

An aerial photograph of a rural area, likely a farm or small village. The image shows several buildings, including a large rectangular structure and a smaller one, surrounded by green fields and trees. A dirt road or path is visible, winding through the landscape. The overall scene is a mix of built-up areas and natural vegetation.

**ENVIRONMENTAL MANAGEMENT PROGRAMME  
FOR THE DEVELOPMENT OF THE APPROVED  
LONGLANDS VILLAGE DEVELOPMENT ON ERF  
345 LONGLANDS, VLOTTENBURG,  
STELLENBOSCH**

**AWEC FILE NO.: 1016**

**February 2021**



## TABLE OF CONTENTS

	PAGE
<b>SECTION A: THE SCOPE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME.....</b>	<b>1</b>
<b>SECTION B: BACKGROUND INFORMATION.....</b>	<b>3</b>
B.1 PROJECT DESCRIPTION AND APPROVAL CONTEXT .....	3
B.1.1 Description of the Proposed Development.....	3
B.2 Qualifications and Expertise of the EAP who compiled this EMPr .....	5
<b>SECTION C: PROJECT POLICIES, VISION, GOALS AND PRINCIPLES .....</b>	<b>6</b>
C.1 ENVIRONMENTAL POLICY .....	6
C.2 VISION AND GOALS .....	6
C.2.1 Vision .....	6
C.2.2 Goals .....	7
C.3 FUNDAMENTAL PRINCIPLES OF THE EMPr.....	7
<b>SECTION D: APPOINTMENT OF ENVIRONMENTAL CONTROL OFFICER</b>	<b>10</b>
D.1 INTRODUCTION AND METHODOLOGY.....	10
D.1.1 ROLES AND RESPONSIBILITIES OF THE ECO.....	10
D.1.2 LEVEL AND TYPE OF COMPETENCY OF ECO .....	11
D.1.3 FREQUENCY OF SITE VISITS .....	11
D.1.4 EDUCATION PROGRAMME .....	11
D.1.5 COMMUNICATION PROCEDURES ON SITE .....	12
<b>SECTION E: CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME.....</b>	<b>14</b>
E.1 GENERAL CONSTRUCTION MANAGEMENT PROGRAMMES .....	14
<b>E.2 BIOPHYSICAL MANAGEMENT PROGRAMMES .....</b>	<b>17</b>
E.2.1 Fauna and Flora .....	18
E.2.2 Water .....	20
E.2.3 Soil.....	20
E.2.4 Energy Management.....	22
<b>E.3 SOCIO-ECONOMIC MANAGEMENT PROGRAMMES .....</b>	<b>22</b>
E.3.1 Archaeological and Heritage Resources.....	23
E.3.2 Socio-Economic Benefits of the Development .....	24
E.3.3 Aesthetics .....	24
E.3.4 Security.....	25
E.3.5 Noise.....	25
<b>SECTION F: POST-CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME.....</b>	<b>26</b>
<b>SECTION G: OPERATIONAL ENVIRONMENTAL MANAGEMENT PROGRAMMES .....</b>	<b>27</b>
G.1 GENERAL OPERATIONAL MANAGEMENT PROGRAMMES .....	27
<b>G.2 BIOPHYSICAL MANAGEMENT PROGRAMMES .....</b>	<b>27</b>
G.2.1 Fauna and Flora .....	27
G.2.2 Water .....	29
G.2.3 Waste Management.....	30
G.2.4 Soil.....	31
G.2.5 Energy Management.....	31
<b>G.3 SOCIO-ENVIRONMENTAL MANAGEMENT PROGRAMMES.....</b>	<b>31</b>
G.3.1 Archaeological and Heritage Resources.....	32
G.3.2 Socio-Economic Benefits of the Development .....	32

G.3.3 Aesthetics ..... 33  
G.3.4 Security..... 33  
**SECTION H: ENVIRONMENTAL AUDITING ..... 34**  
**SECTION I: CONTINUAL IMPROVEMENT OF EMPr ..... 35**  
I.1 REQUIREMENTS FOR EFFECTIVE IMPLEMENTATION ..... 35  
I.1.1 The Commitment of the Developer/HOA. .... 35  
I.1.2 Document Control..... 35  
I.2 REQUIREMENTS FOR CONTINUAL IMPROVEMENT ..... 35  
I.2.1 Management Review ..... 35  
**SECTION J: CONCLUSIONS ..... 36**

