PROPOSED DEVELOPMENT AND REZONING OF PORTION 3 OF FARM 695 ('CLIPPETY CLOP') EAST LONDON

ENVIRONMENTAL MANAGEMENT PROGRAMME (DRAFT)

February 2011

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1 INTRODUCTION

1.1 GENERAL

Terreco Environmental were appointed by Gary Atkinson on behalf of Clippety Clop Property Holdings, to undertake the Basic Environmental Assessment for the Project in terms of Section 24 of the National Environmental Management Act 107 of 1998. However consultations with the Department of Economic Development and Environmental Assessment (DEDEA) (East London) confirmed prior authorisation for the Project was not required. Instead, DEDEA have requested an Environmental Management Programme (EMPr) be prepared and submitted to DEDEA for approval prior to construction activities commencing.

The proposed development of portion 3 of farm 695 will see the establishment of up to 12 residential units (holiday homes), with associated infrastructure and services built into the property. The Areena River Resort and access road lies on the western boundary of the site with farmland on the northern and eastern boundaries of the site. The Kwelera River lies on the southern boundary of the site. Access to the Project site is via Schafli Road which is shared by the Areena River Resort.

The Kwelera River is a significant sensitive receptor and it is important the development at Clippety Clop does not result in any adverse changes to the river banks, drainage patterns or water quality (via surface or groundwater flows), especially from the sanitation systems. In addition, the Kwelera River valley is an attractive natural feature and it is important that the aesthetic quality of the valley is not adversely affected by the development at the site. The Areena River Resort is also a sensitive receptor from the perspective of being a popular recreational/tourist location for which the maintenance of the aesthetic quality of the area is critical.

It is acknowledged that water supply in the area is stressed and that poor sanitation management has already affected the Kwelera River. The medium and long term environmental sustainability of the proposed development will be a product of resource consumption and management practiced by those utilising on the site insofar as the aesthetic attractiveness of the site and the availability of water in particular could be adversely affected if due care is not applied. It is proposed half the number of proposed units be constructed in the short term with the remainder only being built at a later date. The addition of these future residential units on the site should not represent a significant adverse impact provided a building code is developed and implemented, preferably using the principles of 'green building'. The future development of the remaining plots should also be guided by any problems observed with the initial establishment and use of the six units.

1.2 PURPOSE OF THE EMPR

The purpose of an Environmental Management Programme report (EMPr) is to help control those activities that can have potentially adverse environmental implications on the Project site and surrounding areas. In short, an EMPr describes good environmental practice principles which must be applied for the duration of a specific stage of the Project development (e.g. planning and design, construction and operation). Specific to this Project, the EMPr focuses on controlling the potential impact associated with the construction activities. From a design perspective, minimising the footprint of each home will be critical as the overall development footprint for the Project is close to the one hectare trigger for developments outside urban areas according to NEMA 107 of 1998.

It is important to recognise that the EMPr is a dynamic document and provision must be made to ensure the Environmental Specifications evolve and respond to changing design details, construction activities on site, at a minimum.

1.3 STRUCTURE OF THE EMPR

The structure of the EMPr has been based on the requirements of the current Environmental Impact Assessment Regulations, 2010 (section 33). Specifically, the EMPr contains the following:

- Details on the EMPr author (see below).
- A summary description of the construction activities and how these may impact on the site and surrounding areas - **Chapter 2**.
- A summary of the design and operational specifications – **Chapter 3.**
- The mitigation measures or 'environmental specifications' to be implemented to control the potential impacts that may occur during construction – **Chapter 4.**
- Details regarding the implementation of the design and operational phase of the Project and the responsible persons for implementing the EMPr during the construction phase as well as the approach to monitoring the EMPr - **Chapter 5.**

Additional information produced and/or obtained in support of the main text has been included in Appendices at the back of this document, including:

- Confirmation Letter from DEDEA. **(Appendix A)**
- Primary Environmental Legislation. **(Appendix B)**
- Example Method Statement Layout **(Appendix C)**
- Scoping Report as per Development Facilitation Act Application Requirements **(Appendix D)**
- Engineering Report prepared by Cornerstone Consulting **(Appendix E)**
- Vegetation Survey by Carl Vernon **(Appendix F)**

1.4 AUTHORS OF THE EMPR

Regulation 33(a) of the EIA Regulations, 2010, indicates that the EMPr must contain details of the EAP who prepared the document and the relevant expertise of the EAP.

The EMPr was prepared by Louise Jupp and Bevan O`Reilly of Terreco Environmental cc.

Terreco Environmental cc is an East London-based environmental and geotechnical consulting firm with extensive experience in a variety of development projects through the Eastern Cape Province. Louise Jupp has a BSc (Honours) in Earth Science and an MSc in Environmental Science. She is a Director of Terreco Environmental cc and has been operating as an Environmental Practitioner in the UK and South

Africa for over 18 years. She has undertaken environmental impact assessments for a variety of infrastructure projects in urban and rural settings including new road schemes, transmission lines, runway extensions, rail lines and bulk sewer mains in accordance with South African and major funding requirements and frameworks. Other related environmental experience includes preparing chapters on the principles of and methodology for undertaking EIA for road schemes and air transport for the European Union and the Cypriot Government. She is therefore familiar with the environmental impact assessment process and its application on a variety of related infrastructure projects. Bevan O`Reilly has a BSc (Honours) in Botany from NMMU. He has worked on various projects in and around the East London area for Terreco Environmental cc including the development of EMPrs, undertaking construction phase audits and preparing EIAs for infrastructure development projects.

1.5 GLOSSARY OF DEFINITIONS AND ABBREVIATIONS USED IN THE EMPR

The following definitions and abbreviations are used in this document:

DEDEA	Department of Economic Development and Environmental Affairs.
ECO	Environmental Control Officer.
EIA	Environmental Impact Assessment.
EMPr	Environmental Management Programme.
Environment	The surroundings within which humans exist and that could be made up of: the land, water and atmosphere of the earth; micro-organisms, plant and animal life; any part of combination of the aforementioned and the interrelationships among and between them; and, the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.
Environmental Aspect	Element of an activity that can interact with the environment and lead to environmental impacts.
Environmental Impact	The change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.
ES	Environmental Specifications.
Invasive Alien Vegetation	An undesirable plant growth which shall include, but not be limited to, all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act 43 of 1983.
MSDS	Material safety data sheets.
NEMA	National Environmental Management Act 107 of 1998 (as amended).
No-Go Areas	Generally those areas outside the designated working areas, including but not limited to: existing services and infrastructure, occupied property; grave sites; cultivated

	lands, wetland areas, 'Special or Sensitive Environments' as defined in the EMPr.
SAHRA	South African Heritage Resources Agency.
Topsoil	Natural soil covering, including all the vegetation and organic matter, with variable depth.
Working Areas	Working areas are those areas required by the Contractor to construct the works, as approved by the Project Manager.

2 THE PROJECT AND POTENTIAL IMPACTS ON THE ENVIRONMENT

2.1 DESCRIPTION OF THE PROJECT AND CONSTRUCTION AND OPERATION ACTIVITIES

The affected area lies within the jurisdiction of the Great Kei Municipality, Amathole District Municipality. The Project site is a largely isolated private property comprising portion 3 of Farm 695, East London. The farm portion is 28 hectares in size and is zoned as Agriculture 1. Construction activities will be limited to portion 3 of farm 695 and will take place above the 1:100 year flood line and more than 100 metres from the high-water mark of the Kwelera River and estuary.

An engineering report produced by Cornerstone Consulting (see **Appendix E**) in September of 2010 revealed a number of environmental considerations to be taken into account. Sanitation will be dealt with by the use of a conservancy tank linked by pipelines running from each unit. The conservancy tank will be placed a minimum of 100 meters away from the Kwelera River. Existing gravel roads/paths will be utilised as far as possible for access to the new homes and any new gravel paths created will have single layer gravel wearing course surfaces. Rainwater harvesting will be utilised for freshwater. The design standards for the Project will be produced in accordance with ADM Design Standards.

2.1.1 Project Design Features

A maximum of twelve (12) residential units (holiday homes) and associated services are to be established on portion 3 of farm 695 where contours permit. **The overall development footprint for the Project is expected to be in the order of 9 035m² at a maximum (see below)**. The development footprint includes plot sizes, new gravel tracks to be created as well as services such as sanitation (conservancy tank and pipelines).

A summary of the expected maximum surface area disruption is listed below:

- Twelve (12) holiday homes are to be built. Each unit is expected to physically occupy a footprint of 120 - 150m² and will be positioned within a surveyed area of 550m² for each unit. The total surveyed development footprint for the Project is 6600m². However the physically disturbed area for the total number of units for the Project will be significantly less, viz in the order of **1140 - 1800m²**.
- There is to be no fencing between the units.
- Conservancy tank plus pipelines **±475m²**.
- Gravel paths **±1960m².**

The trigger threshold for prior environmental authorisation in terms of NEMA for developments outside urban areas, described in Government Notice R 544 is one (1) hectare / 10 000m² whereby the *'development footprint'* is defined as *'in respect of land, means any evidence of physical alteration s a result of the undertaking of any activity.'* [1]

[1] Item 23, Government Notice R544 National Environmental Management Act, 1998 (Act 107 of 1998) Listing Notice 1: List of Activities and Competent Authorities Identified in Terms of Sections 24(2) and 24D.

As noted above the estimated absolute worst case development footprint for the Project is 9 035m^2 but is actually expected to be in the order of 4 235m^2 (assuming each residential unit will be 150m^2 in size). The Project is therefore well within the trigger threshold of 10 000m^2.

A summary of the key Project features is provided below.

