without their expressed consent.

Where indigenous vegetation must be cleared for the development, the following measures must be implemented:

- An Independent Environmental Control Officer must oversee compliance with all the prescribed environmental requirements and mitigation measures listed here and will be on site regularly.
- Only the areas required to fulfil the needs of the construction activities and access to the construction site must be cleared of vegetation.
- Vegetation outside of the approved footprint must not be cleared, unless permitted in accordance with the alien invasive management plan, and under the supervision of the ECO.
- Land clearing and earthmoving activities should not be undertaken during strong winds or heavy rainfall events, where possible.
- Trees and shrubs that are directly affected by the operations may be felled or cleared but only by the expressed written permission of the ECO, and under the applicable permit obtained in terms of the Nature Conservation Ordinance (19 of 1974, amended 2000), if applicable.
- Stripped vegetation should be temporarily stored during operations and to be used later to stabilise slopes/soils. This excludes alien invasive species.

- Ensure any open spaces/bare areas are kept clear of alien plant species through the adoption of an Alien Invasive Management plan.
- No unpermitted/uncontrolled fires are permitted on site.
- Rehabilitation of vegetation of the site must be done as described in the approved Rehabilitation Plans/Method Statements.
- To limit adverse impacts to the surrounding environment, the contractor and labourers must take great care if cement is to be mixed on site. Cement is to be mixed on thick plastic sheets or in large buckets that are bunded. Any spillage must be cleaned up immediately. Cement water must also to be contained in the above manner and allowed to dry out and then removed from site. Cement water, which is highly alkaline, poses a definite threat to the soil and seed banks, should the water disperse into surrounding areas.

6.8. Alien Invasive Species Control

Several exotic invasive and other weed species were noted on the site. Existing infestations and any further spread of these species pose a negative risk to the environment by causing direct habitat destruction. These increase the risk and intensity of wildfires, and reduces surface and sub-surface water. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014). The following measures toward managing the alien invasive species are proposed:

- Ensure that alien invasive species are identified, and measures are taken to consistently remove alien invasive species from within the development footprint – implement weed management plan/alien invasive management plan as per EMPr.
- Stockpiled alien invasive species cleared from site, should be contained and removed from site as soon as possible, so as to not allow dispersal.

Removal of species must take place throughout the construction (onus rests on the Contractor) and post-construction phases (Onus rests on designated developer).

6.9. Topsoil and Subsoil Management

Topsoil must be removed from any area where physical disturbance of the surface will occur, including within the footprint of the development site (working area) and possibly within the site camp, ablution area, refuelling area and temporary waste storage area. Topsoil removal and stockpiling must be undertaken only after the ECO has been consulted with. A method statement toward the management of stockpiles, must be submitted to the ECO for approval prior to construction related activities pertaining thereto commences. The following soil management measures must be implemented (specifically for areas containing indigenous vegetation):

- Topsoil & subsoil that has been excavated must be stockpiled separately, along & adjacent to the excavation areas and must be covered.
- Topsoil stockpiles must not be covered with tarpaulin, as this may smother and decrease the virility of topsoil.
- Excavated topsoil and subsoil must be stockpiled for the duration of the active construction period and utilised for the final landscaping and rehabilitation of disturbed areas on site.
- The topsoil & subsoil storage area must be located on a level area outside of any surface drainage channels outside the riparian zone, and at a location where it can be protected from disturbance and water flow/floods during construction and where it will not interfere with construction activities.

- Topsoil and subsoil stockpiles must be adequately protected from being blown away or eroded by storm water. If necessary, shade cloth or other suitable measures must be used to stabilise and protect the stockpile from wind/water erosion.
- Handling of topsoil must be minimised as much as possible, and the location of the topsoil berm must be chosen carefully to avoid needing to relocate the topsoil berm.
- Ideally, topsoil is to be handled twice only, once to strip and stockpile, and once to replace, level, shape and scarify.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads.
- Topsoil stockpiles must not exceed 1.5 m in height and must not be compacted.
- If soil stockpiles will be stored for an extended period of time, the stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding, (or application of herbicides if agreed with the ECO).
- Soil material that will not be re-utilised on site may be removed from site and taken to an appropriate site for re-use or disposal.
- Note that the topsoil must be the final layer applied to a rehabilitated/ re-landscaped site, after subsoil/ spoil material has been placed and shaped on the site.
- Material Stockpiles (including imported materials and rubble) may not exceed 2 m in height.

6.10. Integrated Waste Management Approach

It is recommended that an integrated waste management system is adopted on site. The system must be based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Separate waste bins/skips that are weather- and animal proof must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. These bins/skips must be emptied, and the waste taken to a registered recycling facility. The receipts from the facility must be kept on file and must be available on request.

Cement and concrete batching will be permitted on site, but may only take place on designated impermeable surfaces, as agreed with the ECO. Used cement bags must be disposed of as hazardous waste on site.

The Contractor must compile a Waste Management Method Statement and a Cement Handling Method Statement in line with the requirements of the EMPr. These Method Statements must be approved by the ECO and the RE.

6.11. Erosion Control and Stormwater Management

Stormwater must be managed in accordance with the Municipal Stormwater Management By-law and based on Sustainable Drainage Systems (SUDS). The SUDS systems attempt to maintain or mimic the natural flow systems as well as prevent the wash-off of urban pollutants to receiving waters. Further to this, the EA Holder or appointed contractor must ensure that:

Where necessary, Stormwater Management Plans must be developed by the Contractor (as part of the Method Statements) for the site and should include the following:

- The management of stormwater and erosion control during construction.
- The management of stormwater and erosion control as part of post-construction.
- Temporary drainage works are implemented, where/when required, to prevent sediment-laden surface water from draining into watercourses in proximity to the site. Stormwater must be prevented from entering or running off site.

- Sheet runoff from access roads and the walkways is slowed down by the strategic placement of berms or other methods.

As much indigenous vegetation must be maintained and encouraged to minimise erosion;

- All soil compacted because of construction activities as well as ongoing operational activities falling outside of project footprint areas should be ripped and profiled;
- To ensure that site is not subjected to excessive erosion and capable of drainage runoff with minimum risk of scour, their slopes should be profiled at a maximum 1:3 gradient where possible;
- Rehabilitation is necessary to control erosion and sedimentation of all eroded areas (where works took place);
- It is important that the rehabilitation of site is planned and completed in such a way that the runoff water will not cause erosion; and

The scale and nature of the erosion and stormwater control measures implemented on site must be appropriate to the conditions on site, and sufficient to achieve the desired outcomes (soil preservation, prevention of flooding, stormwater control) to the satisfaction of the ECO and RE.

The prevention of soil erosion can be initiated by designating specific areas for stockpiling of raw materials with consultation of the ECO. No stockpiling is to occur on or near slopes or water resources and all stockpiling areas must be approved by the ECO before stockpiling occurs.

Stockpiles need to be effectively managed and maintained as they have the potential to contribute to runoff and erosion. To prevent this, the following management measures must be implemented:

- Stockpiles of earth material may not be located within any storm-water drainage pathways.
- Any erosion runnels/ gulleys/ channels that form on site must be infilled with appropriate material, compacted, rehabilitated as needed and appropriate erosion control measures put in place to prevent recurrent erosion at that site. Rehabilitation of erosion channels must be ongoing during the construction phase and not left until the end of the construction period.
- It may be necessary to implement small-scale erosion protection measures at the construction site, to prevent soil erosion. Such measures may include the use of shade netting, geo-fabric, brush-packing or similar barriers in areas susceptible to erosion and along exposed slopes.

6.12. Excavations and Earthworks

Any major earthworks with bulldozers and heavy machinery must be under constant supervision. Operators must be aware of all the environmental obligations, as there is always the potential to inflict damage to the sensitive areas. Any unnecessary or excessive heavy machinery movement must be kept to a minimum i.e. only what is absolutely necessary. Areas to be excavated must be clearly demarcated. Areas which have already been excavated and entail fairly significant earthworks, must be similarly demarcated to avoid the spreading of construction activities beyond the approved working areas.

All excavated material must be stored on a flat surface away from any drainage line, sloped areas or area susceptible to erosion. The location must be decided in consultation with the ECO. Stored material must be protected from wind and water erosion, and this may entail covering the material with suitable shade cloth material or similar (if and when necessary). The shade cloth may need to be weighed down in such a manner that any stream flow is directed away from the stockpile, reducing the risk of erosion.

Whenever any excavation is undertaken, the following procedures shall be adhered to:

- Topsoil must be handled as described in this EMPr.
- Excavations must take place only within the approved demarcated site.
- Excavations must follow the contour lines, where possible and/or applicable.
- Where possible, excavations should be closed overnight, over weekends, holiday periods, and during any other planned site closure periods, where feasible.
- Excavations must be temporarily demarcated with shade cloth or barrier fencing to obstruct visual impacts and to prevent the harm to animals or unauthorised persons that may fall into excavations.
- The construction site will not be left in any way to deteriorate into an unacceptable state.
- Once excavations have been filled with overburden and coarse natural materials and profiled with acceptable contours (including erosion control measures), the previously stored subsoil and topsoil shall be returned to its original depth over the area.

6.13. Visual Impact

The proposed project has the potential to cause a visual impact during the construction and post-construction periods. To minimise the potential visual impact, all working areas, storage facilities, stockpiles, waste bins, elevated tanks and the site camp should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Waste must be managed according to this EMPr. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy. The site camp may require visual screening via shade cloth or other suitable material. The use of reflective materials and excessive lighting should be avoided.

6.14. Noise Management.

Additional noise is expected during the construction period due to construction activities. It is important that earth-moving activities be restricted to normal construction working hours as far as possible (Please see the management actions provided by the relevant specialist below). Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. This is to be done by ensuring that all equipment is in good working condition. Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate, and all affected parties must be informed of excessive noise factors.

All plant, equipment and vehicles are to have effective silencers/mufflers fitted that would otherwise cause a noise level exceeding 105dBI (As advised by the Noise Specialist appointed for the project). Exhaust systems are to be in good repair with no holes in the piping. Regular check-ups and adequately maintained must be undertaken to keep all equipment and vehicles in good working order to reduce noise. Excessively noisy equipment, vehicles or machinery requiring repairs are to be removed from site. No sound amplification equipment (hooters, loud music speakers, sirens etc.) is to be used on site except in emergencies.

6.15. Dust Management

Although the generation of dust is synonymous with construction sites, care needs to be taken to prevent excessive dust from impacting the surrounding environment and community. Majority of the dust causing activities will take place during the construction period. Exposed surfaces, such as stockpiles and cleared areas should be provided with a suitable cover as soon as possible or wetted down. Construction vehicles should maintain low speeds of 20-40km/h and must ensure that tarpaulins are used to cover any loads transported. Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. i.e. dust fall rates in non-residential areas may not exceed 1200 600mg/m²/day, measured using reference method ASTM D1739.

A Complaints Register must be available at the site office for inspection by the ECO, in case of complaints, such as those related to dust. This should form a part of your Environmental Site File. The register shall contain all contact details of the person who made the complaint and information regarding the complaint itself as well as any follow-up undertaken, if required.

The Contractor shall submit a MS to the RE detailing how potential dust will be controlled. The contractor will consider the recommendations above while bearing in mind that these are not the only available solutions.

