

PROPOSED LIGHT INDUSTRIAL DEVELOPMENT AND ASSOCIATED INFRASTRUCTURE ON PORTION 32 AND A PORTION OF PORTION 33 OF FARM 168 DURBANVILLE, WESTERN CAPE PROVINCE



ENVIRONMENTAL MANAGEMENT PLAN

Pinetop Estate (Pty) Ltd.

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**To avoid duplication and save paper, these figures and appendices are not attached to the Draft Environmental Management Plan submitted as part of the Basic Assessment Report. These Figures and Appendices are attached to the BAR.*

LIST OF ACRONYMS AND ABBREVIATIONS

Department of Environmental Affairs and Development Planning	DEA&DP
Environmental Assessment Practitioner	EAP
Environmental Authorisation	EA
Environmental Control Officer	ECO
Basic Assessment Report	BAR
Basic Assessment	BA
Environmental Management Programmes	EMPr
Material Safety Data Sheet	MSDS
Method Statement	MS
National Environmental Management Act, (Act 107 of 1998)	NEMA
Occupational Health and Safety Act, 1993 (Act 85 of 1993)	OHSA
Environmental Management Plan	EMP
Personal Protective Equipment	PPE
Safety Health and Environment	SHE
Withers Environmental Consultants	WEC

SECTION A: SCOPE OF THE ENVIRONMENTAL MANAGEMENT PLAN

This section describes the scope of the Environmental Management Plan (EMP) for the proposed development of **an Industrial Development** on Portion 32 of Farm No.168, Fisantekraal, Durbanville and how the document is to be used.

This EMP, together with its various Environmental Management Programmes (EMPs) must be read together with the following:

- The Basic Assessment Report (BAR);
- The attached Maintenance Management Plan (MMP);
- The Conditions of Authorisation that the Department of Environmental Affairs and Development Planning (DEA&DP) of the Province of the Western Cape will impose in terms of the Environmental Authorisation, should it be granted for the application in terms of the NEMA EIA Regulations 2014;
- The Conditions that the Department of Water and Sanitation may impose in terms of the Water Use Authorisation (WUA), should it be granted for the application in terms of the National Water Act; and
- Any specialist studies conducted during the Basic Assessment (BA) process.
- **Revised Draft Substantive Amendment Report and specialist studies / statements undertaken during the amendment process.**

The EMP incorporates the recommendations of the BAR and the Freshwater Impact Assessment, Civil Engineering Report and Traffic Impact Assessment Report, in respect of the various mitigating actions that need to be undertaken during the construction and operational phases of the project, so as to:

- minimise potential adverse impacts; and
- enhance potential beneficial impacts of the project, thereby promoting sustainable development.

The EMP covers the spectrum of pre-construction, construction and operational phases. The directives and guidelines covered in respect of the above phases are provided by the various EMPs. The EMP is basically the '*management tool*' for providing management guidelines for the construction methodology and supervision of the construction of the project to ensure that environmental impacts are minimised. In addition, the EMPs provide the necessary guidelines to the Environmental Control Officer (ECO) and to the management personnel and directors of Pinetop Estate (Pty) Ltd. to ensure that:

- initially the contractors and their subcontractors fulfil their construction role in an environmentally responsible manner (for both construction of services and building of the storage units); and
- secondly, that Pinetop Estate (Pty) Ltd. fulfil their long-term environmental management commitments during the Operational Phase of the project.

The EMP covers such aspects as the Vision set by Pinetop Estate for the proposed development of the storage facility. In addition, various Goals have been put forward for achieving the Vision. A number of specific EMPs are set for achieving the various Goals of the development. To achieve these Goals, various Environmental Objectives are set for each of the EMPs. Various performance requirements or Targets are put forward for the specific Management Actions to be taken, as described below:

- **Environmental Objectives**

These objectives provide the means for achieving the overall environmental aims arising from the environmental policy that the relevant management entity (Pinetop Estate and any other development entity that may develop any approved phase of the overall project) sets itself, and which are quantified where possible.

- **Environmental Target**

These are detailed performance requirements, which are quantified where possible, and that arise from the environmental objectives. Targets need to be set and met in order to achieve the desired objectives.

- **Management Actions**

These are specific strategies and actions that are instituted for achieving the environmental targets within a specific timeframe. The actions should be specific and measurable.

It is the responsibility of the directors of Pinetop Estate, to ensure adherence to the recommendations of the EMP, which will include the conditions of authorisation to be determined by the DEA&DP, and to review the results of the monitoring programmes and to facilitate any corrective action that may be necessary.

During the construction phase, the ECO will be responsible for overseeing/ monitoring the implementation of the mitigation measures contained in this EMP, as well as adherence to the conditions of authorisation imposed by the DEA&DP and DWS. It is recommended that the EMP document be formally updated every five years or earlier if deemed necessary by the ECO.

It is the responsibility of the Director (Pinetop Estate) to ensure adherence to the recommendations of the EMP, and to review the results of the monitoring programmes and to facilitate any corrective action that may be necessary. The EMP **must form part of the tender documentation** to ensure that appointed contractors understand what their environmental contract obligations are.

The ECO will need to undertake site visits to assess whether any environmental degradation/pollution is resulting from development of the storage units and associated infrastructure on the proposed property, and the Director to do the same during the construction and operational phases of the project and to assess compliance with the measures as contained in this EMP. The ECO should conduct an annual environmental audit during the operational phase in terms of the EMP and Conditions of Authorisation.

The roles and responsibilities of the ECO include the following:

1. The ECO will:
 - Meet with the Implementing Agent and consulting engineers to hand over the site to the appointed Contractor and go through the content of the EMP and ensure that the Contractor understands the environmental conditions of the contract;
 - Meet with the Contractor and staff before construction commences to go through the environmental “do’s and don’ts” of the project;
 - Attend the monthly site meetings to assess progress and compliance with the recommendations of the EMP;
 - Complete an ECO Checklist after each site meeting and distribute it to all the relevant role players within 5 days. The ECO Checklist will act as environmental site instructions for the duration of the contract for the installation of the services and construction of buildings; and
 - Undertake environmental audits of the project once installation of services has been completed and again after construction of buildings has been completed.
2. The Contractor’s Site Agent will monitor the day-to-day progress of the construction process. The consulting engineer should conduct monthly site visits and meetings with the Contractor and ECO when necessary. Should any environmental problems arise during the Construction Phase, the Site Agent and/or consulting engineer must immediately inform the ECO to undertake a site visit to assess and attend to the potential environmental problem(s). All works where environmental problems exist are to be stopped until the ECO has been to site and assessed the situation and rectified the problem(s). If mitigation is not timeously applied and environmental degradation continues, the ECO will instruct the Director (Pinetop Estate) to stop operations until such time that the necessary measures have been satisfactorily undertaken. The ECO will also inform the relevant officials at the DEA&DP of any non-compliance. Only once all prescribed environmental control mechanisms and/or Conditions of Approval have been implemented to the satisfaction of the ECO, will instruction be given to recommence with the operational activities. The ECO Audit Report will record any irregularities or non-compliance with the EMP or Conditions of Authorisation.
3. The results of the monitoring programmes (site meetings), which will be contained in the monthly ECO Checklists, will be used for the compilation of audit reports to be submitted to Pinetop Estate about four weeks after the completion of the Construction Phase of civil services for the project and after completion of the Construction Phase of buildings. If the ECO, at any stage indicates to the Director of Pinetop Estate, that the relevant requirements of the EMP are not being complied with, he/she will issue the necessary instructions (verbally to the Director and in writing in the ECOs Audit Report) for corrective mitigation.

Responsibilities of the Project Team: Pinetop Estate.

In order to ensure that the construction and operational phases are undertaken in an environmentally sound and sustainable manner, it is imperative that Pinetop Estate commit themselves to the following:

- Ensuring that the mitigation/management and monitoring measures as described in this EMP are implemented;
- Appointing a suitably qualified ECO (at least 5 years' experience) to regulate the construction activities in accordance with this EMP and the Conditions of Authorisation;
- Review the results of the ECO site visits (ECO Audit Reports), and facilitate any corrective actions that may be necessary;
- Maintain their commitment and leadership throughout the construction and operational phases of the project;

Pinetop Estate is ultimately responsible for the implementation of the mitigation measures provided in this EMP.

SECTION B: BACKGROUND INFORMATION

B.1 Project Description and Approval Context

B.1.1 Activity Information

The applicant proposes a **general industrial development** and associated infrastructure on Portion 32 and a portion of Portion 33 of Farm 168 in Fisantekraal, near Durbanville. The total extent of the proposed development is ± 20.5 ha **consisting of the following:**

The total development footprint is **204825m²** which broadly comprises of the following:

- **Land Use: General Industry Subzone I** — mix of **warehousing, workshops, offices, container site.**
- Portion I (Warehousing, distribution, Container site, Industrial Area (Park), Gatehouse, and offices) which has a development footprint of **58053m²**
 - Phase 1 = 2415 m²
 - Industrial Area (Workshop) including 25 parking bays = 2403 m²
 - Gatehouse = 12 m²
 - Phase 2 = 1646 m²
 - Container Staging = 1646 m²
 - Phase 3 = 21614m²
 - Warehousing (Warehousing and distribution) including 230 parking bays = 21654 m²
 - Attenuation Ponds = 1339 m²
 - Pond A = 338 m²
 - Pond B = 457 m²
 - Pond C = 544 m²
 - Portion H (Warehousing and distribution including associated infrastructure and ancillary Office) which has a development footprint of **39448m²**
 - Erf 1995 (Industrial Park) which has a development footprint of **30749m²**
 - Open Space Zone (River and buffer areas which traverse the property) which has a footprint of **59909m²**
 - Portion J – Transport Zone (Public Road) which has a development footprint of **11616m²**
 - Transport Zone (Public Road) which has a development footprint of **3184m²**
 - Portion G (Eskom Electrical substation) which has a development footprint of **346m²**
 - Utility Zone - Services Servitude area which has a development footprint of **1520m²**
- **Subdivision/Servitudes:**

Amendment of the existing approved subdivision plan (Plan No. 1) in respect of Portion 32 and 33 of Farm 168 now unregistered erven 1990 and 1991 which amendments are reflected in attached Plan No. 2 (Appendix O **of the Draft SAR**) and Table 1.

 - The cancellation of unregistered erven 1992,1993 and 1997 to create a new single consolidated Portion A (General Industry Subzone I);

- The cancellation of unregistered Erf 2006 to be substituted with two new subdivided portions depicted as Portion B (General Industry Subzone I) & C (Utility Zone / Electrical Substation);
- The cancellation of unregistered erven 1998 and 2007 to create a single consolidated Transport Zone II (Public Road) Portion D; and
- The cancellation of approved 8,5m right of way servitudes over unregistered Erf 1993 and Erf 2006 respectively.

Table 1: Development Schedule for Amended Subdivision Erven 1990 and 1991

Proposed Consolidations & Development Schedule					
Annotation	Zoning	Use	New Ptn	Proposed Consolidations & Retained Erven	Area
	General Industry Sub Zone GI 1	Warehousing, Distribution & Ancillary Office	H		39448m ²
	General Industry Sub Zone GI 1	Warehousing, Distribution, Workshop & Container Site	I	Consolidation of unregistered Erf 1992, Portions B and C	58053m ²
	General Industry Sub Zone GI 1	Industrial (Park)		Unregistered Erf 1995 retained	30749m ²
	Open Space Zone 3	Special Open Space (Private)		Unregistered Erf 1996 retained	59909m ²
	Transport Zone 2	Public Road	J	Consolidation of unregistered Erf 1998, Erf 2007 and Portions A, D, E and F	11616m ²
	Transport Zone 2	Public Road		Unregistered Erf 2008 retained	3184m ²
	Utility Zone	Eskom Electrical Substation	G		346m ²
	Utility Zone	Services Servitude Area		Unregistered Erf 2001 retained	1520m ²
Total					204825m²

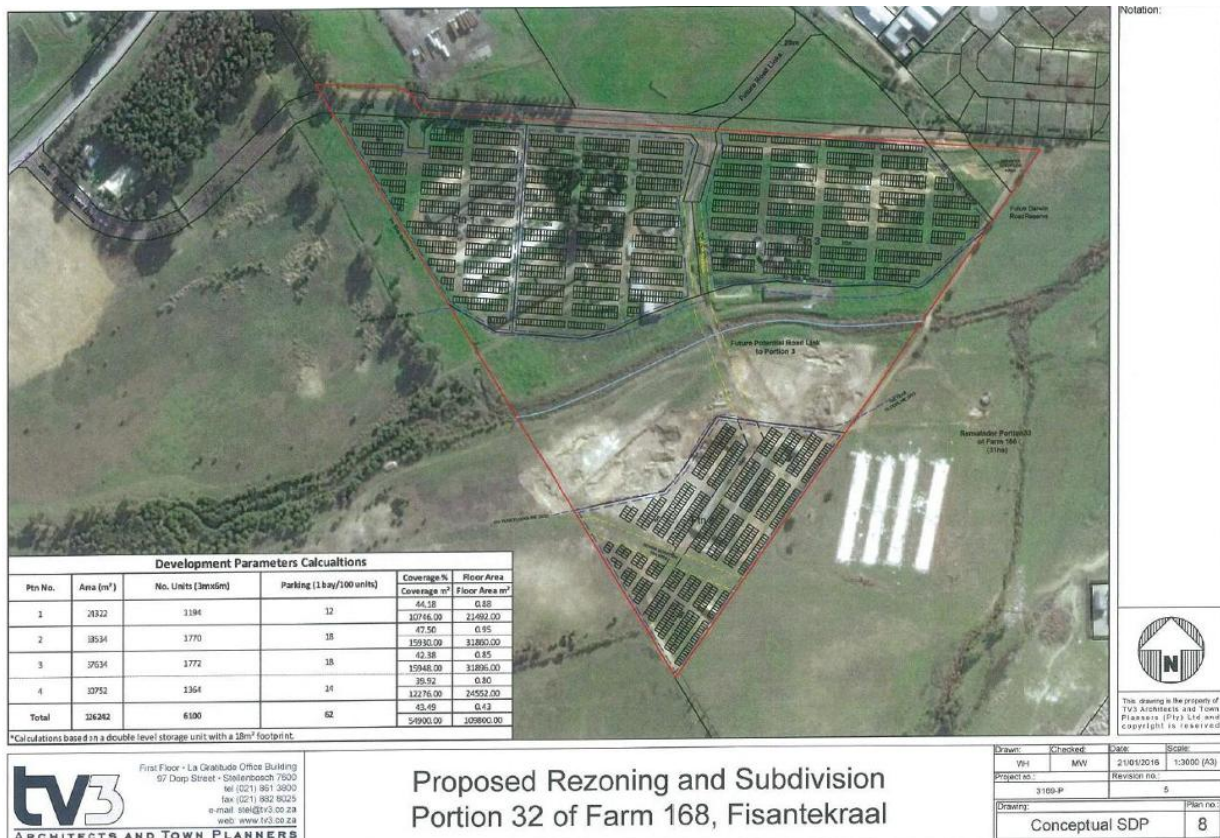


Figure 1: Initial proposed layout for the proposed development associated with the study area (TV3 Architects and Town Planners (Pty) Ltd, 2016).



Figure 2: Revised proposed layout for the development associated with the study area (Mike Paterson Associates cc, 2026).

The proposed development site has been completely transformed by human activities, including earthworks and agriculture (disused commercial poultry houses and piggery). A number of gravel farm roads and buildings are present on the proposed site, including residences and farm outbuildings. The disused poultry houses and a disused piggery have subsequently been removed from the property (all existing buildings on the proposed site will be demolished before the construction of the proposed industrial development). Currently Nguni Cattle graze on the property. The intention is to rezone the property from Agricultural Zone I to General Industry Sub Zone GI 1 (as per the City of Cape Town Integrated Zoning Scheme).

An unnamed tributary of the Mosselbank River traverses the site, and an existing low water bridge crosses the tributary. The natural vegetation on the site is mapped as Cape Flats Sandstone Fynbos (FFd 5), with the surrounding areas mapped as Swartland Shale Renosterveld (FRs 9). Both of these vegetation types are considered to be Critically Endangered (Mucina & Rutherford, 2006). However, the development site has been transformed by agricultural activities.

B.1.2.1 Description of the Receiving Environment

The terrain of the proposed site is flat and land use varies from agricultural fields, small settlements, and open space. The property is transected by an unnamed tributary of the Mosselbank River which flows west to east. The property currently contains a number of farm buildings, pasture for cattle and abandoned or decommissioned buildings. Nearly all of the natural vegetation cover has been removed and currently consists of alien and weedy vegetation. The proposed site is dominated by exotic grasses and weedy shrubs and in particular, kikuyu grass *Pennisetum clandestinum* (not listed in areas where it currently occurs) and Patterson's curse *Echium plantagineum* (Category 1b). The watercourse of the unnamed tributary is dominated by the common reed *Phragmites australis*. Dug trenches which carry surface water run-off down to the tributary are dominated by bulrushes *Typha capensis* (Refer to *Freshwater Impact Assessment Report: Appendix G2 of the BAR*).

^a Note that all areas provided in this report are approximate

^b Note that all areas provided in this report are approximate

The site is not located within a Critical Biodiversity Area (CBA) or National Freshwater Ecosystem Priority Area (FEPA).

B.1.2.2 Description of the surrounding Land Uses

The surrounding land use is predominantly industrial and agricultural. Agricultural land, County Fair offices, the Durbanville Industrial Park and Durbanville Memorial Park (cemetery) are located north of the site; whilst the site is surrounded by agricultural land to the east, south and west. Denny Mushrooms and Corobrick Centre (quarry and brick making facility) are located further to the northwest of the site, across from Klipheuwel Road.

B.2.4 Socio-Economic Context

The development will result in socio-economic advantages for the local community as it will result in temporary job opportunities during the construction phase and permanent jobs during the operational phase, e.g. security personnel and admin staff. Should the property be developed, it will increase the overall economic value of the property.

The development site is located between Durbanville and Fisantekraal and therefore the baseline information for both areas is provided below:

2011 Census suburb Overview: Fisantekraal

In 2011 the population of the nearest residential area, Fisantekraal was 12 369 and the number of households^c was 3 711.

Key results for 2011 Census Suburb Fisantekraal:

- The population is predominantly Black African (52%) and Coloured (47%).
- 17% of those aged 20 years and older have completed Grade 12 or higher.
- 73% of the labour force (aged 15 to 64) is employed.
- 73% of households have a monthly income of R3 200 or less.
- 43% of households live in formal dwellings.
- 68% of households have access to piped water in their dwelling or inside their yard.
- 71% of households have access to a flush toilet connected to the public sewer system.
- 93% of households have their refuse removed at least once a week.
- 69% of households use electricity for lighting in their dwelling

Demographic Profile – 2011 Census:

Fisantekraal Population	Male		Female		Total	
	Number	%	Number	%	Number	%
Black African	3324	26.9%	3041	24.6 %	6365	51.5%
Coloured	2756	22.3%	3044	24.6 %	5800	46.5%
Asian	22	0.2%	20	0.2 %	42	0.3%
White	38	0.3%	22	0.2 %	60	0.5%
Other	80	0.6%	23	0.2%	103	0.8%
Total	6220	50.3%	6150	49.7%	12370	100.0%

2011 Census suburb Overview: Durbanville

In 2011 the population of 2011 Census suburb Durbanville was 40 994 and the number of household was 15 528. The household size was 2.68.