- The residential units are holiday homes and are not expected to be occupied all year round.
- The development footprint for each dwelling will **not exceed the surveyed area of 550m^2 which is used to located each unit within portion 3 of Farm 695 only. The final size of each unit is generally expected to be 120-150m^2**.
- No more than 12 dwellings will be built.
- The units are single storey structures.
- No fences are to be constructed between each unit.
- As far as possible, existing single lane gravel roads within the property will be used to access homes.
- **Sanitation Management** is to be carefully considered. Initially, one conservancy tank will be installed to service the holiday homes to be built on the property. The conservancy tank will be placed further than 100 metres from the Kwelera River and will be serviced by an ADM truck tanker on a periodic basis. Once fully developed, an alternative method of sewage treatment such as a 'package' type sewage treatment plant may need to be considered to service the development. The conservancy tank can be modified to act as a genuine septic tank which can fulfil the primary sewage treatment function for a package type plant, such as the Lillyput system (see Engineers Report; APPENDIX E).
- **Storm water** runoff is expected to be minimal around homes as all units will be fitted to harvest rainwater. Energy dissipating storm water diversion channels will be created along the gravel access roads to reduce the possibility of erosion.
- A secured, central waste pick-up point is proposed for **waste management**. The waste pick-up point is to be sealed (enclosed unit) and lockable.
- **Freshwater requirements** for the holiday homes will be fulfilled by rainwater harvesting at each unit as well as borehole water (depending on quality of water). The use of borehole water for grey water is likely (toilets/gardens)

It is important to note that all development will take place **further than 100 metres from the high-water mark of the Kwelera River / Estuary.**

In light of the exemption from requiring prior environmental authorisation from DEDEA (**Appendix A**) it is critical to ensure that the overall development footprint of the Project is kept to an absolute minimum so as to ensure the developer has a sufficient 'buffer' to ensure the one hectare mark is not exceeded if unforeseen development challenges do arise.

2.1.2 Project Construction Activities

The construction of the Project will in turn require the following activities, at a minimum:

1. Establishing and using the contractor camp incorporating offices, car ports, storage areas, workshops, laboratories, ablution and latrine facilities, services and access.

2. Procuring and transferring materials, plant and/or equipment to and from the site or main construction area.

3. Receiving and storing construction materials and construction waste.

4. Site preparation and undertaking earthworks.

5. Cement and concrete batching.

6. Construction activities associated with the development of gravel roads, houses and pipelines.

7. Undertaking site rehabilitation activities.

2.2 BROAD ENVIRONMENTAL CHARACTERISTICS OF THE AFFECTED AREA

The **topography** of the Project focus area is characterised by a flat to gently sloping floodplain associated with the Kwelera River and which gently rises in a northerly direction from the river to approximately 29m above mean sea level. The property features a distinctive steep cliff/ridgeline which bisects the property in a roughly NW-SE orientation. The top of cliff lies approximately 77m above mean sea level.

In terms of **drainage**, the Project focus area lies adjacent to the meandering Kwelera River. This is a perennial river which is tidal adjacent to the property river edge. The property lies approximately 3km from the estuary mouth. The Kwelera River lies within the Mzimvubu to Keiskamma Water Management Area 12, the Amatola Primary Catchment and Quaternary Catchment R30B. The Kwelera River is considered to be a largely modified river system in general due to poor sanitation practises upstream.

The **geology**[2] of the broader area comprises the Beaufort Group of deposits which are part of the Karoo Supergroup sequence and were deposited around 250 million years ago (Lower Permian period). The Beaufort Group deposits present specifically include the mudstones and sandstones of the Lower and Middle Beaufort Stages, the latter of which include the Katberg Sandstones which form the cliff/ridgeline through the property. The Beaufort deposits were originally deposited by large river within wide floodplains and as a consequence, generally comprise alternating layers of grey fine-grained sandstones and mudstones of varying thickness. Karoo dolerite intrusions occurred extensively around 206 million years ago (Jurassic period) although there do not appear to be any such intrusions within the property (based on the 1:250 000 map only) but are located to the south of the river.

[2] McCarthy T & Rubidge B (2005) The Story of Earth and Life: A Southern African Perspective on a 4.6 billion-year Journey, Kumba Resources.

The **landscape** and visual character of the Project focus area has been described in terms of the specific area incorporating the proposed Project. The following landscape and visual characteristics were noted:

- The landscape character of the surrounding area is predominantly natural partly as a consequence of the topography of the Kwelera River, incorporating steep valley sides, which preclude development. The slopes remain largely vegetated by thicket and man-made structures are generally absent in south facing views. Development on the Kwelera Road (including What's Landing airfield and residential area) is visible from the highpoints on the ridgeline and it is unclear the level of future development which may occur in the general area visible from the property. The Areena River Resort to the west of the property, as evident from within the Project site, is currently relatively low density development including a mixture of structures both in terms of scale and appearance. It is acknowledged that substantial development of the Areena River Resort has been proposed and it is inevitable the landscape and aesthetic quality of the area will change accordingly. It is anticipated there will be a negative change due to the scale of change proposed.

- Grassland and thicket is the dominant vegetation cover within the Project property with a more natural appearance evident north of the 1 in 100 year flood line (which is demarcated by the northern most edge of the mown area) and particularly at the base of the ridgeline where the vegetation is densest. The area within the 1:100 year floodline is largely manicured grass and is maintained for golf. Some buildings/residencies are located immediately adjacent to the river bank. There are also some jetties, an access road and some ornamental planting immediately adjacent to the river bank. There are numerous tracks which traverse the property, including a steep gradient access road to the top of and encircling the top of the ridge.

- Views of the Project focus area from within the Areena River Resort are largely restricted by topography and vegetation, the main exception being the ridgeline which is a distinctive albeit distant feature of the northern valley. View of the site are possible from the river, and/or when using the river. Views. In addition, the main recreational activity areas of the resort are located upstream of the Project focus area.

The visual quality of the Project site on a scale of very poor, poor, ordinary, attractive to very attractive, is deemed to be attractive to very attractive on account of the low level of development present within and currently surrounding the property, the relatively natural character of the site and surrounding areas and the proximity of the Kwelera River and its distinctive valley.

In terms of **ecology and biodiversity**, the Project focus area comprises Buffels Thicket (AT12), the distribution of which follows the Kwelera River valley[3]. Albany Coastal Belt (AT9) surrounds the Buffels Thicket. Both vegetation types are components of the Albany Thicket Biome. In terms of the STEP[4] sensitivity mapping, the general area is described as a 'Network area', a high conservation priority which is likely to be a reflection of the Kwelera River valley itself. As a General Rule, a Network Area can 'only

[3] Mucina and Rutherford (Eds) (2006) The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

[4] STEP = Subtropical Thicket Ecosystem Planning.

withstand minimal loss of natural area through disturbance or development'[5]. However, specialist inputs on the vegetation of the site were provided by Carl Vernon to the effect that: the area is generally well-drained perhaps as a consequence of a drainage channel which runs parallel with the base of the cliff; above the 1:100 year flood line, the grassland has been colonised by Acacia Karoo forming an open woodland; the area has been used as pasture for livestock in the past; Buffels Thicket is dominant along the cliff line; some remnants of riparian vegetation are present: no rare or endangered plant species were observed; and some invasive aliens are present on site.

Specific to the land use management and spatial development guidelines and opportunities identified for Network conservation priority areas in STEP, and taking into account the conditions of Farm 695/3, development should involve minimal loss or disturbance, spoiling the scenery should be avoided and restoration of the undeveloped portion of the area should be considered.

Social and economic impacts are expected to be limited given the relative isolation of the property and the small scale nature of activities. Some benefits may be associated with employment during the construction phase and/or the acquisition of construction materials for the buildings and infrastructure. Some nuisance to users of the adjacent property owner, Areena River Resort may result during construction, e.g. noise nuisance and access disruption due to construction vehicles, and/or a decline in aesthetic quality at a minimum. However, any such impacts should be of low and a temporary significance provided an Environmental Management Programme (EMPr) is rigorously implemented and monitored by an independent Environmental Control Officer (ECO).

Air quality surrounding and incorporating the property is expected to be typical of a rural, undeveloped area where emissions are likely to be characterised by dust emissions and wood burning (for cooking) from the adjacent property in particular and especially when the camp site is full. Vehicle emissions are not expected to be significance in local air quality due to the low volumes of traffic generally travelling through the area on the Schafli Road and/or accessing the Areena River Resort itself.

The **noise environment** observed during the site visits is typical of a rural area and largely dominated by natural sounds. The use of the Areena River Resort during peak times is expected to be an important local noise source especially where people use the river. The relatively low volume of traffic using the Schafli Road and Glen Garif access road and the position of the property should mean the effect of vehicle noise emissions will be of minor importance.

There are currently no known sites or features of significant archaeological, historical or **cultural heritage** within the area to be directly affected by the Project.

2.3 FOCUS OF THE EMPR

2.3.1 Design and Operational Phase

[5] A Network area comprises systems 'of natural pathways e.g. for plants and animals, which id safeguarded, will ensure not only their current existence but also their future survival'. STEP Handbook.

The design and operational phase of the Project should take into consideration the surrounding environment and attempt to minimise its influence on the natural environment in terms of for example, appearance, resource use (water and energy) and waste (solid and liquid waste) management practices at a minimum. Chapter Three provides a list of recommendations for incorporation into the final design of the Project and use of the area thereafter.

2.3.2 Construction Phase

The construction activities for the Project (**Section 2.1**) and the broad manner in which these may impact on the biophysical and human environment (**Section 2.2**) have been listed in **Table 1** (at end of the chapter) In summary, the potential range of impacts that could result without appropriate control include:

- Changes to local air quality – including vehicle emissions and dust.
- Ground/soil contamination and degradation.
- Landscape and visual impacts.
- Surface water and groundwater pollution.
- Alteration of drainage systems.
- Terrestrial habitat degradation and loss and/or disturbance to wildlife.
- Spread of invasive alien species.
- Conflict with existing land uses.
- Public nuisance – disruption to traffic, disruption to access, severance, dust generation, noise and vibration and litter.
- Public health and safety risks.
- Resource use and socio-economic impacts.
- Impacts on municipal services and in connection with sustainable resource use.
- Impacts on features of cultural/historical heritage importance.

Providing the EMPr is strictly adhered to, it is unlikely that the impacts stated above will occur. Mitigation measures for all of the above impacts have been dealt with accordingly in the EMPr. The proposed changes to the land on portion 3 of farm 695 should not represent a significant adverse impact on the biophysical or human environment on account of the following:

- The relatively impacted nature of the plots due to previous human activity;
- The low density of housing to be constructed on site;
- The houses are holiday homes rather than permanent residences;
- The relative isolation of the affected area from other residential units and settlements.