6.16. Site Closure and Rehabilitation

Upon completion of the construction phase, and after each maintenance event, all disturbed areas, including the working area, temporary access road, and all areas utilised for the site camp and associated site camp facilities, if applicable, will require rehabilitation as follows:

- On completion of the construction activities, the site camp area must be cleared of all site camp facilities, ablution facilities, fencing, signage, waste and surplus material.
- All areas within the working area and site camp that have become devoid of vegetation or where soils have been compacted due to construction activities must be scarified or ripped to improve filtration and reduce run-off.
- All demarcation fencing, including all droppers, wires, netting and barrier tape must be removed from site and taken to an appropriate site for re-use or disposal.
- Surfaces must be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the ECO. Any soil contaminated with hydrocarbons (oil, fuel, etc) or other hazardous substance must be collected and disposed of as hazardous waste at a licenced disposal facility.
- All construction waste is to be removed from the site and disposed of at an appropriate facility. Burying or burning of waste or rubble on site is strictly prohibited.
- Topsoil removed and stockpiled before construction, must be replaced by spreading it evenly over the areas from which it was removed. This topsoil (and the seedbank it contains) will facilitate the re-vegetation of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Site Manager may require that the soil be analysed and any deleterious effects on the soil arising from the activity, be corrected and the area be seeded with a vegetation seed mix to his or her satisfaction. This *must* be done in consultation with the ECO.
- Disturbed areas, especially areas where excavations have taken place, must be shaped as appropriate (original topography must be restored where possible), and covered with a layer of stockpiled topsoil as soon as possible.
- Any topsoil, subsoil or other excavated material that cannot be utilised during site rehabilitation must be removed from the site and disposed of at an appropriate disposal site.
- The disturbed, newly rehabilitated surfaces (particularly steeper slopes and areas recently covered with topsoil) must be protected from wind & water erosion using mulch, brush packing or other appropriate erosion protection measures. Brush-packing/mulching is done by covering the exposed surface with organic plant material such as branches, plant cuttings and leafy material. Ideally the vegetation removed from site at the start of the construction must be utilised. Brush-packing/mulching plays a valuable role in erosion control, while also promoting re-vegetation of the site by retaining moisture in the soil, introducing seeds and/or trapping wind-blown seeds and providing organic material (compost) to promote new plant growth.
- Final landscaping and rehabilitation of the site must be done to the satisfaction of the ECO and must adhere to all conditions/requirements of the Environmental Authorisation.

6.17. Temporary Site Closure (Contractor's break)

In the event of a temporary site closure occurring such as the builder's holidays, temporary suspension of works or any period of inactivity longer than 5 calendar days the Contractor is to notify the ECO. The Contractor shall check the site according to the requirements of the ECO, and ensure that all items are addressed. The Contractor will provide a brief written report on compliance to the FE and ECO prior to the temporary shutdown date. It is the obligation of the Contractors to uphold and manage the anticipated impacts of vacancy of the site during this time. Therefore, the following management measures toward ensuring minimum impacts must be implemented prior to any temporary site closures during the construction phase:

- Any contaminated soil must be collected and disposed of as hazardous waste.
- All construction waste, litter and rubble must be removed from the site and re-used elsewhere, or recycled/disposed of at an appropriate facility. Burying or burning of waste or rubble on site is prohibited.
- Temporary access routes must be closed and measures put in place to prevent future use of the access road by any person.
- Preventative dust pollution mitigation measures must be implemented to control dust during the festive break (when the site is vacant).
- All construction areas/facilities must be secured, e.g. Where scaffolding is left on site, it must be ensured that no plastics, danger tape or other wastes are allowed to blow off; portable toilets must be secured etc.
- All construction barriers must be neat and secure.
- Stockpiles of topsoil, spoil material and other material that may generate dust must be protected from wind erosion (e.g. covered with netting, tarpaulin or other appropriate measures. Note that topsoil should not be covered with tarpaulin as this may kill the seedbank).
- Drip trays must be placed beneath all construction vehicles, if kept on site during the construction break. Drip trays must be placed under generators (if used on site) water pumps and any other machinery on site that utilises fuel/ lubricant.
- Where feasible, fuel tanks should be elevated so that leaks are easily detected.
- Contractors must ensure that their site camp and working areas are clear of alien invasive and weed species prior to the construction break.

7. MONITORING COMPLIANCE, ROLES AND RESPONSIBILITIES

This EMPr, once approved by the competent authority (DEADP), must be seen as binding to the *Holder*, and any person acting on the *Holder's* behalf, including but not limited to agents, employees, associates, contractors and service providers.

The *Holder* and all other persons who may be directly involved in the development are also bound by their general Duty of Care, as stated in Section 28 of the National Environmental Management Act, 1998:

Duty of Care:

"Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the environment"

7.1. Environmental Authorisation (EA) Holder / Proponent

It is the EA *Holder's* responsibility to ensure that all agents/contractors/subconsultants appointed to provide services towards the fulfilment of the proposed activities, are fully aware of the EMPr, Environmental Authorisation and any other relevant licenses/permits, which must be considered prior to actioning any activity on site. The EA *Holder* may choose to hold the Contractor responsible for any fines incurred as a result of non-compliant activities during implementation, however this must be done through the agent and by legal procedure. The EA *Holder* must ensure that:

- Financial allowances are incorporated into the Bill of Quantities, to accommodate for the requirements of the licenses and EMPr.
- An appropriately experienced/qualified Environmental Control Officer (ECO) is appointed to monitor compliance, prior to commencement of site establishment activities.
- Should the granted EA stipulate the need for the appointment of an Environmental Auditor, ensure an appropriated experienced/qualified Environmental Auditor is appointed to audit compliance, prior to commencement of site establishment activities.

The *Holder* is ultimately responsible for ensuring that the environmental management measures specified in this EMPr, as well as any other conditions specified by the competent authority, are implemented and adhered to during the construction and post-construction phase (maintenance activities) of the proposed development.

The *Holder* or delegated party is responsible for monitoring and maintenance during the post-construction phase. The *Holder* must ensure that all appointed service providers, contractors and maintenance workers are capable of complying with all statutory requirements of this EMPr and the conditions of the Environmental Authorisation. The *Holder* is responsible for ensuring that this EMPr and the conditions of the Environmental Authorisation are implemented and adhered to during construction.

The *Holder* or appointed consultant is responsible for identifying emergency situations that may arise during operational and maintenance activities and must formulate appropriate emergency response procedures for these emergency scenarios.

During the post-construction and maintenance phase of the project the following maintenance measures are to be implemented in order to ensure the functioning of the infrastructure when needed.

7.2. Contractor

It is the Contractors responsibility to be aware of the requirements of the EMPr, Environmental Authorisation and any other relevant permits/licences and ensure that all labour, appointed sub-contractors/consultants are also made aware of these documents. The Contractor is required to ensure that as per EMPr, EA conditions, and other permits or licences:

- Time allowances/considerations are given to accommodate all relevant activities, when compiling the project programme of works.
- Financial allowances are made to meet all relevant requirements.
- All activities are implemented in an environmentally conscience manner, in line with the EMPr.
- Produce method statements for approval by the ECO and Site Engineer, prior to implementing activities.

The "Construction Contractor" is the entity responsible for undertaking the physical construction of the residential development. The construction contractor is responsible for ensuring that all environmental management measures specified in this EMPr and in the EA are implemented during the pre-construction, construction and post-construction rehabilitation phases, unless agreed otherwise with

the Holder. The contractor will be responsible for all costs incurred, in relation to any non-compliances which may occur during implementation of construction activities/rehabilitation activities. The contractor must therefore make adequate financial provision for the implementation of all prescribed measures, in accordance with the Bill of Quantities and the EMPr.

It is strongly recommended that the Construction Contractor appoint an Environmental Site Officer (ESO), who will act as the Contractor's representative to enforce compliance with the conditions of this EMPr, throughout all phases of construction.

- In addition to the above, the Construction Contractor is responsible for the following:
 - Identify emergency situations that may arise as a result of construction activities and formulate appropriate emergency response procedures.
 - Ensure that all construction workers, including sub-consultants and service providers, undergo environmental awareness training prior to commencing work on site, or as soon as possible thereafter.
 - Compile the required method statements, which must be to the satisfaction of the ECO, before commencing with the activity to be governed by the method statement.
 - Respond to concerns or issues identified by the ECO, as relates to environmental management, and implement the appropriate management or remediation measures, at the Contractor's own expense (unless agreed otherwise).
 - Any damage to the surrounding environment (site camp location and outskirts of working corridor) must be noted by the contractor with photo evidence. Any damage identified throughout the operational phase of the proposed extension will be the contractor's responsibility to repair.
 - Should third parties be called to the site to perform clean up and rehabilitation procedures, the Construction Contractor will be responsible for all associated costs.

Note that failure to comply with the requirements and conditions of this EMPr and the Environmental Authorisation may result in fines or other penalties being levied against the Construction Contractor by the Competent Authority (As described in Section 12 of this EMPr).

- **Construction Phase Record Keeping**

A copy of the approved EMPr, the Environmental Authorisation and any relevant construction method statements must be kept on site at all times during pre-construction, construction and rehabilitation activities. The ECO Reports must be retained by the *Holder* for a period of at least 5 years and must be provided to the Competent Authority upon request.

- **Method Statements**

The Competent Authority and/or the ECO may require the *Holder* or Construction Contractor to submit Method Statements for one or more construction-related activity, or any aspect of the management of the site, before the activity is undertaken or during the performance of the activity, if the activity is causing or may cause significant environmental damage, or pose a health and safety risk.

Method Statements need not be complex and lengthy, but must clearly state **how**, **when** and **where** the activity concerned will be undertaken, and must specify **who** will be responsible for undertaking each component of that activity. Method Statements must be prepared by the Construction Contractor and submitted to the ECO for approval before undertaking the activity concerned.

The ECO and / or Competent Authority have the authority to request method statements for activities as listed in Section 6.4 of the EMPr.

The ECO has the authority to prevent activities from being undertaken until such time as a satisfactory Method Statement has been submitted to the ECO and approved by the ECO.

7.3. ECO Monitoring

The appointed ECO is responsible for undertaking regular site visits to monitor and report on the implementation of the EMPr and adherence to the conditions of the Environmental Authorisation during the pre-construction, construction and post-construction rehabilitation phases. The ECO is not required to monitor the site during the operational (maintenance) phase of the development.

Frequency of ECO visits:

- The ECO must conduct **fortnightly** site visits during the initial construction phase, including bulk earthworks and civil installations. This can be reduced to monthly once construction of top structures have commenced.
- The ECO must conduct a site visit 3 months after practical completion of the construction period.
- The ECO has the discretion to undertake additional visits if he / she feels this is justified due to the actions of the contractors, and to make *ad hoc* visits in order to ensure compliance.

Monitoring Reports:

- Must be produced **monthly** and submitted to the Competent Authority, Engineer, Proponent and Contractor.

- **Competency of the ECO**

The ECO must be independent of the Environmental Auditor, Holder, Engineer, Construction Contractor and their service providers. The appointed ECO must be suitably qualified and experienced and must be able to demonstrate that he / she is of sufficient competency to undertake the required task. The ECO must work in close co-operation with the Construction Contractor, resident engineer or ESO and all contractors in order to identify potential problems before they occur, and provide suitable guidance as to how the identified problems (environmental impacts) can be avoided.