2011 Census Suburb Durbanville	2011
Population	40 944
Household	15 258
Average Household size	2.68

^c A household is defined as a group of persons who live together, and provide themselves jointly with food or other essentials for living, or a single person who lives alone (Statistics South Africa).

2011 Census District Overview: City of Cape Town

In 2011 the population of Cape Town was 3 740 025, an increase of 29.3% since 2001 and the number of household was 1 068 572, an increase of 37.5% since 2001. The household size has declined from 3.72 to 3.50 in the 10 years.

2011 Census District Overview: City of Cape Town	2001	2011	Change 2001 to 2011	
Population	2 892 243	3 740 025	847 782	29.3%
Household	777 389	1 068 572	291 183	37.5%
Average Household Size	3.72	3.50		

Key results for 2011 Census Cape Town:

- The population is predominantly Black African (42%) and Coloured (39%).
- 46% of those aged 20 years and older have completed Grade 12 or higher.
- 76% of the labour force (aged 15 to 64) is employed.
- 47% of households have a monthly income of R3 200 or less.
- 78% of households live in formal dwellings.
- 87% of households have access to piped water in their dwelling or inside their yard.
- 88% of households have access to a flush toilet connected to the public sewer system.
- 94% of households have their refuse removed at least once a week.
- 94% of households use electricity for lighting in their dwelling

B.2.5 Need for a Storage Facility

The efficiency and the profitability of establishing storage units in Fisantekraal have been assessed, and the **pre-feasibility study conducted has confirmed that the proposed project is feasible from a technical and financial point of view.** The Guideline on Need and Desirability was consulted to make sure that the relevant requirements regarding need and desirability of the proposed light industrial development were met during this Basic Assessment Process. The surrounding land use is predominantly industrial and agricultural. The land uses within Fisantekraal are varied, and includes light to medium industries.

The site is within an area identified by the City of Cape Town as an area for industrial development in terms of their Spatial Development Plan (Northern District).

Self-storage is an industry where individuals are able to purchase or rent storage space in a secure location. Typically, there are a number of reasons why additional storage space is required i.e. when moving from one home or premises to another, during remodeling or renovations or due to downsizing, extended periods of travelling or just simply a need for additional storage on a short or long-term basis (often for commercial purposes).

Need for a multi-functional industrial park:

Alignment with Zoning and Market Demand

- The property is zoned for General Industry I, which permits a broader range of industrial activities.
- The original EA limited the development to storage units only, which restricts the site's economic potential.
- The amendment seeks to align the approved land use with the zoning and respond to market demand for diverse industrial operations such as warehousing, logistics, light manufacturing, and office space.

Economic and Employment Benefits

- General industrial use will attract a wider variety of tenants and businesses.
- This will result in greater job creation, both during construction and operational phases.
- The diversified industrial estate will contribute more meaningfully to the local economy than a mono-functional storage facility.

Optimized Land Use and Infrastructure

- The revised Site Development Plan (SDP) introduces a phased layout with tailored footprints for workshops, warehouses, and offices.
- This allows for more efficient use of the site, better circulation, and improved integration of supporting infrastructure (stormwater, sewage, traffic).
- The amendment ensures that infrastructure is scaled appropriately for industrial use, improving long-term sustainability.

Environmental Safeguards Remain Intact

- The amendment does not alter the environmental buffers or floodline protections approved in the original EA.
- Areas within the 1:100 year floodline and 30m river buffer will still be rezoned to Open Space 3 (Special Open Space) and remain undeveloped.
- Stormwater and sewage systems will be upgraded to meet the City of Cape Town's Sustainable Urban Drainage Systems (SUDS) policy and industrial effluent standards.

Improved Traffic and Access Planning

- The revised layout accommodates heavier vehicle movements associated with industrial operations.
- Access points, road geometry, and parking provisions have been updated to support safe and efficient circulation.

In conclusion, the proposed amendment is driven by a strategic need to unlock the full development potential of the site in alignment with its zoning, market demand, and infrastructure capacity. By transitioning from a storage-only model to a diversified general industrial estate, the project will deliver enhanced economic value, greater employment opportunities, and long-term sustainability—while maintaining all environmental safeguards and regulatory commitments set out in the original Environmental Authorisation.

B.2 LEGAL ENVIRONMENTAL REQUIREMENTS OF THE APPLICATION

Withers Environmental Consultants (WEC) has been appointed by Pinetop Estate (Pty) Ltd. as their independent Environmental Assessment Practitioner (EAP) to undertake a Basic Assessment for the development of a storage facility on Portion 32 and a portion of Portion 33 of Farm 168 in Fisantekraal, near Durbanville. The application is being considered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014, which came into effect on 8 December 2014.

B.2.1 National Environmental Management Act (Act 107 of 1998) (NEMA)

To develop a storage facility on the site, the applicant needs to obtain Environmental Authorisation (EA) from the DEA&DP to lawfully undertake activities listed in Listing Notice 1 of the EIA Regulations, 2014, promulgated in terms of the NEMA.

Brief Description of the Activities

The proposed development of a storage facility includes associated infrastructure (i.e. connections to the municipal storm water, sewage, potable water and electricity infrastructure) and will trigger listed activities in terms of the 2014 EIA Regulations.

Table 1: Listed activities which may be triggered by the proposal to develop storage units on the site.

GN No. R. 983 Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1 (GN No. R. 983)	Describe the portion of the development as per the project description that relates to the applicable listed activity.
12	<i>"The development of: (iii) bridges exceeding 100 square metres in size; (x) buildings; exceeding 100 square metres in size; or (xii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs: (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; Excluding: (dd) where such development occurs within an urban area."</i>	The proposed development will exceed 100m ² in size (including the formalisation of the existing low water bridge crossing) and portions of the development will occur within 32m from the Mosselbank River.
19	<i>"The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from; (i) a watercourse;"</i>	The formalisation (upgrading) of the existing low water bridge crossing across the Mosselbank River, and associated access road, may result in the infilling or removal of more than 5m ³ of material from the watercourse, as may the rehabilitation activities for the river corridor as recommended by the Freshwater Specialist.
24	<i>The development of (i) a road for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding- (a) roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or (b) roads where the entire road falls within an urban area.</i>	The proposed Class 4 access road along the northern boundary of the development site has a 20m wide road reserve, with a road width of 9.8m. Internal road reserves vary from 6m to 17m. The site falls outside of an urban area.
28	<i>"Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes."</i>	The land was used for agriculture after 01 April 1998, and it is anticipated that approximately 13ha will be developed for industrial purposes (storage units), including associated infrastructure.
48	<i>The expansion of (iii) bridges where the bridge is expanded by 100 square metres or more in size where such expansion or expansion and related operation occurs- (a) within a watercourse; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</i>	In the event that the existing low water bridge is upgraded and /or construction of the new bridge through the river, this activity will be triggered.
67	<i>"Phased activities for all activities listed in this Notice, which commenced on or after the effective date of this Notice; or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices; where any phase of the activity may be below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold; <u>Excluding</u> the following activities listed in this Notice;</i> <i>17(i)(a-d); 17(ii)(a-d); 17(iii)(a-d); 17(iv)(ad); 17(v)(a-d); 20; 21; 22; 24(i); 29; 30; 31; 32; 34; 54(i)(a-d); 54(ii)(a-d); 54(iii)(a-d); 54(iv)(a-d); 54(v)(a-d); 55; 61; 62; 64; and 65."</i>	The proposed development will be developed over at least four phases.

This EMP, once approved by the DEA&DP, becomes a legally enforceable commitment that must be honoured by Pinetop Estate in terms of the NEMA.

The responsibility of Pinetop Estate is to ensure that the project is in line with all relevant environmental and safety legislation. In addition, Pinetop Estate must also take cognisance of Provincial and Local Government Ordinances that may be applicable to the project.

The primary function of the NEMA, as amended, is to provide for co-operative environmental governance by establishing:

- principles for decision making on matters affecting the environment;
- institutions that will promote co-operative governance;
- procedures for coordinating environmental functions exercised by organs of state; and
- to provide for matters connected therewith.

The NEMA EIA Regulations also requires that an EMP be submitted along with the BAR to demonstrate how environmental management and mitigation measures will be implemented during the construction and operation of the storage facility.

As such, this EMP has been submitted to DEA&DP for approval along with the BAR. Should the DEA&DP see fit to grant EA, this EMP may need to be updated by the EAP to ensure that all relevant conditions of authorisation have been adequately captured.

The content of this EMP has also been aligned with Section 24 (N) of the NEMA and *Appendix 4: Content of environmental management programme (EMPr) of the EIA Regulations 2014*, which lists, *inter alia*, the required content of an “environmental management programme” (see **Appendix A**).

B.2.2 National Environmental Management: Biodiversity (Act 10 of 2004) (NEMBA)

The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA) is part of a suite of legislation falling under NEMA (it is a Specific Environmental Management Act or a “SEMA”). Chapter 4 of NEMBA deals with threatened and protected ecosystems and species, and related threatened processes and restricted activities. The need to protect listed ecosystems is addressed (**Section 54**), while **Section 73** deals with Duty of Care relating to the control of invasive species.

Invasive species on the site, including within the river corridor, will be removed in a phased manner in terms of this EMP and the MMP (attached as Appendix A to this EMP).

B.2.3 National Water Act (Act 36 of 1998) (NWA)

The National Water Act (Act No. 36 of 1998) (NWA) is intended to ensure that South Africa’s water resources are protected, used, developed, conserved, managed and controlled in a responsible, efficient, sustainable and equitable manner. The proposed development will require a water use authorisation in terms of the NWA for Section 21(c) and (i) water uses

Albeit that the storage unit development itself is located outside of the 1:100 year flood line and the 30m no-go river corridor determined by the Freshwater Specialists, bed and bank modification of the unnamed tributary will take place as a result of the upgrading of the existing crossing as well as short term rehabilitation and long term maintenance activities of the river corridor and crossing.

B.2.4 Occupational Health and Safety (Act 85 of 1993) (OHSA)^d

The objectives of this Act are to provide for health and safety of persons at work and the protection of persons other than persons at work against hazards to health and safety arising out of, or in connection with the activities of persons at work; and to provide for matters connected therewith.

The construction and operational phases of the proposed development of a storage facility need to be in keeping with the directives set out in the various Regulations promulgated in terms of the OSH Act, namely:

- Pinetop Estate Management is to ensure that, as far as is reasonably practicable, that the working conditions on site are safe, and without risk to their employees or contractors;

^d As amended by the Occupational Health and Safety Amendment Act (Act 181 of 1993)

- Pinetop Estate Management must provide the required Personal Protective Equipment (PPE) to ensure the safety and well-being of their workers (any contractors used for the construction of the storage units will need to ensure that their staff are provided with the necessary PPE);
- Adequate facilities must be provided to ensure that relevant minimum standards apply to working conditions in the field (e.g. the provision of mobile chemical toilets and potable water).

B.2.5 Basic Conditions of Employment Act (Act 75 of 1997)

This Act is to give effect to the right to fair labour practices referred to in section 23(1) of the Constitution by establishing and making provision for the regulation of basic conditions of employment; and thereby to comply with the obligations of the Republic as a member state of the International Labour Organisation; and to provide for matters connected therewith. Pinetop Estate is required to adhere to all the relevant requirements of the Basic Conditions of Employment Act, 1997(Act 75 of 1997).

B.2.6 National Environmental Management: Air Quality Act (Act 39 of 2004)

This Act provides for national norms and standards regulating air quality in order to protect the environment and human health by preventing pollution and ecological degradation. It establishes the framework for the licensing of listed activities, the setting of Minimum Emission Standards (MES), and the monitoring and reporting obligations of facilities that may impact ambient air quality. The Act requires operators to demonstrate ongoing compliance with licence conditions, emission limits, and reporting requirements, including submissions to the National Atmospheric Emission Inventory System (NAEIS).

Pinetop Estates (Pty) Ltd, as the Proponent, is required to adhere to all relevant provisions of the Air Quality Act, including obtaining and maintaining an Atmospheric Emission Licence (AEL) where applicable, ensuring that emission sources are monitored and reported, and implementing corrective actions to address any non-conformities. Compliance with this Act is essential to safeguard environmental quality, align with national regulatory obligations, and ensure transparent reporting to the competent authority.

The construction activities must comply with the provisions of the City of Cape Town Air Quality Management By-law dated 17 August 2016, as amended, in terms of Section 4 and Section 26.

Depending on the duration of the development and impact on the receiving environment for complaints being received or conditions so warrant, this office reserves the right to call for a dust fall monitoring programme to be implemented in accordance with the below regulatory provisions. Compliance in terms of the National Dust Control Regulations, Government Notice 827 dated 1 November 2013, as may be amended from time to time.

Should any fuel-burning equipment (i.e. furnace, boiler, burner, incinerator, smoking device, wood-fired oven/pizza oven, commercial wood or charcoal fired braai, barbecue/grill or other equipment including a chimney); be proposed for installation, an application for authorisation must be made in terms Section 11 of the City of Cape Town's Air Quality Management By-Law 2016, as amended, prior to the installation of such fuel-burning equipment. In this regard, please contact Mr. Lumko Vazi at email: Lumko.Vazi@capetown.gov.za or Tel: 021 444 2914.

B.2.7 Details and Experience of the Person / Company who Compiled the EMP

Mr Aubrey Withers, who is the director of WEC, has 27 years in professional practice as an Environmental Assessment Practitioner (EAP), and has:

- undertaken many EIAs for a host of development projects from large housing projects, resort developments, housing developments, golf course developments, industrial parks, engineering projects of all facets and agricultural projects; and
- compiled environmental management plans for all such projects and has also supervised the implementation of such projects as the environmental control officer (ECO).

The Curriculum Vitae for Mr Withers is attached as **Appendix D to the EMP**.

Mr Withers has reviewed and endorsed the EMP. The EMP was compiled by:

- Ms Nosipho Mbunje who has a BTech in Environmental Management and four years' experience in the environmental consulting field; and
- Ms Karin Neethling who has an MPhil in Environmental Management and 7 years relevant experience in the environmental consultancy field and is currently completing her MPhil in Environmental Law.

The amended EMPr has been updated by Ms Lauren Abrahams, who has a BTech in Oceanography and 10 years relevant experience in the environmental consultancy field.

Lauren Abrahams	Updated EMPr
	Lauren Abrahams is an Environmental Consultant with experience in applying the principles of Integrated Environmental Management (IEM), and in applying the Environmental Impact Assessment Regulations to various development projects in South Africa. She has experience in various sectors including residential, commercial and industrial developments. Her core experience includes Project Management of environmental projects, including oversight through the tendering, design, and construction, operational and decommissioning phases. Lauren also has extensive experience in Permitting and/or Licencing in respect with Specific Environmental Management Acts (SEMA), Environmental Compliance Monitoring, and Water Use Licence Applications in terms of the National Water Act, to mention a few. In addition, Lauren has valuable knowledge and experience in Public Participation Processes.
Relevant Years of Experience	10 years
Qualifications	BTech (Oceanography), Cape Peninsular University of Technology, 2010. ND (Oceanography), Cape Peninsular University of Technology, 2009.
Professional Registration / Memberships	Registered EAP EAPASA (2019/656) Pri. Nat. Sci. SACNASP (007592) Member: International Association for Impact Assessment South Africa (
Role in Project	Project Management and Report Preparation

SECTION C: PROJECT VISION, AIMS AND POLICIES

The purpose of the EMP is to provide guidelines to the Implementing Agent, Pinetop Estate and Contractor for managing the potential impacts of the development on the surrounding environment during the Planning, Design Construction and Operational Phases, by implementing / ensuring that:

- the mitigation of the environmental impacts identified during the environmental assessment of the construction and operation of the proposed development;
- energy saving light fittings and appliances are used (such as low voltage light fittings, low energy bulbs [e.g. CFL lights and LEDs] etc.) to reduce electricity use;
- the mitigation of the potential environmental impacts identified on site by Withers Environmental Consultants and Appointed Specialist are implemented;
- the stated objectives and targets set by Pinetop Estate, which in turn meets the general environmental policy set for the project are implemented;
- the environmental recommendations, including environmental monitoring put forward for the Operational Phase are implemented; and
- implementation of the conditions of approval issued by the DEA&DP for the construction and future management of the proposed development.

Pinetop Estate should ensure that the following is undertaken during the Operational Phase of the project:

- an integrated water management system is adhered to in order to minimise the use of water in the development;
- solid waste is sorted during the Operational Phase of the project and that such recyclables are fed into the recycled waste stream (such as paper and cardboard, glass, tins and plastic); and
- a 30m buffer from the top of each bank of the unnamed tributary as recommended by the Freshwater Specialist is maintained as per this EMP and the appended MMP.

To achieve the above, it is important that the development take into account the site characteristics, natural surroundings and the relevant legislation, and that the EMP is practically structured and implemented so that impacts are minimised during the Construction Phases (installation of services and construction of buildings) and the Operational Phases of the project.

C.1 Environmental Policy

The primary environmental policy statements of Pinetop Estate are as follows:

- All aspects of the development and its management will be undertaken in accordance with the relevant legislation and with the vision, goals and principles put forward in this EMP.
- The environment^e forms the fundamental basis of the proposed project. All construction and operational activities must, therefore, conform to the principle of environmental sustainability and must be carried out in such a way that potential negative environmental impacts on the development site and surrounds are minimised, and that water and energy saving measures are implemented and measures are put in place to recycle waste as much as possible.

C.2 Vision and Goals

The following sections describe the vision and goals as are applicable to this EMP.

C.2.1 Vision

The following **Vision** has been set for the project:

To develop and manage the proposed industrial development in such a way that it will:

^e "Environment" (as defined in NEMA, (Act 107 of 1998)) means the surroundings within which humans exist and that are made up of- (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

- ensure sustainable development in all its facets and in particular during the Construction and Operational Phases of the project;
- ensure the conservation of the surrounding environment (biophysical, socio-economic and cultural-historic characteristics);
- lead to a better appreciation, understanding, use and conservation of the limited resources (water and energy) by the owners and employees to the industrial development;
- ensure an ethic of waste recycling;
- provide a pleasant environment in which to live in; and
- provide both temporary and permanent job opportunities within the local community.