**LIST OF FIGURES**

- FIGURE 1:** Regional Locality Map  
**FIGURE 2:** Locality Map  
**FIGURE 3:** Site Development Plan

## LIST OF ABBREVIATIONS

Aubrey Withers Environmental Consultants	AWEC
Basic Assessment Report	BAR
Environmental Assessment Practitioner	EAP
Environmental Control Officer	ECO
Environmental Impact Assessment	EIA
Environmental Management Programme	EMPr
Environmental Management Programmes	EMPs
Home Owners Association	HOA
Heritage Western Cape	HWC
Interested and Affected Parties	I&APs
Resident Engineer	RE
South African Heritage Resources Agency	SAHRA
Spatial Development Framework	SDF
Site Development Plan	SDP
Traffic Impact Assessment	TIA
Waste Water Treatment Works	WWTW

## SECTION A: THE SCOPE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

This section describes the scope of the Environmental Management Programme of the Longlands Village Residential development on Erf 345 Longlands, Stellenbosch, Western Cape (**Figure 1**).

The EMPr, together with its various Environmental Management Programmes (EMPs), was prepared for the Applicant, Longlands Village (Pty) Ltd. (also referred to hereafter as the 'Applicant' or 'Developer') by Aubrey Withers of Aubrey Withers Environmental Consultants (AWEC).

The EMPr covers the spectrum of pre-construction, construction and operational phases of the project. The directives and guidelines covered in respect of the above phases are provided by the various EMPs. In essence, the EMPr is the '*management tool*' for providing management guidelines for the construction methodology and supervision of the construction of the project to ensure that environmental impacts are minimised. In addition, the EMPs provide the necessary guidelines to the Environmental Control Officer (ECO), consulting engineers and construction supervisor, to ensure that:

- initially the contractors and their subcontractors fulfil their construction role in an environmentally responsible manner (for both construction of bulk engineering services and building of houses); and
- secondly the Home Owners Association (HOA) of the proposed Village development fulfil their long-term environmental management commitments during the Operational Phase of the project.

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

- **Environmental Objectives**

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

- **Environmental Targets**

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

- **Management Actions**

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

It is the responsibility of the Developer or Implementing Agent and any other development entity that may develop any approved phase of the overall project to ensure adherence to the recommendations of the EMPr, and to review the results of the monitoring programmes and to facilitate any corrective action that may be necessary. It should be noted that the developer and the HOA of the proposed development will be responsible for the implementation and monitoring of environmental issues that may arise during the Operational Phase of the project.

As part of their responsibility, the developer (and any other development entity that may develop any approved phase of the overall project) will need to appoint an ECO (Environmental Control Officer) to regulate the Construction Phases of the project. The EMPr must form part of the tender documentation to ensure that appointed contractors understand what their environmental contract obligations are.

The duties of the ECO are as follows:

1. The ECO will:
  - Meet with the Implementing Agent and consulting engineers to hand over the site to the appointed Contractor and go through the content of the EMPr and ensure that the Contractor understands the environmental conditions of the contract;
  - Meet with the Contractor and staff before construction commences to go through the environmental “do’s and don’ts” of the project (i.e. induction of staff);
  - Attend the monthly site meetings to assess progress and compliance with the recommendations of the EMPr;
  - Complete an ECO Checklist after each site meeting and distribute it to all the relevant role players within 5 days. The ECO Checklist will act as environmental site instructions for the duration of the contract for the installation of the services and construction of buildings; and
  - Undertake an environmental audit of the project once installation of services has been completed.
2. The Contractor’s Site Agent will monitor the day-to-day progress of the construction process. The consulting engineer should conduct monthly site visits and meetings with the Contractor and ECO. Should any environmental problems arise during the Construction Phase, the Site Agent and/or consulting engineer must immediately inform the ECO to undertake a site visit to assess and attend to the potential environmental problem(s). All works where environmental problems exist are to be stopped until the ECO has been to site and assessed the situation and rectified the problem(s).
3. The results of the monitoring programmes (site meetings), which will be contained in the monthly ECO Checklists, will be used for the compilation of the final audit report to be submitted to the applicant about four weeks after the completion of the Construction Phase of civil services for the project.