- **Duties of the ECO**

The duties of the ECO include, but are not limited to:

- Conduct a pre-construction site inspection to ascertain the pre-commencement condition of the site (i.e. the status quo);
 - Conduct environmental awareness training, which must include;
 - A brief description of the surrounding environment
 - Importance of the EMPr
 - Roles and responsibilities
 - Identified environmental risks
 - Mitigation measures to be implemented
 - No-go areas
 - Emergency procedures (Hydrocarbon spill)
- Undertake regular site visits to monitor compliance with all mitigation, monitoring and management measures contained in the EMPr and the Environmental Authorisation, during the pre-construction, construction and rehabilitation phases of the development;
- Evaluate the achievement of the performance indicators associated with each impact management objective specified in this EMPr;
- Liaise with site contractors, engineers and other members of the development team with regard to the requirements of the EMPr; Provide guidance as and when required regarding the

implementation of the environmental management measures contained in the EMPr and EA, so as to assist the Holder and contractor in remaining compliant with these measures;

- Assist in finding environmentally acceptable solutions to construction problems;
- Examine method statements, where required;
- Recommend additional environmental protection measures, should this be necessary;
- Furnish contractors with verbal warnings in case of contravention of the EMPr;
- Recommend that the competent authority furnish errant contractors with predetermined fines, when verbal and / or written warnings are ignored;
- Keep detailed records of all site activities that may pertain to the environment, and produce monthly compliance-monitoring reports (ECO Reports) for submission to the Holder, and the Competent Authority at regular intervals during the construction phase;
- Submit a final post-construction inspection report, within 6 months of completion of the construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.

- **Authority of the ECO**

The ECO has the authority to recommend to the decision-making authorities that they suspend all works (or part thereof) occurring on site, should any action being undertaken on site not comply with the environmental requirements, and where such actions pose a serious threat to any element of the surrounding environment.

The ECO has the authority to issue instructions to the Construction Contractor and/or Holder, regarding measures that must be implemented on site in order to ensure compliance with the EMPr and Environmental Authorisation, and/or to prevent environmental degradation or pollution from occurring.

The ECO has the authority to issue verbal and written warnings to contractors. Should verbal and written instructions and/or warnings be ignored, the ECO has the authority to request the Competent Authority to issue pre-determined fines or other penalties.

The ECO has the authority to report incidents of non-compliance to the Competent Authority at any time.

7.4. ESO Monitoring

Due to the nature of this development, an Environmental Site Officer (ESO) or a person designated to overseeing the daily workings of the Contractor must be appointed. The site officer will be responsible for implementing and monitoring the site activities daily. This individual must be appointed by the Head Contractor. The ESO will be responsible for actively managing activities on-site. The ESO must:

- Have a site diary wherein they report all environmental incidents daily. These reports and documents must be made available to the ECO, Site Contractor, Site Engineer and the DEADP when required;
- Ensure that all environmental filing relevant to the project is up to date;

7.5. Auditing by Environmental Auditor

In accordance with the requirements of the Environmental Impact Assessment Regulations, 2014 (as amended), the Holder of the Environmental Authorisation must, for the period that the Environmental Authorisation is valid, appoint a suitably qualified independent (external) person to conduct an environmental audit to audit compliance with the conditions of the Environmental Authorisation and

the EMPr. As per Section 34 of the EIA Regulations (GN R326 of 2017), the duty of an Environmental Auditor is to be independent and is responsible for:

- Ensuring compliance with the conditions of the environmental authorisation and the EMPr; and
- Submit an environmental audit report to the relevant competent authority, which provides verifiable findings, in a structured and systematic manner, as per Appendix 7 of GN R326.
- Any amendments to the EMPr, which must be recorded in Appendix F.

The Holder is responsible for appointing, managing and remunerating the appointed auditor. The auditor may **not** be the appointed ECO.

The appointed auditor is to be provided with all information relevant to the project upon request. The appointed auditor must undertake environmental audits during prior to the commencement of each phase, at the following stages;

- **6 months after the commencement of construction activities;**
- **Annually for the remainder of the construction phase;**
- **Upon completion of construction phase; and**
- **3 months after the practical completion of construction.**

Following each audit, the environmental auditor must submit an audit report to the Competent Authority (in this instance the DEADP) Environmental auditing and environmental audit reports must adhere to the requirements of the amended 2014 Environmental Impact Assessment Regulations, in particular Section 34 (*Auditing of Compliance with Environmental Authorisation, Environmental Management Programme*) and Appendix 7 (*Objective and Content of Environmental Audit Report*).

The audit report must provide verifiable findings on the level of compliance with the provisions/ conditions of the Environmental Authorisation and the EMPr and must also comment on the ability of the measures contained in this EMPr to sufficiently avoid, manage and mitigate environmental impacts.

Where the findings of the audit report indicate that the impact management measures stated in the EMPr are insufficient to adequately address environmental impacts, recommendations as to how the EMPr must be amended so as to address the identified shortcomings must be made and submitted to the competent authority together with the audit report.

8. ENVIRONMENTAL IMPACT MANAGEMENT: PLANNING AND DESIGN PHASE

No direct environmental impacts are associated with the planning and design phase. However, poor planning or inappropriate design decisions in this phase may result in environmental impacts arising during subsequent phases of the project.

Planning and design activities must therefore take into account the environmental constraints and opportunities identified during the Environmental Impact Assessment process, in order to avoid or minimise the potential future impacts of the development. Proper planning is also essential to ensure that adequate provision is made to implement the environmental requirements of this EMPr, and to ensure that the development is compliant with additional conditions which may be included in the Environmental Authorisation.

The environmental management objectives (goals) during this phase are to:

- Appoint an Independent Environmental Control Officer.
- Compile and adopt a suitable and acceptable Stormwater Management Plan.
- Update the EMPr (if necessary).

These **environmental management objectives**, as well as the **environmental management actions** that must be implemented in order to achieve the desired objective and avoid/minimise potential impacts are discussed in more detail below.

8.1. Objective 1: Appointment of an Environmental Control Officer and Environmental Auditor

Impact Management Objective: To appoint a suitably qualified and experienced environmental control officer, environmental auditor.					
Potential impact to avoid	Failure to appoint an ECO, and should it be required in terms of the Environmental Authorisation, an Environmental Auditor, and Environmental Auditor will result in non-compliance with the requirements of the EMPr.				
Impact Management Outcome	The requirements of the EMPr are implemented and monitored during all phases of the project, which will promote sound environmental management on site.				
IMPACT MANAGEMENT ACTIONS		Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
Environmental Auditor & Control Officer: <ul style="list-style-type: none"> Should it be required in terms of the Environmental Authorisation (EA), a suitable qualified and experienced Environmental Auditor must be appointed as per approved frequencies. A suitably qualified and experienced Environmental Control Officer (ECO) must be appointed before any activities commence on site. The appointed ECO must adhere to the requirements stated in Section 11 of this EMPr. The appointed ECO must be advised of the construction start date, at least two weeks in advance, prior to the commencement of any construction activities on site, so that the ECO can perform a pre-commencement inspection, ensure any pre-construction conditions of the environmental authorisation are completed, and plan for environmental awareness training of construction workers (see Section 14 for Environmental Awareness Plan and Appendix I for Environmental Awareness Training Booklet). 		Hartland Lifestyle Estate (Pty) Ltd	During design phase	Once Off	Keep appointment letter on file
Performance Indicator	<ul style="list-style-type: none"> A qualified ECO (should it be required in terms of the EA) is appointed prior to the commencement of any construction activities (including pre-construction set-up activities) on site. 				



<p>Climate Change Considerations:</p> <ul style="list-style-type: none"> • Final designs must include: <ul style="list-style-type: none"> - Green building materials must be integrated into the development as much as possible. - Apply soft engineering techniques, where possible. - Take into consideration floodline/drainage areas that can be exacerbated during flooding/storm surge events. - Incorporate thermal efficiency into designs and use climate-resilient technologies. - Water saving technologies/techniques (jo-jo tanks for rainwater collection) and energy saving technologies/techniques (solar geezers/solar panels on roofs, potentially in for light poles, etc. and utilizing energy saving bulbs where possible). - An appropriate stormwater management plan must be compiled and approved. - Ensure materials are sourced locally, and consider Life Cycle of all materials utilized, when selecting materials. <p>Recommendations of the Aquatic Specialist</p> <ul style="list-style-type: none"> • Creation of a diversion channel/swale must be prioritised during the early phase of the project so that intermittent flows do not flow through an active construction site. • Permeable check dams (e.g. rock-filled gabions) can be incorporated into the design of the diversion channel/swale to slow surface flows and attenuate stormwater runoff that is likely to originate from the development area; • The banks must be sloped (1:4 vertical to horizontal) and must be vegetated with an indigenous grass mix to avoid erosion of the bed and banks and sedimentation of downstream habitats; • Culverts beneath road crossings must be appropriately sized (i.e. must be sized according to the natural width of the channel) and must not result in concentrated, high energy flow downstream of the crossing. Stormwater flows must not be channelled to a narrower section of the channel. In this respect box culverts are recommended. • Stream bed and bank protection must be incorporated below road crossings. The diversion channel should be buffered by a 15 m buffer which must be vegetated with and indigenous grass mix. <p>Recommendations of the Noise Specialist:</p> <ul style="list-style-type: none"> • The hospital facade orientation and location of sensitive spaces relative to the helipad, notwithstanding operational requirements, should be the primary control mechanism pursued in concept and schematic design of the hospital and wards. Particular care must be paid to the NICU/PICU wards; and 	<p>Resident Engineer</p>		<p>Once-off</p>	<p>Confirmation to be supplied by the RE and inspections by the Municipality to be passed upon installation</p>
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<ul style="list-style-type: none"> • An L_{Amax} of 65dB is to be achieved in the wards and sensitive spaces within the hospital to prevent sleep disturbances of convalescing patients. Hospital designs are to allow for the achievement of this the maximum noise limit; and • Once more details on the helipad and helipad operations is available, the aviation noise modelling must be re-undertaken to confirm the level of impact on the nearby sensitive receptors prior to construction and operation of the helipad. 				
<p>Performance Indicator</p>	<p>The project does not incur delays, excessive costs and penalties due to unobtained permits and non-compliance with required permits, permissions, licences, and approvals.</p>			



9. ENVIRONMENTAL IMPACT MANAGEMENT: PRE-CONSTRUCTION PHASE

Proper set-up during the pre-construction phase can set the foundation for good environmental management during the active construction phase to follow and can avoid potential impacts from arising at a later date.

The Impact Management Objectives for this phase of the project relate to:

- Identification and Demarcation of no-go areas and working areas.
- Establishment of site camp and associated site facilities.
- Pre-construction ECO visit.

