ENVIRO LOGIC
Environmental Impact Assessment, Planning and Management Services
Omgewingsimpakbeoordeling, Beplanning- en Bestuursdienste

ENVIRONMENTAL IMPACT ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT ON ERVEN 4995, 4997, 5007 AND 5009

HARMONY ESTATE, BERGSIG SPRINGBOK

ENVIRONMENTAL MANAGEMENT PLAN

PLAN OF CONSTRUCTION AND MANAGEMENT OF ACTIVITIES RELATING TO THE PROTECTION OF THE NATURAL ENVIRONMENT DURING THE CONSTRUCTION AND OPERATIONAL PHASE.

Department of Environment and Nature Conservation

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I TERMS AND ABBREVIATIONS

Audit	Regular inspection and verification of construction activities for implementation of the EMP.
Batch plant	A concrete or plaster mixing facility and associated equipment and materials.
Bund	An enclosure under / around a storage facility to contain any spillage.
Contractor	a) the main contractor; b) nominated sub-contractors; and c) any other contractor from time to time engaged by the development facilitator direct in connection with any part of the works which is not a nominated sub-contractor to the main contractor.
CP EMP	Construction Phase Environmental Management Programme
D: E&NC	Department of Environment and Nature Conservation
Developer	The developer is the same person as the applicant.
Development Site	Boundary and extent of development works and infrastructure.
D: WA	Department of Water Affairs.
ECO	Environmental Control Officer:
OP EMP	Operational Phase Environmental Management Programme
SAHRA	South African Heritage Resources Agency
Works	Means the building construction operations and all related and incidental works such as, but not limited to, site works, earth works, roads, parking areas, landscaping and the installation of services in connection with the execution and carrying to completion of the development plan.

A. GENERAL

1. INTRODUCTION

ENVIRO LOGIC has been appointed by the Applicant as the independent environmental consultants to compile an Environmental Management Programme (EMP), for the proposed development on Erven 4995, 4997, 5007 and 5009 Harmony Estate, Bergsig Springbok.

Harmony Estate is located south of Henry Markus Street and west of lnry Street in Bergsig in the northern part of the town of Springbok. Erven 4995, 4997, 5007 and 5009 are located on the north eastern side of Harmony Estate. The property is located within the urban edge.

(See **Locality Map: Appendix A** and **Proposed Layout Plan: Appendix B)**

The proposed project entails the development of:

- Erven 4995 (697,6 m²), 4997 (840,0 m²), 5007 (700 m²) and 5009 (859,8 m²). Total area = 3 097,40 m²;
- Construction of associated infrastructure (underground water supply system, a conventional waterborne sewage system, and a storm water management system).
- The installation of an underground electricity supply network and Telkom lines.

(See **Proposed Layout Plan: Appendix B)**.

The Applicant is CORNAM PROPERTY DEVELOPMENT CC.

The Environmental Assessment Practitioner ("EAP**")** is ***ENVIRO LOGIC***

2. ENVIRONMENTAL MANAGEMENT PLAN

This report serves as the Environmental Management Plan (Construction Phase and Operational Phase) for the proposed development on Erven 4995, 4997, 5007 and 5009 Harmony Estate, Bergsig Springbok.

This Environmental Management Plan (EMP) is to be used during the construction and operational phase associated with this development and has been drafted on the basis of recommendations made by independent consultants.

Conditions of approval set by the D: E&NC to be inserted upon receive.

The EMP is intended for use by the Applicant, the Environmental Control Officer (ECO); the Contractor(s); the competent authority (Department of Environment and Nature Conservation), and the Local Authority (Nama Khoi Municipality).

2. 1 PROJECT DESCRIPTION

2.1.1 Project Locality and Development

Development and construction of dwellings and associated infrastructure on Erven 4995, 4997, 5007 and 5009 located in Harmony Estate, Bergsig Springbok.

The proposed development site (Erven 4995, 4997, 5007 and 5009) is located on the north eastern edge of Harmony Estate. The site borders existing residential erven on the north western and south western side and natural land on the north eastern and south eastern side. The erven are located between 10,5m and 7,7m from the edge of a seasonal stream in the north east. (See **Proposed Layout Plan: Appendix B**).

The area ("footprint") of the proposed development is ± 3 097,40 m².