C.2.2 Goals

The **Goals** for upholding the above vision are the following (amongst others):

- Enhancing the biodiversity of the property and surrounds by removing alien vegetation and the re-instatement of natural vegetation within the river corridor through natural succession;
- To implement a water demand management system to reduce the use of potable water by ensuring the use of water saving devices such as, aerated taps and dual flush toilets.
- To prevent seasonal water-logging of open areas through the establishment of an effective stormwater drainage system;
- To introduce an ethic of using electricity sparingly by specifying appropriate light fittings and appliances and, if feasible, through the use of renewable energy forms (e.g. solar panels);
- To promote an ethic of waste minimisation and recycling;
- To enhance the built environment by ensuring environmentally friendly and aesthetically pleasing “green” building designs and colour schemes that are in harmony with the surrounding architectural vernacular, and to ensure conservation of energy (window orientation, thermal insulation, etc.);
- To minimise negative environmental impacts that could arise during the Construction Phase, such as dust during earthworks, wind and/or water erosion of cleared surfaces, construction noise etc.;
- To protect, as far as is possible, potential impact of the development on the unnamed tributary of the Mosselbank River which transects the property;
- To enhance positive environmental impacts (particularly socio-economic) that could arise during the Construction and Operational Phases of the project, such as the creation of job opportunities and the development of skills for the local community; and
- To ensure the health and safety of construction workers during the Construction Phases and permanent staff during the Operational Phases of the project in accordance with the Occupational Health and Safety Act (Act No. 85 of 1993).

C.3 Fundamental Principles of NEMA

This EMP is based on fundamental principles^f derived from applicable government policy statements contained in various government documents and legislation (e.g. the NEMA). The following principles contained in various documents and laws were used as guidance during the preparation of this EMP:

- **Environmental management** must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- **Development** must be socially, environmentally and economically sustainable, i.e. meet the “triple bottom line” criteria for development.
- **Sustainable development** requires the consideration of all relevant factors including the following:

^f **Principles** are shared assumptions and truths that policy and action can be based upon.

- that the disturbance of ecosystems and loss of biological diversity are avoided, are minimised and remedied;
- that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- that the development, use and exploitation of renewable resources and the ecosystems of which they are a part do not exceed the level beyond which their integrity is jeopardised;
- that a risk-averse and cautious approach is applied (also called the **Precautionary Approach**), which takes into account the limits of current knowledge about the consequences of decisions and actions.
- **Environmental management must be integrated**, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the *best practicable environmental option*.
- **Community well-being and empowerment** must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
- **Capacity building and education:** The EMP must play a dynamic role in developing the understanding, skills and capacity of the employees and people in the area in order to promote sustainable development.
- Developmental and environmental planning, problem solving and decision-making are often complex. Possible consequences of conflicting interest as well as the consequences of not acting need careful consideration.
- **Co-ordination:** Various concerns and issues cut across the key sectors and functions in the area. Sustainability and integrated planning and management (including monitoring) therefore will depend on co-ordination and integration of all sectors and I&APs in the Fisantekraal/ Durbanville area.
- **Due process** must be applied in all integrated management activities. This includes adherence to the provisions in the Constitution and statutes dealing with just administration and public participation in regional and local governance.
- **Duty of care:** Every person (owners, contract workers and staff members) associated with the Portion 32 of Farm 168 has a duty to act with due care to avoid damage to the environment, or pollution of the environment or waste a precious resource. Also called the **Environmental Responsibility Principle**.
- **Equity:** The EMP is to encourage equitable access to natural resources, benefits and services to meet basic needs and ensure human wellbeing. Each generation has a duty to avoid impairing the ability of future generations to ensure its wellbeing.
- **Full cost accounting:** Decisions must be based on an assessment of the full social and environmental costs.
- **Good governance** depends on mutual trust and reciprocal relations between the various groups and sectors of the area and the controlling officials. This must be based on the fulfilment of constitutional, legislative and executive obligations, and the maintenance of transparency and accountability.
- **Prevention:** The EMP must anticipate problems and strive to prevent negative impacts on the environment and on people's rights.
- **Polluter Pays:** Those responsible for environmental damage must pay the repair costs both to the environment and human health, and the costs of preventative measures to reduce or prevent further pollution or degradation.
- **Subsidiary:** Regulatory responsibilities belong at the most local level at which the tasks can be carried out effectively. Environmental management structures must match the ecological scale of the managed resource.
- **Waste management:** Minimise and avoid the creation of waste at source. The EMP is to encourage waste recycling, separation at source and safe disposal of unavoidable waste.

SECTION D: ROLES AND RESPONSIBILITIES FOR THE IMPLEMENTATION OF THE SPECIFIC ENVIRONMENTAL MANAGEMENT PROGRAMMES

D.1 Responsible Parties

In order to ensure compliance with the provisions of this EMP, an ECO should to be appointed by the Implementing Agent (Pinetop Estate) to oversee the Construction Phase of the project.

The ECO will then need to undertake periodic site visits to assess whether any environmental degradation is resulting from the Construction Phases of the project and to check compliance with the EMPs. The daily on-site activities will be controlled by the Construction Manager (or Site Agent) and Resident Engineer (RE). The roles and responsibilities of the ECO throughout the contract period are provided in **Section D.3** below.

The EMPs contained in this EMP aim to give direction and guidance to all responsible parties, to ensure that all negative environmental impacts are mitigated. The responsible parties during the construction and Operational Phases of the project, all of whom will need to co-operate closely to minimise or avoid potential environmental impacts, are the Contractor (Construction Manager and/or Site Agent), RE, Pinetop Estate management and the ECO.

The roles and responsibilities of the ECO, the level and type of competency required of the ECO, and frequency of site visits are outlined below.

D.2 Roles and Responsibilities of the Project Team: PINETOP ESTATE (PTY) LTD.

In order to ensure that the all operations are undertaken in an environmentally sound and sustainable manner, it is imperative that the directors of Pinetop Estate commit themselves to the following:

- Ensuring that the mitigation/management and monitoring measures as described in this EMP are implemented.
- Appointing an ECO officer to regulate the operational activities in accordance with this EMP.
- Review the results of the ECO officer site visits (ECO officer Audit Reports), and facilitate any corrective actions that may be necessary.
- Maintain their commitment and leadership throughout the construction and operational phases of the project.
- Maintenance of the buffer zone of 30 meters from the top of each bank of the stream. This ecological corridor should be kept clear of alien vegetation and landscaped and revegetated with appropriate vegetation; indigenous to the catchment as recommended by the Freshwater Specialist (**Appendix G of the BAR**).

Pinetop Estate Director is responsible for the implementation of the majority of the mitigation measures provided in this EMP.

D.3 Roles and Responsibilities of the ECO

In terms of the roles and responsibilities of the ECO, the ECO shall:

- regulate the various phases of the project in accordance with the recommendations made in the EMP.
- assist Pinetop Estate and the Contractor with instituting the EMPs prescribed in this EMP;
- meet with the Contractor and construction teams, before construction begins, to enlighten them regarding the environmental sensitivities of the site and how to go about their construction methodology and site husbandry, so as to prevent negative environmental impacts from occurring, i.e. conduct an environmental induction training programme;
- conduct periodic site visits (as scheduled in D5 below) to assess any environmental degradation resulting from the project, to monitor compliance the recommendations of the EMPs (to ensure that environmental impacts are minimised and mitigated), and to assess and monitor the success of the rehabilitation/landscaping programmes;
- report to Pinetop Estate (Director), construction managers and consultants during monthly site meetings of progress on the implementation of the EMP, and implementation of the relevant mitigation measures contained in the EMP;

- stop construction works if, in his opinion, there is a serious threat to or impact on the environment as a result of the construction operations;
- attend regular site meetings to discuss progress of the project with construction personnel consultants; and
- issue an ECO Checklist after each site meeting to act as site instructions for recording any irregularities or non-compliance with the EMPs and construction progress in general.

D.3.1 Compliance Auditing Requirements in terms of the EIA Regulations

ECO Audit Reports need to meet the objectives and content requirements as laid out in Appendix 7 to the EIA Regulations 2014 (GNR 982) (as amended from time to time).

Auditing of compliance with the environmental authorisation and environmental management plan needs to be undertaken in accordance with Section 34 of the EIA Regulations 2014 (as amended from time to time).

D.4 Level and Competency of the ECO

A suitably experienced ECO Consultant, with at least 3 years relevant site supervision experience, will need to act as the ECO.

D.5 Frequency of ECO Site Visits

Initially, the ECO will:

- attend the site handover to the Contractor and assist in siting the site offices, storage areas and toilets;
- undertake an environmental induction training session of construction personnel;
- undertake monthly site visits to check on construction progress and whether any environmental degradation is taking place and whether the correct mitigation is being undertaken by the contractors to prevent such degradation. These monthly site visits will coincide with the monthly site meetings (with the Pinetop Estate, Site Agent, RE and Contractor);
- attend *ad hoc* site visits should environmental problems arise during the Construction Phases, or when certain milestones have/have not been reached;

Pinetop Estate is advised to retain the ECO to supervise the various construction phases of the proposed development (e.g. the installation of services, and the construction of storage units).

The ECO will undertake audits after the Construction Phase of installation of civil services and (in collaboration with the Implementing Agent) once the construction of buildings has been completed. These audits will be undertaken to assess compliance with the EMPs and with the construction guidelines and to ensure that satisfactory rehabilitation of the disturbed areas has taken place.

D.6 Environmental Training

Environmental training is required to promote environmental awareness amongst staff. The objective is to ensure all employees have an understanding of environmental issues and potential impacts of construction and operational activities.

The ECO will give a presentation to construction staff to familiarise them with the environmental aspects of the contract. The Contractor and staff must attend this meeting. Staff must fill in the attendance register of this environmental induction programme

The content of the environmental training should include the following:

- | | |
|------|--|
| (i) | Introduction: the environmental and socio-economic sensitivities of the site will be explained (including the potential discovery of archaeological material or burial sites). Reinforce an environmental ethic amongst staff and explain the consequences of not complying with the content of the EMP (e.g. issuing of a stop works order). |
| (ii) | Environmental Pollution: engender an ethic of waste pollution management and how plastic bags and paper waste cause, not only visual pollution, but can lead to blockages of stormwater drains, which in turn can lead to flooding, and animal death if ingested by them. All solid waste must be stored in wind – proof bins to prevent waste being blown around the site. Explain also that burning |

of waste, especially PVC can cause toxic air pollution that is harmful to man and to the atmosphere, and that unsupervised fires can lead to run-away fires. The importance of the use of chemical or other toilets will also be emphasised.

- (iii) The negative **consequences of oil and diesel pollution** will also be explained, and that it is imperative to work carefully with such hazardous substances.
- (iv) **Adherence to Speed Limits:** Speed limits of construction vehicles whilst driving in Fisantekraal must be adhered to in order to protect pedestrians, children and animals, and to prevent accidents.
- (v) **Soil Erosion:** Prevent erosion from diversion, restriction or increase in storm-water. Rainwater should be appropriately channelled to prevent erosion or flooding. If erosion occurs, appropriate measures will need to be undertaken to prevent erosion.
- (vi) **Dust Pollution:** Reasonable measures to minimise the generation of dust should be undertaken. Areas where earth is moved may require wetting with water in order to reduce dust. If dust problems persist, the affected areas may require covering with straw or wood chips.
- (vii) **Noise Pollution:** Local by-laws and regulations in terms of noise will be enforced on site. Construction should only take place during the week during normal working hours and no amplified music will be allowed on site.
- (viii) Construction staff will **not be allowed access to neighbouring properties** and the **ecological stream corridor** of 75-80m should be clearly marked and only be accessible to staff trained to undertake rehabilitation and maintenance work in terms of the MMP.
- (ix) The importance of **personal hygiene and the use of chemical toilets** will be explained to the Contractor's staff.

D.6.1 Communication Procedures on Site

The following sections describe the communication procedures as are relevant to the implementation of this EMP.

D.6.1.1 Site Instruction Entries

An instruction book/file should be kept on site by the Manager for the purposes of recording specific important site instructions that may need immediate attention. The site instruction book will also be used for issuing "stop work" orders for the purposes of immediately stopping any particular activities on site due to the environmental risk or impact that may result.

Audits will be conducted by an ECO appointed by Pinetop Estate. The audits will serve as a general record of compliances and non-compliances in accordance with the content of the EMP, and the OHS Act, that need to be addressed during the course of the development of a storage facility. The Manager must give immediate attention to any environmental issues that need to be dealt with.

D.6.1.2 Registers of Environmental Incidents and External Complaints/Comments

A **register** should be maintained of all **environmental incidents** occurring on site. The register should record the following information for each incident: date, time, type of incident, person responsible for the incident, corrective action required, immediate corrective action implemented, and whether or not the incident was reported to the ECO and/or other parties.

A **register** should also be maintained of any **complaints and/or comments received** from external parties (such as from neighbours and members of the surrounding community or staff of Portion 32 of Farm 168). The register should record the following information for each complaint and/or comment received: date, time, details of the person who lodged the complaint/comment, details of the complaint/comment, action required, immediate action implemented, whether or not the complaint/comment was reported to the ECO and/or other parties.

D.6.1.3 Minutes of the Site Meetings

The Manager should keep notes of each team meeting, which must be made available to the ECO. The notes must record any environmental issues that have been raised during the internal audits (by Manager) and that need to be addressed or rectified.

D.6.1.4 Method Statements

Method statements from the Contractor(s) may be required for specific sensitive activities, e.g. removal of alien vegetation from the site. A method statement forms the baseline information for work that takes place in sensitive areas or under sensitive conditions and is a “live document”, i.e. modifications can be negotiated between the Contractor(s) and ECO as circumstances unfold.

All method statements will form part of the EMP documentation and are subject to all terms and conditions contained within the EMP.

The method statement must include the equipment to be used as well as materials, labour and methods to be used to undertake the activity.

The format for such a method statement should follow the following general layout and include the following information:

- **What?** A brief description of the works;
- **How?** A detailed description of the process of work, methods and materials; and where materials will be stored;
- **Where?** A description/sketch map of the locality of work required (if applicable);
- **When?** The sequencing of actions with due commencement dates and completion date estimates;
- **Who?** The names of the person/s or companies who are going to undertake the work; and
- **Why?** An explanation of the reason why the work needs to be carried out.

SECTION E: CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

E.1 GENERAL CONSTRUCTION MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY: The development of the storage facility must ensure that all negative environmental impacts are mitigated to prevent any temporary or permanent environmental impacts or effects and ensure the safety and good health of all construction staff.		
OBJECTIVE: To control all aspects of the Construction Phase (which encompasses both the construction of civil services and the construction of buildings/units) by implementing the necessary mitigation and recommendations to prevent any temporary or permanent negative environmental impacts from occurring.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Establish appropriate partnerships and good relationships with local authorities, local community and contractors	1. Ensure appropriate communication with all local authorities, local communities, and contractors. 2. Contractors to be fully informed by the ECO as to their environmental contractual obligations. 3. The ECO to give a presentation to Contractor and site staff to familiarise them with the environmental aspects of the contract. The Contractor(s) and all site staff must attend this meeting. 4. Appropriate signage that indicates the contact details of the Implementing Agent, Contractor, RE (or REs representative) and ECO must be provided on site.	To be undertaken by professional team and ECO, project manager (consulting engineer and/or site agent) as ongoing process. ECO to monitor environmental contractual obligations of contractors on ongoing basis. ECO and RE to meet with Contractor and staff before construction commences to initiate the EMP. Developer/RE to ensure that appropriate signage is put in place.
Set up of construction site and site offices and undertake construction and earthworks without adversely affecting the environment	1. Communicate with Contractor to ensure that all the environmental specifications are understood and carried out. 2. The Contractor must point out and demarcate the construction site and site offices. This area is to be fenced off and must be locked outside working hours. 3. The Contractor must cordon off the 75-80m ecological stream corridor as a no-go area. 4. Control all construction in terms of the Construction Guidelines (refer to Appendix 1) and in terms of the content of this EMP. This will include the storage of topsoil. 5. Construction material (concrete raw materials) must be stored in designated areas in a neat and orderly manner.	To be undertaken by ECO and site agent before construction commences. To be sanctioned by the ECO before construction begins. To be sanctioned by the ECO before construction begins. ECO to inform and induct the construction staff with respect to the content of the Construction Guidelines prior to commencement of construction. ECO to monitor compliance. Area for construction material to be designated by the ECO and to be in secured area. ECO to monitor compliance.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Set up of construction site and site offices and undertake construction and earthworks without adversely affecting the environment (continued)	6. Contractor to store building rubble in a suitable designated area, with rubble removed from site on a weekly basis (if not to be used as fill). 7. The temporary dumping site for all spoil must be indicated by the Contractor. Trucks removing spoil must remain on designated access road/s. Access road/s must be well maintained. 8. Road construction signs to be erected along appropriate roads warning road users of construction activities and heavy vehicles in the vicinity. 9. Personal Protective Equipment must be provided to ensure safety of workers and adequate facilities must be provided to ensure that relevant minimum standards apply to working conditions. Working conditions must be in line with the requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). 10. All solid waste to be kept in appropriate weather and scavenger proof containers and removed from the site by the Contractor on a weekly basis to a licensed waste disposal facility. The burning of solid waste and paper on site will not be allowed. Recyclable waste (e.g. paper, glass, tin, plastic) should be recycled if possible. 11. Workers will not be allowed access onto neighbouring properties. 12. In the event of a spill of oils or fuels, contaminated soil must be placed in a sealed container and removed to a licensed waste disposal facility that accepts such waste. Alternatively, all servicing of vehicles must be conducted over a drip tray to prevent accidental spillage of oils and fuels.	Area for building rubble storage to be designated by the ECO. Contractor to remove builder's rubble on weekly basis. ECO to monitor compliance. ECO to assess spoil dumping site, and to monitor condition of road/s. ECO and Safety Officer to monitor road safety conditions throughout contract periods. Safety Officer to monitor working conditions and safety throughout. Contractor to remove solid waste on a weekly basis. ECO to monitor compliance. Contractor to ensure that workers do not trespass. ECO to monitor compliance. ECO to supervise and monitor. Contractor to report all fuel and oil spills to the ECO; Contractor to remove contaminated soil to a licensed waste disposal facility.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Set up of construction site and site offices and undertake construction and earthworks without adversely affecting the environment (continued)	13. Concrete mixing must be restricted to a designated area on site, which must be bunded/enclosed by an impermeable surface. All remaining cement residues are to be removed from site at the end of each phase of the development. If necessary, two wastewater catch-pits must be constructed in series for the capture of cement residues from cleaning of the cement mixer. Residues are to be removed from site from time to time. 14. All parked mechanical vehicles must have a drip tray present to prevent spillage of oils and fuels and used oil (from servicing of vehicles) should be recycled or disposed of at a hazardous waste disposal facility. 15. All excavations deeper than 1.5m must be protected from collapsing by shoring up with boards. 16. Disturbed areas where dust can arise should be kept moist by spraying with water from a water bowser or other suitable means such as straw or wood-chip stabilisation or covering with shade cloth.	ECO to monitor compliance. Contractor to remove cement residues from site as directed or at end of contract. ECO to monitor compliance. Contractor to recycle or dispose of used oils at hazardous waste disposal site. ECO and appointed Safety Officer to monitor compliance. ECO to monitor the generation of any dust and advise the Contractor to mitigate accordingly.
Prevent possible negative impacts of construction personnel on the environment	1. Contractors will be responsible for the conduct of their personnel on site, as it pertains to trespassing, littering, and unacceptable social behaviour. 2. ECO must inform construction personnel of environmental rules to apply during construction period. 3. Maintain strict supervision over all construction activities. 4. All construction workers should stay within the development area demarcation. All no-go areas (i.e. the 75-80m ecological stream corridor) must be identified and demarcated before construction commences. 5. The Contractors must secure the properties with appropriate means to ensure their security.	Contractor responsible for social management. ECO to monitor for duration of contract. ECO to meet with Contractor prior to commencement of construction in new areas to inform workers of the sensitivities of the site and how they should conduct themselves. ECO to monitor construction activities and if any adverse impacts occur, he must inform the Site Agent, RE and client of such conduct on an on-going basis. ECO to monitor for duration of contract. ECO and Safety Officer to monitor for duration of contract. ECO to monitor compliance of adequate security enclosure.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Prevent possible negative impacts of construction personnel on the environment (continued)	- The Contractor must provide temporary chemical toilet facilities at the stores/site office area and at each of the sites when building work is being conducted there. A minimum of one toilet shall be provided per 15 persons at each working area or as stipulated by the local authority. The toilets must be kept in a clean and sanitary condition, and must be regularly serviced. - Construction staff should not be allowed to stay on site and should alternatively be bussed to site each day. Security personnel may be required to live on site for the duration of the construction phase.	ECO to monitor for duration of contract. ECO to monitor for duration of contract.
Ensure appropriate training of staff to prevent accidents and ensure health and safety of staff on site	- The Contractor is to ensure that the working conditions on site adhere to the minimum requirements of the Occupational Health and Safety Act (Act No. 85 of 1993). - The appropriate training of staff must be given to prevent accidents and the appropriate protective gear is to be issued.	The Site Agent is to ensure compliance and that a Health and Safety official is appointed to undertake the necessary audits to ensure compliance. The Site Agent is to ensure that appropriate training and protective gear is given to personnel for specific tasks. Appointed Safety officer to monitor.
Ensure that the Construction Phase meets the required performance criteria	- Inform all contractors and their staff of the performance criteria. - Institute and maintain a monitoring programme of construction performance. - Monitor construction work. - Ensure that contractors adhere to the guidelines in respect of littering, sanitation, spills of toxic substances and general behaviour.	To be undertaken by ECO prior to commencement of construction. Site Agent to supervise worker behaviour on a daily basis and to be monitored by ECO. RE/Architect to monitor progress and impacts and inform client of any time delays or non-performance during contract period. ECO/RE/Architect to monitor significant impacts.