9.1. Objective 1: Identify & demarcate no-go and working areas

Impact Management Objective: Demarcation of no-go and working areas.				
Potential impact to avoid	<ul style="list-style-type: none"> • Insensitive location of working areas and site facilities may result in environmental impacts during the construction phase. • Failure to accurately demarcate working areas may result in works exceeding the approved assessed footprint, resulting in non-compliance and potential penalties and delays. 			
Impact Management Outcome	<ul style="list-style-type: none"> • Future construction activities will be restricted to within the designated areas & all areas indicated as no-go areas, will be protected from disturbance. • Excavating into potentially fossil-bearing deposits during the pre-construction phase might damage some fossils 			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<p>General:</p> <ul style="list-style-type: none"> • Inform the ECO of planned works ahead, so as to ensure inductions are undertaken timeously. • Involve the ECO in selection of site camp location. • Ensure all labour and sub-contractors undergo environmental inductions. • Ensure all applicable permits/licenses are obtained prior to commencement of construction works on site. • Environmental Awareness and Training – Ensure all labour are informed and plant operators are aware of risks, issues, dos and don'ts within the project areas. • Ensure the relevant ECO is present and consulted for demarcation of the sensitive areas within the project footprint • Demarcate the site camp with temporary fencing (e.g. poles and shade cloth) to obstruct visual impacts; • The temporary demarcations must be retained and maintained on a daily basis for the duration of the construction period in any one area. 	Environmental Control Officer (ECO), Contractor, Hartland Lifestyle Estate (Pty) Ltd	Pre-construction phase (prior to arrival of construction equipment, machinery, or workers on site)	Once-Off / Ad hoc – as required	On-site inspections

<ul style="list-style-type: none"> Contain disturbance to the demarcated construction area at any one time. Areas outside the proposed development footprint described in the EMP must be considered no-go areas. <p>Road users;</p> <ul style="list-style-type: none"> A detailed Traffic Management Plan/Method Statement must be compiled by the appointed contractor and submitted for approval to the RE and the ECO. 				
Performance Indicator	No-go areas, working areas and areas for site camp facilities have been identified and appropriately demarcated to the satisfaction of the ECO, before construction activities commences on site. No fossils have been disturbed.			



9.2. Objective 2: Establish Environmentally Sensitive Site Camp & Site Facilities

Impact Management Objective: To set up and equip the site camp and associated site facilities in a manner that will promote good environmental management.				
Potential impact to avoid	<ul style="list-style-type: none"> Failure to properly demarcate and set up site facilities may result in disorganised construction activities and unnecessary disturbance to the site. Failure to provide the necessary site facilities and/or failure to equip these facilities with the necessary equipment/materials may impede good environmental management & compromise ability to respond to emergencies. 			
Impact Management Outcome	Site camp facilities do not impact significantly on environment. The equipment required to implement the provisions of the EMPr are provided on site.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
General: <ul style="list-style-type: none"> The site camp and associated site facilities must be set-up and managed in accordance with the general environmental management measures specified in Section 6.4 of this EMPr. The site camp must be strategically set up in a manner that will promote good environmental management during construction/ demolition, and to respond to potential emergencies (including fires, spillage of hazardous substances etc.) that may arise. The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. 	Contractor / Hartland Lifestyle Estate (Pty) Ltd / ECO	Pre-construction phase (prior to start of construction activities)	Once-Off	On-site monitoring
Performance Indicator	Appropriate, well organised, and properly equipped site facilities are available on site prior to commencement of construction activities. The location and set up of the facilities don't impact on the natural resources.			

9.3. Objective 3: Pre-Construction ECO and Environmental Site Officer (ESO) Inspection and Due Diligence

It is essential that the appointed ECO and ESO be advised of the intended construction start date before construction activities commence on site, in order for the ECO to conduct an initial site inspection to assess the pre-commencement condition of the site. The ECO can also advise on the appropriate siting and demarcation of the site facilities, and the identification and demarcation of the no-go areas. The ECO may also conduct the first round of environmental awareness training at this stage, if any construction workers/sub-contractors are present on site.

Impact Management Objective: Environmental Control Officer and Environmental Site Officer to conduct an inspection prior to the commencement of construction activities on site.	
Potential impact to avoid	<ul style="list-style-type: none"> Failure to appoint ECO or to notify ECO of commencement prior to commencement may result in non-compliance with the EA. If a pre-commencement ECO inspection is not performed, the Construction Contractor may be held liable for environmental degradation that took place prior to the Contractor commencing work on site.
Impact Management Outcome	<ul style="list-style-type: none"> Good environmental management is promoted and enforced by the ECO during the full pre-construction and construction phases. Site facilities are appropriately located on site. Construction workers receive environmental awareness training before commencing work on site.
IMPACT MANAGEMENT ACTIONS	

Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<ul style="list-style-type: none"> The appointed ECO must be advised of the construction start date, before any activities commence on site so that the ECO can perform a pre-commencement inspection and plan for environmental awareness training (see Section 14 and Appendix I), of construction workers. The ECO must ensure all relevant items are in place in terms of Section 7 and 8 of this EMPr, where necessary, and all relevant pre-construction requirements have been complied with in terms of the EA. Ensure the project timeframe has taken the relevant requirements of the EA and EMPr, into account. The ECO must take photographs of the site prior to the establishment of ALL facilities (including the site camp), for record purposes. The EEO is to ensure that the Environmental File is in place on site, with all the relevant content, and emergency numbers for the relevant authorities are available. The ECO is to consult with the Contractor regarding relevant dates for environmental inductions (with regard to new labour). If it is recommended that an ESO is appointed, as per the EA, this must be undertaken. 	Contractor	Start of Construction Phase	Once-Off	Photographic Evidence
	ECO		Continuous	On-site monitoring
	Contractor			
	ECO		Once-off	Photographic Evidence On-site monitoring
	Contractor			
	Performance Indicator		A pre-commencement site inspection is conducted by the appointed ECO before construction activities commence on site.	

10. ENVIRONMENTAL IMPACT MANAGEMENT: CONSTRUCTION PHASE

A number of potential environmental impacts may arise during the construction phase of the development. These impacts have been identified and assessed during the Environmental Impact Assessment process. Environmental Management objectives and actions that will prevent the identified potential impacts from arising – or where avoidance is not possible, that will minimise and mitigate the impacts – are provided in this section.

The environmental management actions and mitigation measures prescribed in this section must be implemented throughout the construction phase and must be implemented in conjunction with the general management measures specified in Section 6 of this EMPr, as well as any other conditions which may be stated in the Environmental Authorisation. The Environmental Control Officer must monitor and enforce the implementation of the relevant environmental management measures and may provide guidance on the implementation of these environmental management measures as and when required.

The environmental management objectives (goals) for the Construction phase are:

- Erosion, Earthworks and Land clearance
- Loss of vegetation and disruption to ecological processes
- Disturbance and displacement of faunal habitat and faunal species of conservation concern
- Management of the loss and impacts on the freshwater resources
- Management of socio-economic impacts
- Groundwater, surface water and soil contamination control
- Traffic impacts Control
- Air Quality Impact Control
- Noise and Visual Impact Control

The environmental management actions that must be implemented in order to achieve the desired objectives and avoid/minimise potential impacts are discussed in more detail in the sections below.

10.1. Objective 1: Erosion, Earthworks and Land Clearance

Impact Management Objective: To prevent soil loss, and destruction to indigenous vegetation and heritage resources on site.				
Potential impact(s) to avoid	Susceptibility of some areas to erosion because of construction related disturbances due to the clearance of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion, during heavy rainfall events, after completion of the activity. Stockpiled soils and materials can be displaced in heavy rainfall and windy conditions, resulting in sediment dispersal. Likely loss of heritage material findings, such as the discovery of fossil deposits, during excavation and trenching.			
Impact Management Outcome	Stormwater systems are not impacted significantly.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<p>General:</p> <ul style="list-style-type: none"> Any significant spills or leak incidents must be reported in terms of the National Environmental Management Act, 1997 (Act 107 of 1998), the Water Act, 1998 (Act 36 of 1998). An Emergency Response Plan compiled by the contractor prior to the commencement of the construction phase must be in place for the site, this must clearly describe emergency procedures and include emergency contact numbers. The Contractor must report any significant incidents that could potentially lead to soil, groundwater pollution and soil to the ECO. Monitoring and removal of weeds, invasive aliens and other non-desirable vegetation must take place regularly throughout the construction area (including the site camp and stockpiling area). Be mindful of rainfall events, and plan construction works during dry season. Ensure programme of works includes rehabilitation after each section has been backfilled, to avoid bare surfaces remaining exposed for extended periods of time. Ensure all works on site, remain within the proposed development area identified in this EMP (this includes stockpiling, if necessary, on site). During rehabilitation of any one specific area, Indigenous vegetation must be utilised where possible. <p>Stockpiling, excavations and exposed areas:</p> <ul style="list-style-type: none"> Please refer to Section 6.19 for the measures proposed for stockpiling activities on site; Please refer to Section 6.12 for the management of excavations and exposed areas on site; 	Contractor	Construction phase	Continuous Daily by the ESO Monthly by the ECO	On-site monitoring by the ECO and daily monitoring to be done by a designated ESO

<ul style="list-style-type: none"> • Please refer to Section 6.11 for erosion control and stormwater management on site. <p>Soil Aspects:</p> <ul style="list-style-type: none"> • Sufficient topsoil must be stored for later use during decommissioning, particularly from outcrop areas. • Topsoil shall be removed from all areas where physical disturbance of the surface will occur. • All available topsoil shall be removed after consultation with the botanist and horticulturalist prior to commencement of any operations. • The removed topsoil shall be stored on high ground within the site footprint. • Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads. • The stockpiled topsoil shall be protected from being blown away or being eroded. The application of a suitable grass seed/runner mix will facilitate this and reduce the minimise weeds. <p>Operating Procedures in the Site</p> <ul style="list-style-type: none"> • Construction shall only take place within the approved demarcated site. • The Contractor must ensure that an emergency preparedness plan is in place in order to fight accidental fires or veld fires, should they occur. The adjacent landowners/users/managers should also be informed or otherwise involved. • Enclosed areas for food preparation should be provided and the Contractor must strictly prohibit the use of open fires for cooking and heating purposes. • The use of branches of trees and shrubs for fire-making must be strictly prohibited. • The Contractor should take all reasonable and active steps to avoid increasing the risk of fire through their activities on-site. No fires may be lit except at places approved by the ECO. • The Contractor must supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other relevant areas with tested and approved fire-fighting equipment. • Fires and "hot work" must be restricted to demarcated areas. • A braai facility may be considered at the discretion of the Contractor and in consultation with the ECO. The area must be away from flammable stores. All events must be under management's supervision and a fire extinguisher will be immediately available. "Low-smoke" fuels must be used (e.g., charcoal) and smoke control regulations, if applicable, must be considered. • The Contractor must take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains. <p>Palaeontology and Heritage Specialists recommendations:</p>				
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<ul style="list-style-type: none"> Since there is a small chance that fossils may occur below the soil cover in the conglomerate and sands of the Enon Formation (Uitenhage Group) the Fossil Chance Find Protocol has been added to the EMPr. If fossils are found by the ECO/ESO, or other responsible person once excavations have commenced, then they should be rescued and a palaeontologist called to assess and collect a representative sample. In the unlikely event that any human remains are uncovered during construction activities; these must be immediately reported to the archaeologist (J Kaplan 082 321 0172) who will inform Heritage Western Cape. Burials must not be disturbed or removed until inspected by a professional archaeologist. 				
Performance Indicator	No soil and / or groundwater contamination incidences nor potential fossil find disturbed			

10.2. Objective 2: Loss of vegetation and disruption to ecological processes

Impact Management Objective: Reduce the impacts caused by land disturbance and impacts on surrounding indigenous vegetation.				
Potential impact(s) to avoid	Prevention of vegetation loss immediately outside the development site/ no-go areas			
Impact Management Outcome	The disturbance of indigenous vegetation and faunal species is minimised.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<p>General:</p> <ul style="list-style-type: none"> Demarcate the construction site boundaries upon site establishment and limit all activities to inside these boundaries. Topsoil and subsoil management must be done in line with Section 6 of this EMPr. A method statement must be compiled and by the Contractor and approved by both the ECO and the RE. <p>Clearance of vegetation:</p> <ul style="list-style-type: none"> Limit the footprint area of the construction activity to the immediate site. Rehabilitate the development footprint and areas disturbed during construction with species indigenous to the vegetation type during the decommissioning phase of the development. 	Contractor	Construction phase	Continuous Daily by the ESO Monthly by the ECO	On-site monitoring by the ECO and daily monitoring to be done by a designated ESO

<ul style="list-style-type: none"> Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences. <p>Recommendations of the Terrestrial Biodiversity and Plant Specialist:</p> <ul style="list-style-type: none"> Where possible, retain the strip of vegetation/regrowth along the south-eastern boundary of the site. Fence off the construction area where it borders on the latter. The vegetation outside the construction area must not be disturbed in any way. To mitigate the impact of vegetation clearing/disturbance outside the development footprint, topsoil and seedbearing plant material from the disturbed area(s) must be protected and replaced after disturbance as part of the rehabilitation process. As a duty of care measure, consideration should also be given to S&R of suitable species (e.g. bulbs & succulents). Bulbs should be removed along with some soil, placed in gel, bagged and then taken to a nursery for temporary storage or transplanted directly in the receiving area. S&R should be done at an appropriate time of the year, preferably when the soil is wet during the raining season. Please note that a CapeNature permit is needed for the relocation of indigenous plant species. Allow at least 24 months for the monitoring of rehabilitation success and alien infestation post construction. Keep the rehabilitation area(s) clear of invasive aliens. 				
Performance Indicator	Construction team limit disturbance to the surrounding vegetation.			