2.1.2 Bulk Services and Roads

Water

Potable water will be supplied by the Nama Khoi Municipality.

The network will consist of an underground HDPE class 12 pipeline (diameter 75mm - 110 mm) with a connection to every erf. Network will be linked up with the existing bulk water supply network west of existing Erf 2581

Sewerage

Sewerage will be handled by the Nama Khoi Municipality.

The construction of a conventional waterborne sewage system. The sewer system will be an underground system comprising of a minimum of 150mm diameter fibre cement Reka Class 4 sewer pipe with manholes at intersecting points. Sewer lines will be in road reserves and will be linked up with the existing sewer system north of existing Erf 2577.

Stormwater

Storm water flow from roadways, driveways etc. will be collected in channels (kerbing) alongside roadways and discharged into seasonal stream located north east of site. Erosion protection will be provided where required.

Porous surfaces that facilitate the infiltration of storm water runoff should be utilised as far as possible within the development.

Solid waste

Solid waste will be handled by the Nama Khoi Municipality. Waste will be collected and transported to the local waste site.

Electricity

Electricity will be supplied by the Nama Khoi Municipality. The construction of an underground electricity supply network.

The most efficient lamps/ luminaries should be used as allowed by the local Municipality to minimize CO^2 emissions. Luminaries with high cut-off efficiency should be used, within municipal requirements to minimize light pollution.

External lighting shall face downwards.

Telkom
Telkom lines will be distributed underground inside the development.

Roads
Access to the erven will be obtained from Liberty Street.

2.2 SITE DESCRIPTION

2.2.1 Site: General

Harmony Estate is located on the south eastern edge of Bergsig and north of Springbok. The proposed development site (Erven 4995, 4997, 5007 and 5009) is located on the north eastern edge of Harmony Estate inside the urban edge. Springbok normally receives about 106mm of rain per year and because it receives most of its rainfall during winter it has a Mediterranean climate. It receives the lowest rainfall in January and the highest in June. The average midday temperatures for Springbok range from 16.5°C in July to 28.3°C in February. The region is the coldest during July when the mercury drops to 3.8°C on average during the night. The site topography varies between 875 m and 877 m above mean sea level with a fairly even slope north eastwards towards a seasonal stream. Dumping of rocks/ stones occurs along the north eastern side of the site. There are no significant landscape features occurring on the proposed development site.

2.2.2 Site: Vegetation

According to Mucina, L & Rutterford, M.C. (eds) 2006 (“The Vegetation of South Africa, Lesotho and Swaziland”, Strelitzia 19) the vegetation of the area is classified as “Namaqualand Klipkoppe Shrubland” and the conservation status as “Least Threatened”. The groundcover consists out of a few scattered low shrubs in the south and bare soil. Annual plants and grasses occur in some open areas. No rare or endangered plant species occurs on the site. No threatened animals or animal habitats occur on the site.

2.2.3 Archaeological Impact Assessment

No archaeological remains were observed during site visits.

Should any unmarked human remains be disturbed, exposed or uncovered during earthworks, these should immediately be reported to an archaeologist, and to the South African Heritage Resources Agency (SAHRA).

2.3 CONDITIONS OF AUTHORISATION

Environmental Authorisation / Conditions of Authorisation (to be inserted: **Appendix C**)

The applicant shall be responsible for ensuring compliance with the conditions contained in the Environmental Authorisation to be issued by the D: E&NC.

Contractors must investigate and comply with all existing regulations and laws / bylaws unless the Relevant Authority grants specific written authority waiving compliance with any legislation.

B. CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT PLAN (CP EMP)

1. GENERAL

The Construction Phase Environmental Management Plan has been compiled to direct the construction and related works and serves as a baseline information document and guidance for preventing or mitigating environmental impacts.

The Construction Phase EMP describes mitigation measures in more detail, and is partly prescriptive, identifying specific people or organisations to undertake specific tasks, in order to ensure that impacts on the environment are minimised during the construction phase of this project. It is an open-ended document implying that information gained during construction activities and / or monitoring of procedures on site could lead to changes in the CP EMP.