E.2 BIOPHYSICAL MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY:

Conserve all aspects of the environment for the Storage Facility Project, which includes the following:

- Conserve and protect fauna and flora.
- Ensure the conservation and sustainable use of resources (water and electricity) and the re-use of recyclable materials.
- Prevent of soil erosion and dust.
- Reduce the risk of potential fires occurring.
- Prevent environmental pollution.
- Delineate the 30m buffer zone from the top of each bank of the stream (i.e. 75-80m ecological stream corridor) as a no-go area and commence with short-term maintenance activities as elaborated on in the attached MMP (**Appendix A** to this EMP).

E.2.1 Fauna and Flora**OBJECTIVE:**

To conserve/ protect indigenous plants and animals that occur within and around the proposed development sites, to remove alien vegetation and to commence with the rehabilitation of the ecological stream corridor.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Minimise the removal of any vegetation during the construction phase	1. Remove only the bare minimum of vegetation for construction purposes. 2. Larger machinery, such as diggers or bulldozers, should not be operated within the ecological stream corridor to remove alien vegetation. 3. The disturbed riparian zone/buffer area should be covered with top soil and shaped to resemble ground levels of the surrounding stream banks and then revegetated with appropriate indigenous vegetation as listed in Appendix D of the Freshwater report (Appendix G2) 4. Where appropriate, stockpile topsoil removed from the building area in suitable designated areas for later use in the rehabilitation of the ecological stream corridor and private open space areas. 5. If necessary, topsoil from neighbouring properties (which are also being developed) could also be used. 6. Stockpiling of topsoil must not exceed a height of 2m above ground level. Topsoil stockpiles may need to be covered with a suitable material (or seeded with a suitable indigenous grass species) to prevent them from being windblown or contaminated.	ECO to monitor. Contractor to monitor. ECO to inform staff and contractor of importance of working outside the no-go area. Contractor to monitor and ECO to give guidance. Designated areas for storage topsoil to be ratified by the ECO at start of contract. ECO to monitor and approve quality and origin of topsoil.
Alien plant management	1. Alien vegetation must be removed by appropriate means. The three key alien species identified by Toni Belcher on the site are: <i>Acacia saligna</i> (Port Jackson), <i>P clandestinum</i> (Kikuyu grass) and <i>E plantagineum</i> (Paterson's Curse).	Methods for on-site alien plant removal are to be advised by the ECO. <i>Note that alien vegetation removal will be an ongoing activity in the open space area and ecological stream corridor during the operational phase of the activity.</i>

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Maintenance and Management of unnamed tributary of the Mosselbank River (as per the recommendations of the Freshwater Assessment and Freshwater Statement)	1. An ecological stream corridor of about 75 - 80m wide, which allows for a 30m buffer on either side of the stream should be established and maintained within the development;	Contractor to ensure that ecological stream corridor is cordoned off during the construction phase as a no-go area. ECO to monitor.
	2. The rubble from demolished buildings on the property should not be dumped in the riparian/ buffer zone but should be removed from site. The site should be covered with top soil. Disturbed areas or areas where the soil is left bare should be revegetated with appropriate indigenous vegetation. Alien vegetation which recruits in the disturbed area should be removed;	Contractor to ensure that building rubble stored in a designated areas on site and removed to a landfill site on a weekly basis. ECO to monitor.
	3. The stream and its ecological corridor/buffer zone should be treated as "no-go" areas during the construction phase and appropriately demarcated as such. No vehicles, machinery, personnel, construction material, spoil material, fuel, oil, bitumen or waste should be allowed into these areas except for the approved rehabilitation work in these areas (refer to the MMP in Appendix A) as well as the construction of infrastructure associated with the proposed and approved development – these works should be undertaken according to an approved method statement and under the supervision of the ECO.	Contractor to enforce; ECO to monitor
	4. Drainage of water through the site is largely via the lowest point which is located along the river corridor. It is thus recommended that adequate stormwater management measures (such as the use of swales and permeable surfaces to encourage infiltration) should be put into place as far as possible to reduce the water quality impacts of the stormwater on the downstream aquatic ecosystems ⁹ .	Contractor/ Site Agent. ECO to monitor.

⁹ The potential exists that a functional wetland area could be created within the stormwater management areas to offset any loss of aquatic habitat as well as enhance the mitigation of the stormwater before it is potentially discharged into the stream. The stormwater pond feature could be incorporated into ecological/stream corridor through the development;

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Maintenance and Management of unnamed tributary of the Mosselbank River (as per the recommendations of the Freshwater Assessment and Freshwater Statement) (continued)	5. The site office and construction camp; fuel storage, refuelling, vehicle maintenance and toilets should not be allowed within 50 m from the stream;	Contractor/ Site Agent. ECO to monitor.
	6. Freshwater ecosystems should be inspected on a regular basis (but especially after rainfall) by the ECO for signs of sedimentation and erosion. These inspections should form part of every site inspection carried out by the ECO. If signs of erosion or pollution are noted, immediate action should be taken to remedy the situation;	Contractor/ Site Agent. ECO to monitor.
	7. The intensity of the stormwater runoff should be reduced within the development as per the stormwater management plan. The buffer zone could be used for stormwater management measures to regulate flow into the unnamed tributary and into the Mosselbank River;	Contractor/ Site Agent. ECO to monitor.
	8. The existing low-level crossings should be utilised. If the crossing needs to be upgraded the crossing should not allow less flow present. No additional crossings should be constructed.	Contractor/ Site Agent. ECO to monitor.
	9. Upgrading of the existing crossing should be in terms of the attached Method Statement (Appendix B) and the work area must be demarcated to limit the disturbance of the river channel outside of the delineated area.	Contractor/ Site Agent. ECO to monitor
	10. Construction activities should preferably take place during the drier, low rainfall months to reduce the potential of any contaminated runoff from the construction activities. If not possible, measures should be put in place to prevent runoff from the construction activities discharging directly into the aquatic system.	Contractor/ Site Agent. ECO to monitor.
	11. Sediment trapping measures (e.g. silt curtains, cut-off trenches and/or settlement sumps) should be placed down-slope of areas that are cleared, to minimise sediment runoff into freshwater ecosystems. A Method Statement should be drawn up before construction	Contractor/ Site Agent. ECO to monitor.

Maintenance and Management of unnamed tributary of the Mosselbank River (as per the recommendations of the Freshwater Assessment and Freshwater Statement) (continued)	12. Soil removed from the construction area must not be stockpiled within the 30 m conservation buffer and exposed soil must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation of the river. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum, so as for later usage as backfill material or as part of rehabilitation activities, and the stockpiles may not exceed 2 m in height;	Contractor/	Site	Agent.	ECO	to monitor.
	13. Suitable dust management practices must be implemented for the duration of construction and the National Dust Control Regulations, GN 827 of 2013, should be complied with at all times;	Contractor/	Site	Agent.	ECO	to monitor.
	14. In all events all machinery and vehicles used during construction must be maintained and equipped with drip trays to prevent oil, petrol or diesel leaks. If breakdowns occur these vehicles must be towed offsite site to the designated areas/workshops. An emergency spill plan must also be established and implemented for the operation of the proposed workshop. The proposed control measures will ensure that incidental oil spills and leakage are minimised onsite and thus limit any opportunities of water contamination and water quality deterioration;	Contractor/	Site	Agent.	ECO	to monitor.
	15. The proposed parking areas and internal road network must incorporate permeable paving or Permeable Interlocking Concrete Pavement (PICP) as a SuDS for the proposed development;	Contractor/	Site	Agent.	ECO	to monitor.
	16. In the context of the SWMP, compiled by Peter Wium Consulting Engineer (2025), applying the principles of SuDS must be implemented for the proposed development to allow for subsurface infiltration of stormwater, minimising the amount of surface runoff and the associated contribution to flood peaks of the Mosselbank River and its associated UCVB wetland;	Contractor/	Site	Agent.	ECO	to monitor.
	17. Proliferation of Alien and Invasive Plant species (AIPs) as a result of the construction and operation related disturbances must be monitored and controlled;	Contractor/	Site	Agent.	ECO	to monitor.
	18. Moderate rehabilitation of the disturbed areas must be undertaken, including removal of existing rubble and building	Contractor/	Site	Agent.	ECO	to monitor.

	material, control of opportunistic <i>Phragmites australis</i> and re-vegetation exclusively with indigenous vegetation to increase biodiversity of the freshwater ecosystems, inclusive of the 30 m conservation buffer that might have been impacted by the construction of the proposed development and road upgrade, thus contributing to improvement the PES of these systems; 19. Following rehabilitation activities, a suitable Alien Invasive Management Plan (AIMP) must be implemented to ensure that AIPs do not become established within the areas disturbed by construction activities; and 20. General good housekeeping practices must be implemented during all phases of the proposed residential development, to ensure limited direct, indirect and cumulative impacts to the receiving freshwater environment.	Contractor/ Site Agent. ECO to monitor. Contractor/ Site Agent. ECO to monitor.
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PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Development and operation of the stormwater ponds (as per the recommendations of the and Freshwater Statement)	- Stormwater ponds must be vegetated with indigenous obligate and facultative hydrophytes suitable for seasonal saturation. This will assist with energy dissipation and prevent sedimentation and erosion as well as improve habitat provision; - Cobbles must be placed on the concrete aprons to further assist with energy dissipation; - All materials used to construct the stormwater ponds should not generate toxic leachates or lead to significant changes in pH or dissolved salt concentrations; especially considering that outflow of the pond drains into the unnamed tributary of the Mosselbank River; - No plastic lining may be used as part of the stormwater ponds' construction as this has various ecological impacts, with special mention of impacts to faunal assemblages; - Rocks must be placed at any outlet pipes (downgradient of the stormwater ponds), as required and indigenous vegetation established to bind the soil of the bed and to prevent erosion. This will also promote diffuse flow and decrease the velocity of water released downgradient towards the unnamed tributary of the Mosselbank River and the UCVB wetland; - The operation of the stormwater management system must ensure that stormwater is released into the	Contractor/ Site Agent. ECO to monitor.

	unnamed tributary of the Mosselbank River in an attenuated manner to mimic natural flow velocities as far as feasibly possible; and 7. Regular inspection of the stormwater management system and associated landscaped areas must be undertaken (specifically after large storm events) in order to monitor the occurrence of erosion, particularly of the landscaped areas surrounding the stormwater attenuation system. If erosion has occurred, it must immediately be rehabilitated through stabilisation of the embankments and revegetation with indigenous vegetation.	
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PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Use of Pesticides and Insecticides	1. Care must be taken when using pesticides, herbicides and insecticides to prevent pollution of the environment. No pollution of surface or ground water may occur due to any activity on the property. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with at all times. 2. The relevant requirements of the Hazardous Substances Act, Act 15 of 1973 must be complied with at all times. Control over the use, storage, application, and disposal of these substances (and empty containers) is needed. 3. Pesticides/herbicides/insecticides should have low environmental toxicity (the active ingredients should have short half-lives). Use pesticides that possess chemical properties that are less conducive to runoff (such as low water solubility and high adsorption coefficients). 4. Maintain, and clean pesticide application equipment in a designated area, which eliminates the potential for on-or-off site environmental pollution. 5. Mix and load pesticides and herbicides in a designated area where spills may be effectively contained and which eliminates the potential for on-or-off site environmental pollution. 6. Read and follow label instructions when applying chemical products. 7. Dispose of empty containers and waste materials (left over chemicals) at a registered waste disposal facility. 8. Current Material Safety Data Sheets must be available on site for all chemicals (pesticides, herbicides, etc.) used. Such chemicals must be stored in appropriate lockable stores.	Chemicals to be ratified by the ECO. The use of such chemicals is to be conducted by experienced contractors. The ECO (in collaboration with the RE) is to monitor all aspects of herbicide, insecticide and fertilizer use.
Minimise disturbance to fauna	1. Contractors must not harm or disturb any domestic animals or any wildlife, especially molerats, rats, snakes, tortoises, lizards and birds.	ECO/Contractor to monitor. The Contractor must report all incidents of harm to any fauna to the ECO.

Minimise disturbance to fauna (continued)	1. Molerats, snakes, tortoises and other animals must not be harmed and must be physically removed from the construction site without harming them and taken to an appropriate location (e.g. into nearby naturally vegetated areas). Note that only competent and reputable snake handlers may be employed to move snakes, should it be necessary.	ECO/Contractor to monitor on a going basis. CapeNature can be contacted at 021 866 8000 for a list of reputable snake handlers in the area.
Take the necessary measures to reduce the risk of fire on the property	- Staff may only smoke within demarcated areas. Cigarette butts must be disposed of in lidded waste bins, which must be provided. Waste bin lids must be replaced if these are lost. - No fires will be allowed on the site unless authorised by the Safety Officer.	ECO, Safety officer and Contractor to monitor. ECO, Safety Officer and Contractor to monitor.

E.2.2 Water

OBJECTIVE: To ensure the conservation and sustainable use of scarce water resources by instituting measures to minimise water use during the Construction Phases of the project, including awareness programmes to educate workers on the efficient use of potable water.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Institute measures to minimise potable water use during the Construction Phases of the project	- No pollution of surface or ground water may occur due to any activity on the properties. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with at all times. - Contractors must use water sparingly, e.g. use optimum moisture conditions for filling and road construction. All leaks need to be repaired timeously. Should dust become a nuisance to surrounding residents, efficient use of water to wet dusty surfaces should be employed.	ECO/Contractor to monitor throughout the construction period. ECO/Contractor to monitor throughout the construction period.
Institute measures for stormwater to prevent erosion, damage to property and environmental pollution.	- A detailed stormwater design for the proposed development should be undertaken by the consulting engineers. - The attenuation system should be designed to accommodate the 2 year storm event. Screening of stormwater should take place to prevent solid waste entering the municipal stormwater system.	ECO/Contractor to monitor during construction. ECO and RE to monitor adequate storage of stormwater after moderate rain storms and after the wet winter period (Construction Phase). This function will later be taken over by Pinetop Estate during the Operational Phase.

E.2.3 Soil**OBJECTIVE:**

To ensure the conservation of the soil on the sites of the proposed development of the storage Facility, and institute measures to prevent soil erosion and pollution (contamination of soil) from taking place.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Prevent soil erosion	1. Minimise the area to be cleared of vegetation and grasses for the installation of services. 2. The Contractor will protect areas susceptible to erosion by installing the necessary temporary and permanent stormwater drainage works as soon as possible. Additional measures deemed necessary by the ECO or RE must be taken to prevent surface water runoff from resulting in erosion.	ECO to monitor vegetation clearing operations and site preparation and check for any erosion that may take place. Anti-erosion measures to be discussed with and approved by the RE in consultation with the ECO if and when necessary.
Rehabilitate all areas where soil erosion has taken place	1. Institute soil protection and soil rehabilitation measures where erosion has taken place. 2. Eroded areas will need to be backfilled and compacted. 3. Plant indigenous grass sods (or sow indigenous grass seeds on prepared surfaces) should any signs of erosion be noted. Straw or wood chips should be worked into the upper soil horizon to bind the soil and prevent dust and windblown sand where necessary.	To be planned and facilitated by ECO when necessary. Contractor to ensure that the backfilled material is compacted sufficiently so as to not collapse in the future. ECO to monitor and advise accordingly.
Prevent pollution/contamination of soil	1. Prevent cement spills or clear such accidental spills as soon as possible as cement powder has a high alkalinity pH rating that can contaminate and affect both soil and water pH dramatically. All hydrocarbon spills are to be addressed immediately to prevent seeping into the ground. 2. All servicing and refuelling of vehicles must be conducted over a drip tray to prevent accidental spillage of oils and fuels. Similarly any stationary concrete mixers, dumpers, compressors or generators must have drip trays under them at all times, whether they are working or not. 3. All vehicles, equipment, fuel and petroleum services and tanks must be maintained in a good condition that prevents leakages and potential contamination of soil. 4. The fuels, oils and hydrocarbon products kept in tins and drums must be stored in a bunded area (or, temporarily, on drip-trays) to prevent pollution in case of spills or leakages.	ECO to monitor for duration of contract. Contractor to inform ECO of such spills. Special measures are to be implemented for any hydrocarbon fuel spills (Appendix C). ECO to monitor for duration of contract. ECO to monitor for duration of contract. ECO to monitor compliance for duration of contract.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Prevention of dust	1. The bare minimum of vegetation must be removed during the installation of civil services to prevent windblown dust. 2. All disturbed surfaces must be monitored for dust during windy periods. It may be necessary to work straw or wood chips into the disturbed surfaces to prevent dust. 3. Internal road surfaces may cause dust pollution during their construction and should be kept moist until such time that their surfaces are paved.	ECO to advise during initial earthworks. ECO to advise on the use of straw/wood chips should dust become a nuisance. ECO to monitor and advise on the use of water to wet surfaces to prevent dust or to advise on alternative dust suppression measures

E.2.4 Energy Management

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Use electricity sparingly during construction	1. Contractors must be informed of the efficient energy (electricity) use during construction. When not in use lights, angle grinders, motors etc. must be switched off. 2. Energy efficient building designs must be implemented by the architects, to minimise heat losses and gains. 3. Energy demand could be further decreased by inclusion of energy saving outdoor lights, which should be controlled by light sensors where applicable and Advanced T5 technology fluorescent lighting and CFL lighting should be mandatory for all buildings.	ECO and site agent to monitor for the duration of the contract period. Pinetop Estate to ensure that such specifications are incorporated in the plans. Engineers and architects to acknowledge the required actions with regard to energy saving and to incorporate into their designs. Pinetop Estate should only approve energy efficient designs.