10.3. Objective 3: Disturbance and displacement of Faunal habitat and faunal species of conservation concern

Impact Management Objective: Reduce the impacts caused by land disturbance and impacts on the faunal habitat and faunal species of conservation concern					
Potential impact(s) to avoid	<ul style="list-style-type: none"> Permanent loss of faunal habitat cover due to construction activities. Increased susceptibility to erosion caused by construction activities. Disturbance and displacement of faunal species, their processes. 				
Impact Management Outcome	The disturbance of faunal habitat and faunal species is minimised.				
IMPACT MANAGEMENT ACTIONS					
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))	
<p>General:</p> <ul style="list-style-type: none"> Ensure contact numbers for emergency assistance is available. Reptiles such as lizards are less mobile compared to mammals, and some mortalities could arise. 	Contractor	Construction phase	Continuous Daily by the ESO Monthly by the ECO	On-site monitoring by the ECO and daily monitoring to be	

<ul style="list-style-type: none"> Should vegetation regrowth be significant prior to the commencement of the construction phase of the proposed development, it is recommended that a faunal search and rescue be conducted before construction commences, although experience has shown that there could still be some mortalities as these species are mobile and may thus move onto site once construction is underway. A reptile handler should be on call for such circumstances. No animals are to be harmed or killed during the course of operations. It is important that clearing activities are kept to the minimum and take place in a phased manner. This allows animal species to move into safe areas and prevents wind and water erosion of the cleared areas. Workers are NOT allowed to collect any flora or snare any faunal species. All flora and fauna remain the property of the landowner and must not be disturbed, upset or used without their expressed consent. Where landscaping will be done, indigenous vegetation must be used as far as reasonably possible. Materials used during construction must be sourced and transported responsibly to minimise the risk of further introductions of new IAPs and contamination of the site, and especially the areas surrounding the site. The site is to be always kept clean and tidy so as to not attract the animals to the site. 				done by a designated ESO
Performance Indicator			Construction team limit disturbance to the surrounding vegetation and faunal species.	

10.4. Objective 4: Loss of Agricultural Resources

Impact Management Objective: Reduce the impacts caused by land disturbance and impacts on the Agricultural Resources					
Potential impact(s) to avoid	<ul style="list-style-type: none"> Loss of Agricultural Resources beyond the boundaries of the proposed development footprint. 				
Impact Management Outcome	Minimisation of the impacts of the proposed development on the agricultural resources.				
IMPACT MANAGEMENT ACTIONS					
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))	
General: <ul style="list-style-type: none"> No activities are allowed beyond the boundaries of the approved development area. Where construction works are required beyond the boundaries of the proposed development footprint, these areas must be demarcated in accordance with the layout (once approved). 	Contractor	Construction phase	Continuous Daily by the ESO Monthly by the ECO	On-site monitoring by the ECO and daily monitoring to be done by a designated ESO	

<ul style="list-style-type: none"> No workers may be permitted to enter into areas beyond the demarcated boundaries of the construction footprint. 				
Performance Indicator	Construction team limit disturbance to the agricultural resources within proximity to the proposed development area.			

10.5. Objective 5: Impacts on Freshwater resources

Impact Management Objective: Reduce the clearing of vegetation causing erosion and sedimentation of aquatic habitat				
Potential impact(s) to avoid	<ul style="list-style-type: none"> The newly established channel while unnatural – will convey surface runoff from the development footprint to areas downstream of the development footprint. Mitigation must therefore focus on preventing eroded soil and sediment from the construction site washing into the diversion channel. 			
Impact Management Outcome	Minimisation of the impacts of the proposed development on the freshwater resources.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<p>General:</p> <ul style="list-style-type: none"> Suitable measures must be implemented in areas that are susceptible to erosion. Areas must be rehabilitated, and a suitable cover crop planted once construction is completed. Be mindful of weather conditions that may cause runoff. Toilets may not be linked to the storm water drainage system in any way. Chemical toilets must be regularly emptied, and the waste disposed of at an appropriately registered waste water disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets. <p>Recommendations of the Aquatic Biodiversity Specialist:</p> <ul style="list-style-type: none"> The 15 m buffer must be demarcated around the channel created prior to the commencement of the construction activities on site, and, apart from access to the construction site over the diversion channel, must be considered as a no-go area; Silt fencing must be installed along the length of the outside of the buffer (i.e. 15 m away from the edge of the channel); Ensure that vegetation clearing is conducted in parallel with the construction progress to minimise erosion and runoff; Revegetate exposed areas once construction has been completed' 	Contractor	Construction phase)	Continuous Daily by the ESO Monthly by the ECO	On-site monitoring by the ECO and daily monitoring to be done by a designated ESO

<ul style="list-style-type: none"> Ensure that stormwater and runoff generated by hardened surfaces is discharged into retention areas (i.e. swales or retention ponds), to avoid concentrated runoff and associated erosion; and Stockpiling must take place outside of the designated buffer. All stockpiles must be protected from erosion, surrounded by bunds and stored on flat areas where run-off will be minimised. 				
Performance Indicator	Construction team limit disturbance to the freshwater resources within proximity to the proposed development area.			

10.6. Objective 6: Impacts of Pollution on the environmental resources

Impact Management Objective: Reduce the impacts caused by pollution sources				
Potential impact(s) to avoid	<ul style="list-style-type: none"> Poor housekeeping could potentially lead to groundwater, freshwater and soil contamination. 			
Impact Management Outcome	Minimisation of the impacts of pollution from the proposed development on the biophysical environment.			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<ul style="list-style-type: none"> General <ul style="list-style-type: none"> Cement handling must be done in line with Section 6 of this EMPr and an appropriate method statement must be provided by the Contractor (and signed off by the ECO and the RE). Handling and containment of Hazardous Substances must be done in line with Section 6 of the EMPr and an appropriate method statement must be provided by the Contractor (and signed off by the ECO and the RE). A waste management method statement in line with this EMPr must be compiled by the Contractor, and must be signed of by the ECO and the RE. Pollution Management – Hazardous Substances <ul style="list-style-type: none"> Vehicles and machinery must be in good working order and must be regularly inspected for leaks. A record of these inspections must be kept in the site diary and any maintenance issues must be recorded. The ESO and the ECO may request for faulty equipment/machinery to be removed from site and repaired. Refuelling of vehicles/ machinery may only take place at the site camp or vehicle maintenance yard. Where refuelling must occur, drip trays should be utilised to catch potential spills/ drips. 	Contractor	Construction phase)	Continuous Daily by the ESO Monthly by the ECO	On-site monitoring by the ECO and daily monitoring to be done by a designated ESO

<ul style="list-style-type: none"> o Where feasible, fuel tanks should be elevated so that leaks are easily detected. o A spill kit to neutralise/treat spills of fuel/ oil/ lubricants must be available on site, and workers must be educated on how to utilise the spill kit. o If cement is to be mixed, ensure this is done on a bunded impermeable surface, and transferred so that there is no interaction with natural ground. o No contaminated soil may be utilized during backfilling. • <u>General Waste Management</u> <ul style="list-style-type: none"> o Separate waste bins/skips must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. o Waste must be placed in the appropriate waste bins/skips/ stockpiles. o Skips/ bins must be provided with secure lids or covering that will prevent scavenging and windblown waste or dust. o Waste bins/skips must be regularly emptied and must not be allowed to overflow. o Construction workers must be instructed not to litter and to place all waste in the appropriate waste bins provided on site. o The Contractor must ensure that all workers on site are familiar with the correct waste disposal procedures to be followed. o Waste generated on site must be classified and managed in accordance with the National Environmental Management: Waste Act – Waste Classification and Management Regulations (GN No. R. 634 of August 2013). o Disposal of waste to landfill must be undertaken in accordance with the National Environmental Management: Waste Act – National Norms and Standard for the Assessment of Waste for Landfill Disposal (GN No. R. 635 of August 2013). • <u>Aquatic Biodiversity Specialist Recommendations:</u> <ul style="list-style-type: none"> o The 15 m buffer must be demarcated, and, apart from access to the construction site over the diversion channel, must be considered as a no-go area; o Restrict vehicle access to single points that are clearly demarcated; o Working areas must be clearly demarcated and no vehicle access or disturbance must take place outside of demarcated areas; o Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work in any natural or artificial watercourse; o No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed within the buffer of the watercourse; 				
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<ul style="list-style-type: none"> o Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills; o Contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly; o Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation) and must be routinely serviced; and o No dumping of construction material on-site may take place. 				
Performance Indicator	Housekeeping is in order in all working areas forming part of the proposed development.			

10.7. Objective 7: Impact on Socio-Economic Environment

Impact Management Objective: To create employment opportunities with potential for skills transfer, for members of the local community.				
Potential impact(s) to be promoted.	<ul style="list-style-type: none"> • A number of temporary job opportunities for skilled and unskilled labour will be created during the construction phase of the development. • Potential transfer of skills from more experienced workers to less experienced workers. • Increase in business for local businesses within the construction industry. 			
Impact Management Outcome	<ul style="list-style-type: none"> • Social benefits from the employment opportunities created during the construction phase. • Increased revenue for local businesses during the construction phase. 			
IMPACT MANAGEMENT ACTIONS				
Promotion measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<p>General mitigations:</p> <ul style="list-style-type: none"> • An independent Community Liaison Officer (CLO) must be appointed by the Contractor/Developer to ensure that employment of local labour is fair. <p>Safety and Security</p> <ul style="list-style-type: none"> • There must be a 24/7 security team on the proposed development site during the construction phase of the project. • No local workers may access the proposed development area outside of the designated clock in times. • An attendance register must be available on site at all times. 	Contractor	Construction phase)	Continuous Daily by the ESO Monthly by the ECO	On-site monitoring by the ECO and daily monitoring to be done by a designated ESO



<ul style="list-style-type: none"> All labourers must sign the attendance register upon entrance and exit of the workday. 				
Performance Indicator	A substantial proportion of the construction team is from the local community, with preference given to historically disadvantaged individuals and, where appropriate, unskilled labourers. Skills transfer from experienced to less experienced workers is actively encouraged on site.			