2. ROLEPLAYERS AND THEIR FUNCTIONS

2.1 THE APPLICANT

The Applicant is responsible for appointing the Contractor(s) for the duration of the construction contract and for ensuring that the Contractor(s) fulfill their obligations in terms of conditions contained in the Environmental Authorisation to be issued by the D: E&NC and this CP EMP.

The applicant must appoint a suitably experienced Environmental Control Officer (ECO) before commencement of any land clearing or construction activities to ensure compliance with the provisions of the construction phase EMP.

2.2 THE CONTRACTOR

The Contractor must ensure that all of its sub-contractors, employees, suppliers, agents, etc., are fully aware of the environmental issues detailed in this EMP. The Contractor shall liaise closely with the Applicant and the ECO and must ensure that the works on site are conducted in an environmentally sensitive manner and fully in accordance with the requirements of the EMP, at all times. The Contractor must identify in consultation with the Applicant and ECO the necessary areas for storage of materials, ablutions, eating areas of contract workers, etc., and have these areas demarcated.

When the ECO is not on site the Applicant will be responsible for the EMP. Any problems that might lead to damage to the environment must be discussed with the ECO. The Contractor is responsible to fill in the **"ENVIRONMENTAL WEEKLY CHECKLIST"** for civil construction work (see **Appendix: D**). The **Environmental Weekly Checklist's** must be kept together and must be available for assessment by the Applicant and the ECO.

2.3 THE ENVIRONMENTAL CONTROL OFFICER (ECO)

The following applies to the ECO:

Requirements for the Posts:
The designation is reserved for suitably qualified independent, environmental manager, with adequate environmental knowledge to understand and implement the Environmental Management Plan (EMP).

Site Visits:
Due to the nature of this development the ECO will visit the site at least once a month while construction is in progress, with additional visits at the professional, project-linked, discretion of the ECO.

Responsibilities of the ECO:

- Is responsible for the environmental issues involved with the construction phase of the project;
- Co-ordinating any aspect of site activity that may have an effect on the environment;
- Must work in close conjunction with the Applicant and Contractor.
- Must approve areas for storage of materials, ablutions, eating areas of contract workers, etc., and have these areas demarcated;
- Must identify 'no go' areas and areas sensitive to erosion and have these areas demarcated;
- Environmental awareness of the Contractors/ Builders and workers is essential. This must be in the form of an on site talk and / or a written code of conduct (see **Appendix E**);
- Record keeping in the form of a checklist and / or diary entries and photographic records for visual reference.

Authority of the ECO:

- He/she has the authority to stop works if in his/her opinion there is a serious threat to, or impact on, the environment caused directly from the construction / building operations;
- This authority is limited to emergency situations where immediate consultation with the Contractor / Applicant is not possible. A relevant reason should be supplied to the Contractor / Applicant as soon as possible after stoppage of such works.

3. COMMUNICATION PROCEDURES ON SITE

3.1 Inceptual Site Meeting

An inceptual site meeting should be held between the ECO and the Contractor to:

- confirm the demarcation of construction sites, access roads, working boundaries and no-go areas;
- discuss method of stockpiling;
- check that required ablution, toilets and fire-fighting facilities are on hand;
- discuss restricted access to the natural areas;
- ensure all parties have full sets of this EMP and any other documentation or plans required;
- sign the “Declaration of Understanding”, by Contractor (see **Appendix F**);
- discuss communication channels including contact details;
- discuss areas of responsibility;
- discuss ECO checklists / reports.

3.2 Site Meetings

The ECO should attend Site Meetings (to be held by the Applicant) and “environmental issues” is to be a standing item on the Site Meetings agenda. This agenda item is to allow for discussion of the main construction activities that relate to the environment. The minutes of these meetings will form part of the CP EMP records and are to reflect environmental queries, agreed actions and dates of eventual compliance by the Contractor.

3.3 ECO Diary Entries / Checklist

The ECO will maintain a site diary/checklist that relates to environmental issues as they occur on site.

3.4 Method Statements

Method statements from the Contractor will be required for specific sensitive actions on request of the authorities and/ or the ECO. A method statement forms the base line information on which sensitive area work takes place and is a “live document” in that modifications are negotiated between the Contractor, Applicant and ECO, as circumstances unfold. All method statements will form part of the CP EMP documentation and are subject to all terms and conditions contained within the CP EMP main document. (See **Standard Method Statement sheet: Appendix G**).