E.3 SOCIO-ECONOMIC MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY:

To conserve all aspects of the social environment (including aesthetics) and cultural-historic environment (including archaeological and heritage resources) on and around the proposed site for the proposed development. To adopt a Fisantekraal/ Durbanville first policy when employing construction companies and staff and when purchasing building materials to ensure that the socio-economic benefits accrue to the Fisantekraal area.

E.3.1 Archaeological and Heritage Resources

OBJECTIVE:

To ensure the conservation of the archaeological and heritage resources on the property, by checking for such resources in the excavations undertaken for civil service and in those undertaken for foundations of roads and buildings and siting development away from such resources in the event that they are found.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Conserve all archaeological settings, artefacts and heritage resources	1. If any archaeological or unmarked human remains are uncovered or exposed during earthworks, these must immediately be reported to the Heritage Western Cape (Guy Thomas 021 483 9685). Sampling of deposits may need to be carried out if deemed necessary by the archaeologist. Archaeological remains may not be disturbed further until the necessary research has been undertaken. In the case of human burials, these will have to be removed under a permit issued by the SAHRA. 2. If any graves or unmarked human burials are discovered, they must be treated with respect and the South African Heritage Resources Agency (SAHRA) must be notified immediately and must not be disturbed further until the necessary approval has been obtained from SAHRA. An archaeologist must be contracted to remove the remains at the expense of the Implementing Agent (Pinetop Estate). A permit is required for such action.	ECO and Contractor to monitor excavated materials and inform HWC of any significant finds. ECO to arrange an archaeologist in the event that archaeological finds are uncovered in excavations. HWC to assess and to provide the necessary approvals for destroying archaeological sites if these are located. HWC and South African Heritage Resources (SAHRA) must assess any grave sites. ECO and Developer are to ensure that directives pertaining to heritage resources and their protection are met. The Implementing Agent is to ensure that appropriately qualified, experienced architects are appointed.

E.3.2 Socio-Economic Benefits of the Development

OBJECTIVE:

Undertake a development that is socially, environmentally and economically sustainable. To optimise the social benefits of the development, local builders and contractors should enjoy preferential appointments to install civil services and for construction of buildings.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Job Opportunities	1. Both the temporary job opportunities during the construction phase and more permanent jobs (e.g. office and security personnel) during the operational phase should be allocated to persons from the local	Pinetop Estate should monitor the local employment strategy together with the appointed Contractors. These activities should be explored in conjunction with other developments planned for the area.

	Fisantekraal and Durbanville wherever possible.	
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E.3.3 Aesthetics

OBJECTIVE: To minimise the visual (aesthetic) impact of the development on the surrounding environment.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Minimise the visual (aesthetic) impact of the buildings in the development	1. Various mitigation methods can be employed to reduce visual impacts, such as the use of natural, earthy colours, building orientation, colour of roofs etc. 2. Limit the stockpiling of materials and equipment to clearly defined areas.	Developer/Architect to ensure visual mitigation methods are considered in the design of buildings and that they are implemented.
Ensure outdoor advertising associated with the project is not visually obtrusive	1. All outdoor advertising associated with this project, whether on or off the site, must comply with the South African Manual for Outdoor Advertising Control (SAMOAC).	ECO to monitor compliance by Contractors.

E.3.4 Noise

OBJECTIVE: To prevent unacceptable noise impacts during the Construction Phase of the development.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Minimise noise levels during the construction phase.	1. Construction should be limited to normal working hours, should not take place on Sundays or on public holidays, and no amplified music will be allowed on site. Should construction work be required after hours, residents should be given due notice. 2. Ensure equipment is fitted with requisite silencers and directional settings. 3. A complaints register should be kept on site, so that neighbouring landowners' grievances regarding excessive noise can be addressed.	The Contractor and Developer will need to ensure that noise mitigation measures on site are implemented. ECO to monitor compliance by Contractors for duration of contract.

SECTION F: POST-CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

ENVIRONMENTAL POLICY:

The Construction and Operational Phases of the proposed development of the storage facility must ensure that all negative environmental impacts are mitigated to prevent any temporary or permanent environmental impacts or effects from occurring.

OBJECTIVE:

To control all aspects of the Post Construction Phase of the development by implementing the necessary mitigation and recommendations to prevent any temporary or permanent negative environmental impacts from occurring.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Post-construction site rehabilitation/preparation of soil surfaces	1. All temporary structures to be removed from the site within three weeks after completion of each phase of the project. 2. The Contractor must remove any remaining cement spills within one week after completion of each phase of the project, to appropriate, licensed dumping sites. 3. All remaining building rubble and other forms of waste must be removed from the site, within one week after completing each phase of the project. 4. The Contractor must repair disturbed areas (e.g. deep tracks left by construction vehicles) within one week after completing that phase of the project. 5. The ECO is to undertake environmental audits of the project once installation of services (each phase) has been completed and again after construction of buildings (each phase) has been completed, to ensure that any contractual obligations not complied with are completed.	The ECO will monitor the post-Construction Phases of the project to ensure that degradation of the environment does not take place, surfaces are properly prepared and all remaining litter and building rubble is picked up. ECO to monitor with the RE.

SECTION G: OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

G.1 GENERAL OPERATIONAL MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY:

The recommendations of the EMPs for the Operational Phase of the proposed development of a storage facility must ensure that all negative environmental impacts are mitigated by Pinetop Estate to prevent any temporary or permanent environmental impacts or effects from occurring throughout the Operational Phase.

OBJECTIVE:

To control all aspects of the Operational Phase of the development by implementing the necessary mitigation and recommendations to prevent any temporary or permanent negative environmental impacts from occurring in the future.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Ensure that the Operational Phase meets the required performance criteria	1. Ensure that the workers adhere to the guidelines in respect of littering, recycling, sparing use of energy and water saving. 2. Driving regulations through Fisantekraal/Durbanville must be adhered to at all times.	To be undertaken by Pinetop Estate. To be monitored by Pinetop Estate Management.

G.2 BIOPHYSICAL MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY:

Conserve all aspects of the environment, which includes the following:

- Ensure the conservation and sustainable use of resources (water and electricity) and the re-use of recyclable materials.
- Prevention of soil erosion and dust.
- Prevention of environmental pollution.
- Ongoing maintenance and management of the ecological stream corridor in accordance with the long-term and general maintenance activities as per the MMP (**Appendix A**).

G.2.1 Fauna and Flora

OBJECTIVE:

Primarily to protect and maintain the watercourse by removing alien vegetation on an ongoing basis and to continue with the rehabilitation of the ecological stream corridor.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Protection and Maintenance of the Watercourse	1. Signage should be placed on site listing the legislation that provides protection to watercourses/ aquatic habitats. 2. The buffer surround the stream represents an area which should be suitably vegetated and where no hard structures should be constructed. No soil, rubble or any other material should be moved, disturbed or dumped within the buffer zone.	To be monitored and implemented by Pinetop Estate Management or an appointed sub-contractor.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Protection and Maintenance of the Watercourse (continued)	3. After the construction phase, the proposed buffer area should be established. On-site stormwater management measures (such as the use of swales and permeable surfaces to encourage infiltration) should be put into place as far as possible to reduce the water quality impacts of the stormwater on the downstream aquatic ecosystems. A pre-treatment area should also be included in the stormwater management area to reduce the sediment and remove litter in the stormwater before it is discharged into the stream. These pre-treatment areas should be regularly maintained. 4. Swales should be planted with suitable grasses (not kikuyu grass).^h 5. No discharge of effluents or polluted water shall be allowed into the stream; 6. Proliferation of Alien and Invasive Plant species (AIPs) as a result of the construction and operation related disturbances must be monitored and controlled; 7. Moderate rehabilitation of the disturbed areas must be undertaken, including removal of existing rubble and building material, control of opportunistic <i>Phragmites australis</i> and re-vegetation exclusively with indigenous vegetation to increase biodiversity of the freshwater ecosystems, inclusive of the 30 m conservation buffer that might have been impacted by the construction of the proposed development and road upgrade, thus contributing to improvement the PES of these systems; 8. Following rehabilitation activities, a suitable Alien Invasive Management Plan (AIMP) must be implemented to ensure that AIPs do not become established within the areas disturbed by construction activities; and 9. General good housekeeping practices must be implemented during all phases of the proposed residential development, to ensure limited direct, indirect and cumulative impacts to the receiving freshwater environment.	To be monitored and implemented by Pinetop Estate Management or an appointed sub-contractor.

Landscaping of open spaces	1. No kikuyu grass should be planted. Only buffalo grass or couch grass (fynkweek) should be used for open areas/ lawns. 2. Landscaping to be undertaken in accordance with an approved Landscaping Plan – refer to updated landscaping plan as included in Appendix C3 of the Draft SAR.	To be monitored by the Pinetop Estate Management with guidance from ECO where possible
Use of pesticides, herbicides and insecticides to control alien vegetation in open spaces and / or in indigenous vegetation adjacent to the stream	1. Care must be taken when using pesticides, herbicides and insecticides to prevent pollution of the environment. No pollution of surface or ground water may occur due to any activity on the property. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with at all times. 2. The relevant requirements of the Hazardous Substances Act, Act 15 of 1973 must be complied with at all times. Control over the use, storage, application, and disposal of these substances (and empty containers) is needed. 3. The relevant requirements of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, Act 36 of 1947 must be complied with at all times. 4. Pesticides/herbicides/insecticides should have low environmental	The use of such chemicals should be conducted by experienced contractors or properly trained persons.

^h The following grasses have been recommended by Dr Charlie Boucher for seeding of stream banks and could be used for the swales and rehabilitation of the stream bank: *Cymbopogon marginatus* (motwortelrerpentynggras), *Cynodon dactylon* (fynkweek), *Ehrharta calycina* (polgras), *Eragrostis capensis* (hartjiegras), *Eragrostis curvula* (blousaadgras), *Festuca scabra* (munniksgras), *Heteropogon contortus* (pylgras, spear grass), *Hyparrhenia hirta* (dekgras), *Koeleria capensis* (polgras, strandgras), *Themeda triandra* (rooigras), *Tribolium uniolae* (koringgras)

	toxicity (the active ingredients should have short half-lives). Use pesticides that possess chemical properties that are less conducive to runoff (such as low water solubility and high adsorption coefficients). - Organic slow-release fertilizers should be used wherever possible http://www.organicgreen.co.za/. Alternatively slow release, less soluble and least mobile chemical fertilisers should be used. - Clean fertilizer and pesticide equipment in a designated area, which eliminates the potential for on-or-off site pollution. - Mix and load pesticides and herbicides in a designated area where spills may be effectively contained and which eliminates the potential for on-or-off site environmental pollution. - Read and follow label instructions when applying chemical products. - Dispose of empty containers and waste materials (left over chemicals) at a registered waste disposal facility. - Current Material Safety Data Sheets must be available on site for all chemicals (pesticides, herbicides, fertilizers etc.) used. Such chemicals must be stored in appropriate lockable stores	
Alien plant management	- Alien vegetation must be removed by appropriate means (<i>i.e. according to acceptable alien vegetation control methods such as those provided by the Working for Water Programme</i>). - The three key alien species identified by Toni Belcher on the site are: <i>Acacia saligna</i> (Port Jackson), <i>P clandestinum</i> (Kikuyu grass) and <i>E plantagineum</i> (Paterson's Curse).	Methods for on-site alien plant removal are to be advised by the ECO.
Minimise disturbance to fauna and not allow introduction of exotic species	Snakes, tortoises and other animals must be physically removed from the properties without harming them and relocated an appropriate site (e.g. nearby naturally vegetated areas). Competent snake handlers must be contacted to move snakes, should it be necessary.	All incidents of harm to any fauna must be reported to the authorities (CapeNature and/or police). CapeNature can be contacted at 021 866 8000 for a list of snake handlers in the area.

Development and operation of the stormwater ponds (as per the recommendations of the and Freshwater Statement)	1. Stormwater ponds must be vegetated with indigenous obligate and facultative hydrophytes suitable for seasonal saturation. This will assist with energy dissipation and prevent sedimentation and erosion as well as improve habitat provision; 2. Cobbles must be placed on the concrete aprons to further assist with energy dissipation; 3. All materials used to construct the stormwater ponds should not generate toxic leachates or lead to significant changes in pH or dissolved salt concentrations; especially considering that outflow of the pond drains into the unnamed tributary of the Mosselbank River; 4. No plastic lining may be used as part of the stormwater ponds' construction as this has various ecological impacts, with special mention of impacts to faunal assemblages; 5. Rocks must be placed at any outlet pipes (downgradient of the stormwater ponds), as required and indigenous vegetation established to bind the soil of the bed and to prevent erosion. This will also promote diffuse flow and decrease the velocity of water released downgradient towards the unnamed tributary of the Mosselbank River and the UCVB wetland; 6. The operation of the stormwater management system must ensure that stormwater is released into the unnamed tributary of the Mosselbank River in an attenuated manner to mimic natural flow velocities as far as feasibly possible; and 7. Regular inspection of the stormwater management system and associated landscaped areas must be undertaken (specifically after large storm events) in order to monitor the occurrence of erosion, particularly of the landscaped areas surrounding the stormwater attenuation system. If erosion has occurred, it must immediately be rehabilitated through stabilisation of the embankments and revegetation with indigenous vegetation.	Contractor/ Site Agent. ECO to monitor.
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G.2.3 Water**OBJECTIVE:**

To ensure the conservation and sustainable use of scarce water resources within the proposed development of a storage facility by instituting measures to minimize potable water use during the Operational Phase of the project.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Institute measures for stormwater management to prevent erosion, damage to property and the pollution of watercourses	1. Ensure that the stormwater drainage system remains operational and that erosion does not occur on the property as a result of ineffective stormwater management.	Pinetop Estate Manager to monitor adequate storage of stormwater after moderate rain storm and after the wet winter period.

G.2.4 Waste Management**OBJECTIVE:**

To ensure waste minimization and recycling of all waste at source and ensure that recyclables enter the waste stream by engendering an ethic of waste management amongst staff.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Pinetop Estate/Manager to monitor waste management, minimisation and recycling	1. An integrated waste management approach must be used that is based on waste minimisation and must include reduction, recycling, re-use and disposal where appropriate. 2. Waste should be sorted by separating plastic, paper, tins, and bottles into different containers and ensuring that those items get into the recycling stream. 3. Any solid waste must be disposed of at a licensed waste disposal facility. 4. Storage of waste on site must comply with the Norms and Standards published in terms of the NEM:Waste Act, if applicable.	Manager of the storage facility to arrange for collection and disposal. Manager to monitor.

G.2.5 Soil

OBJECTIVE: To ensure the conservation of the soil on the site of the development and institute measures to prevent soil erosion and pollution (contamination of soil) from taking place.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Prevention and Rehabilitation of soil erosion	1. Ensure that the stormwater drainage system remains operational and that erosion does not occur as a result of ineffective stormwater management.	Manager of the storage Facility to monitor and to address any such problems.
Prevention of dust	1. It may be necessary to work straw, thatch or wood-chips into disturbed surfaces, to keep wet, or to quickly establish vegetative cover to prevent dust.	Manager of the storage facility to monitor and to address any such problems.

G.2.6 Energy Management

OBJECTIVE: To ensure the conservation of our scarce energy resources by implementing an integrated energy management system where energy saving appliances and fittings are used to save energy and where an ethic of energy management is engendered amongst residents of Fisantekraal.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Specify energy saving appliances and fittings	1. Daylighting of buildings should be properly integrated with the electric lighting system for its potential to be realised. Advanced T5 technology fluorescent lighting, CFL lighting and the use of LEDs should be mandatory for all buildings.	Pinetop Estate to ensure that such specifications are put onto building plans. Pinetop Estate to ensure that these measures have been implemented and are maintained. Pinetop Estate to ensure that incandescent lighting is never used.

G.3 SOCIO-ENVIRONMENTAL MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY:

To conserve all aspects of the social environment and cultural-historic environment (including archaeological and heritage resources) on and around the site for the proposed development and to ensure the employment of local labour and services from the Fisantekraal/Durbanville area.

G.3.1 Socio-Economic Benefits of the Development

OBJECTIVE:

To ensure that the development that is socially, environmentally and economically sustainable. To optimise the social benefits of the development local builders, contractors, service providers etc. should enjoy preferential appointments to construct buildings, to provide necessary goods and services etc.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Job Opportunities	1. Pinetop Estate should employ a social engagement strategy during the operational phase; jobs should be allocated to persons from the local communities wherever possible (or contractors who commit to employing local labour). 2. Appropriate training must be given to any appointed staff. 3. The minimum measures of the Occupational and Health and Safety Act must be implemented and appropriate personal protective equipment must be supplied.	Pinetop Estate to ensure compliance with the employment and social engagement strategy.

G.3.2 Aesthetics

OBJECTIVE:

To minimise the visual (aesthetic) impact of the development on the surrounding environment.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Minimise the visual (aesthetic) impact of the buildings in the development	1. Various mitigation methods can be employed to reduce visual impacts, such as the use of natural building materials, earthy colours, building orientation, colour of roofs, landscaping, etc. 2. Open spaces on the sites should be landscaped (where applicable) and should be planted with indigenous water-wise plants and trees to visually appealing open spaces for the local residents. 3. Landscaping to be undertaken in accordance with an approved Landscaping Plan.	Pinetop Estate should ensure that only indigenous and water-wise shrubs and trees are planted, if required.

G.3.3 Security

OBJECTIVE:

To maintain and/or enhance security levels around the Storage Facility, during the Operational Phase of the development.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Minimise security risk during the Operational Phase.	1. Security plans should be put into place for ensuring the security of building/ units during the Operational Phase. 2. During the operational phase, security personnel will be employed to guard the storage facility 24/7	Pinetop Estate are to ensure that appropriate security measures are applied.

SECTION H: ENVIRONMENTAL AUDITING

ENVIRONMENTAL POLICY:

Environmental auditing is to be instituted and maintained as a fundamental management function for revising the management programmes and procedures required for the proposed development of a Storage Facility during the Construction and Operational Phases.