It is acknowledged the Kwelera River is a key feature of sensitivity which must be protected from construction activities which could lead to physical degradation and/or pollution of the watercourse.

Table 1: Potential Impacts Associated with the Construction of the Project

ACTIVITY			⇨ INTERACTION BETWEEN THE ENVIRONMENTAL ASPECT AND POTENTIAL IMPACT ILLUSTRATED BELOW ⇩														
PHASE OF OCCURRENCE	CONSTRUCTION (C)	Establishment & use of construction camp and offices – including provision for any fuel and vehicle/plant storage and workshops.	C		C	C	C		C	C	C	C		C	C	C	C
		Procuring and transferring of materials, plant and/or equipment to and from the site.		C						C	C				C	C	C
		Storage of construction materials and/or waste on site.				C	C	C		C	C					C	
		Site preparation, including vegetation clearance and grubbing.						C	C	C		C	C		C	C	
		Cement batching.	C	C	C	C	C	C	C	C	C				C	C	C
		Services.	C	C	C		C			C	C	C	C	C			
		Establishment of homes.	C	C	C	C		C	C	C	C	C	C	C	C	C	C
		Site rehabilitation (incorporating the construction areas).			C			C	C	C		C	C			C	C
ASPECT Element of an activity that can interact with the environment and lead to environmental impacts, or the cause of a given impact.			Energy Demand	Materials Consumption	Water Consumption	Releases to water, incl stormwater	Releases to air (gaseous. Incl odours)	Releases to air (dust)	Noise Emissions & Vibrations	Waste generation, storage & disposal	Accidental spillages	Ground disturbance & vegetation clearance	Change in land form	Change in land use and/or accessibility	Traffic Generation (on, off and to the site)	Employment Opportunities	Procurement of services and goods
			INTERACTION BETWEEN THE ENVIRONMENTAL ASPECT AND POTENTIAL ENVIRONMENTAL IMPACTS ⇩														
AFFECTED ENVIRONMENT – POTENTIAL IMPACTS	PHYSICAL	Air Pollution.	C				C	C							C		
		Soil compaction / erosion / pollution.							C		C	C	C				
		Landscape change and visual impacts.						C				C	C	C			
		Surface water pollution.				C			C	C	C						
		Groundwater pollution.				C			C	C	C						
		Alteration of drainage systems.			C	C					C	C	C	C			
	BIOLOGICAL	Terrestrial ecosystem and biodiversity impacts			C	C	C	C	C	C	C	C					
		Aquatic ecosystem and biodiversity impact				C				C	C	C					
		Spread of invasive alien species.			C							C					
		Public nuisance – disruption to traffic, access and severance, dust generation, noise and vibration and light 'pollution'.		C				C	C	C	C			C	C		
		Public health and safety, including security.	C							C	C			C	C		
		Aesthetic impacts.						C		C			C	C			
		Socio-economic impacts.		C										C	C	C	C
		Compatibility / incompatibility with municipal service provision.	C		C	C				C					C		
		Heritage resource impacts.													C		
		Compatibility / incompatibility with sustainable or responsible resource use (e.g. allowing for recycling).	C	C	C					C							C

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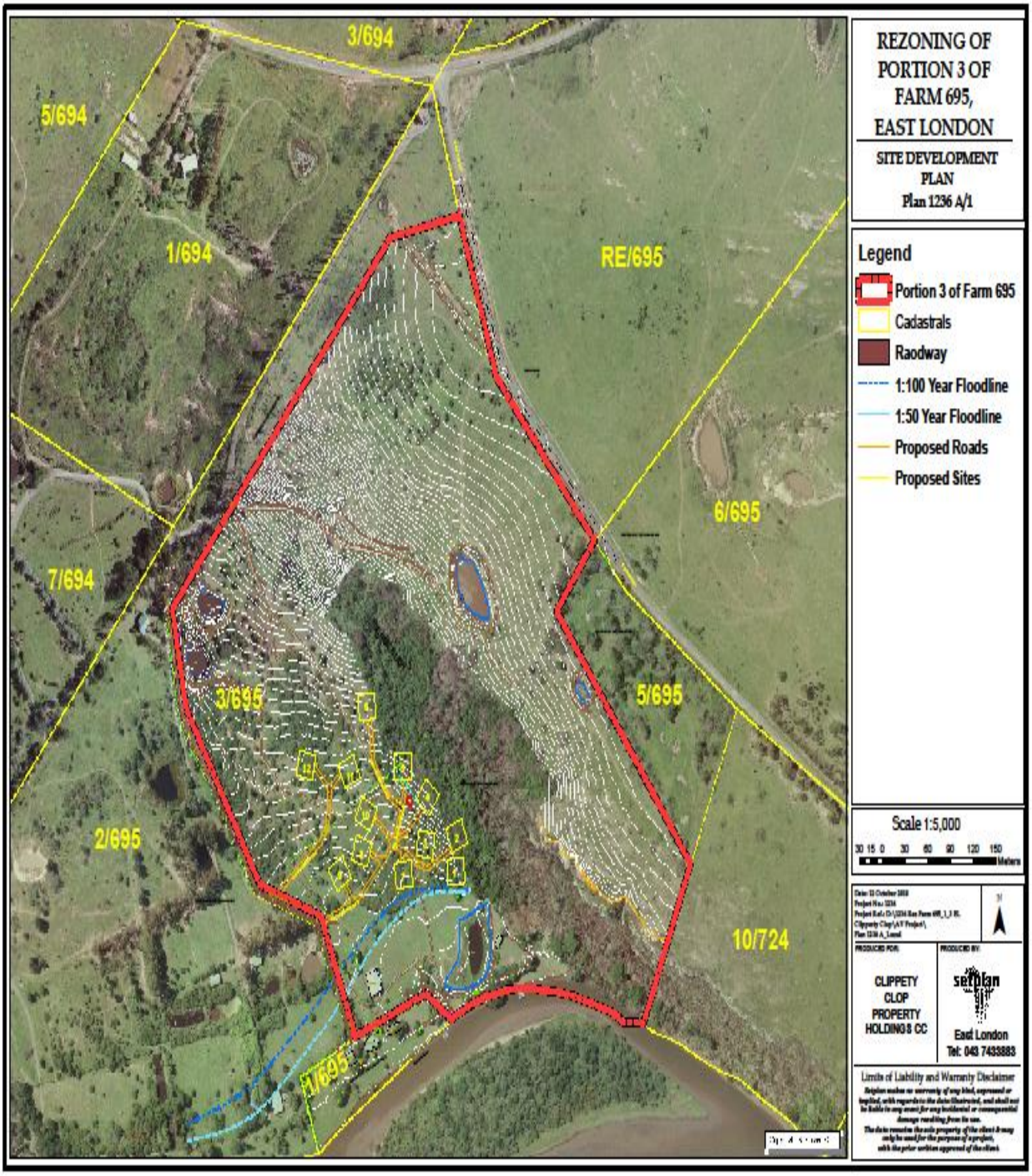
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SITE DEVELOPMENT PLAN
Plan 1236 A/1
Legend
Portion 3 of Farm 695
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1:50 Year Floodline
Proposed Roads
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3 DESIGN AND OPERATIONAL SPECIFICATIONS

This chapter contains a short list of design and operational recommendations for consideration during the final design and future use of the Project.

3.1 DESIGN SPECIFICATIONS

Mitigation measures have been prepared for incorporation into the final design of the Project, for implementation during the construction phase and for the long term operation of the Project, including the following:

- The appearance of the Project must be visually appealing and in the context of the surrounding area.
- The natural setting of the area should be kept in-tact as this would not only benefit the biophysical environment the development is set in, but also maintain property exclusivity and thus property value.
- Ensure the total development footprint does not exceed 1 hectare. One of the primary design features for each home should be to use space efficiently in order to reduce the overall size of the homes. It must be kept in mind that the development footprint for each home extends to the boundary of its garden.
- Maximise the use of rainwater harvesting for drinking water. Efficient gutter systems and roof design will ensure a maximum harvest.
- Consider grey water recycling and reuse to reduce water consumption and prolong water availability – grey water could be used for grounds maintenance.
- The principles of 'Green Building' should be considered to promote efficient resource use for each property including energy, water and sewage management at a minimum.
- Potentially contaminating features of the Project should be overdesigned to reduce any risk of pollution to an absolute minimum.
- Isolation of conservancy tanks from the surrounding environment must be ensured, especially with regards to the Kwelera River.
- Sanitation for homes will be achieved by a single conservancy tank which will service all the units on the property. The conservancy tank is included in each homes development footprint. It is therefore critical to place the conservancy tank in such a position that the pipelines coming from each home will be as short as possible.
- In the event a package sewage treatment plant is put in place in the future this needs to be 'over-designed' to reduce the risk of plant failure (and hence the possible pollution risks to the Kwelera River) at a minimum.
- Ensure development occurs as far from the high-water mark as reasonably possible.

- Existing waste dump to be removed (including contaminated soils) and proper structure to be provided for the temporary storage of solid waste prior to removal for disposal. This structure must be isolated from the surrounding environment to prevent pollution risks.

- The infiltration of runoff across the development area should be promoted rather than channelling runoff directly to the Kwelera River, keeping in mind that each unit will harvest rainwater which will reduce the amount of runoff generated by each unit. Infiltration of runoff into soils can be achieved by minimising hard surfaces and possibly utilising the small existing earth dam to the south east of the site. All excess stormwater runoff from the north east side of the site will be drained into the existing earth dam.

- Indigenous vegetation planting plan would be a positive step towards reducing the Project's impact on the environment and an active invasive alien species eradication programme would also be beneficial.

3.2 OPERATIONAL SPECIFICATIONS

Mitigation measures for the operational phase or use of the Project can be incorporated into an **Owner's Code of Conduct** agreement which will need to be signed by the participating parties. It is recommended this Code of Conduct include reference to the following, at a minimum:

- The nature of activities that can take place on the property.

- The maximum period of occupancy permitted on the basis the units are holiday homes rather than permanent residences.

- Provision of the regular maintenance of services, with particular attention to the conservancy tank (future package plant?) and associated pipelines, plant and structures.

- Protecting the Kwelera River.