A method statement describes the scope of the intended work in a step-by-step description in order for the Applicant and ECO to understand the Contractors

intentions. This will enable them to assist in devising any mitigation measures, which would minimise environmental impact during these tasks. For each instance wherein it is requested that the Contractor submit a method statement to the satisfaction of the Applicant and ECO, the format should clearly indicate the following:

- **What -** a brief description of the work to be undertaken;
- **How -** a detailed description of the process of work, methods and materials;
- **Where** - a description/sketch map of the locality of work (if applicable); and
- **When** - the sequencing of actions with due commencement dates and completion date estimates.

The Contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the Applicant and ECO.

4. Mandatory Site Equipment

Before any construction work is due to start the Contractor shall ensure that the following equipment is on site:

- Sufficient and suitable chemical toilet facilities.
- Refuse bins, which are weather and wind proof, with proper lids.
- One type ABC (all purpose) 12,5 kg fire extinguisher.
- Drip trays (where applicable).
- Leak proof container for the storage of oiled equipment (where applicable).

5. Record Keeping

All records relating to the implementation of this management plan (e.g. Declaration of Understanding, ECO Checklist and/or diary, Method Statements, etc.) must be kept together and can be retrieved easily. These records must be available for scrutiny by any relevant authorities.

Photographs

Photographs are to be taken of the site prior to, during and immediately after construction, as a visual reference. These photographs must be stored with other records related to this CP EMP (to be inserted upon completion by ECO, see **Appendix: H**).

6. Environmental Audit Report

An Environmental Audit Report must be submitted by the Applicant to the satisfaction of the D: E&NC within **three (3) months** after the installation of the bulk services has been completed.

7. STANDARD AND SPECIFIC MANAGEMENT SPECIFICATIONS

This section constitutes the Environmental Policy applicable to the Construction Phase of this development. It has been formulated to ensure that the construction phase is carried out with the least possible negative impact on the natural features of the site. Any deviations from these conditions will be subject to penalties and / or suspension or termination of the contract. Environmentally considerate behaviour is expected at all times. Conditions can only be altered after consultation with the Environmental Control Officer (ECO).

7.1 General

Care and due cognisance must be taken of existing services, new service routes and service construction methods and restrictions.

Access to natural areas during the construction phase of the development is not allowed. Construction and natural areas must be demarcated prior to any construction commencing.

Vegetation and topsoil (± 100 mm) must be removed from the areas to be developed and stockpiled (within the demarcated areas).

All reasonable measures must be taken to prevent pollution of water resources in case of accidents and/or during installation and operation.

Pollution prevention measures must be employed at all levels of the project. No surface, ground or storm water resources may be polluted 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.

Dumping is not permitted on the property. All rock spoil, surplus subsoil and building rubble must be removed from the site and disposed of at the local waste site at Bergsig.

An integrated waste management approach must be used that is based on waste minimization and should incorporate reduction, recycling, re-use and disposal where appropriate. Any solid waste shall be disposed of at the local waste site.

If any archaeological material be discovered during earth moving activities all works must be stopped and SAHRA must be notified immediately.

Should any unmarked human remains be disturbed, exposed or uncovered during earthworks, these should immediately be reported to an archaeologist, and to the South African Heritage Resources Agency (SAHRA).

7.2 Design Guidelines

Residential units should be fitted with low-flow showerheads, ‘low flow’ taps and dual-flush toilets to encourage water saving. Rainwater collection tanks should be incorporated in the design. These must be placed in such way that it does not reduce the aesthetical appearance of the design. Residents should be allowed to

use grey water at their own discretion and according to conditions prescribed by the Local Authority.

Energy saving light bulbs such as CFLs and LEDs should be installed in stead of incandescent bulbs except where the quality of the light is not sufficient for high precision work and reading. The use of solar panel heating systems is encouraged.

Where applicable, all outdoor lighting must be fitted with timers, automatic shut-off devices or photo-sensitive mechanisms to switch off the lights during daylight hours. External lighting shall not impose on the street and public areas and shall face downwards. All external lights must be shielded in such a way that only the area that is meant to be lit is actually lit and light is not allowed to spill into the surrounding landscape. The most efficient lamps/ luminaries must be used as allowed by the local Municipality to minimize CO^2 emissions.