OBJECTIVE:

To maintain scheduled monitoring and supervision over all management activities to ensure optimal professionalism, productivity, and cost-effectiveness in all work spheres, whilst ensuring environmental sustainability. This specifically refers to the following:

- achieving all the set goals and objectives;
- ensuring that the set procedures and management actions will achieve the desired results;
- timeous application of corrective measures when negative impacts arise;
- ensuring that the available resources are applied in the most effective manner;
- revising the management actions according to the results of the monitoring and auditing programmes; and
- monitoring the success of the management programmes for water, waste and energy amongst staff and visitors, and revise such programmes if poor results are noted.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Conduct an environmental audit at the end of each phase of the construction programme.	1. The ECO to undertake an audit after the construction phase of the installation of civil services has been completed. 2. ECO is to undertake audits after each construction phase of buildings has been completed.	To be undertaken by ECO at the end of each phase of the contract in association with the RE/Contractor and Developer.
Corrective measures in accordance with the MBO (Management by Objectives) concept	1. Revise EMP in accordance with the findings of the environmental audits, if changes are necessary. 2. Set strategy for implementing any necessary corrective measures. 3. Set specific objectives for correction or modification of procedures.	To be facilitated by ECO as part of audits, thereafter function of Pinetop Estate
Assess the success of management programmes for water, waste and energy.	1. Pinetop Estate is to assess the success of implementation of the various management programmes.	Pinetop Estate Management to monitor.

SECTION I: CONTINUAL IMPROVEMENT OF EMP

I.1 REQUIREMENTS FOR EFFECTIVE IMPLEMENTATION

I.1.1 The Commitment of Pinetop Estate (Pty) Ltd.

To ensure the successful management of the proposed development of a storage facility, it is imperative that initially Pinetop Estate commits to:

- (a) implementing the environmental management policy that has been set for the project;
- (b) ensuring the environmental management of their development activities by facilitating an audit at the end of each of the construction programmes, and committing themselves to the resultant recommendations; and
- (c) maintaining their commitment and leadership throughout the Construction and future Operational Phase of the project.

I.1.2 Document Control

The EMP is a basic planning framework guiding the construction phases (i.e. pre-construction [planning and design], construction and post-construction Phases) of the project. It is important for the EMP to be revised (improved), if need be, by documenting all actions and management results in a structured format, and especially in accordance with the results of the audits. It will be important for the EMP and its supporting documents to be accessible to all the implementing and management members responsible for implementing its actions.

I.2 REQUIREMENTS FOR CONTINUAL IMPROVEMENT

The EMP should be a dynamic document, which depends on continual revision to maintain its relevance. It is therefore imperative for the EMP to be updated and revised in accordance with information and data that emerges from the monitoring processes (such as ECO checklists), and new management techniques and technology that may become available in the future. The primary requirement for achieving continual improvement is scheduled reviewing (audits at the end of each of the development phases).

I.2.1 Management Review

To maintain continual revision, appropriateness and effectiveness of the EMP, and thereby enhance its performance, the ECO should, on behalf of Pinetop Estate, formally review and evaluate the EMP at defined intervals (e.g. at the end of each development / construction phase). The scope of the review should be comprehensive, though not all elements of the EMP need to be reviewed at once, and the review process may take place over a defined period of time. The reviews should include the following:

- review the results of the monitoring analysis undertaken during the audits;
- review the extent to which the objectives and targets originally set in the EMP have been met;
- review the applicability of the EMP in relation to changing conditions, circumstances and information; and
- obtain and review any concerns amongst relevant I&APs, and relevant authorities that may arise during the Operational Phase in the future.

SECTION J: CONCLUSIONS

The EMP is a fundamental element of the management process that is aimed at ensuring the environmental sustainability of the proposed development of the Storage Facility.

It is imperative for the EMP to be actively implemented and used at all management levels as an integral part of the project. The ECO should ensure that the recommendations of the EMPs are carried out. It is also equally important to revise the EMP in accordance with information that becomes available from the monitoring process and any new technologies that may be developed and used in the future.

Pinetop Estate needs to play a pivotal role in managing the Operational Phase of the development into the long-term future to ensure that the recommendations of this EMP are carried out, therefore fostering sustainable development.

It is also equally important to revise the EMP in accordance with new information that becomes available from the monitoring processes and any new technologies that may be developed and used in the future.

WITHERS ENVIRONMENTAL CONSULTANTS
September 2016

Appendix A:
Maintenance Management Plan

PROPOSED LIGHT INDUSTRIAL DEVELOPMENT AND ASSOCIATED INFRASTRUCTURE ON PORTION 32 AND A PORTION OF PORTION 33 OF FARM 168 DURBANVILLE, WESTERN CAPE PROVINCE



ENVIRONMENTAL MAINTENANCE MANAGEMENT PLAN (MMP)

Prepared for:
Pinetop Estate (Pty) Ltd.

**Prepared by: K Neethling
Reviewed by: AW Withers
WEC Project No. 1350
June 2016**

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LIST OF FIGURES

Figure 1: Google Earth Locality Map* *[attached as Appendix B2 to the BAR]*

Figure 2: Site Development Plan* *[attached as Appendix B3 to the BAR]*

**To avoid duplication, these figures and appendices are not attached to the Draft Maintenance Management Plan available for comment as part of the Basic Assessment Report. These Figures and Appendices are attached to the BAR.*

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Table 1:	Proposed Industrial Development on Portion 32 of Farm 168
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LIST OF ABBREVIATIONS

BA	Basic Assessment
BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DEA&DP	Department of Environmental Affairs and Development Planning
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FEPA	Freshwater Ecosystem Priority Area
MMP	Maintenance Management Plan
NEMA	National Environmental Management Act (Act 107 of 1998)
NWA	National Water Act (Act 36 of 1998)
WEC	Withers Environmental Consultants
WUA	Water Use Authorisation

1. INTRODUCTION

1.1 BACKGROUND INFORMATION AND OBJECTIVES

The applicant proposes a general industrial development and associated infrastructure on Portion 32 and a portion of Portion 33 of Farm 168 in Fisantekraal, near Durbanville. The total extent of the proposed development is ± 20.5 ha consisting of the following:

The total development footprint is **204825m²** which broadly comprises of the following:

- **Land Use: General Industry Subzone I** — mix of **warehousing, workshops, offices, container site**.
- Portion I (Warehousing, distribution, Container site, Industrial Area (Park), Gatehouse, and offices) which has a development footprint of **58053m²**
 - Phase 1 = 2415 m²
 - Industrial Area (Workshop) including 25 parking bays = 2403 m²
 - Gatehouse = 12 m²
 - Phase 2 = 1646 m²
 - Container Staging = 1646 m²
 - Phase 3 = 21614m²
 - Warehousing (Warehousing and distribution) including 230 parking bays = 21654 m²
 - Attenuation Ponds = 1339 m²
 - Pond A = 338 m²
 - Pond B = 457 m²
 - Pond C = 544 m²
 - Portion H (Warehousing and distribution including associated infrastructure and ancillary Office) which has a development footprint of **39448m²**
 - Erf 1995 (Industrial Park) which has a development footprint of **30749m²**
 - Open Space Zone (River and buffer areas which traverse the property) which has a footprint of **59909m²**
 - Portion J – Transport Zone (Public Road) which has a development footprint of **11616m²**
 - Transport Zone (Public Road) which has a development footprint of **3184m²**
 - Portion G (Eskom Electrical substation) which has a development footprint of **346m²**
 - Utility Zone - Services Servitude area which has a development footprint of **1520m²**
- **Subdivision/Servitudes:**

Amendment of the existing approved subdivision plan (Plan No. 1) in respect of Portion 32 and 33 of Farm 168 now unregistered erven 1990 and 1991 which amendments are reflected in attached Plan No. 2 (Appendix O *of the Draft SAR*) and Table 1.

 - The cancellation of unregistered erven 1992, 1993 and 1997 to create a new single consolidated Portion A (General Industry Subzone I);

- The cancellation of unregistered Erf 2006 to be substituted with two new subdivided portions depicted as Portion B (General Industry Subzone I) & C (Utility Zone / Electrical Substation);
- The cancellation of unregistered erven 1998 and 2007 to create a single consolidated Transport Zone II (Public Road) Portion D; and
- The cancellation of approved 8,5m right of way servitudes over unregistered Erf 1993 and Erf 2006 respectively.

Table 2: Development Schedule for Amended Subdivision Erven 1990 and 1991

Proposed Consolidations & Development Schedule					
Annotation	Zoning	Use	New Ptn	Proposed Consolidations & Retained Erven	Area
	General Industry Sub Zone GI 1	Warehousing, Distribution & Ancillary Office	H		39448m ²
	General Industry Sub Zone GI 1	Warehousing, Distribution, Workshop & Container Site	I	Consolidation of unregistered Erf 1992, Portions B and C	58053m ²
	General Industry Sub Zone GI 1	Industrial (Park)		Unregistered Erf 1995 retained	30749m ²
	Open Space Zone 3	Special Open Space (Private)		Unregistered Erf 1996 retained	59909m ²
	Transport Zone 2	Public Road	J	Consolidation of unregistered Erf 1998, Erf 2007 and Portions A, D, E and F	11616m ²
	Transport Zone 2	Public Road		Unregistered Erf 2008 retained	3184m ²
	Utility Zone	Eskom Electrical Substation	G		346m ²
	Utility Zone	Services Servitude Area		Unregistered Erf 2001 retained	1520m ²
Total					204825m²

The proposed development site has been completely transformed by human activities, including earthworks and agriculture (disused commercial poultry houses and piggery). A number of gravel farm roads and buildings are present on the proposed site, including residences and farm outbuildings. The disused poultry houses and a disused piggery have subsequently been removed from the property (all existing buildings on the proposed site will be demolished before the construction of the proposed industrial development). Currently Nguni Cattle graze on the property. The intention is to rezone the property from Agricultural Zone I to General Industry Sub Zone GI 1 (as per the City of Cape Town Integrated Zoning Scheme).

An unnamed tributary of the Mosselbank River traverses the site, and an existing low water bridge crosses the tributary. The natural vegetation on the site is mapped as Cape Flats Sandstone Fynbos (FFd 5), with the surrounding areas mapped as Swartland Shale Renosterveld (FRs 9). Both of these vegetation types are considered to be Critically Endangered (Mucina & Rutherford, 2006). However, the development site has been transformed by agricultural activities.

Freshwater features on the site include two smaller wetland areas mapped by the City of Cape Town wetland mapping, an unnamed tributary of the Mosselbank River³ and drainage trenches carrying run off to the unnamed tributary. Neither the wetland nor the trenches are considered significant for the conservation of habitat or the supply of ecosystem services, due to extensive to complete modification of these features. The unnamed tributary is however considered an important aquatic ecological feature and is the focus of this Maintenance Management Plan (MMP)⁴.

The development footprint will be located outside of the 1:100 year flood line and outside of the 30m buffer from the top of bank as determined by the freshwater specialist⁵, with the exception of a link road across the tributary, in the location of an existing gravel road and low water bridge crossing, as indicated on **Figure 2**. The existing gravel access road and low water bridge will be upgraded as part of the development application.

The development application triggers listed activities in terms of the 2014 EIA Regulations, which requires Environmental Authorisation (EA) from the competent authority prior to the activity commencing.

¹ Note that all areas provided in this report are approximate

² Note that all areas provided in this report are approximate

³ The watercourse which traverses the property is an unnamed tributary of the Mosselbank River, which in turn is a tributary of the upper Diep River System within the Berg-Olifants Water Management Area (Quaternary G21E).

⁴ "maintenance management plan" means a management plan for maintenance purposes defined or adopted by the competent authority

⁵ The 30m buffer translates to an ecological stream corridor width of 75-80m.

This MMP details the short term and long term maintenance and management requirements of the unnamed tributary which traverses the property and is divided into that which is required to immediately rehabilitate the river corridor and minimise the impact of the proposed development on the watercourse and the longer term maintenance activities. The MMP also includes the maintenance of structures within the river corridor (i.e. the upgraded crossing).

This MMP may be approved by the competent authority [Department of Environmental Affairs and Development Planning (DEA&DP)] in terms of the NEMA EIA Regulations and only relates to Activity 19⁶, Listing Notice 1 (GN R. 983).

1.2 RELEVANT LEGISLATION, POLICIES AND GUIDELINES

1.2.1 National Environmental Management Act as amended, 1998 (Act 107 of 1998)

The NEMA EIA Regulations make provision for the competent authority to agree to a MMP, which will absolve the applicant from having to obtain environmental authorisation for the maintenance of structures or systems, where such maintenance activities may trigger Activity 19 of Listing Notice 1. In this regard, maintenance refers specifically to *actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint*.

1.2.2 National Water Act, 1998 (Act 36 of 1998)

In terms of Section 21 of the National Water Act, a water use authorisation is required for the development of the storage unit facility, the upgrading of the access road and for the ongoing maintenance of the watercourse. An application for a water use authorisation will be made to the Regional Office of the DWS. A copy of this MMP will also be provided to the DWS for comment.

1.2.3 City of Cape Town: Stormwater Management By-Law (2005)

The Stormwater Management By-law provides for the regulation of stormwater management in the City of Cape Town and regulates activities which may have a detrimental effect on the development, operation or maintenance of the stormwater system.

The “stormwater system” *means both constructed and natural facilities, including pipes, culverts, watercourses and their associated floodplains, whether over or under public or privately owned land, used or required for the management, collection, conveyance, temporary storage, control, monitoring, treatment, use and disposal of stormwater.*

The “private stormwater system” *means a stormwater system owned, operated or maintained by a person other than the Council*. Since the subject portion of the unnamed tributary is located on private land, and will be maintained by the applicant in terms of this MMP, it is regarded as part of the private stormwater system.

The By-law provides that every owner of property on which private stormwater systems are located, shall not carry out any activity which will or which could reasonably be expected to impair the effective functioning of the stormwater system and shall at own cost keep such stormwater systems function effectively.

Importantly, written consent of the Council is required to fill, excavate, slope, landscape, open up or remove the ground above, within, under or immediately next to any part of the stormwater system. A copy of this MMP will be provided to the Stormwater Department of the City of Cape Town for comment.

⁶ Activity 19, Listing Notice 1: *The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving (b) is for maintenance purposes undertaken in accordance with a **maintenance management plan**.*

1.2.4 City of Cape Town⁷: Management of Urban Stormwater Impact Policy (2009)

The Policy is aimed at minimising the undesirable impacts of stormwater runoff from developed areas by introducing Water Sensitive Urban Design Principles to urban planning and stormwater management in the Cape Town metropolitan area.

This policy recognises that well-managed urban water bodies are valuable resources providing environmental and recreational services which require protection and enhancement. Watercourses and wetlands are integral to the stormwater management system, are an important component of the City's biodiversity network.

A stormwater management plan has been prepared by the consulting engineers to limit stormwater runoff into the tributary. Implementation of this MMP will contribute to the protection and enhancement of the watercourse, which is an integral part of the urban stormwater system.

1.2.5 City of Cape Town⁸: Floodplain and River Corridor Management Policy (2009)

The Policy recognises that watercourses and wetlands form an integral component of urban stormwater management systems, are important for sustaining the aquatic ecology of the city and are an important component of the City's biodiversity network. Two of the key objectives of the policy are to manage development in a manner that:

- Protects the natural flood carrying capacity of watercourses and wetlands; and
- Protects and enhances the intrinsic value and the environmental goods and services provided by watercourses, wetlands and associated riparian areas and floodplains.

In line with the Policy, the 1:100 flood line and an ecological buffer zone has been determined for the unnamed tributary. The Policy also states that the "river corridor", which comprises the watercourse, the floodplain and the ecological buffer, must be managed in an integrated manner which balances the flooding, environmental and economic issues. This MMP, and the EMP to which it is appended, include measures to manage the watercourse in such a way that it meets the above policy objectives.

1.3 EXPERTISE OF THE EAP WHO COMPILED THIS MMP

This MMP was compiled by Ms Karin Neethling, who has an MPhil in Environmental Management and seven years' relevant experience in the environmental consulting field. The MMP was reviewed by Mr Aubrey Withers.

Mr Withers, the sole Director of Withers Environmental Consultants (WEC), started his environmental practice in Stellenbosch more than 16 years ago. He completed his Bachelor of Science Degree in Geology (Honours) at the University of Port Elizabeth in 1978. Mr Withers is a registered professional natural scientist with the South African Council for Natural Scientific Professions. He is also a member of professional bodies such as the Geological Society of South Africa.

Mr Withers has 12 years' experience in lecturing, minerals exploration, groundwater development (specifically in Namibia, Northern Province, North West Province and Western Cape Province), and geotechnical geology, civil engineering and building construction, and 26 years in professional practice as an environmental practitioner, undertaking such tasks as:

- environmental planning for the compilation of Spatial Development Frameworks;
- paving the way for the formation of potential Biosphere Reserves, i.e. bioregional planning;
- EIAs and Basic Assessments for a host of development projects, i.e. resort developments, sewage pipelines, golf course developments, and nature reserves;

⁷ Roads and Stormwater Department: Catchment, Stormwater and River Management Branch

⁸ Roads and Stormwater Department: Catchment, Stormwater and River Management Branch

- compiling environmental management plans/ environmental maintenance management plans for such projects and supervising the implementation of such projects as the Environmental Control Officer (ECO);
- Specialist reports for the safe development of housing and resort projects along the coastline of the Western Cape Province, by taking into account climate change and future sea level rise.

2. SITE DESCRIPTION

2.1 DESCRIPTION OF THE FRESHWATER FEATURES

Freshwater features on the site include two smaller wetland areas mapped by the City of Cape Town wetland mapping, an unnamed tributary of the Mosselbank River and drainage trenches carrying run off to an unnamed tributary. Neither the wetland nor the trenches are considered significant for the conservation of habitat or the supply of ecosystem services, due to extensive to complete modification of these features. The unnamed tributary is however considered an important aquatic ecological feature and is the focus of the MMP.

Drainage trenches running down to the unnamed tributary are dominated by *T. capensis*. The unnamed tributary is a seasonal stream with a sandy substrate. The channel is dominated by *P. australis*, while *C. dactylon*, *C. textillus* and *B. maritimus* are abundant. The gradient of the tributary is flat and the channel is relatively wide (5 – 10 meters). The most significant modifications to the channel include invasion by *A. saligna* and *P. clandestinum*. The former grows densely along the channel just upstream of the site, reducing the flow into the site. The site is not located within a Critical Biodiversity Area (CBA) or National Freshwater Ecosystem Priority Area (FEPA).

The surrounding land use has encroached in places up to the top of the bank of the river. This includes the recent disturbance of the area when the buildings on the river's southern bank were removed. The rubble and disturbed soil is evident up to the edge of the watercourse. This increases sediment loads of the stream and decreases water quality of run-off. It also facilitate further invasion of the site by *A. saligna* and *P. clandestinum*. The tributary is crossed by a low water bridge on the site.

The portion of the unnamed tributary which is the subject of this MMP is located on Portion 32 of Farm 168, Fisantekraal within the City of Cape Town Metropolitan area. The property is located on the outskirts of Durbanville. The terrain is flat and the predominant land uses includes agricultural fields, small settlements, and open space. The unnamed tributary of the Mosselbank River which transects the property flows from west to east.