- The promotion of basic resource management principles including:
  - Basic water conservation and management.
  - Waste minimisation.
  - Invasive alien eradication.
  - Fire management.

4 ENVIRONMENTAL SPECIFICATIONS FOR CONSTRUCTION

4.1 SCOPE OF APPLICATION FOR THE ENVIRONMENTAL SPECIFICATIONS

The physical application and 'jurisdiction' of the EMPr will incorporate the Contractor's Camp, designated works area and access route(s) and immediately surrounding areas.

4.2 ENVIRONMENTAL PRINCIPLES FOR THE CONSTRUCTION PHASE

The following core environmental principles apply, whereby:

- Construction is a disruptive activity and all due consideration must be given to minimizing impacts on the environment.
- The construction area 'footprint' should be kept to a minimum to reduce the occurrence, duration, magnitude or significance of construction related impacts.
- All relevant legislation should be adhered to and all relevant permits and permissions obtained and complied with at all times. Refer to Appendix A for the Confirmation Letter from DEDEA and Appendix B for the primary environmental legislation relevant to the Project.
- The Contractor should prepare a statement regarding his environmental commitments for the duration of the contract: this statement should be made known to all staff and measures put in place to enact the commitments.
- The Contractor should foster a collaborative and cooperative relationship between all pertinent stakeholders, including DEDEA, Ward Councillors, landowners/land users and the adjacent communities at a minimum; and promote timely communications with these parties as and when required.

4.3 ENVIRONMENTAL SPECIFICATIONS (ES)

The ES for the Construction Phase have been listed as per the following key construction stages/activities:

- Pre-Construction and Site Establishment Activities **ES 1.1 to ES 1.13**
- Environmental Management & Good Housekeeping **ES 2.1 to ES 2.8**
- Specific Construction Activities **ES 3.1 to ES 3.15**
- Rehabilitation **ES 4.1 to ES 4.2**

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MANAGEMENT FOCUS		ENVIRONMENTAL SPECIFICATION (ES)	
1.	**PRE-CONSTRUCTION AND SITE ESTABLISHMENT ACTIVITIES**		
1.1	**Compliance with Legislation, Permits and Permissions**	1.1.1	All pertinent national, provincial and local government **legislation** concerning the protection of the natural environment and the prevention of pollution is to be strictly enforced by the Contractor – refer to **Appendix B** for a list of the primary environmental legislation.
		1.1.2	All pertinent **approvals, permits and permissions** to be obtained before activities commence on site: the conditions of which are to be strictly enforced by the Contractor.
		1.1.3	The requirements of the **EMPr** are to be **enforced** by the Contractor **and regularly audited**.
1.2	**Access to Property & Protection of Existing Services and Infrastructure**	1.2.1	All negotiations to **access land/property** to be completed prior to commencing activities: and written records to be in place.
		1.2.2	The Contractor shall ensure **existing services** are not damaged or disturbed unless required by the contract and with the permission of the Project Manager.
		1.2.3	The Contractor shall be responsible for the **repair and reinstatement** of any existing infrastructure that is damaged or services which are interrupted, and prioritising and completing such repairs as soon as possible.
		1.2.4	Due notice of activities commencing on site shall be given to the immediately adjacent/affected landowners, businesses and community as per **ES 2.7** to help reduce public nuisance and disruption.
1.3	**Siting the Contractor's Camp**	1.3.1	The site for the Contractor's Camp must be **flat** and be more that **100m from the Kwelera River and any other water bodies** and generally not facilitate uncontrolled stormwater runoff (refer to **ES 2.3**) or result in soil erosion and/or the formation of dongas (refer to **ES 2.1**).
		1.3.2	The Camp must be sited in such a manner as to reduce the risk of causing public nuisance (directly or through blocking access to property) and it must not lead to any security implications (**ES 2.7**).
		1.3.3	Existing degraded areas to be used where possible for the Contractor's Camp, associated workshops and storage areas.
1.4	**Contractor's Camp**	1.4.1	The Contractor's Camp and the storage and works area must incorporate **appropriate infrastructure and facilities** to minimise any potential environmental impacts as per **Section 2**.
		1.4.2	The **'footprint'** of the Contractor's Camp, workshops, storage and working areas is to be kept to a minimum at all times.

MANAGEMENT FOCUS		ENVIRONMENTAL SPECIFICATION (ES)	
1.5	**Working and No-Go Areas and 'Special or Sensitive Environments'**	1.5.1	The Construction Site shall be divided into **Working Areas** and **'No-Go' areas** and shall be marked on appropriate plans for reference (refer to **Glossary**).
		1.5.2	No-Go sites shall include any **'Special or Sensitive Environments'** as identified prior to construction activities commencing, by the Contractor, Project Manager and ECO: the 1:100 year floodline of the Kwelera River, or any other waterbodies or watercourses.
		1.5.3	The 'No-Go' areas will be demarcated on site with fencing, hazard tape and the like, and the Contractor will ensure these areas are maintained as such for the duration of the works. **The primary 'No-Go' area will be any land within 100 metres of the highwater mark of the Kwelera River. Measured and demarcated by the appointed ECO *before* construction activities begin.**
		1.5.4	No 'creep' of materials, stockpiles or activities into the 'No-Go' areas is permitted.
		1.5.5	The 'Special or Sensitive Sites' shall, in particular be protected from potential pollution risks, including runoff from the adjacent working areas, litter and so on.
		1.5.6	All site personnel shall be regularly made aware of the 'No-Go' areas including delivery drivers and other 'temporary' personnel.
1.6	**Workshop, Equipment Maintenance and Storage**	1.6.1	Where practical, all maintenance of equipment and vehicles shall be performed in a **designated workshop** only. Any maintenance required outside the workshop will require prior approval from the Project Manager.
		1.6.2	**No contamination** of the soil, vegetation or surface water from the workshop, maintenance or storage areas is permitted.
		1.6.3	Measures to **prevent spillage and leaks** contaminating the surrounding area must be used, including ground protection, bunds, covers, splash trays, drip trays and the use of proper dispensing equipment – refer to **ES 2.1**.
		1.6.4	All **static plant** shall be located within a bunded area as per **ES 2.1**.
		1.6.5	Where required, vehicles/plant must be washed in designated wash areas where the greywater can be managed as per **ES 2.3**.
		1.6.6	Used oils and lubricants, spent filters, chemicals and similar waste products generated at the workshop are to be disposed as per **ES 2.6**.
		1.6.7	**Spillages and incidents** associated with the workshop, equipment maintenance and storage areas must be addressed in a Site Pollution Incident Response Plan – refer to **ES 1.11**.

MANAGEMENT FOCUS		ENVIRONMENTAL SPECIFICATION (ES)	
1.7	**Access Roads/ Haul Roads & Traffic Control**	1.7.1	The Contractor shall comply with all applicable road safety and transport-related **legislation and by-laws**.
		1.7.2	The Contractor shall notify the appropriate authorities in advance where **road restrictions, diversions and closures** are required.
		1.7.3	**Access/haul routes** to the construction site and works area are to be approved by the Project Manager. Existing roads and tracks shall be utilised where possible. The movement of vehicles beyond the identified access and haul routes is to be restricted.
		1.7.4	Designated **delivery areas** should be established and personnel assigned to receive deliveries and direct delivery vehicles on and off site accordingly
		1.7.5	All public roads shall be kept clear of **mud and debris**.
		1.7.6	**Speed restrictions** are to be in place and enforced on site and haul routes.
		1.7.7	**Disruption** to regular road users and adjacent property owners from delivery vehicles and other construction related traffic must be minimised – refer to **ES 2.7**.
		1.7.8	**Damage to public roads** not subject to the construction programme, as a result of the construction activities, shall be repaired to the satisfaction of the Project Manager.
1.8	**Use of Local Labour and Local Material Acquisition**	1.8.1	Wherever possible, the Contractor should endeavour to use **local labour** and **local suppliers**.
		1.8.2	Wherever possible and practical, the Contractor should endeavour to source building materials from environmentally responsible and permitted sources. See also **ES 3.2** regarding use of borrow pits and quarries.
1.9	**Environmental Awareness Training**	1.9.1	**Awareness training** for the Contractor's staff will be required and must be provided prior to work or specific activities commencing on site and as an ongoing programme through, for example, weekly 'Tool Box' meetings.
		1.9.2	The Contractor must demonstrate appropriate training has been/is being provided to all permanent and temporary staff through **training records**, at a minimum.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)	
1.10 Fire Prevention and Control	1.10.1	The Contractor shall take all reasonable and precautionary steps to ensure that fires are not started as a consequence of activities on site: a **Fire Prevention and Management Plan** shall be developed for the construction phase.
	1.10.2	Basic fire fighting equipment shall be made available in the Contractor's Camp and across the Works Area, as appropriate, and site personnel made aware of how to use the equipment to deal with any fires.
	1.10.3	**Flammable materials** should be stored under controlled conditions to limit the potential for ignition and the spread of fires – refer also to **ES 3.11**.
	1.10.4	**No smoking** shall be permitted in areas where there is a fire hazard.
	1.10.5	**'Hot' work activities** shall be restricted to sites approved by the Project Manager.
	1.10.6	Any cooking facilities on site will be located in designated areas only. No cooking fires are to be left unattended.
	1.10.7	Costs incurred through fire damage will be the responsibility of the Contractor should the Contractor's staff be proven to be responsible for the fire.
1.11 Incident/Accident Prevention Measures	1.11.1	Soils, water bodies and their catchments shall be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, washwater, organic materials and bituminous/tar products – refer to **ES 2.1** and **ES 2.3.**
	1.11.2	The Contractor shall develop a **Site Pollution Incident Response Plan**, including provision for managing spills and preventing pollution entering the drainage lines in particular.
	1.11.3	The Contractor shall ensure all personnel are aware of the incident procedures and know how to use equipment provided to contain spills and other incidents
	1.11.4	The Contractor shall assemble and clearly display a list of the relevant **emergency telephone contact numbers** for staff (in English and in Xhosa).
	1.11.5	In the event of any spillage where down-stream impacts are noted, the Contractor shall be liable to arrange for professional service providers to assist with rehabilitation and remediation, as required by the Project Manager.
	1.11.6	A **Complaints and Incident Register** will be maintained by the Contractor.
1.12 Method Statements	1.12.1	The Contractor shall prepare **Method Statements** for additional construction activities that do not currently appear in this edition of EMPr and/or have been listed below (e.g. for the establishment of on-site fuel storage (**ES 3.11**) or in connection