The Local Authority when considering building plan approvals for the development should ensure that water and energy saving devices have been incorporated into the building specifications. All designs shall comply with the National Building regulations as well as statutory requirement by the local authorities.

7.3 Demarcation and fencing

Working areas must be demarcated with colour coded wooden or metal poles. The Contractor to the satisfaction of the Applicant and the ECO must maintain all poles.

The area considered being the working area is defined as that area to be utilised for the installation of services and the construction of each building. Each construction / building site must be demarcated before construction / building commences and construction / building personnel will not be allowed beyond the construction / building perimeter of the site. All activities including stockpiling of plant material, topsoil and rocks must occur within this demarcated area.

7.4 Fauna and Flora

Indigenous plants or wild animals (including reptiles, amphibians, birds' etc.) may not be damaged or harmed. Vegetation removals on demarcated construction sites (as part of the development requirements) are excluded.

All incidents of harm to any animal or natural vegetation (apart from the agreed areas) must be reported to the ECO.

Indigenous fauna in "development areas" that will be disturbed must be relocated to suitable adjacent habitats.

7.5 Top Material Removal and Stockpiling

Vegetation must be stripped from demarcated construction and building sites **only shortly before commencing with the construction / building process**, and separately stockpiled (within the demarcated working area).

Prior to construction or earthworks commencing on site, a minimum of 100 mm topsoil must be removed from demarcated construction and building sites and separately stockpiled (within the demarcated working area) in heaps no higher than 1.5 m. Stockpiles must be stabilised if signs of erosion are visible.

Surplus subsoil that becomes available during construction work and building operations must be used as fill material on designated areas or removed from the site and disposed of at a licensed landfill site.

Clearing residential stands: The area being cleared of vegetation, for the construction of residential units (houses), must be kept to a minimum. Areas designated for the storage of building materials and the mixing of concrete must be located within the area demarcated for the building. **Stands may only be cleared a maximum of two weeks before construction begins.**

7.6 Dust Control

The Contractor is to take appropriate measures to minimise the generation of dust as a result of construction works, to the satisfaction of the Applicant and the ECO.

Vegetation must be stripped from demarcated construction and building sites **only shortly before commencing with the construction / building process.** Dust production must be controlled by regular watering of roads and works area, should the need arise. Straw stabilisation can be used as a method of stabilisation and dust control. Seed bearing invasive vegetation must not be used for this purpose.

All vehicles transporting material that can be blown off (e.g. soil, rubble etc.) must be covered with a tarpaulin.

Excessive dust conditions shall be reported to the Applicant and ECO.

7.7 Appropriate use of Machinery

The Contractor must at all times carefully consider what machinery is appropriate to the task while minimising the extent of environmental damage.
No machinery is to operate outside of the demarcated working area without the permission of the ECO.

Operators of machinery must be suitably qualified.

All machinery and construction vehicles will be parked overnight at designated construction areas.

7.8 Anti-erosion measures

To reduce the loss of material by erosion, the Civil Contractor shall ensure that ***disturbance on site*** is kept to a minimum.

The Contractor must take appropriate and active measures to prevent erosion (wind and water), resulting from his own works, operations and activities as well as storm water control measures, to the satisfaction of the Applicant and ECO.

During construction the Contractor must protect areas susceptible to wind and water erosion, by installing all the necessary temporary and permanent works as soon as possible.

All trenches and excavation works must be properly backfilled and compacted according to specifications.

The contractor shall be responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed.

Aspects normally covered in construction contracts in terms of “protection of works” are standard and are not to be billed or confused with any details covered under environmental requirements.

7.9 Contractors Site Office

The contractor’s site office and storage facilities will be located within the site boundaries and should be fenced in. No site staff, other than security personnel (if required) will be housed on site. Security personnel must be supplied with ablution facilities, water and refuse collection facilities, facilities for cooking and heating so that open fires are not necessary.

At the end of construction the contractor’s site office and storage facilities must be removed and the site rehabilitated and re-vegetated. Compacted areas must be ripped and mulched.

7.10 Site Structures

All site establishment components (as well as equipment) must be positioned to limit visual intrusion on neighbours and the size of area disturbed. The type and colour of roofing and cladding materials to temporary structures shall be selected to reduce reflection.