10.8. Objective 8: Noise and Visual Impact Control

Impact Management Objective: Minimised noise complaints					
Potential impact(s) to be avoided.	<ul style="list-style-type: none"> Noise from construction vehicles and machinery. Impacts on the Visual and Cultural Landscape 				
Impact Management Outcome	<ul style="list-style-type: none"> Avoid excessive noise and visual impacts due to construction activities 				
IMPACT MANAGEMENT ACTIONS					
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))	
<p>Noise</p> <ul style="list-style-type: none"> All construction vehicles must be fitted with silencers to avoid excessive noise. All construction vehicles must be equipped with muffled reverse sirens (which are to the standard of the Occupational Health & Safety Act (Act 85 of 1993). No constructions activities are permitted between 17:00 and 7:00 unless previously agreed upon between the Contacting team and the Municipality. Construction workers are to remain within the designated site boundary at all time. Eating areas are to be located away from any residential units/homesteads and tourists' attractions within proximity to the current working areas. All equipment to be adequately maintained and kept in good working order to reduce noise. Noise levels must comply with the SANS 100103 – 0994 (recommended noise levels), as well as the Western Cape Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013. All mitigation measures relating to noise control as described in Section 6 of the EMPr must be adhered to. <p>Visual</p> <ul style="list-style-type: none"> A clean site policy must be adopted at all time during the construction phase. 	Contractor	Construction phase	Continuous Daily by the ESO Monthly by the ECO	On-site monitoring by the ECO and daily monitoring to be done by a designated ESO	

<ul style="list-style-type: none"> • Where possible, storage and disposal of waste must take place in a sustainable manner, where clearly marked recycle bins must be provided to workers at the site camp. • The visual impact experienced during the construction phase would be relatively short term and be mitigated by good housekeeping and regular removal of rubble on the site. • Section 6 of the EMPr must be adhered to in order to minimize the visual impacts of construction phase activities. • The site must be kept clean and tidy at all times. • No stockpiles may exceed 2m in height. • To manage complaints relation to impacts on the nearby communities, a dust register must be developed. • If required, water spray vehicles will be used to control wind cause by strong winds during activities on the works. • No over-watering of the cleared areas or road surfaces must take place. • Wind screens should be used to reduce wind and dust in open areas. • Should complaints be received, should the local authority require for such an action, it may be necessary for the responsible person to submit an area/site specific Dust Management Plan (DMP), directly to the City's Air Quality Management Branch, for scrutiny. • The aforementioned DMP will have to comply with the provisions of the National Dust Control Regulations (GN. 36974) dated 1 November 2013. • Once authorised, the DMP must be instated on site and must be adhered to. <p><u>Recommendations by the visual specialist:</u></p> <ul style="list-style-type: none"> • Site establishment, including demarcation of construction areas, establishment of temporary laydown/stockpile areas, and installation of temporary construction services (where required). • Vegetation clearance and site preparation, including clearing within approved development areas and the formation or upgrading of access routes (where required). • Earthworks, including cut-and-fill (as required), excavation for foundations, and the preparation of building platforms. • Construction of internal roads, access points, and associated stormwater management infrastructure. • Construction of buildings and associated structures for the education precinct (secondary school, hostel, administration building, main hall, clubhouse and associated sports facilities) and tertiary precinct (education facilities and student accommodation, including courts/fields). • Construction of the hospital precinct and associated infrastructure, including provision for future staff accommodation and the helipad (as applicable to the approved design). • Installation of services and reticulation, including water, electrical, telecommunications, and wastewater infrastructure, including the sewer pump station and pressure line connection to the Hartenbos Regional WWTW. • Construction of parking areas, sidewalks/pedestrian routes, boundary treatments (where applicable), and associated external works. 				
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<ul style="list-style-type: none"> • Site rehabilitation and stabilisation of disturbed areas not required for permanent infrastructure (where required), including erosion control and reinstatement/landscaping where applicable. • Testing, inspection and commissioning of completed infrastructure and services. • De-establishment of construction areas and removal of construction equipment and temporary infrastructure no longer required. • The construction phase programme will be confirmed by the appointed contractor and may be implemented in phases. For the purposes of this VIA, construction is assumed to extend over a period of months, with the most pronounced visual effects being temporary and largely confined to the construction period. The programme may be influenced by factors such as procurement lead times, weather conditions, programme sequencing, and unforeseen construction constraints. <p>Recommendations by the noise specialist:</p> <ul style="list-style-type: none"> • All construction activities are to be limited between 07:00 to 18:00 on weekdays, 08:00 to 15:00 on Saturdays and no construction activities on Sundays and public holidays; • The developer must compile and implement a detailed noise management plan to mitigate construction noise emissions and the associated noise impacts at the sensitive receptors due to the scale of the development project; • All vehicles and mobile machinery must be fitted with white noise ("ssh-ssh") type combination broad band smart self-adjusting reverse beeper alarms versus traditional "beep-beep" type reverse alarms to minimize mobile vehicle noise onsite; • All vehicles and equipment are to be kept in good repair to reduce construction and operational noise levels; • All construction vehicles must achieve a sound power level of 105 dB(A) or less within a 10m radius of the vehicle; • All vehicles/machinery must be subject to an annual noise survey to determine the sound power levels. • Appropriate noise-suppression must be implemented on those found to be exceeding the 105dB(A) within a 10m radius of the noise source; • Ensuring all construction equipment and vehicles onsite is noise-suppressed (or attenuated); • A materials handling drop height policy should be implemented and maintained onsite. All equipment operators should be trained in the policy such that drop height reduction is implemented to reduce noise generation onsite; • Equipment found to have defects that lead to elevated noise emissions are not be returned to operations until repaired; • Ensure all plant and equipment is maintained regularly and in accordance with manufacturer requirements; • All equipment is to be well maintained and fitted with appropriate noise abatement measures; 				
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<ul style="list-style-type: none"> • The onsite speed limit of 30km to reduce the level of noise from construction traffic is to be rigorously maintained and enforced; • Vehicles should not be allowed to idle for more than 5-minutes when not in use; • All vehicles are to fitted with original equipment manufacturer (OEM) specification silencers/exhaust systems; • Machines in intermittent use should be shut down in the intervening periods between work or throttled down to a minimum; • No blasting is permitted onsite during (all project phases) as blasting noise and blasting safety exclusion zones have not been assesses; • A noise complaints register must be maintained at the main access gate; • Any noise complaints should be directed to site management. Complaints and any actions arising from a complaint must be recorded in a complaint's register to be maintained by site management. An investigation should be undertaken to determine the specific activities and/or equipment / machinery which is generating the nuisance noise resulting in the noise complaints; • Monitoring: <ul style="list-style-type: none"> ○ Quarterly perimeter noise monitoring and assessment as per GN320, SANS 10328 and SANS 10103 must be implemented through the construction phases at the Hartland boundary and at a suitable selection of the nearby sensitive receptors as identified in this report (i.e. the baseline monitoring points); ○ The above monitoring requirements are to be stipulated in sites noise management plan which is the report to the project Environmental Management Plan (EMP). 				
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Performance Indicator	No noise or visual impact complaints.
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11. ENVIRONMENTAL IMPACT MANAGEMENT: POST CONSTRUCTION REHABILITATION PHASE & OPERATIONAL PHASE

After all construction activities have ceased, the sites must be cleared of all construction related equipment, materials, facilities and waste. In addition, all disturbed surfaces – including disturbed areas around the structures and all areas utilised for site facilities – must be stabilised, rehabilitated and provided with a suitable cover. All temporary access roads constructed must be rehabilitated and access must be restricted from the public.

The environmental management objectives (goals) for this phase are:

- Alien invasive species clearance and site management
- Minimise impacts on Freshwater resources
- Visual and Noise Impact management

11.1. Objective 1: Alien invasive species clearance, rehabilitation and site management

Impact Management Objective: Alien invasive species controlled and reduced				
Potential impact(s) to be avoided	<ul style="list-style-type: none"> • The spread of alien invasive species to other areas. • Increased fire risk • Potential loss to biodiversity • Environmental degradation from the change of vegetation structure and soil chemistry. 			
Impact Management Outcome	Limited infestation and establishment of alien invasive species population and limit fire risks			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<p>General</p> <ul style="list-style-type: none"> • An Emergency Response Plan must be in place for the site, this must clearly describe emergency procedures and include emergency contact numbers <p>Alien invasive vegetation management</p> <ul style="list-style-type: none"> • Spread of alien invasive vegetation associated with the soil disturbance caused by construction must be managed appropriately. • The risk of spreading of invasive alien vegetation is expected to be low significance after the proposed mitigation measures are implemented found in Appendix G. • After the clearing of any invasive alien vegetation, follow-up clearances must be undertaken twice a year for two years. • Following the conclusion of the installation activities in any one area, any disturbed areas must be rehabilitated by the Contractor, with suitable indigenous flora as soon as possible. The onus will rest on the EA Holder to ensure the prolonged success of the rehabilitation measures. • Removal of weedy or invasive plant material is to be done by hand and in accordance with applicable and recognised methods. No machinery may be used. 	Contractor /Harland Lifestyle Estate (Pty) Ltd	Operational phase (2 years following conclusion of construction activities))	Continuous	On-site checks

<ul style="list-style-type: none"> • Areas that have been cleared must be considered for replanting with the locally indigenous species. Clearing must take place before invasive alien plants flower and set seed. All cleared material is to be removed from site to a suitable refuse facility. • If herbicides are to be used, only registered herbicides are to be used. • All equipment must be suited to the task at hand and be in good working order. • Herbicide application must be done in such a way as to prevent over-spray and spray drift. Herbicide application should not be undertaken during windy conditions. • No water may be collected from any natural sources for mixing of herbicide or cleaning of equipment. • Alien invasive vegetation management around the site is to take place in accordance with the Alien Vegetation Management Programme provided in the Environmental Management Programme. • The Vegetation Rehabilitation Plan included in the Environmental Management Programme must be implemented on site until successful rehabilitation has been confirmed by the ECO. <p>Recommendations by the Terrestrial Biodiversity and Plant Species specialist:</p> <ul style="list-style-type: none"> • Monitor the development area and all areas disturbed during construction for rehabilitation success and alien infestation. Where needed, rehabilitate/revegetate disturbed surfaces expediently. Erosion prevention measures may be needed on steeper slopes, such as silt fences, logs or netting, to slow down runoff and potential erosion. Mulching and seeding with indigenous thicket/renosterveld seed may also be needed. • As a long-term maintenance requirement, continue with alien clearing on and around the development footprint, focussing on invasive species such as rooikrans, spear thistle, thorn apple, lantana and eastern prickly-pear. These species are category 1b invaders that require compulsory control as part of an invasive species control programme. Please note that it is a legal requirement for landowners to clear alien vegetation on their land. 				
Performance Indicator	Limited alien species, protected indigenous vegetation, limit fire risks.			