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)
	with herbicide/pesticide use for alien plant control (**ES 2.4**)). 1.12.2 The Method Statements must be approved by the Project Manager before the specific construction activity commences. 1.12.3 An example layout for a Method Statement is provided in **Appendix C** for guidance.
1.13 Site Photographs	1.13.1 Detailed, **electronic colour photographs** of the Camp and other areas to be disturbed/temporarily used for construction activities (e.g. stockpile areas and spoil sites) shall be taken prior to any establishment taking place. 1.13.2 These photographs will assist with determining the level of rehabilitation required once construction has been completed – refer to **ES 4.1 – 4.2**.
2. ENVIRONMENTAL MANAGEMENT AND GOOD HOUSEKEEPING	
2.1 Managing Soil and Land Degradation	***SOIL EROSION*** 2.1.1 No **soil erosion** will be tolerated on or immediately adjacent to the site: the Contractor will be responsible for protecting areas susceptible to erosion. Bank protection and/or stabilisation measures must be put in place and stop-boards used to control loose soil entering the Kwelera River. 2.1.2 Site to be cleared of vegetation as and when required in order to avoid undue soil erosion risks. 2.1.3 Exposed surfaces to be re-vegetated and stabilised as soon as possible to avoid soil erosion risks. 2.1.4 Suitable measures (temporary or permanent) are to be installed to divert surface runoff from the stockpiles. 2.1.5 Runoff shall not be diverted directly to the rivers without silt traps/silt settlement measures being provided. 2.1.6 Any channels or erosion channels that develop during and as a result of construction activities shall be backfilled and compacted and the areas restored to a proper condition 2.1.7 The Contractor shall reinstate areas damaged by erosion at his own cost. ***SOIL CONTAMINATION*** 2.1.8 Topsoil to be cleared and stockpiled from all areas where physical disturbance of the surface will occur. 2.1.9 Topsoil stockpiles to be located and managed as per **ES 3.12**. 2.1.10 Measures to prevent spillage and leaks contaminating the surrounding area must be used, including ground protection, bunds, covers, splash trays, drip trays and using proper dispensing equipment.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)
	2.1.11 Any soil which becomes contaminated (e.g. by fuels, oils, lubricants, bitumen and so on) to be removed for disposal at an appropriately permitted landfill site. 2.1.12 All equipment and vehicles to be kept in good working order and serviced regularly to reduce the risk of leaks and **soil contamination**. 2.1.13 Bunded areas for static plant shall have a smooth impermeable surface with an earth bund and arranged such that the bunded area shall be sloped towards an oil trap or sump to enable incidental spillage to be removed. Any such spillage collected will be disposed as per **ES 2.6**.
2.2 Controlling Visual and Aesthetic Impacts	2.2.1 In terms of possible **light pollution**, particularly during authorised night work, the Contractor shall ensure that any lighting installed on site does not cause a reasonably avoidable disturbance to adjacent property owners or interfere with road traffic. 2.2.2 The site shall be kept neat, clean and tidy at all times. 2.2.3 Regular litter collection patrols will be made as per **ES 2.6**.
2.3 Controlling Water Related Impacts	***RESPONSIBLE WATER USE*** 2.3.1 The Contractor shall arrange for the necessary **approvals/permits** from the relevant authorities for the abstraction of water where this is not obtained from Municipal supplies. 2.3.2 Utilise rainwater supplies where possible. 2.3.3 Promote responsible water use by personnel. ***WATER POLLUTION*** 2.3.4 No grey water runoff or uncontrolled discharges from the Contractor's Camp or works areas shall be permitted. 2.3.5 **Water contaminated by pollutants** such as cements, concrete, lime, chemicals, detergents and fuels shall be discharged into a conservancy tank for removal from site. 2.3.6 The washing of vehicles and plant should be undertaken at specialist facilities rather than on site: where this is not possible, cleaning should be undertaken in a bunded area and the water collected in a conservancy tank for disposal. 2.3.7 Contaminated water shall not be discharged to the municipal sewer system unless approved by the Project Manager and/or authorisation has been obtained from the municipality. 2.3.8 Potential pollutants of any kind and in any form, shall be kept, stored and used in such a manner that any escape can be contained, and surface and groundwater are not placed at risk – refer to **ES 3.13 and ES 3.14**.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)
	2.3.9 The Contractor shall notify the Project Manager of any pollution incidents on site. ***SANITATION*** 2.3.10 Sufficient **toilet** facilities will be provided for workers on-site. 2.3.11 **No use of the Kwelera River, or other water bodies and streams** for vehicle washing, bathing or clothes washing etc shall be permitted. 2.3.12 **Portable toilets** shall not be located on flood plains and must be at least 100m from the Kwelera River or any other water bodies and/or areas susceptible to flooding. 2.3.13 The discharge of waste from toilets into the environment or burial of waste is strictly prohibited. Outside toilets must be secured to prevent them from blowing over and must be lockable. 2.3.14 **Spillage** from on-site toilets must be provided for in the Site Pollution Incident Response Plan – refer to **ES 1.11**. 2.3.15 Staff must use the sanitation facilities provided and not the veld or Kwelera River. ***STORMWATER*** 2.3.16 The Contractor shall take reasonable measures to control and attenuate stormwater runoff across and beyond the Camp and working areas. 2.3.17 Any potentially contaminated stormwater must be separated from uncontaminated stormwater and discharged to a conservancy tank for removal from site. 2.3.18 Uncontaminated stormwater water may be directed to existing stormwater drainage systems with appropriate **attenuation measures and settlement lagoons** in place as necessary, as approved by the Project Manager. 2.3.19 Diversion drains, with flow attenuation measures as necessary, must be provided to reduce stormwater flows across exposed, unsurfaced areas and stockpiles. 2.3.20 **Runoff loaded with sediment** and other suspended materials from the site/working areas shall be prevented from discharging to directly to adjacent watercourses and/or water bodies by using settlement lagoons or similar silt control measures.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)
2.4 Controlling Ecological Impacts	***LOSS/DEGRADATION OF HABITATS*** 2.4.1 Vegetation shall not be removed, damaged or destroyed except to the extent necessary for establishing the construction site and carrying out the construction works. A vegetation survey must be undertaken prior to the clearance of vegetation on site to identify those plants to be protected. 2.4.2 Any **indigenous vegetation** is to be maintained on site where possible – e.g. trees should be trimmed rather than removed – and appropriate protection from construction activities to be provided – refer to **ES 1.5**. 2.4.3 No unauthorised harvesting of plants by personnel (e.g. for firewood) is permitted. 2.4.4 Refer to **ES 3.11** where the use of **herbicides, pesticides and other poisonous substances** has been specified. 2.4.5 Clearance of the site shall be undertaken as per **ES 3.9.** ***INVASIVE ALIEN VEGETATION*** 2.4.6 The Contractor shall be responsible for the **removal of alien vegetation** within areas affected by the construction activities including cleared ground and topsoil stockpiles: this responsibility shall extend for the duration of the defects notification period. 2.4.7 The eradication of alien plants must take place before the plants reach maturity. Methods to remove alien plants may involve hand removal, hoeing by hand or the application of herbicides (see below). 2.4.8 Wherever, **alien vegetation** is cut or excavated, the cuttings must be gathered in heaps and not spread around before being removed from site to approved disposal sites. 2.4.9 Where the **use of herbicides, pesticides and other poisonous substances** has been specified the Contractor will be required to prepare a **Method Statement** as per **ES 1.12.**
2.5 Managing Noise and Air Quality Impacts	***NOISE*** 2.5.1 The Contractor shall keep **noise levels** within acceptable limits (as per government regulations) and activities shall, where possible, be confined to normal working hours. 2.5.2 Construction activities required outside normal working hours must be approved by the Project Manager, and where necessary, **advance warning** provided to adjacent residents. 2.5.3 Noise levels **exceeding 85dB** shall only be permitted where approved and with appropriate advanced warning to adjacent residents (minimum of 5 days) being provided.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)
	2.5.4 Noise that could cause a major disturbance should only be carried out during daylight hours and with advance warning provided as above. 2.5.5 No amplified music shall be allowed at the site. 2.5.6 Noisy construction plant is to be located as far as possible from residential areas: use noise screens as necessary. 2.5.7 **Any complaints** received by the Contractor regarding noise will be recorded and reported to the Project Manager. Actions taken to address such complaints shall be approved by the Project Manager. 2.5.8 Construction vehicles and plant to be in good working order. ***AIR QUALITY – DUST*** 2.5.9 The Contractor shall be responsible for the control of **dust** arising from the operations and activities on site. 2.5.10 The risk of wind-blown erosion across the construction site must be reduced as per **ES 2.1**. Stockpiles to be kept to the minimum practical height and where these will be in place for 6 months or more, the stockpile should be seeded. 2.5.11 **Dust generation** from excavations, exposed areas and haul roads must be minimized by damping down by water spraying. 2.5.12 The excavation, handling and transport of erodible materials during high wind conditions should be avoided where practical to reduce dust generation, particularly where the wind direction will blow dust towards the adjacent residential areas. 2.5.13 Vehicle speeds on site must be restricted to reduce the risk of dust generation. 2.5.14 Construction vehicles and plant to be kept in good working order. 2.5.15 **Any complaints** received by the Contractor regarding dust will be recorded and reported to the Project Manager. Actions taken to address such complaints shall be approved by the Project Manager. 2.5.16 A Method Statement will be required should any crushing be undertaken on site – refer to **ES 1.12**.
2.6 Waste Management	***NON-HAZARDOUS WASTE*** 2.6.1 **No litter** is to be evident on site, the working areas or at the workshop. 2.6.2 **Bins and containers** shall be provided to reduce the potential for litter on the construction site or within the Camp. The bins and containers should be placed on flat ground and provided with covers to prevent litter or the attraction of vermin. 2.6.3 All bins and containers shall be **regularly emptied**, with all solid waste generated being transported to an appropriate, permitted waste disposal site.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)
	2.6.4 **No burying or dumping** of waste materials, vegetation, litter or refuse on land or in water bodies shall be permitted. 2.6.5 Cleared vegetation is to be removed to landfill: no vegetation is to be burned. 2.6.6 The re-use of cleared vegetation should be promoted where practical – e.g. mulching for rehabilitation purposes. ***HAZARDOUS WASTE*** 2.6.7 Use containers suitable for their contents and which are clearly labelled for any hazardous waste. 2.6.8 **Used oil, lubricants and cleaning materials** shall be collected in a holding tank for return to the supplier. **Used filter materials** shall be stored in a secure bin for disposal off site. 2.6.9 Any **contaminated soil** must be removed for disposal at an appropriate site and replaced as approved by the Project Manager. 2.6.10 Hazardous waste containers must be isolated from the environment as per **ES 3.11.** 2.6.11 Hazardous waste must not be mixed with non-hazardous waste. 2.6.12 Avoid mixing different types of hazardous waste together. 2.6.13 Hazardous waste should be removed from site for disposal at an appropriate site as quickly as possible. 2.6.14 Recycle oils where possible.
2.7 Controlling Public Nuisance and Safety Risks	***NUISANCE*** 2.7.1 **Disruption of access to property** must be kept to a minimum at all times – refer to **ES 1.2** and **ES 1.7.** 2.7.2 Where such disruption is unavoidable, the Contractor shall advise the affected parties in advance (at least 7 days). 2.7.3 The Contractor shall take appropriate measures to minimize any **disruption to the adjacent residential and recreational areas**, including excessive noise and dust levels (see **ES 2.5**), severance and disruption to property access (see **ES 1.2 and ES 1.7)** and exposure to safety risks. 2.7.4 Aesthetic degradation/nuisance to be minimised through litter control and litter collection as per ES 2.2 and maintaining a clean, neat and tidy works site.