7.11 Lights

The Contractor shall ensure that any lighting installed on the site for his activities does not interfere with road traffic or cause a disturbance to the surrounding neighbours / community or other users of the area. Nigh time light sources must be directed away from residential areas and roads.

7.12 Eating, Washing and Resting Areas

The Contractor must designate restricted places for eating, washing and resting, within the specified working areas, to the satisfaction of the Applicant and ECO. The Contractor must provide adequate refuse bins with secure, wind and animal proof lids that must be cleaned on a daily basis.

The feeding of, or leaving food for, domestic and wild animals is strictly prohibited.

7.13 Drinking Water

The Contractor must insure that drinking water (SABS standard) is available for all staff on site.

7.14 Toilets

The Contractor is responsible for the provision of sufficient and suitable chemical toilets. A minimum of one chemical toilet shall be provided per 15 persons. The Contractor shall supply toilet paper at all toilets at all times. Toilet paper dispensers shall be provided in all toilets. Toilets shall be of a neat construction and shall be provided with doors and locks and shall be secured to prevent them from blowing over. Entrances to toilets should be adequately screened from public view. Sanitation facilities shall be located within 100 m from any point of work, but must not be closer than 50 m to any water body.

The Contractor (or reputable toilet servicing company) shall ensure that toilets are emptied at close of each working week. Waste must be disposed of at a registered waste disposal site.

Sanitation provision and servicing must be to the satisfaction of the ECO and Applicant.

7.15 Discharge of construction water

Care must be taken to ensure that no water from the construction sites enters any natural watercourses.

All cement effluent from washings (mixer, wheelbarrows, etc.) and run-off from batching areas and other work areas must be contained in suitable sedimentation ponds approved by the Applicant and the ECO. Sedimentation ponds must be lined with SABS approved HDPE liners.

Sedimentation ponds shall be allowed to dry out on a regular basis to allow for solid material to be removed. This material must be disposed of in a suitable manner, depending on the nature of the material, and to the discretion of the Applicant / ECO.

All solid waste material from the sedimentation ponds must be disposed of at the local waste site at Bergsig.

No surface or ground water may be polluted due to any activity on the property/ site. The relevant requirements of the National Water Act, 1998 (Act, No. 36 of 1998) must be complied with at all times.

7.16 Waste Disposal (Refuse)

No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur. All rock spoil and building rubble must be removed from the site and disposed of at a licensed landfill site.

The Contractor shall be responsible for the establishment of a refuse control system that is acceptable to the Applicant and the ECO.

The Contractor shall ensure that waste and surplus food, food packaging and organic waste are not deposited by any workers anywhere on the site except in refuse bins. Refuse bins must be weather and animal-proof with proper lids. The Contractor must transport refuse collected from the working areas and the Contractors site office, at least once a week to an approved waste disposal site.

The Contractor must collect and transport discarded construction/ building materials such as steel reinforcing, wooden shuttering and timbers, cement bags, piping, plastic straps, etc. to an approved waste disposal site.

An integrated waste management approach must be used that is based on waste minimization and should incorporate reduction, recycling, re-use and disposal where appropriate. Any solid and chemical wastes must be disposed of at a landfill licensed in terms of section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989).

7.17 Fuel and Service areas

All vehicles and equipment must be maintained in a good condition that prevents leakage and possible contamination of soil or water supplies.

Servicing of vehicles and machinery will take place at existing facilities in the area.

Any emergency repairs on site must have a drip tray present to prevent accidental spillage of oils and fuels. The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing. The depth of the drip tray must be determined considering the total amount / volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle. Leaking equipment must be repaired immediately or be removed from site to facilitate repair. All potentially hazardous and non-degradable waste must be collected and removed to a registered waste site.

Any fuels, oils and inflammable materials are to be stored in suitably equipped storage areas. These areas shall comply with general fire safety requirements. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Storage areas shall display the required safety signs depicting “No Smoking”, “No Naked lights” and “Danger”. Containers must be clearly marked to indicate contents as well as safety requirements. Quantities of fuels, oils, and hazardous materials stored on site should be appropriate to the requirement for these substances on site.

No fuel / oil containers may be left unattended within drainage areas.