11.2. Objective 2: Impacts on Freshwater resources

Impact Management Objective: Reduce the impacts of stormwater runoff on the erosion and sedimentation of the diversion channel	
Potential impact(s) to avoid	<ul style="list-style-type: none"> • Increased surface runoff from impermeable surfaces results in the input of high volumes of water at high velocity, which can lead to erosion of the diversion channel and sedimentation of downstream habitats.
Impact Management Outcome	Minimisation of the impacts of the proposed development on the freshwater resources.
IMPACT MANAGEMENT ACTIONS	



Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<p>Recommendations from the Aquatic Biodiversity Specialist</p> <ul style="list-style-type: none"> Implementation of additional SuDS measures is required to attenuate stormwater onsite and reduce stormwater impacts to an appropriate level. It is recommended that the stormwater management plan for the development should align with the Municipality's urban stormwater impacts policy which requires 24 hour extended detention of the 1-year return interval, 24-hour storm event. In addition to rainwater harvesting (which will be implemented as part of the stormwater management plan) the following must, inter alia, be considered: Swales and detention ponds can be incorporated into the open space network to attenuate stormwater runoff, encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site; Use of permeable paving to encourage infiltration into the soil; Use of retention ponds and artificial wetlands to capture stormwater runoff and prevent its discharge from the site; and Discharge headwalls at the ends of stormwater pipes must be equipped with stilling basins and erosion protection to decrease storm water velocities, spread the flows and prevent erosion at the outlets. 	Contractor /Hartland Lifestyle Estate (Pty) Ltd	Operational phase (2 years following conclusion of construction activities))	Continuous	On-site checks
Performance Indicator	Construction team limit disturbance to the freshwater resources within proximity to the proposed development area.			

11.3. Objective 3: Visual and Noise impact

Impact Management Objective: Visual and Noise Impact				
Potential impact(s) to be avoided.	Unightly views of the clearance activities associated with the project due to delayed revegetation and rehabilitation.			
Impact Management Outcome	<ul style="list-style-type: none"> Development remains fire wise. Development protected from wildfires. Implementation of the National Veld and Forest Fire Act (Act No. 101 of 1998) No unnecessary disturbance to the view. Minimise unnecessary noise impacts on the future inhabitants of the site and the surrounding areas. 			
IMPACT MANAGEMENT ACTIONS				
Mitigation measure	Responsible party (Appendix 4 (1)(f)(i))	Time period (Appendix 4 (1)(f)(j))	Frequency of monitoring (Appendix 4 (1)(f)(h))	Method of monitoring (Appendix 4 (1)(f)(g))
<p>General:</p> <ul style="list-style-type: none"> Rehabilitate the area where the clearance and installation activities may have impacted. 	Contractor /Hartland Lifestyle Estate (Pty) Ltd	Operational phase (2 years following conclusion of construction activities))	Continuous	On-site checks

<ul style="list-style-type: none"> Follow the rehabilitation plan and ensure that all alien invasives are cleared and indigenous cover is successful. Re-vegetation and landscaping with plant species indigenous to the region must be undertaken, where possible. The Applicant/Holder must ensure that the vegetation is reinstated and monitor vegetation growth to ensure regrowth until its fully established. <p><u>Recommendations of the visual specialist</u></p> <ul style="list-style-type: none"> Day-to-day operation of the hospital/medical facilities, including patient services, clinical support functions, and associated administrative activities; Day-to-day operation of the secondary school and tertiary education facilities, including teaching, learning, administration, and management of hostel/student accommodation; Routine cleaning and housekeeping for all buildings and external areas, including periodic cleaning of façades, paved surfaces, and public circulation areas; Ongoing maintenance of buildings and associated infrastructure, including roofs, façades, internal services, and external works (roads, parking areas, sidewalks and stormwater infrastructure); Operation and maintenance of precinct services and reticulation infrastructure, including electricity supply and backup systems (if applicable), water supply, and wastewater conveyance infrastructure, including the sewer pump station and pressure line; Management of exterior and security lighting in accordance with operational requirements and applicable standards; Continuous site security and access control, including monitoring of access points, patrols and surveillance where required; Operational waste management, including collection, temporary storage and removal of general waste and recyclables, and the management of healthcare-related waste streams in accordance with applicable regulatory requirements and contracted service arrangements; Water use for sanitation and general cleaning, and for irrigation and dust suppression where required during dry periods; and Operation of the helipad (where applicable), including compliance with safety and operational requirements and the management of associated infrastructure. <p><u>Noise Specialist recommendations:</u></p> <ul style="list-style-type: none"> The Hartland development managing company must develop a set of rules which incorporate noise emission mitigation measure to which all facilities, facility operators, tenants and property users must abide by; 				
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<ul style="list-style-type: none"> • The onsite speed limit of 40km to reduce the level of noise from traffic is to be rigorously maintained and enforced; • All maintenance activities are to be limited between 07:00 to 18:00 on weekdays, 08:00 to 15:00 on Saturdays and no maintenance activities on Sundays and public holidays; • The following noise mitigation measures can be implemented on all sports venue PA address systems to mitigate PA system noise: <ul style="list-style-type: none"> ○ Mitigate PA system noise by ensuring proper grounding, using balanced cables (XLR/TRS), and optimizing gain structure to keep the noise floor low; ○ Use shielded, balanced high-quality XLR cables or TRS cables instead of unbalanced TS cables to reduce interference; ○ Use a ground loop isolators to break electrical hum; ○ Dedicated circuits: Plug all audio gear into the same power source or a power conditioner to avoid ground loops; ○ Eliminate feedback by keeping the microphones behind the main PA speakers by at least 1-2m from speakers; ○ Use cardioid or supercardioid microphone, pointing the "dead zone" (back) toward speakers; ○ Use a graphic or parametric equalizer to cut problematic screeching frequencies (e.g. 2kHz–8kHz); ○ Use DI boxes or ground loop isolators to stop buzz; ○ Lower the microphone volume in monitors or use in-ear monitoring systems; ○ Set the mixer gain high and the power amp/powered speaker volume lower, rather than boosting low-level inputs; ○ Apply a noise gate to quiet channels, such as microphones, during silences; ○ Use vibration isolation/damping techniques on speakers to stop floor transmission and or transmission to mounting structures; ○ Use ferrite chokes on cables to stop RFI (Radio Frequency Interference); ○ Turn off or mute microphones not currently in us; and ○ Speakers can be orientated to face away from sensitive receptors (where possible). • The following noise mitigation measures can be implemented to reduce helicopter noise: <ul style="list-style-type: none"> ○ Heartland should adopt the South Africa aviation noise standards and aim at noise reduction around the helipad and use a 65dB(A) threshold for noise management (where possible); ○ All aircraft must hold a noise certificate of compliance with Part 36 regulations and SA-CATS 36 and all pilots are expected to use noise abatement procedures during all aspects of the flights; and 				
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<ul style="list-style-type: none"> o Pilots to utilize steeper ascent/descent angles, optimized speed, and strategic routing to avoid noisesensitive areas, such as residential zones. Key techniques include using constant acceleration on approach to reduce Blade-Vortex Interaction (BVI) noise (i.e. the classic "thumping" sound) and prioritizing altitude to minimize sound propagation to the ground and avoid turns near sensitive receptors as noise levels during turning are higher than for similar straight line flight conditions. 				
<p>Performance Indicator</p>	<ul style="list-style-type: none"> • No alien vegetation present. • Limited noise and visual complaints by surrounding landowners and neighbours. 			



12. PENALTIES, CLAIMS AND DAMAGES

The contractor will be responsible for all costs incurred in the rehabilitation of the site and for ensuring that all procedures required to rehabilitate the site are implemented. If third parties are called to the site to perform clean up and rehabilitation procedures, the contractor will be responsible for all costs. The competent authority may impose penalties on the *Holder* or any of the contractors if conditions contained in this EMPr are contravened. This would be based on an agreement or contract between the *Holder* and the contractor. Penalties could be imposed in terms of Chapter 11 of the Western Cape Bill on Planning and Development as published in the Extraordinary Provincial Gazette No 5183, 3 October 1997, and would be applicable for any action which leads to damage to the natural environment. Please note that the payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

In cases where severe environmental damage occurs, the competent authority law enforcement division may take legal action against the responsible parties. The reasons for this could include, among others:

- Not implementing the conditions of the EMPr;
- Spillage that results in environmental damage;
- Incorrect handling and storage of construction materials and chemicals;
- Sensitive areas that are not clearly demarcated;
- Performing ablutions in areas other than facilities provided for such actions; and
- Occurrence of unattended and out of control fire.

The Contractor shall comply with the environmental specifications and requirements on an ongoing basis and any failure on his part to do so will entitle the ECO to issue the contractor with penalty / fine as described in the following section. The following offences, level of severity and value of the financial fines have been drafted according to the sensitivities on the proposed site, the mitigation measures proposed, and the construction methods proposed. It must be noted that the level of severity is at the discretion of the ECO and any offences or fines will be recorded in the ECO's monitoring report.

The following fine structure shall apply:

Table 2: Fines and offences

Finable Transgression	Min Fine	Max Fine
Failure to notify the ECO of the commencement of construction or pre-construction activities, prior to the commencement of such activities.	R1 000	R2 000
Failure to comply with the provisions relating to the demarcation of the working area, site camp and associated facilities, and the maintenance of the demarcated boundaries.	R1 000	R5 000
Failure to comply with the provisions relating to the demarcation of all "no-go" areas, and the maintenance of the demarcated boundaries.	R2 000	R5 000
Failure to provide secured ablution facilities (1:30 ratio) on site.	R500	R15 000
Failure to comply with the provisions relating to the clearance of vegetation on site.	R2 000	R5 000
Clearance of indigenous vegetation (regardless of the density of alien vegetation present) outside of the demarcated boundaries of the working area and site camp.	R2 500	R15 000
Failure to apply herbicide to alien vegetation when required to do so.	R500	R2 000
Failure to adhere to designated access routes and/or the driving of vehicles through undeveloped vegetation outside of the demarcated working area or site camp.	R1 000	R5 000

Movement of vehicles and/or construction workers in no-go areas;	R1 000	R10 000
Parking or storage of vehicles, machinery, tools and other materials or equipment related to the Contractors operations, within designated "no-go" areas.	R1 000	R10 000
Parking or storage of vehicles, machinery, tools and other materials or equipment related to the Contractors operations, outside of the areas demarcated for such parking/storage.	R500	R5 000
Failure to comply with the provisions relating to the management of topsoil and subsoil.	R1 000	R5 000
Excessive excavation of material in areas not depicted for such purpose / activity on the approved design plans.	R2 500	R10 000
Failure to comply with the provisions relating to waste management on site i.e. recycling of wastes.	R500	R5 000
Failure to comply with the provisions relating to the storage, use and management of hazardous substances and fuels on site and/or the spillage of hydrocarbons or hazardous substances on site leading to environmental damage.	R1 000	R10 000
Mixing cement or concrete on bare ground and/or failure to comply with any other provision regarding cement/ concrete batching.	R1 000	R5 000
Failure to provide adequate fire-fighting equipment (in working order) on site at all times and/or failure to comply with the provisions relating to fire prevention and/or the occurrence of unattended or out of control fires.	R500	R5 000
Refueling of vehicles, machinery or equipment outside of the designated refueling area.	R500	R2 000
Maintenance of vehicles, machinery or equipment outside of the designated maintenance yard, except in emergencies.	R500	R2 000
Failure to undertake refueling or repairs over a drip tray or other impermeable bunded surface to collect spilled hydrocarbons (fuels, lubricants, oils etc.) and other hazardous substances; failure to provide drip trays under fuel burning equipment (including pumps and generators) where there is a risk of hydrocarbon leakage.	R500	R2 000
Failure to produce a required method statement/s to the engineer's and ECO's satisfaction prior to undertaking the activity concerned and/or failure to adhere to an approved method statement.	R1 000	R5 000

The above does not absolve the transgressor from being prosecuted in terms of the **National Environmental Management Act (Act 107 of 1998)** which may result in further penalties and other actions by State Departments.