MANAGEMENT FOCUS		ENVIRONMENTAL SPECIFICATION (ES)	
		SAFETY	
		2.7.5	The Contractor shall be responsible for the **protection of the public and public property** from any dangers associated with the construction activities, and for the safe and easy passage of pedestrians and traffic in areas affected by the construction activities.
		2.7.6	Any works/activities which may pose a **hazard** to humans and/or domestic/wild animals are to be protected or cordoned off and, if appropriate, warning signage erected.
		2.7.7	Appropriate security is to be provided at the site to protect equipment and provide for a safe construction site.
		2.7.8	Any damage caused as a result of the construction activities shall be repaired to the satisfaction of the Project Manager – refer to **ES 1.2**.
2.8	**Controlling Cultural Heritage/Historical and Archaeological Impacts**	2.8.1	The Contractor shall notify the Project Manager if any previously unidentified **graves or artefacts** of archaeological, historical or cultural significance are uncovered during site clearance or construction activities.
		2.8.2	Work shall be stopped immediately and appropriate assessment of the artefact or feature shall be undertaken on the guidance of **SAHRA**.
		2.8.4	Known sites of historical, archaeological or cultural importance are **'Sensitive Areas'** and will be designated 'No-Go' areas and subject to **ES 1.5**.
3.	**SPECIFIC CONSTRUCTION ACTIVITIES (IN ALPHABETICAL ORDER)**		
3.1	**Asphalt, Bitumen and Paving**	3.1.1	In the event an asphalt/bitumen plant being established, the plant shall be located in a **flat area** of low environmental sensitivity – at least **100m** from the banks of the Kwelera River. A **Method Statement** will be required for the operation and decommissioning of the plant – refer to **ES 1.12**
		3.1.2	Topsoil shall be removed from the plant site. Bunding and stormwater runoff to be provided as per **ES 3.12 and ES 2.3**.
		3.1.3	Drums and products shall be stored as per **ES 3.11.** The storage area shall be covered to prevent rainwater from contacting the areas and potentially generating contaminated runoff as per **ES 2.3**.
		3.1.4	**Spillages and incidents** associated with the use of asphalt/bitumen plant and products must be addressed in the Site Pollution Incident Response Plan – refer to **ES 1.11.**

MANAGEMENT FOCUS		ENVIRONMENTAL SPECIFICATION (ES)	
		3.1.5	No spoiling of tar or bituminous products on the site or any burying will be permitted.
		3.1.6	Unused products shall be returned to the supplier's production plant.
		3.1.7	Waste products shall be disposed in an appropriately approved landfill site as approved by the Project Manager as per **ES 2.6**.
3.2	**Borrow Pits and Quarries**	3.2.1	The Contractor will be responsible for ensuring that appropriate **authorisation and permits** to use existing/open new borrow pits and/or quarries has been obtained from DME or such permits are held by the borrow pit/quarry operators.
3.3	**Kwelera River**	3.3.1	**The land within 100 metres from the high-water mark of Kwelera River is deemed a 'Sensitive Environment' and must be protected from pollution risks and degradation accordingly** – refer to **ES 1.5**.
		3.3.2	The existing river habitat and water quality must be protected from dust, direct or indirect spillage of pollutants or falling debris, paint, grouting and surface treatments, or litter during the construction of the houses as per **ES 2.1 and ES 2.3**.
		3.3.3	Affected sections of the Kwelera River will be rehabilitated as per **ES 4.1** and to the satisfaction of the ECO.
3.4	**Cement/Concrete Use on Site**	3.4.1	In the event a concrete batching plant is established, the plant shall be located in a **flat** area of low environmental sensitivity – at least **100m** from the Kwelera River. A **Method Statement** will be required for the operation and decommissioning of the batching plant – refer to **ES 1.12**.
		3.4.2	Concrete shall not be mixed directly on the bare ground. Topsoil shall be removed from the batching plant site, bunding and stormwater runoff provided as per **ES 3.12 and ES 2.3**.
		3.4.3	Unused cement bags are to be stored so as not to be affected by rain or runoff events – refer to **ES 3.11**.
		3.4.4	**Spillages and incidents** associated with the use of concrete batching plant and/or ready mix concrete must be addressed in the Site Pollution Incident Response Plan – refer to **ES 1.11.**
		3.4.5	The **flushing and cleaning** of equipment used to transport/apply concrete at the site shall occur at a site approved by the Project Manager and will not result in the pollution of the surrounding environment. Any **waste concrete and cement sludge** shall be removed to an approved disposal site.
3.5	**Earthworks**	3.5.1	Aim to reuse spoil rather than disposing to landfill.
		3.5.2	Be aware of unexpected contamination revealed during earthworks.
		3.5.3	Be aware of unexpected cultural, historical and/or archaeological finds, including graves – refer to **ES 2.8**

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)	
	3.5.4	Manage runoff over unsurfaced areas as per **ES 2.3**.
	3.5.5	Earth moving plant and vehicles activity to be managed as per **ES 2.7** to help reduce nuisance & disruption and manage noise and dust generation as per **ES 2.5**.
	3.5.6	Construction vehicles and plant to be in good working order.
3.6 Excavation, Hauling & Placement	3.6.1	The site shall be cleared and prepared as per **ES 3.9**.
	3.6.2	Wherever practically possible, excavation activities shall be done manually.
	3.6.3	The Contractor shall take all reasonable measures to limit dust generation as a result of excavation, hauling and placement activities – refer to **ES 2.5**.
	3.6.4	Prevent water entering excavated areas as per **ES 2.3**.
	3.6.5	Be aware of unexpected contamination revealed during earthworks: work shall be stopped immediately and the Project Manager notified. Specialist advice should be sought as necessary for the disposal/removal of the contaminated material, otherwise, refer to **ES 2.6**
	3.6.6	Be aware of unexpected cultural, historical and/or archaeological finds, including graves – refer to **ES 2.8**.
	3.6.7	Construction vehicles and plant to be in good working order.
	3.6.8	Manage earth moving plant and vehicles as per **ES 2.7** to reduce nuisance & disruption.
	3.6.9	Manage noise and dust generation as per **ES 2.5**.
3.7 Power tools and generators.	3.7.1	The Contractor shall take preventative measures, such as screening, muffling, dust control and/or providing advance warning, to reduce the level of public nuisance and disruption that may result from the noise and dust levels – refer to **ES 2.7 and ES 2.5** respectively.
3.8 Roadworks	3.8.1	The risk of spillage when using oils, bitumens and chemicals must be managed as per **ES 1.11, ES 2.1, ES 2.3, ES 3.1 and ES 3.11.**
	3.8.2	Noise and vibration must be managed as per **ES 2.5** to prevent noise nuisance.
	3.8.3	Traffic ingress and egress to the construction sites must be managed as per **ES 1.2** to prevent disruption to access to property by property owners and their customers.
	3.8.5	The responsible use of asphalt and bitumen is described in **ES 3.1**.