The contractor shall keep the necessary materials and equipment on site to deal with spills of the materials present should they occur. The Contractor must ensure that senior and other relevant members of the workforce are trained in

dealing with spills and emergency spill kits. In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water Affairs must be informed immediately. The Contractor must keep a record of all spills and the corrective action taken. All spills and remediation measures taken are to be recorded in the ECO checklist/ diary.

All contaminated soil must be removed and placed in containers. Contaminated material can be taken to one central point where bio-remediation can be done. A specialist Contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise is not available on site. All spills of hazardous substances must be reported to the Applicant and ECO.

7.18 Preparation of Building Material

All building materials are to be prepared within the demarcated working area at each construction/ building site.

Construction and building material will be stored at the Contractors site office/ storage facilities, as well as on the construction site (within the demarcated area).

No building material may be sourced from the property. (No quarrying or sand mining).

7.19 Concrete works

Cement powder has a high alkalinity pH rating, which can contaminate and affect both soil and water pH dramatically. A shift in pH can have serious consequences on the functioning of soil and water organisms and plants. The following recommendations must be implemented to minimise impact.

- All cement mixing should take place in a cement mixer and then within a SABS approved HDPE plastic lined bund. **No cement may be mixed on the ground.**
- Mixing areas to be carefully placed in consultation with the Applicant and the ECO.
- Cement contaminated water may not enter a natural or man-made (e.g. trench or dam) water system.
- If possible/ appropriate ready mixed concrete should be used.
- Cement bags are to be stored securely out of harms way from the elements (wind and rain).
- Excess or spilled cement / concrete should be confined within the works area and then removed to an approved waste site.

7.20 Blasting / drilling

In the event that blasting or rock drilling is required, the following recommendations must be implemented.

a) The Contractor shall take all necessary precautions to prevent damage to special features and the general environment, which includes the removal of fly rock. Environmental damage caused by blasting / drilling shall be repaired at the Contractors expense to the satisfaction of the Applicant and the ECO.

a) No blasting may be done on Sundays and Public Holidays.
b) Adequate warning must be provided prior to all blasting to all site staff.
c) All-clear signals must also be clearly given.
d) The Local Authority, adjacent landowners/ neighbours, SAPS, Applicant and ECO must be given at least 24-hour notice before blasting events.

7.21 Fires

No open fires will be allowed on site under any circumstances.

The collecting of indigenous vegetation for firewood on the property is prohibited

Adequate fire fighting equipment must be available on site in good working order (at least one type ABC (all purpose) 12.5 kg extinguisher.

Welding, gas cutting or cutting of metal will only be permitted inside the working areas.

The Contractor shall pay the costs incurred to organisations called to put out any fires started by construction workers. The Contractor shall also pay any costs incurred to reinstate burnt areas as deemed necessary by the Applicant and the ECO.

7.22 Working Hours

Works are to be restricted to:

Monday to Friday:	07hOO – 18h00
Saturday:	07h00 – 13h00
Sunday:	No work
Public Holidays:	No work

7.23 Noise

Noise levels shall be kept within acceptable limits, and construction crew must abide by local by-laws regarding noise.

All construction vehicles should be in a good working order to reduce possible noise pollution.

Work hours during the construction phase shall be strictly enforced unless express permission is given, which permission shall not be granted without consultation with the adjacent landowners.

Noise reduction is essential and Contractors shall endeavour to limit unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc.

Noisy activities shall take place only during working hours. The residents of houses adjacent to the development should be notified in writing 24 hours prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the adjacent sites. These activities could

include, but are not limited to, blasting, piling, use of pneumatic jack-hammers and compressors, etc.

7.24 Safety

The access to the site must be controlled so as to restrict unauthorised personnel from entering the site. The Contractor is responsible for ensuring that only authorised personnel are on site at all times. Notices must be displayed at public entrances to the property, warning visitors that they are entering a construction site.

The Contractor must ensure that all emergency procedures are in place prior to commencing work. Emergency procedures shall include (but not be limited to) fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc.

The contractor must ensure that lists of all emergency telephone numbers / contact persons are kept up to date and that all numbers and names are posted at relevant locations throughout the duration of the construction period.

The nearest emergency service provider must be identified and the contact details of this emergency centre, as well as the police and ambulance services must available at prominent locations around the construction site and the contractor's site office.