The geomorphological and physical features of the unnamed tributary are summarised in **Table 3** below (Source: BlueScience 2015).

Table 3: Geomorphological and Physical Features of the Unnamed Tributary

Geomorphological Zone	Lower foothill/ Lowland stream
Lateral mobility	Moderately confined to unconfined
Channel Form	Simple single channel – historically was braided channel
Channel Pattern	Single channel, moderate sinuosity (historically consisted of a wide multi-channel)
Channel Type	Alluvial with dominant bed material being sand
Channel Modification	Large scale modification as a result of surrounding land use
Hydrological Type	Seasonal
Ecoregion	Southern Coastal Belt
DWA catchment	G21E
Rainfall Region	Winter

3. OBJECTIVES OF MAINTENANCE ACTIVITIES

This Maintenance Management Plan (MMP)⁹ details the short term and long term maintenance and management requirements of the unnamed tributary which traverses the property and is divided into that which is required to immediately rehabilitate the river corridor and minimise the impact of the proposed development on the watercourse and the longer term maintenance activities. The MMP also includes the maintenance of structures within the river corridor (i.e. the upgraded crossing).

The objective of this maintenance management plan is to absolve the applicant from having to obtain environmental authorisation for these short-term, long-term and general maintenance activities, related to the unnamed tributary and crossing on Portion 32 of Farm 168, which may trigger Activity 19 of Listing Notice 1.

The appointed freshwater specialist has assessed the impacts of the development proposal on the unnamed tributary and has also made a series of recommendations for the short and long term maintenance and rehabilitation of the tributary.

4. DESCRIPTION OF MAINTENANCE ACTIVITIES

This MMP describes the future maintenance that is required to immediately rehabilitate the river corridor and to undertake long term and general maintenance of the river corridor¹⁰ and upgraded crossing. The proposed maintenance tasks are described in the Tables below. It is not possible to determine at this stage how much material will need to be removed or moved from the stream for maintenance activities. The removed material will not be stored on site and will be removed from site and disposed to landfill.

The above maintenance activities will result in bed and bank modifications and the removal of silt to prevent obstruction of the flow of water. The maintenance and management tasks recommended by the freshwater specialist are contained in **Table 2** below.

The following must be noted:

- All maintenance and management activities must be undertaken by a suitably qualified contractor under the supervision of an ECO or Freshwater Ecologist;
- Maintenance and management activities must minimize disturbance to fauna. For example, in the event of snakes on the site, a competent snake handler must be contacted to move snakes away from the work area;
- A qualified first aid person should be on site during maintenance work; and
- Personal Protective Equipment (PPE) and appropriate training must be provided to ensure the safety of workers.

4.1 SHORT TERM MAINTENANCE AND MANAGEMENT ACTIVITIES

Short term maintenance and management activities of the unnamed tributary of the Mosselbank River that are associated with the proposed project consist of the following:

- Rehabilitation of the riparian zone and buffer area within the site;
- Establishment of an ecological stream corridor through the development that is approximately 75 to 80m wide which allows for the stream with a 30m buffer on either side; and
- Upgrade to the existing road crossing through the stream.

The maintenance tasks and recommended methodology for the above is indicated in **Table 4** and **Table 5** below:

⁹ "maintenance management plan" means a management plan for maintenance purposes defined or adopted by the competent authority

¹⁰ The river corridor is a 75-80m wide ecological stream corridor identified by the freshwater specialist that needs to be rehabilitated and thereafter maintained and managed in perpetuity.

Table 4: Short Term Maintenance Tasks and Methodology			
Proposed Task	Methodology	Timing	Possible Impact(s) mitigated by the MMP
Establishment of an ecological stream corridor	An ecological stream corridor through the development that is approximately 75 to 80m wide which allows for the stream with a 30m buffer on either side should be established within the site in which no hard structures should be constructed.	The corridor must be established/ delineated and cordoned off as a no-go area prior to construction commencing on the site.	- Loss of aquatic habitat and associated biota - Flow modification - Water Quality Impairment
Rehabilitation of the riparian zone and proposed buffer areas	Any rubble from demolished buildings on the property should not be dumped in the riparian/ buffer zone and the existing rubble should be removed from this area.	Existing rubble within the riparian zone must be removed within one year of construction commencing	- Loss of aquatic habitat and associated biota - Flow modification - Water Quality Impairment
	The disturbed riparian zone/buffer area should be covered with top soil and shaped to resemble ground levels of the surrounding stream banks and then revegetated with appropriate indigenous vegetation as listed in Appendix D of the freshwater assessment report.	Within one year of construction commencing	- Loss of aquatic habitat and associated biota - Facilitated Invasion of riparian habitat - Flow modification - Water Quality Impairment
	Alien vegetation which recruits in the disturbed area, and in particular <i>Acacia saligna</i> , <i>Echium plantagineum</i> and <i>Pennisetum clandestinum</i> , should be removed/weeded according to acceptable alien vegetation control methods such as those provided by the Working for Water Programme.	Ongoing	- Loss of aquatic habitat and associated biota - Facilitated Invasion of riparian habitat - Flow modification - Water Quality Impairment
	Larger machinery, such as diggers or bulldozers, should not be operated within the buffer zone to remove alien vegetation.	Ongoing	- Loss of aquatic habitat and associated biota - Flow modification - Water Quality Impairment
Upgrade to the existing road crossing through the unnamed tributary	The existing low-level crossing should preferably be utilised and upgraded but should not be significantly changed in order to minimise disturbance of the water courses bed and banks.	The low level crossing will only be upgraded (if required) as part of the last phase of the development on the southern portion of the property.	- Loss of aquatic habitat and associated biota - Flow modification - Water Quality Impairment
	The upgraded crossing should not allow less flow through the structure than the current one.		- Flow modification - Water Quality Impairment
	No additional crossings should be constructed.	N/A	- Loss of aquatic habitat and associated biota - Flow modification - Water Quality Impairment

4.2 LONG TERM MAINTENANCE AND MANAGEMENT ACTIVITIES

Longer term maintenance and management activities associated with the proposed project includes the regular monitoring and maintenance of unnamed tributary of the Mosselbank River within the property to ensure that:

- The river channel does not become blocked with sediment, debris or nuisance vegetation growth;
- No erosion of the upgraded river channel occurs;
- The vegetation within the river channel and riparian zone is properly established and remains clear of invasive alien plants; and
- Weeds, alien species and undesirable species such as Typha do not grow within wetland area.

The maintenance tasks and recommended methodology are indicated in **Table 5** below:

Table 5: Long Term Maintenance Tasks and Methodology

Proposed Task	Methodology	Timing	Possible Impact(s) mitigated by the MMP
The river channel does not become blocked with sediment, debris or nuisance vegetation growth	The disturbance of aquatic habitats associated with the maintenance works should be limited (both temporal and spatial extents) as far as possible. Care should be taken to minimize the sedimentation that would be caused downstream of the works. Work should preferably be undertaken by hand with no machinery driven into aquatic habitats Activities associated with the maintenance work should be undertaken during the low flow period before the onset of the winter high flows. Soil, debris and nuisance plant growth removed from the river channel and associated areas should not be dumped within the immediate areas surrounding the aquatic habitats or any indigenous vegetation removed from the site. Removed soil could be used to fill eroded areas.	• Ongoing for the lifetime of the project, once annually. • Maintenance work should be undertaken during the low flow period i.e. before the winter rains.	• Loss of aquatic habitat and associated biota • Flow modification • Water Quality Impairment
No erosion of the upgraded river channel occurs	Activities associated with the maintenance work should be undertaken during the low flow period before the onset of the winter high flows.	• Ongoing for the lifetime of the project, as and when required. • Maintenance work should be undertaken during the low flow (summer) period	• Loss of aquatic habitat and associated biota • Flow modification • Water Quality Impairment
The vegetation within the river channel and riparian zone is properly established and remains clear of invasive alien plants; and	Alien vegetation which recruits in the disturbed area, and in particular <i>Acacia saligna</i> , <i>Echium plantagineum</i> and <i>Pennisetum clandestinum</i> , should be removed/weeded according to acceptable alien vegetation control methods such as those provided by the Working for Water Programme	• Ongoing for the lifetime of the project, once annually. • Maintenance work should be undertaken during the low flow (summer) period	• Loss of aquatic habitat and associated biota • Facilitated Invasion of riparian habitat • Flow modification
Weeds, alien species and undesirable species such as <i>Typha</i> do not grow within wetland area.	Alien vegetation which recruits in the disturbed area, and in particular <i>Acacia saligna</i> , <i>Echium plantagineum</i> and <i>Pennisetum clandestinum</i> , should be removed/weeded according to acceptable alien vegetation control methods such as those provided by the Working for Water Programme	• Ongoing for the lifetime of the project, once annually. • Maintenance work should be undertaken during the low flow (summer) period	• Loss of aquatic habitat and associated biota • Facilitated Invasion of riparian habitat • Flow modification

4.3 GENERAL MAINTENANCE

The maintenance methodology of items not covered in **Section 4.1 (Table 4)** and **Section 4.2 (Table 5)** above are indicated in **Table 6** below. This includes maintenance activities related to the upgraded access road and crossing, culverts and the removal of litter etc. As far as possible existing roads and track must be used to access the tributary. Any tracks created as a result of maintenance activities within the buffer area must be rehabilitated afterwards.

Table 6: General Maintenance Tasks and Methodology			
Proposed Task	Methodology	Timing	Possible Impact(s) mitigated by the MMP
Removal of obstructions from the river bed or culverts	Dredge silt manually by means of spades, wheelbarrows and hand tools and remove to a suitable disposal facility	• March annually and after heavy rains (>35mm)	• Flow modification • Water Quality Impairment
	Clear culverts and outlets by hand		
Clearing of dumped litter, green waste and debris	Manually remove debris (with hand tools where necessary) and remove to a suitable disposal facility	• Monitored on a weekly basis, and undertaken as required	• Flow modification • Water Quality Impairment
Repair of damaged culverts or stormwater pipes	Excavate material by hand and remove any damaged elements and structures to a suitable disposal facility	• Monitored on a weekly basis, and undertaken as required	• Flow modification • Water Quality Impairment
	Place new rip rap/ gabion structure where necessary	• Monitored on a weekly basis, and undertaken as required	• Flow modification • Water Quality Impairment
	Replace damaged structures (rip rap or gabion mesh)	• Monitored on a weekly basis, and undertaken as required	• Flow modification • Water Quality Impairment
Repair of concrete support structures where stormwater pipelines enter the river	Remove damaged elements and rubble to suitable disposal facility and replace damaged elements.	• Monitored on a weekly basis, and undertaken as required	• Flow modification • Water Quality Impairment

5. ROLES AND RESPONSIBILITIES

Refer to **Table 7** below for contact information of relevant parties for future maintenance.

Table 7: Contact information for the relevant parties for future maintenance works.

Name	Capacity	Contact Information
Pinetop Estate (Pty) Ltd.	Applicant/ Proponent	Mr Michael Stewart Cell: 083 391 5399 Email: mikestew@iafrica.com
DEA&DP	Competent Authority	Ms Rondine Isaacs Tel: 021 483 4098/ 3185 Email: rondine.isaacs@westerncape.gov.za
DWS	Competent Authority	Mr Warren Dreyer Tel: 021 941 6185 Cell: 082 600 8684 Email: dreyerw@dws.gov.za
City of Cape Town	Local Authority	Ms Pat Titmuss Tel: 021 444 0597 Email: pat.titmuss@capetown.gov.za
Cape Nature	Commenting Authority	Ms Alana Duffell-Canham Tel: 021 886 8029 Cell: 082 727 2691 Email: aduffell-canham@capenature.co.za
ECO	On-site ECO	<i>To be appointed by the applicant prior to commencement of the proposed development</i>

6. ENVIRONMENTAL EDUCATION / ENVIRONMENTAL AWARENESS PLAN

Persons undertaking the maintenance work must be informed of any environmental risk which may result from their work, and how such risks must be dealt with in order to avoid pollution or the degradation of the environment. In addition, only suitably trained individuals should be permitted to undertake work within the watercourse under the supervision of an ECO or Freshwater Specialist (as required based on the nature of the work being undertaken).

Section D.6. of the EMP (which must be read together with this MMP) describes the environmental training that is required to promote environmental awareness amongst staff.

7. ENVIRONMENTAL MONITORING

The monitoring programme must detect changes that will inform intervention or remedial measures for good environmental performance. The observations, management and reporting must be documented and made available to the DEA&DP for inspection.

During the “short-term maintenance” phase, the ECO will be required to monitor implementation of this MMP on a bi-monthly basis, until the short-term monitoring activities have been completed (to the satisfaction of the ECO). Thereafter, twice annual monitoring (before and after winter rains) of the long-term and general activities as per **Table 5** and **Table 6**.

8. CONCLUSION

Future maintenance and management of the river corridor is anticipated to improve the ecological integrity of the portion of the unnamed drainage channel under consideration. Any maintenance work required on the upgraded bridge structure or culverts is not expected to cause any significant impacts on the watercourse and will improve the flow of water in the tributary.

Should future maintenance activities of the river corridor or crossing require environmental authorisation (EA), maintenance will become an unnecessarily lengthy and costly process. As such, the NEMA EIA Regulations makes provision for the competent authority to agree to

a MMP, which allows for the undertaking of maintenance activities (i.e. actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint) in highly dynamic environments (such as rivers), without having to obtain environmental authorisation each time maintenance activities trigger Activity 19 of Listing Notice 1.

It has also been shown that the approval of and subsequent implementation of this MMP will be in line with the relevant legislation and policies outlined above.

In conclusion we request that:

- the DEA&DP consider the information contained within this MMP; and
- the DEA&DP authorise this MMP for future maintenance of the river corridor and upgraded access road across the unnamed tributary thereby absolving the applicant from obtaining any future EAs that may be necessary in terms of Activity 19 of Listing Notice 1 (GN R. 983) when wanting to undertake future maintenance works to the river corridor or low water bridge, as per this MMP.

June 2016

WITHERS ENVIRONMENTAL CONSULTANTS (PTY) LTD.

Appendix B:
Construction Methodology/ Method Statements

DATE: 20 June 2016

YOUR REF:

OUR REF: 1313 / A5

Development of Farm 168/32, Fisantekraal, Durbanville

Upgrading of the low-water bridge – Methodology and Method Statement

Farm 168/32 is traversed by a tributary of the Mosselbank River, dividing the property in two developable portions. The tributary is currently crossed by way of a narrow, low-water bridge.

The northern development portion of Farm 168/32 gains vehicular access from the existing road network to the north. The southern portion currently has no vehicular access except from the northern portion across the low-water bridge. If the southern portion is developed, upgrading of the low-water bridge will be required.

The floodplain habitat on the property identified by the freshwater specialist requires careful consideration and protection with the upgrading of the low-water bridge. It is proposed that wide spanning culverts be used instead of pipes to mitigate the impact. The construction of the proposed culvert bridge will consist of the installation of pre-manufactured, rectangular, concrete culvert units on pre-manufactured, concrete bases at the invert of the stream, and the construction of a roadway over the culverts.

Construction of the culvert bridge will require the following specific activities:

- a) the area of the culvert bridge, as well as additional width of 5m on each side, is demarcated as construction area,
- b) riverbed is cleared from all vegetation,
- c) the stream is separated into two sections; one into which all water is diverted and the other which becomes the construction section,
- d) the base of the river (construction section) is lowered to firm material and a concrete blinding layer is cast,
- e) the reinforced concrete culvert base is cast onto this working layer. Note that the upstream and downstream ends of the base has downstand beams cast deeper into the river bed and that these footings are protected by gabion mattresses against scouring,
- f) the precast concrete culverts are placed on the base and tied together,
- g) steps (b) to (e) are repeated for the other section,
- h) the wing-walls on the left and right banks are constructed,
- i) selected fill material is placed to bring the road base up to level,
- j) the road structure is placed and the road itself constructed.