MANAGEMENT FOCUS		ENVIRONMENTAL SPECIFICATION (ES)	
3.9	**Site Clearance**	3.9.1	**Clearance of the site** for construction purposes shall be kept to a minimum. All construction activities are to be confirmed to the designated working areas and haul routes.
		3.9.2	Vegetation is to be cleared as per **ES 2.4**.
		3.9.3	The removal of vegetation should be avoided until such time as clearance is required to reduce the risk of soil erosion (see **ES 2.1**), establishment of alien vegetation (see **ES 2.4**) and dust generation (see **ES 2.5**). Exposed surfaces shall be re-vegetated or stabilised as soon as practically possible.
		3.9.4	Stormwater management will be required to prevent silt loading as per **ES 2.3**.
		3.9.5	**No dumping** of soil, vegetation or construction material in water bodies or wetlands is permitted. **No burning** of vegetation to clear areas or to deal with cleared vegetation is permitted.
		3.9.6	Refer to **ES 2.4** where the **use of herbicides, pesticides and other poisonous substances** has been specified.
		3.9.7	Topsoil is to be cleared and stockpiled as per the **ES 3.12.**
3.10	**Storage, Handling and Use of Non-Hazardous Material**	3.10.1	All **non-hazardous material storage areas** shall be sited on flat ground within the Contractor's Camp or at approved sites in the working area only.
		3.10.2	The offloading of materials to the designated storage areas by delivery drivers shall be supervised.
		3.10.3	Storage areas are to be appropriately isolated from the surrounding environment using ground protection, bunds, covers, splash trays, drip trays and proper dispensing equipment as necessary to prevent spillage, leaks and contamination of the surrounding area.
		3.10.4	Materials are to be stored in appropriate containers and as per legal requirements where specified.
		3.10.5	**Spillages and incidents** associated with non-hazardous materials must be addressed in the Site Pollution Incident Response Plan – refer to **ES 1.11**.
3.11	**Storage, Handling and Use of Hazardous Material**	3.11.1	All potentially **hazardous raw and waste materials** are to be handled by trained staff and stored on site in accordance with legal requirements, standard fire safety regulations and manufacturer's instructions.
		3.11.2	All depot(s) for hazardous materials shall be located at least **100m** from the Kwelera River; appropriate symbolic warning signage and security shall be in place; and relevant MSDS shall be available on site.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)
	3.11.3 **Storage areas** are to be appropriately isolated from the surrounding environment using **ground protection, bunds, covers, splash trays, drip trays and proper dispensing equipment** as necessary to prevent spillage, leaks and contamination of the surrounding area. 3.11.4 Spill kits, fire extinguishers, medical kits and similar emergency equipment must be in place as required. 3.11.5 Unless otherwise specified, **fuel** shall not be stored on site. A dedicated site, as approved by the Project Manager, with appropriate containment and safety measures in place, will be established for fuel bowsers. 3.11.6 Fuel will be dispensed by trained personnel only. Any leak or spillage or overflow of fuel from the fuel bowser shall be attended to immediately. There shall be adequate fire fighting equipment at the dedicated fuel bowser site(s). 3.11.7 Should it be necessary to establish a **temporary fuel storage tank onsite**, the Contractor will be required to confirm permitting requirements with DEDEA and/or obtain the required permits before commencing with the instalment of the tank. A **Method Statement** will be required for the operation and decommissioning of the fuel storage tank – refer to **ES 1.12**. 3.11.8 The disposal of hazardous waste shall be undertaken as per **ES 2.6**. 3.11.9 **Spillages and incidents** associated with hazardous materials must be addressed in the Site Pollution Incident Response Plan – refer to **ES 1.11**.
3.12 Topsoil Stockpiles and Spoil Sites	3.12.1 **Topsoil** shall be removed from all areas where physical disturbance of the surface will occur and shall be stockpiled. **Subsoil** should be stockpiled separately to topsoil. It shall be replaced in the excavation in the original order it was removed for rehabilitation purposes. 3.12.2 Stockpiles shall be located in previously disturbed/degraded areas wherever possible. Stockpiles/spoil sites may not be located where stormwater runoff may result in the sedimentation of wetlands or the pollution of streams, rivers or dams – refer to **ES 2.3**. 3.12.3 Stockpiles and spoil sites are not to exceed 2m in height, must be at least 50m from any watercourse and must be profiled to fit the natural topography. 3.12.4 Stockpiles shall be protected from wind erosion and/or water erosion, and are to be maintained weed-free – refer to **ES 2.1 and ES 2.4.** 3.12.5 Stockpiles should not be left for longer than 6 months without appropriate maintenance. 3.12.6 The placement of materials in the stockpiles shall be done in such a manner to minimise the spread or 'creep' of material into the surrounding area, including any 'No-Go' areas – refer to **ES 1.5**.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)	
	3.12.7	Areas affected by stockpiling will be re-instated to their original condition after the material has been removed. No material shall remain on site. Refer to **ES 4.1**.
3.13 Trenching	3.13.1	**Trench lengths** shall be kept as short as practically possible before backfilling and compacting.
	3.13.2	Appropriate measures will be applied to reduce the risk of people or domestic animals becoming trapped in excavated trenches and to prevent collapse.
	3.13.3	Backfilling shall generally be undertaken as soon as practically possible to limit the risk of erosion and to encourage natural regeneration of the disturbed areas. Trenches shall be re-filled to the same level as the surrounding land surface to reduce erosion risks. Excess soil shall be stockpiled as per **ES 3.12**.
4.1 Rehabilitation	4.1.1	The Contractor shall provide a Rehabilitation Plan for approval by the Project Manager. The Rehabilitation Plan should provide for, but not be limited to, the removal of unused materials, rubble etc, the ripping of compacted ground, spreading topsoil and re-establishing grass cover; the specification of the types of grass seed to be used; the removal of any contaminated soils and regarding.
	4.1.2	**Rehabilitation** shall be required for all specified areas disturbed by the construction works. Rehabilitation shall ensure that all specified areas disturbed by the works are returned to a similar or better state than before construction commenced – the electronic colour photographic record shall be used to guide this process (**ES 1.13**). The rehabilitation of all disturbed areas is to be undertaken to the satisfaction of the Project Manager.
	4.1.3	All materials used to construct the coffer dam/temporary crossing must be removed from site once there is no further need for these structures.
	4.1.4	Where possible, the natural re-vegetation of the disturbed area and a programme of progressive rehabilitation should be encouraged.
	4.1.5	Where the rehabilitation of an area is not successful, the Contractor will rehabilitate these areas at no additional cost to the Client. Successful re-vegetation means ≥80% of the seeded area is covered with grass/groundcover.
	4.1.6	**Unused materials**, Contractor's Camp infrastructure/services shall be removed at the end of the contract.
	4.1.7	Any soils contaminated by hydrocarbons shall be removed to an appropriate landfill site, as necessary, as per **ES 2.6**.
4.2 Grass seeding	4.2.1	Grass seeding shall be carried out where specified by the Project Manager– in most cases, the replacement of existing topsoil and original groundcover should be sufficient.

MANAGEMENT FOCUS	ENVIRONMENTAL SPECIFICATION (ES)
	4.2.2 Where grass seeding is deemed to be necessary, the whole of the disturbed area shall be seeded and not only the width of the excavation. 4.2.3 Seeding is to be undertaken during the growing season.

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5 IMPLEMENTATION AND MONITORING OF THE EMPR

5.1 IMPLEMENTATION AND MONITORING OF THE DESIGN AND OPERATIONS EMPR

The **design** recommendations described in Chapter 3 will need to be considered during the final design stage by the Proponent and Project Design Team. These recommendations can also be incorporated into the building code for long term implementation.

It will be the responsibility of the Proponent (or his appointed agents) to prepare and oversee the implementation of the Builders Code.

Any major changes to the proposed development as stated in Chapter 2 will need to be confirmed with DEDEA, especially if the total area to be affected by the development will exceed one (1) hectare/ 10 000m^2 as well as any construction within 100 meters of the high water mark of the Kwelera River/ Estuary.

The recommendations for the **operational phase** or use of the units will, to a certain degree, be defined by the design of the Project. The promotion of responsible resource use can be implemented through a code of conduct which can be agreed and signed by the property owners.

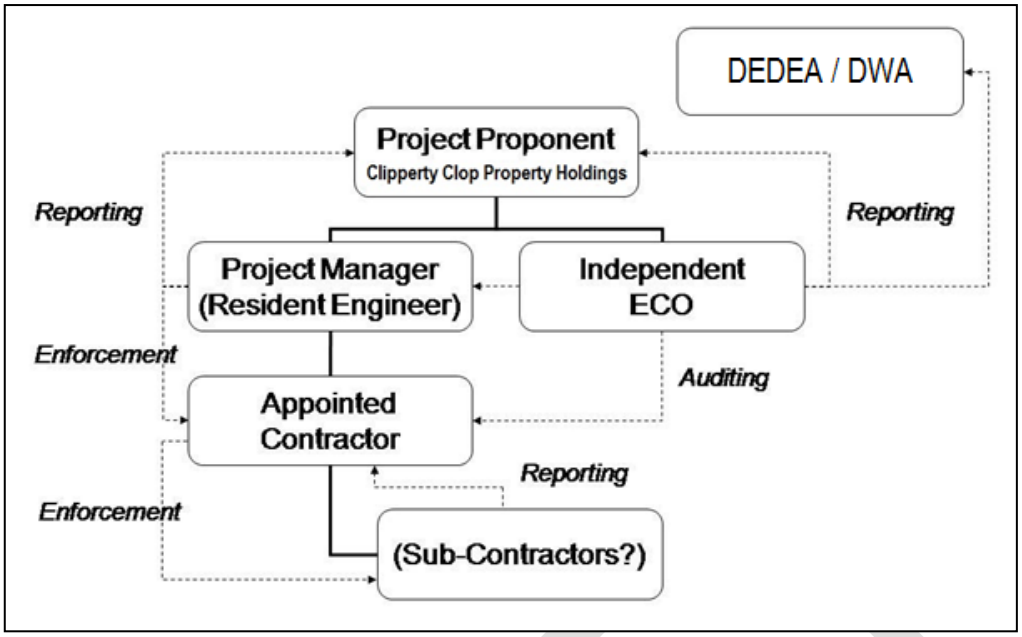
It will be the responsibility of Proponent of prepare and oversee the implementation of the Owner's Code of Conduct.

5.2 IMPLEMENTATION AND MONITORING OF THE CONSTRUCTION EMPR

5.2.1 Implementation of the Construction EMPr

A full programme for the implementation of the EMPr should be developed by the Contractor. The programme should, at a minimum, allow for training; the implementation of specific ES, the timeous preparation (review and approval) of Method Statements and the monitoring/auditing of the EMPr's implementation and effectiveness. The general timing for the implementation of the Environmental Specifications for specific activities should be guided by **Table 1** and the ECO.

This section outlines the roles and responsibilities of each role player for the Construction Phase. The key role players for the Construction Phase and their reporting relationship in terms of implementing the EMPr have been demonstrated below.



It is imperative that these parties work together to ensure effective environmental management on a day to day basis.

(a) Project Proponent/Implementing Agent

The role of the client or Project Proponent (or its appointed agent) will be to ensure activities undertaken on their behalf comply with pertinent environmental legislation, permits and permissions and that activities undertaken on site are in accordance with signed contracts. The Project Proponent will be required to assume overall responsibility for the environmental aspects of the construction of the Project.

(b) Resident Engineer

Specific to environmental management, the Resident Engineer will be required to ensure the enforcement of the Environmental Specifications and supplementary recommendations made by the ECO; review and approve the Method Statements submitted by the Contractor; and liaise with the Contractor, the ECO and Project Proponent on environmental matters as necessary.