13. EMERGENCY PREPAREDNESS

13.1. Emergency response procedures

The potential environmental risks that may arise as a result of construction activities, or during the maintenance of the structures must be identified, and appropriate emergency response procedures must be compiled for each emergency scenario. Potential environmental emergencies that require an emergency response include, but are not limited to, unplanned fires, sewage spills, spills of hazardous chemicals, snake bites etc.

The construction contractor is responsible for identifying potential significant environmental risks that may arise as a result of pre-construction, construction and rehabilitation activities, and the contractor must formulate emergency response procedures for these potential incidents.

The ECO, contractor and the EA *Holder* are responsible for ensuring that all construction workers appointed to the project are aware of the emergency procedures and are properly trained on how to identify and respond to an emergency incident during construction.

Please note that this EMPr only applies to the labourers, contractors, site managers, and engineers appointed, unless specified otherwise, to fulfil the requirements of the proposed development.

An emergency procedure must clearly indicate who will take charge during an emergency, and the roles and responsibilities of workers and authorities during an emergency.

The construction contractor is responsible for ensuring that the requirements of the Occupational Health & Safety Act (Act 85 of 1993) (OHS Act) are adhered to during the construction phase. The *Holder* is responsible for ensuring compliance with the OHS Act during the undertaking of operational and maintenance activities.

Any incidents of pollution or spillage of hazardous materials during construction must be reported to the ECO as soon as possible. The ECO must then (depending on the nature of the spill) notify the relevant authorities, if needed. During the operational phase of the development, the EA *Holder* is responsible for notifying the relevant authorities of any pollution incidents that arise.

Emergency contact numbers (including the fire department, police and ambulance) must be prominently displayed on site at all times and regularly updated.

All emergency incidents must be recorded in a site incident log. The cause of the incident, the measures taken in response to the incident and the efficacy of those measures must also be recorded. This information must be used to inform future emergency preparedness planning, and to avoid prevent similar incidents from arising again.

14. ENVIRONMENTAL AWARENESS PLAN

Environmental Awareness Training must be conducted prior to the commencement of construction activities. It is the *Holder's* responsibility to familiarise himself/herself with the content and requirements of this EMPr. The *Holder* is also responsible to ensure that the contractor and all labourers working on site during the construction phase are familiar with the content of this EMPr.

The following actions must be taken to ensure that all relevant parties are aware of their environmental role and duties:

- This EMPr must be kept on site at all times.
- The provisions of this EMPr and the conditions of the Environmental Authorisation must be explained in detail to all staff during Awareness Training.
- Training booklets will be handed out to all labourers and must be explained to them.
- Weekly checks to be done by the *Holder's* environmental representative who must be on site at all times.
- The ECO to conduct frequent site visits.
- Monthly monitoring reports to be compiled by the ECO. These reports will be circulated to all parties involved (including the *Holder*, contractor and the competent authority where required).

Environmental awareness training and education must be ongoing throughout the construction phase and must be undertaken regularly if deemed necessary (especially if it becomes apparent that there are repeat contraventions of the conditions of the EMPr), or as new workers come to site. Translators must be utilised where needed. Notwithstanding the specific provisions of this particular section it is incumbent upon the Contractor to convey the sentiments of the EMPr to all personnel involved with the works.

APPENDIX A – CURRICULUM VITAE OF EAPS

APPENDIX B – LAYOUT PLAN

APPENDIX C – MAP OF ENVIRONMENTAL SENSITIVITIES



APPENDIX D - SCREENING TOOL

APPENDIX E - PROTOCOL FOR CHANCE FOSSIL FINDS

Responsible Heritage Resources Agency	HERITAGE WESTERN CAPE (Contact details: Protea Assurance Building, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za)
ECO protocol	1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (<i>N.B.</i> safety first!), safeguard site with security tape / fence / sandbags if necessary.
2. Record key data while fossil remains are still <i>in situ</i> : Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo Context – describe position of fossils within stratigraphy (rock layering), depth below surface Photograph fossil(s) <i>in situ</i> with scale, from different angles, including images showing context (e.g. rock layering)	
3. If feasible to leave fossils <i>in situ</i> : Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume	3. If <i>not</i> feasible to leave fossils <i>in situ</i> (emergency procedure only): Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock) Photograph fossils against a plain, level background, with scale Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
4. If required by Heritage Resources Agency for the removal and processing of uncovered fossils, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.	

APPENDIX G - ALIEN INVASIVE MANAGEMENT PROGRAMME

Invasive alien plants have a significant negative impact on the environment by causing direct habitat destruction, increasing the risk and intensity of wildfires, and reducing surface and sub-surface water. Landowners are under legal obligation to control alien plants occurring on their properties. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014).

Category 1a and 1b listed invasive species must be controlled and eradicated. Category 2 plants may only be grown if a permit is obtained, and the property owner ensures that the invasive species do not spread beyond his or her property. The growing of Category 3 species is subject to various exemptions and prohibitions. Some invasive plants are categorised differently in different provinces. For example: the Spanish Broom plant is categorised as a category 1b (harmful) invasive plant in Eastern Cape and Western Cape, but it is a category 3 (less harmful) invasive plant in the other seven provinces.

Alien control programmes are long-term management projects and a clearing plan, which includes follow up actions for rehabilitation of the cleared area, is essential. This will save time, money and significant effort. Collective management and planning with neighbours allow for more cost-effective clearing and maintenance considering aliens seeds as easily dispersed across boundaries by wind or water courses. All clearing actions should be monitored and documented to keep track of which areas are due for follow-up clearing. Alien grasses are among the worst invaders in lowland ecosystems adjacent to farms but are often the most difficult to detect and control.

Alien species/weeds are abundant throughout the site, including *Acacia cyclops* (rooikrans, category 1b), *Helminthotheca echioides* (ox tongue), *Cirsium vulgare* (spear thistle, 1b), *Erigeron bonariensis* (flax-leaf fleabane), *Datura stramonium* (thorn apple, 1b), *Lantana camara* (lantana, 1b), *Opuntia cf cespitosa* (eastern prickly-pear), *Atriplex semibaccata* (Australian saltbush), *Plantago lanceolata* (buckhorn plantain), *Erodium moschatum* (musk heron's bill), *Malva parviflora* (cheese weed), *Coleus barbatus* (woolly plectranthus), *Lysimachia loeflingii* (blue pimpernel), *Fumaria muralis* (fumitory) and *Cenchrus clandestinus* (kikuyu, category 1b in protected areas). *Cenchrus clandestinus* is dominant in and around the dams.

In terms of the National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004) Alien and Invasive Species List, Category 1b invasive species require compulsory control as part of an invasive species control programme. The high presence of aliens on the site is indicative of past disturbances (agricultural & construction activities).

Invasive alien and weed species within the demarcated working areas must be removed in accordance with the regulations contained in the National Environmental Management: Biodiversity Act (NEM:BA, Act 10 of 2004), the Invasive Species Regulations (October 2014), the Conservation of Agricultural Resources Act (CARA, Act 43 of 1983) and the Duty of Care principle contained in NEMA, Section 28. Removal of species should take place throughout the construction, operational, and maintenance phases, in accordance with the following:

- In consultation with the ECO, the Contractor must control the establishment of alien invasive species along the working corridor on an ongoing basis during construction and follow-up clearance to be conducted for a 2-year period.
- The Contractor is responsible for the removal of alien species within all areas disturbed during construction activities. Disturbed areas include (but are not limited to) access roads, construction camps, site areas and temporary storage areas.
- In consultation with relevant authorities, the Engineer may order the removal of alien plants (when necessary) within the confines of the site are to be included.
- In consultation with the ECO, any alien vegetation (including brushwood and seed-bearing material) that is cleared must be disposed of at an appropriately registered waste disposal facility.
- Removal of alien vegetation are to be done according to the Working for Water Guidelines.
- The following control measures may be used to ensure that the introduction and spread of alien invasive vegetation is minimised:
 - Seedlings and saplings can be removed through hand pulling and hoeing, treated with herbicide through a foliar spray or basal stem treatments.
 - Mature trees can be felled, or ring barked or treated with herbicide by means of frilling or cut stump treatment.
 - Herbicide should not be applied in wet or windy conditions.
 - 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
 - After clearing is completed, an appropriate cover crop may be applied as provided in Rehabilitation Programme, should natural re-establishment of indigenous vegetation not take place in a timely manner.

APPENDIX H - REHABILITATION PROGRAMME

DRAFT REHABILITATION PROGRAMME

Rehabilitation Objective

The overall objective of the rehabilitation plan is to minimize adverse environmental impacts associated with the activity whilst maximizing the future utilization of the site. Significant aspects to be borne in mind in this regard is, revegetation of undeveloped footprint and stability and environmental risk. The depression and immediate area of the working area must also be free of alien vegetation. Additional broad rehabilitation strategies / objectives include the following:

- **Rehabilitating the worked-out areas to take place concurrently within prescribed framework established in the EMPr.**
- **All infrastructure, equipment, plant and other items used during the construction period will be removed from the site.**
- **Waste material of any description, including scrap, rubble and tyres, will be removed entirely from the site and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on site.**
- **Final rehabilitation shall be completed within a period specified by the DEADP and/or Cape Nature, if stipulated.**
- **Final landscaping and rehabilitation of the site must be done to the satisfaction of the ECO and must adhere to all conditions/ requirements of the Environmental Authorisation.**

Topsoil and Subsoil Replacement

Topsoil and subsoil will be stripped and stockpiled separately and only used in rehabilitation work towards the end of the operation. This is in contrast to the gravel activity where rehabilitation and topsoil replacement was earmarked at the completion of each phase.

Stripped overburden will be backfilled into the worked-out areas where needed. Stripped topsoil will be spread over the re-profiled areas to an adequate depth to encourage plant regrowth. The vegetative cover will be stripped with the thin topsoil layer to provide organic matter to the relayed material and to ensure that the seed store contained in the topsoil is not diminished. Reseeding may be required should the stockpiles stand for too long and be considered barren from a seed bank point of view. Stockpiles should ideally be stored for no longer than a year.

The topsoil and overburden will be keyed into the reprofiled surfaces to ensure that they are not eroded or washed away. The topsoiled surface will be left fairly rough to enhance seedling establishment, reduce water runoff and increase infiltration.

Revegetation

All prepared surfaces will be seeded with suitable grass species to provide an initial ground cover and stabilize the soil surface. The following grass seed that is commonly available and suitable.

The overall revegetation plan will, therefore, be as follows:

- **Stabilise disturbed soil and rock faces.**
- **Minimize surface erosion and consequent siltation of natural water course located on site.**
- **Control wind-blown dust problems**
- **Enhance the physical properties of the soil.**
- **Re-establish nutrient cycling.**
- **Re-establish a stable ecological system.**

Every effort must be made to avoid unnecessary disturbance of the natural vegetation during operations.

Visual Impacts Amelioration

The overall visual impact of the proposed activities will be minimised by the following mitigating measures:

- **Confining the footprint to an area as small as possible**
- **Re-topsoiling and vegetating all disturbed areas.**

Monitoring and Reporting

Adequate management, maintenance and monitoring of rehabilitation success will be carried out annually for at least 2 years by the EA Holder to ensure successful rehabilitation of the property until a closure certificate is obtained.

To minimise adverse environmental impacts associated with operations it is intended to adopt a progressive rehabilitation programme, which will entail carrying out the proposed rehabilitation procedures concurrently with activity.

APPENDIX J: ENVIRONMENTAL AWARENESS BOOKLET