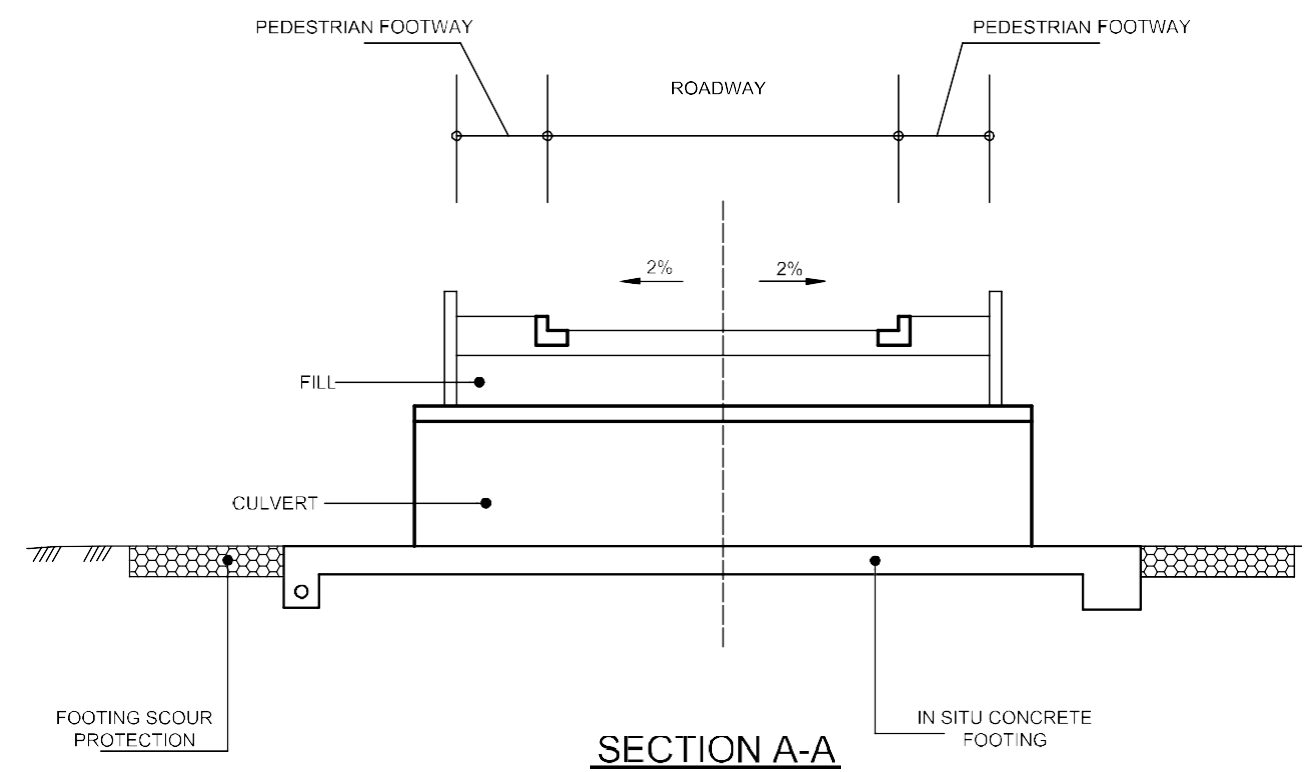
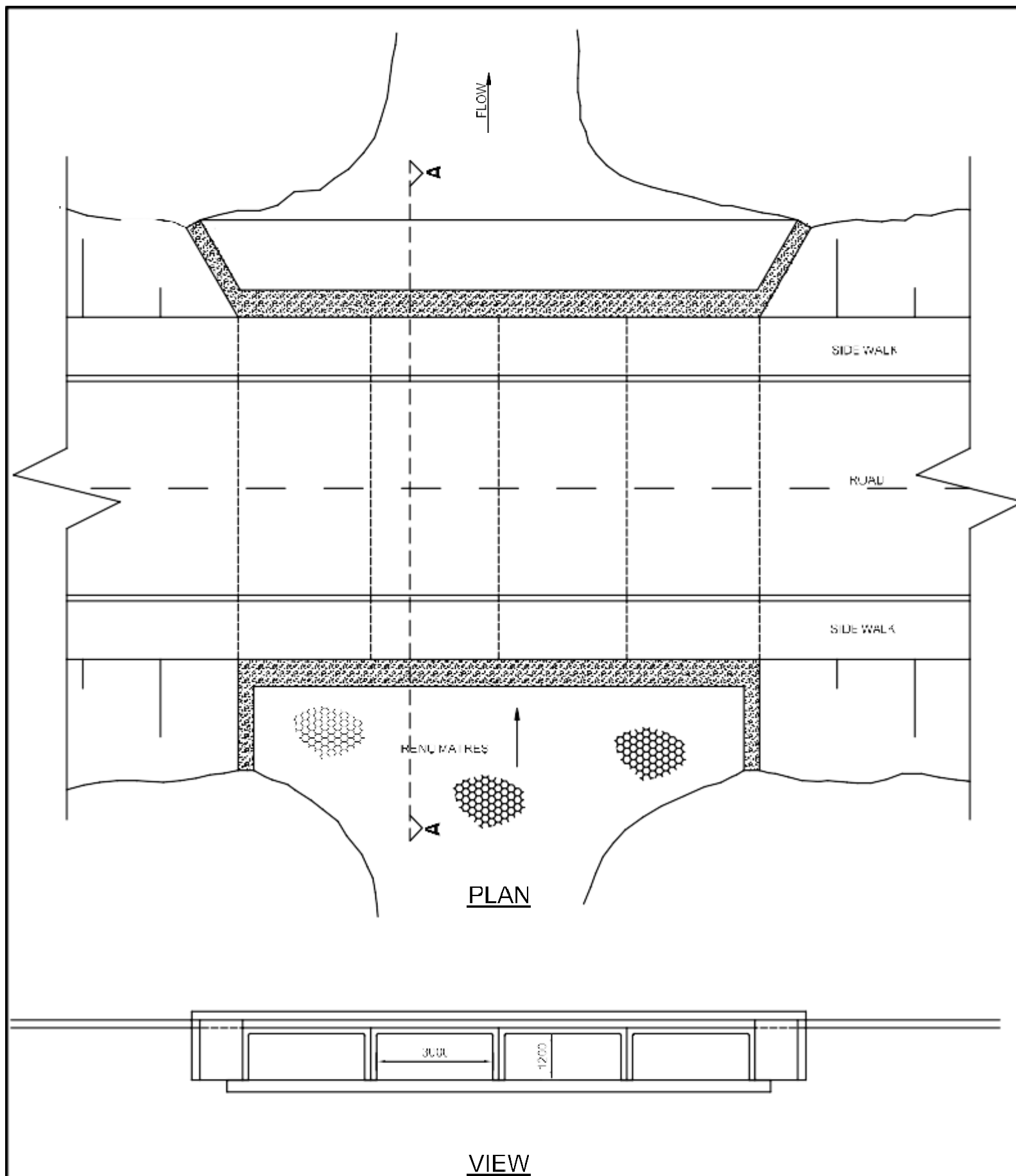
Erosion will be controlled through the placement of gabion mattresses in strategic areas, and in general through the establishment of vegetation.

The concept of the culvert bridge is indicated on the attached drawing no. 1313/06.

Yours faithfully,
BART SENEKAL INC.



L J Louw Pr Eng



DATE: 9 June 2016

YOUR REF:

OUR REF: 1313 / A4

Development of Farm 168/32, Fisantekraal, Durbanville

Construction of infiltration swales – Methodology and Method Statement

Farm 168/32 is traversed by a tributary of the Mosselbank River. Stormwater run-off from a development on the property will drain into this tributary. In line with the SUDS (Sustainable Urban Drainage Systems) policy of the City of Cape Town, it is proposed that the quality of the stormwater run-off be enhanced through the implementation of infiltration swales. Simultaneously the infiltration swales will lead to a reduction in the storm run-off peak and replenish of ground water.

Construction of the infiltration swales will require the following specific activities:

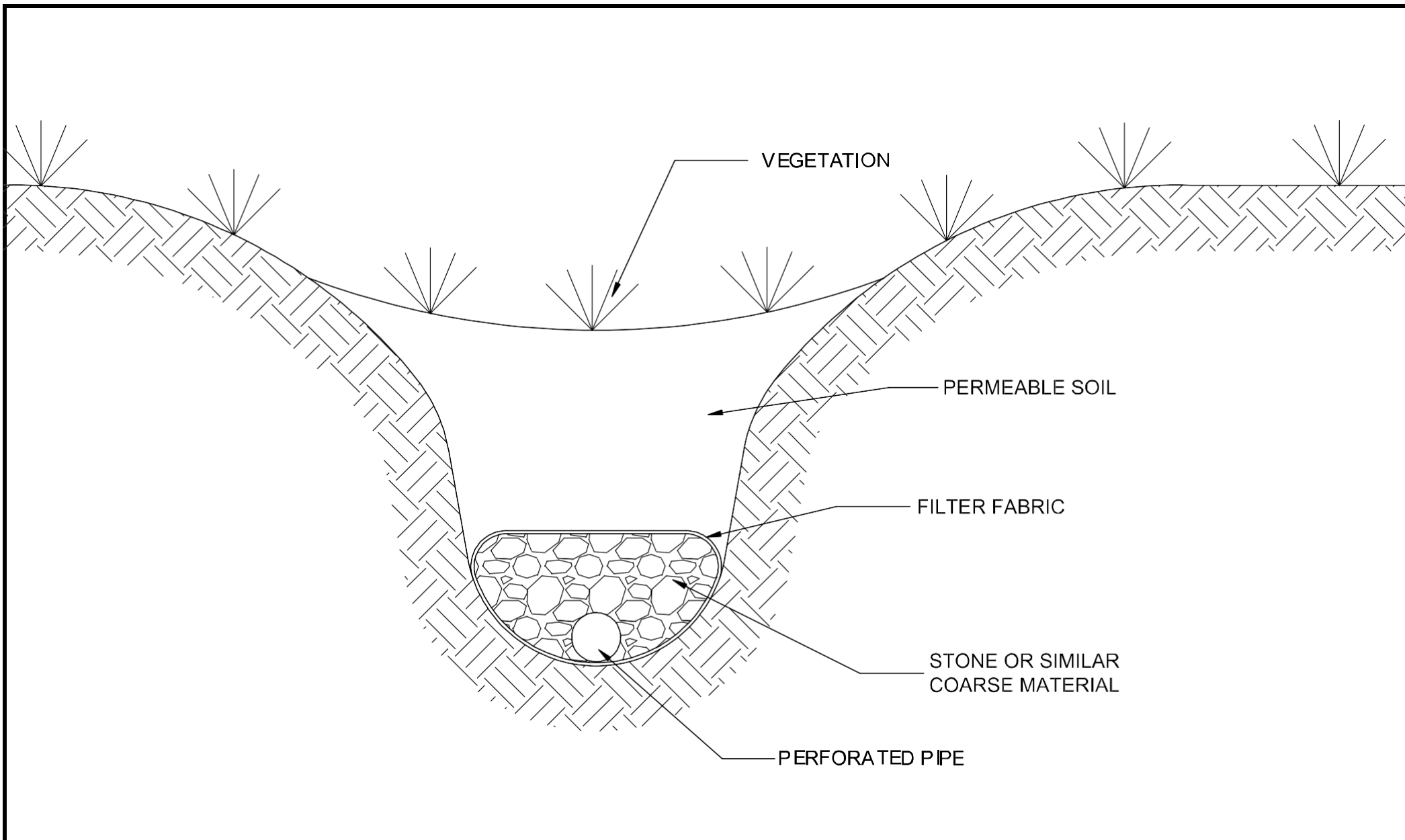
- a) the route for the swale is cleared from vegetation,
- b) the swale is excavated as for a pipe trench,
- c) the drainage system is installed,
- d) the trench is backfilled with free draining sand to a level lower than the surrounding final levels and the sides shaped and trimmed,
- e) excess and unsuitable material is removed.

The concept of the infiltration swale is indicated on the attached drawing no. 1313/05.

Yours faithfully,
BART SENEKAL INC.



L J Louw Pr Eng



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STORAGE DEVELOPEMENT ON FARM 168/32, FISANTEKRAAL, DURBANVILLE

TYPICAL INFILTRATION SWALE

Scale

N.T.S.

Paper Size

A4

Drawing No.

1313/05

Appendix C:
Generic Construction Guidelines

APPENDIX C

DEVELOPMENT OF STORAGE UNITS ON FARM 168, FISANTEKRAAL

CONSTRUCTION GUIDELINES

1. INTRODUCTION

Construction is potentially one of the most destructive phases of the development process that can harm the environment permanently if it is not appropriately planned and the necessary mitigation correctly applied and managed.

Construction implies certain inevitable levels of change to the affected environment or 'place'. A certain degree of change to the environment, within acceptable environmental norms, nevertheless has to be accepted. It is, however, important for such inevitable change to be limited within confined boundaries, so as to protect ecological, social, and cultural characteristics (i.e. the 'sense of place') of the affected environment, by pursuing the best practicable environmental option(s) or practices.

A primary environmental objective is, therefore, to limit the unavoidable disturbance or fragmentation of the environment to the *'limits of acceptable change'*.

The EMP, together with these Construction Guidelines, is to form part of the construction contractual documentation, i.e. the appointed contractors must be fully aware of the environmental management programmes that need to be carried out as part of the construction programmes.

The construction programme is to be implemented by the appointed contractors, on behalf of the Developer, Pinetop Estates (Pty) Ltd., in accordance with the EMPs and these Construction Guidelines.

Compliance with the Construction Guidelines will be monitored by the ECO (Environmental Control Officer), to be appointed, who will also monitor compliance of the conditions of contract and conditions of approval (Environmental Authorisation).

This Construction Guideline document forms part of the Contractor's contractual documentation entered into between the Developer and the Contractor and must be signed by the appointed Contractor as acknowledgement of its content.

2. PRE-CONSTRUCTION PHASE

This phase is to be based on the following principles and guidelines:

- A construction contract must be established between the Developer and the appointed Contractor(s). The contract should include a penalty clause for both environmental and construction transgressions.
- The construction site office, stores, temporary storage of diesel and concrete batching plant is to be located on an appropriate, non-environmentally sensitive site and must be accessible to large trucks and be large enough for the secure storage of equipment, pipes and fittings, and mechanical machinery and the delivery of raw materials.

- Construction personnel should not be housed on the site and will need to be transported to work on a daily basis. Only security personnel may live on site to maintain a security presence, should this be necessary.
- The Contractor should provide the necessary training of staff to fill certain construction jobs on site. The Contractor will also be obliged to apply a Fisantekraal/ Durbanville first policy when employing staff.
- The ECO must inform all contractors and their personnel in respect of the environmental code of conduct prior to the commencement of any construction work.
- The Contractor must demarcate the boundaries of the construction sites with danger tape or fencing. Construction workers must remain in close proximity to the construction site.
- If required only one refuelling area should be provided at the stores/site office. A bunded area must be provided beneath the storage tank. The bund must be watertight and must be able to contain 110% of the volume of all fuels and chemicals to be housed in it for the duration of the construction period. A concrete apron must be cast on the refuelling area to contain diesel spills and drips. The concrete floor of the bunded area can be lined with a layer of soil approximately 150mm thick to absorb any spills and drips. This soil layer is to be replenished from time to time according to the degree of contamination and the contaminated soil removed to an applicable waste disposal facility that accepts such toxic waste. If a mobile fuel bowser is to be used it must be checked for leaks and efficient operation and must have a drip tray under it when parked. All oils diesel and release oils used in the construction process must be kept within the bunded area. Access to the bunded area must be controlled at all times and must be locked at all times.
- The parking and service area for construction vehicles should be well-compacted earth or concrete to prevent oil and diesel spills contaminating the soils of the site. Should oil or diesel spills occur, they should be treated with a suitable hydrocarbon absorption or remediation product. Absorbent spill mop-up products need to be on hand - Products to be investigated should include sunsorb absorbents (tel. 021 674 7277 www.sunsorb.com) and the hydrocarbon encapsulator "Oilcap" (www.gh2o.co.za).
- A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be provided if servicing of vehicles takes place at stores/site office. Fuels and oils must be safely located out of harms way from the elements (preferably within the bunded area) and safety and fire prevention must be strictly adhered to. The necessary fire hydrants should be on site.
- Alien vegetation should be cleared according to the directives contained in the EMP and in the Generic Recommendations for Clearing of Alien Vegetation (**Appendix B** to the EMP).
- Felled alien plant material must be removed from the property by appropriate means to reduce fire risk.
- Any removed topsoil is to be temporarily stockpiled in suitable designated areas for later use in the rehabilitation of the sites, if needed. It may be necessary for the Contractor to stabilise the exposed sandy areas to prevent erosion and dust by spreading straw or chipped vegetation (removed from the site) over the surface or by covering the stockpile with shade cloth. All soil stockpiles shall not exceed 2m in height. The access roads may also require wetting to suppress dust.

- The Contractor must provide temporary chemical toilet facilities at the stores/site office area. A minimum of **one toilet shall be provided per 15 persons at each working area** or as stipulated by the local authority. The toilets must be kept in a clean and sanitary condition, and must be regularly serviced (at least once per week). Toilet paper and potable water (for washing hands) is to be provided by the Contractor.

3. CONSTRUCTION PHASE

This phase is to be undertaken in accordance with the following principles and guidelines:

- The construction area must be clearly demarcated and no construction activity will be allowed outside of this area. All linear alignments of pipelines, cables and roads must be appropriately demarcated.
- Construction and delivery vehicles must not be allowed to leave the demarcated areas and should only use the existing access road/s in and out of the construction area.
- Any cultural-historic artefacts unearthed during excavations must be reported to the ECO as soon as possible and all earthworks should be curtailed in those areas until such time as the ECO and/or a consulting archaeologist has surveyed the site(s) and made his/her recommendations. Heritage Western Cape must immediately be informed if the consulting archaeologist deems the finds to be significant.
- All vehicles, equipment, fuel and petroleum services and tanks must be maintained in a good condition that prevents leakage and possible contamination of soil or ground water supplies.
- All emergency servicing of vehicles must be conducted over a drip tray present to prevent accidental spillage of oils and fuels. Used oil should be recycled or disposed of at a hazardous waste disposal facility.
- All fuel/ oil spills must be reported to the ECO.
- Construction material must be stored in areas designated by the Site Agent and in a neat and orderly manner.
- The Contractor must store any building rubble in a suitable area designated by the ECO and should ideally be removed from site on a weekly basis (if not to be used as fill). The crushing of building rubble must be undertaken at a suitable site. Should dust become a problem, spraying of a water mist may be required. Stormwater controls may be required for diverting stormwater away from sensitive areas where erosion can take place.
- All other solid waste must be kept in appropriate containers and must be removed from the site by the Contractor on a weekly basis to a licensed waste disposal facility. The **burning of solid waste and paper will not be allowed on site**. Recyclable waste should be recycled if at all possible (metal, paper, cardboard, bottles, tins and plastic).
- Concrete mixing and the subsequent cement residues must be restricted to a designated area on the site. Such residues are to be removed from the site within one week of completing each phase of the construction period.
- **Used cement bags are to be stored in a wind and rainproof container for disposal.** Used bags may not lie around on site nor may they be burnt on site.
- Excess or spilled concrete should be confined within the works area and then removed to a waste site.

- Cement powder has a high alkalinity pH rating that can contaminate and affect both soil and water pH dramatically. Cement spills must therefore be prevented or cleared as soon after the spill as possible.
- All excavations (especially within deep unconsolidated sand) deeper than 1.5m must be shored up to prevent collapse of the sides and possible injury to workers or even loss of life.
- All open excavations must be protected with danger tape / danger fencing.
- The seeding or planting of indigenous grass or fynbos species may be considered over exposed soil surfaces to act as a quick binder of the soil in order to speed up the rehabilitation process of disturbed areas.
- Disturbed areas around the building sites, where dust can arise, may need to be kept moist by spraying with water from a water bowser or other suitable means, or alternatively straw can be worked into the surface to bind the soil and prevent windblown dust.
- The Contractor will be responsible for security on the site of works and will ensure that his staff do not trespass onto other properties.
- The Contractor must provide dedicated eating areas for staff. Waste bins with lids must be provided at such areas. Such eating areas are to be maintained in a neat condition.
- Open fires (if allowed by the Safety Officer) must be contained in a dedicated area and within a suitable container. Any fires must be supervised at all times. Treated timber and waste from the construction site must not be burnt on site.
- The ECO/RE must monitor the contractors' compliance with the construction and progress in terms of the above environmental guidelines on a regular basis. The ECO will issue an ECO Checklist within 5 days after each site visit to provide a record of instructions given to the Contractor/Site Agent for environmental work that needs to be done or where problems have been noted.

4. POST-CONSTRUCTION PHASE

This phase is to be undertaken in accordance with the following principles and guidelines:

- All temporary structures must be removed from the site within three weeks after completion of a particular phase of the project.
- The Contractor must remove all oil and cement spills as soon as possible. Alternatively spills may be picked up and stored in appropriate containers/waste skips prior to removal.
- All building rubble and other forms of waste must be removed from the site, within one week after completing a particular phase.
- The Contractor must repair disturbed areas (e.g. ripping of deep tracks left by construction vehicles) within one week after completing each phase of the project.
- The rehabilitation/landscaping of disturbed areas can commence as soon as disturbed areas become available and once climatic conditions allow for it.
- Topsoil and and/or wood chips/straw are to be evenly spread over disturbed areas to facilitate the rehabilitation.

- The ECO must make sure that all the environmental stipulations put forward in the construction contracts and/or ECO Checklists have been complied with, and must advise the Developer/RE if the penalty clause needs to be applied for any environmental impacts that may have occurred.

The Contractor must accept the above Construction Guidelines. **It is expected that the Contractor sign this document as part of the main contract with the Developer.** The main Contractor will also be solely responsible for the conduct of all subcontractors that may be used in this contract.

Signed by: _____ on behalf of: _____

Name: _____

Signed by: _____ on behalf of: _____

Name: _____

Witness: _____

Name: _____

Date: _____