(c) Contractor

The Contractor will be contractually required to undertake his activities in an environmental responsible manner. The role of the Contractor shall include the following, at a minimum:

- To implement the EMPr (and any subsequent revisions) for the duration of the construction activities;
- To provide reasonable resources for the effective control and management of environmental risks associated with the construction activities, as per the EMPr;
- To assign tasks to personnel as necessary and ensure appropriate accountability and responsibility is assigned to enable the carrying out of these duties;
- To maintain incident, training and other relevant administrative records; and

- To ensure all personnel, sub-contractors and other workers appointed by the Contractor are aware of the environmental responsibilities on site.

(d) Environmental Control Officer (ECO)

The ECO will be required to monitor, review and verify the implementation of the EMPr and liaise with the Resident Engineer and/or Project Proponent, and DEDEA to confirm the level of compliance achieved and make appropriate recommendations on improvements/actions required. The responsibilities of the ECO will include, at a minimum:

- Advising the Resident Engineer on the interpretation and enforcement of the Environmental Specifications;
- Assisting with the review of Method Statements;
- Demarcating particularly sensitive areas;
- Monitoring any basic physical changes to the environment as a consequence of the construction works – e.g. evidence of erosion, dust generation and littering;
- Undertaking regular site inspections and submitting reports on the level of compliance to the EMPr demonstrated by the Contractor;
- Undertaking any damage assessments with the Resident Engineer where incidents, accidents and/or serious infringements have occurred on/off site, and advising on remedial actions required; and
- Updating the EMPr as and when appropriate and communicating these changes to the Resident Engineer and Contractor.

5.2.2 Monitoring of the Construction EMPr

(a) Monitoring

The application of the EMPr will be monitored, reviewed and verified by an independent ECO every month, for the duration of the contract. Additional visits may be required pending the environmental performance of the contractor.

The Contractor's performance will be largely measured using a checklist approach. Any additional activities/ amendments required to improve environmental management on site will be made as necessary.

An audit report will be produced after each visit and will be submitted to the Contractor, Resident Engineer, Project Proponent and DEDEA.

(b) Compliance with the EMPr

Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operation required to complete the Construction Phase. It is thus required that the Contractor comply with the EMPr on an ongoing basis.

The Contractor will be deemed not to have complied with the EMPr and will be required to undertake remedial action if:

- There is evidence of significant or prolonged contravention of the EMPr specifications within the boundaries of the Contractor's Camp, works area and/or access routes.
- Environmental damage ensues due to negligence.
- Site observations indicate physical and/or chemical change has occurred as a consequence of activities on site.
- Corrective actions or other instructions are consistently not complied with.
- The Contractor fails to respond to any complaints from the public and the ECO.

(c) Work stoppage

Any failure on the part of the Contractor to comply with the EMPr will entitle the resident engineer to certify work stoppage subject to the details set out.

The resident engineer shall be the final judge as to what constitutes a transgression subject to the provisions of the General Conditions of Contract. In the event that transgressions continue, the Contractor's attention is drawn to the provisions of the General Conditions of Contract, under which the Project Proponent may cancel the Contract.

In addition to work stoppage, penalties may be issued where there is damage to the natural or human environment as a consequence of the transgression(s) and/or non-compliance(s). In such an event, the Contractor may be liable to pay a penalty at the instruction of the Resident Engineer.

A list of incidents that may lead to work stoppage are indicated below – this list is not exhaustive.

- Failure to submit Method Statements timeously.
- Failure to stockpile topsoil properly or materials in designated areas.
- Inappropriate use of adjacent watercourses and water bodies.
- Pollution of water bodies – including increased sediment loading.
- Failure to provide and maintain toilets.
- Lighting of illegal fires on site.
- Animal poaching (wildlife or domestic).
- Failure to provide waste disposal facilities or services.
- Excess dust or excess noise levels emanating from the Contractor's Camp and construction areas.

- Any person, vehicle, plant or item related to the Contractor's activities persistently causing a public nuisance.
- Defacing features, damaging sites of cultural importance.
- Failure to carry out liaison with adjacent landowners; causing damage to property without prior negotiation and/or compensation and/or causing other social infringements.
- Failure to control the pollution risks from dispensing fuel or the storage of vehicles and plant (drip trays) and hazardous materials in particular.
- Failure to maintain a register of environmentally related incidents on site.

The Contractor shall be responsible for the costs associated with repairing any damage to the natural or human environment that may result from the transgression and/or the result of the work stoppage.

(d) Penalties

The imposition of penalties will be at the discretion of the Resident Engineer and/or the Project Proponent.

The value of any penalty imposed shall be determined in light of the consequential damage caused and the costs required to rehabilitate the damaged area.

Payment of any penalty in terms of the contract shall not absolve the Contractor from being liable from prosecution in terms of the any appropriate law.

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APPENDICES

Appendix A: Confirmation Letter from DEDEA.

Appendix B: Primary Environmental Legislation.

Appendix C: Example Method Statement Layout.

Appendix D: Scoping Report prepared as per Development Facilitation Act Application Requirements.

Appendix E: Engineering Report prepared by Cornerstone Consulting.

Appendix F: Vegetation Survey by Carl Vernon.

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APPENDIX A:

Confirmation Letter from DEDEA

10/12/2010 15:43 Ntshutsha (FAX)043 722 6206 P.001/001

Province of the
EASTERN CAPE
DEPARTMENT OF ECONOMIC DEVELOPMENT &
ENVIRONMENTAL AFFAIRS

Palm Square Business Park,
Alderwood House, Beaconbay,
East London, 5241
Phone (043)707 4000
Fax: (043) 748 2069
E-mail: Briant.Noncembu@deaet.ecape.gov.za

Enquiries: N.E Ntshutsha

Attention: Bevan O'Reilly

57 Jarvis Road
Berea
5241
Fax: 043 721 1535

Dear Sir

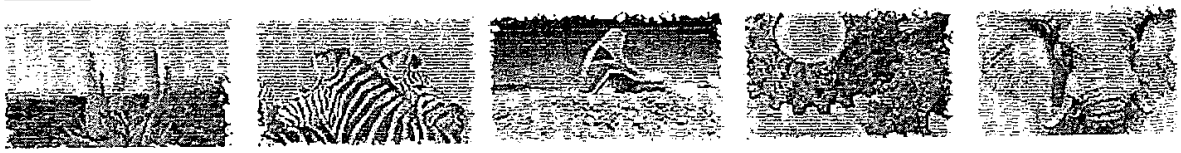
RE: PROPOSED REZONING AND DEVELOPMENT OF PORTIONS 1 AND 3 OF FARM 695 (CLIPPERT CLOP), EAST LONDON.

With regards to the above-mentioned development, this office does not have any objections as the total footprint of the development is 9635 m² and therefore is below the thresholds stipulated in the EIA Regulations, 2010. However, for best environmental practice, the Environmental Management Programme as compiled by Terreco Environmental Consultants must be adhered to and fully implemented.

Please do not hesitate to consult this office for any queries in this regard.

Yours truly

10/12/2010
H. Ntsini (Assistant Manager-EIM)



APPENDIX B:

Primary Environmental Legislation

NOTE: This list is not exhaustive and is for guidance only.

ISSUE	PRIMARY LEGISLATION
General Duty of Care and remediation of environmental damage	Constitution of South Africa Act No 108 of 1996. National Environmental Management Act 107 of 1998. Environment Conservation Act 73 of 1989.
Project authorisation	National Environmental Management Act 107 of 1998 (as amended). EIA Regulations, 2010.
Water related issues	National Water Act 36 of 1998. Water Services Act 108 of 1997.
Soil erosion	Conservation of Agricultural Resources Act 43 of 1983.
Air quality issues	National Environmental Management: Air Quality Act 39 of 2004.
Noise issues	Environment Conservation Act 73 of 1989.
Waste disposal	National Environmental Management: Waste Management Act 59 of 2008.
Cultural heritage and historical issues	National Heritage Resources Act 25 of 1999.
Ecosystems and wildlife	National Environmental Management: Biodiversity Act 10 of 2004. National Forests Act 84 of 1998. National Environmental Management: Protected Areas Act 57 of 2003. Transkei Decree 9 (Environmental Conservation) of 1992. Eastern Cape Conservation Bill, 2003. Cape Nature and Environmental Ordinance 19 of 1974.
Alien Invasive Species	Conservation of Agricultural Resources Act 43 of 1983. National Environmental Management: Biodiversity Act 10 of 2004. Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947.
Borrow pits and quarries	Mineral and Petroleum Resources Development Act 28 of 2002.
Public health related issues	Health Act 63 of 1977. National Health Act 61 of 2003. Occupational Health and Safety Act 85 of 1993.

ISSUE	PRIMARY LEGISLATION
Public Nuisance	National Environmental Management Act 107 of 1998. Common-Law Controls.
Hazardous substances	Environment Conservation Act 73 of 1989. Hazardous Substances Act 15 of 1973.
Traffic related issues	Road Traffic Act 93 of 1996 National Road Traffic Regulations 2000 (as amended).

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APPENDIX C:

Example Method Statement Layout

METHOD STATEMENT NO:

SHORT DESCRIPTION & LOCATION OF ACTIVITY: ……

RESOURCES USED :

Equipment used: ……
Labour used: ……
Materials: ……

CONTROL OF ENVIRONMENTAL IMPACTS:

LIKELY IMPACT	MITIGATION/PRECAUTIONARY ACTIONS – (relevant Environmental Specifications)	FREQUENCY OF APPLICATION
e.g. pollution of surface or groundwater.		e.g. daily, weekly, monthly, once-off

ACTIONS IN CASE OF EMERGENCY:

LIKELY IMPACT	MITIGATION/PRECAUTIONARY ACTIONS – (relevant Environmental Specifications)	FREQUENCY OF APPLICATION
e.g. explosions.		

Responsible Parties for implementing the above: .....
Checked by: .....
Approved by (Project Manager): .....
Approved by (ECO): .....

APPENDIX D:

Scoping Report prepared as per Development Facilitation Act Application Requirements

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APPENDIX E:

Engineering Report prepared by Cornerstone Consulting.

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APPENDIX F:

Vegetation Survey by Carl Vernon.