No unauthorised firearms are permitted on site.

7.25 Penalties

The Applicant can impose spot fines on the Contractor for any contraventions of the CP EMP. By imposing spot fines on individuals guilty of contravening the CP EMP, the Applicant will be able to ensure that the requirements of the CP EMP are taken seriously not only by the management personnel on site, but also by labour. Below is a range of spot fines for different contraventions of the CP EMP. The Applicant should use these as a guide and use his/her own judgment in determining the severity of the contravention and thus the value of the spot fine:

- An individual walking outside the defined boundaries of the site R50
- An individual driving a vehicle outside the defined boundaries of the site R300 – 1000
- An individual driving any earthmoving plant outside the boundaries of the site R300 – 3000
- A plant operator ignoring a verbal warning to have an oil leak from his machinery repaired R200 – 400
- An individual littering on site R50
- An individual not making use of the ablution facilities R50
- An individual making an illegal fire on site R300 – 1000
- An individual using a funnel for refueling rather than a pump R100
- An individual causing unnecessary damage to flora and fauna on site R100 – 1000
- An individual eating a meal outside of the defined eating area R40

For each subsequent similar offence committed by the same individual, the fine should be doubled in value to a maximum value of R3 000. The Applicant will not collect the fines from individuals, but will rather inform the Contractor of the contravention, the individual's identity and the amount of the fine. The fine will be deducted from the Contractors' monthly certificate. It will be the Contractor's responsibility to reclaim such fines from the guilty individuals.

The Contractor must advise his personnel/ workers of the penalties.

7.26 Site Clean Up

The Contractor must ensure that all temporary structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed. The Contractor must repair all disturbed areas. Where necessary and appropriate, the topsoil must be restored in areas where landscaping is to take place.

The construction sites shall be cleared, and cleaned to the satisfaction of the Applicant and the ECO.

7.27 Rehabilitation

Stabilisation of construction areas must take place immediately after construction / building work has been completed. Seed bearing invasive vegetation must not be used for this purpose.

7.28 Community Relations

The Contractor shall be responsible for responding to third party or public queries and/ or complaints relating to operations.

The Contractor shall notify the Applicant and ECO of any complaints lodged. The Contractor shall be responsible for maintaining a ***"Complaints Register"*** on site to record complaints received and action taken. This register will be made available to the Applicant and the ECO on demand.

8. UPDATING of CONSTRUCTION PHASE EMP

Although care has been taken to address all known relevant environmental issues for the construction phase, it might become necessary to add or amend certain procedures or instructions to improve the efficiency of the CP EMP.

Only those additions to, or amendments of, this CP EMP that will either improve environmental protection or can be proved not to have any negative effect would be considered.

Any environmentally significant additions or amendments will be submitted by the ECO to the D: E&NC for approval, after the ECO has consulted the Applicant and the Applicant.

C. OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT PLAN (OP EMP)

Once the infrastructure has been completed the individual plot owners will be responsible for *inter alia* ensuring compliance with the conditions contained in the Environmental Authorisation to be issued by the D: E&NC and this Environmental Management Programme (EMP).

Individual plot owners will have to comply with the conditions contained in the Environmental Authorisation to be issued by the D: E&NC and this EMP at their own cost when developing their individual plots.

The Local Authority when considering building plan approvals for the development should ensure that water and energy saving devices have been incorporated into the building specifications.

All buildings, walls or structures erected on any erf shall confirm strictly with the rules, regulations and by-laws as lay down by the Local Authority in respect of the development.

No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur. Existing refuse/rubble dumped on the development site must be removed. An integrated waste management approach should be implemented that is based on waste minimization and should incorporate reduction, recycling, re-use and disposal where appropriate.

Top material brought onto the site, for filling and/ or landscaping (e.g. for gardens and roads) should as far as possible be free of alien or invasive seed.

Ensure the implementation of a “Springbok first” policy in order to maximise employment and income benefits for local communities. Identify specific existing skills within the local communities as well as additional skill requirements, and put in place the necessary training or incentives to develop these skills.

All outdoor advertising associated with this development, whether on or off the property, must comply with the applicable Local Authority By-Law for the control of Outdoor Advertising or in the absence of local legislative controls, must comply with the South African Manual for Outdoor Advertising Control (SAMOAC).