## SECTION B: BACKGROUND INFORMATION

### B.1 PROJECT DESCRIPTION AND APPROVAL CONTEXT

#### B.1.1 Description of the Proposed Development

The Applicant proposes to develop a residential development to be known as Longlands Village comprising 70 residential erven, on Erf 345 Longlands, Stellenbosch. Vlottenburg is a suburb of Stellenbosch that lies some 7km to the west of the Stellenbosch CBD (**Figure 1**).

The application property is situated within the north western border of Vlottenburg village, (a locality map has been attached as **Figure 2**). The proposed development is consistent with the surrounding land uses where planned and current residential developments border the development property on at least one side to the west (Longlands Manor Estate) and Erf 346 to the east (Longlands Subsidy Housing). Erf 346 of Longlands is currently being developed for 144 residential erven. The approved, but as yet has not been developed, Chalteleare residential estate lies to the south of Erf 345, i.e. Portions 2 and 3 of Farm 1307. The Bonniemile Smallholdings lie to the north of the Polkedraai Road (Stellenbosch Arterial).

The property comprises a 5.15ha portion of land that was once used for the cultivation of dryland vineyards. The property contains the original farmhouse and informal housing. The whole of the property has been totally transformed. No natural vegetation occurs on the property. The vegetation that would have occurred on the property would have been Swartland Granite Renosterveld, a critical endangered vegetation type. No wetlands or streams (or drainage lines) occur on the Longlands Village property. Vlottenburg is connected to Stellenbosch and Kuils River by the Polkedraai Road. The Baden Powell Drive connects Vlottenburg with the N2 to the south.

The applicant and owner of the Longlands Village property (Longlands Village (Pty) Ltd.) has rezoned the property from Agriculture Zone 1 to Subdivisional Area to develop about 70 single residential houses on the property together with roads and private open space (**Figure 3**). The property lies within the urban edge of Vlottenburg. Approval for the development was obtained in terms of the Provision of Land and Assistance Act, 1993 (Act 126 of 1993) from the Department of Rural Development and Land Reform.

The average size of the erven of the proposed development are about 433m<sup>2</sup>, with the smallest erf being 334m<sup>2</sup> and the largest being 668m<sup>2</sup>. Access to the property will be directly off the Polkedraai Road. All the erven will be connected to Municipal services supplied by the Stellenbosch Municipality, namely: water, sewage, electricity and waste collection.

The soils of the proposed development site are mostly gritty sand and scree overlying clays derived from the *in situ* weathering of granite and shale. A variable thickness of laterite occurs at the interface between transported gritty sands and *in situ* clays derived from the weathering of granite of the Stellenbosch-Kuils River Pluton, Cape Granite Suite.

The site is not expected to support many mammal species, due to its informal housing and due to the lack of suitable habitat on site.

The following sections broadly describe roads and access to the proposed development, and the various bulk engineering services.

#### Roads and access

Access to the property will be via the Polkedraai Road, which will eventually be a signalised intersection. The entrance condition will comprise a security entrance and exit gate and a separate entrance for maintenance vehicles. An embayment will also be allowed for the temporary storage of solid waste for collection by the Municipality. The same entrance gate will provide access to the approved Longlands Manor development.



**Potable water**

The development will be provided with an underground water supply network, which is to be appropriately sized to cater for all domestic and fire demand requirements. It will be provided with all the necessary valves, connections and fire hydrants. Potable water will be provided by the Blackheath water purification plant connected to two new reservoirs and a subsurface pipeline. This scheme will form part of the bulk water upgrade scheme for Vlottenburg. The scheme between Blackheath and Vlottenburg (Longlands) has approval, but the water scheme between Longlands and Onderpapegaaiberg still need to be approved by DEADP. The latter development will not, however, impact on the development of Longlands water supply which is to be provided from the two new reservoirs built for the Vlottenburg water scheme.

It is recommended that water saving mechanisms should be prescribed as part of the sale agreements and building guidelines, such as:

- Installation of toilets fitted with dual flush systems;
- Aerator nozzles fitted to taps and showers;
- Water wise gardening practices, such as the planting of indigenous, drought resistant plants, installation of timers and/or computerised irrigation systems;
- Installation of rainwater harvesting systems at each house; and

**Sewage**

The proposed development will connect to the existing Longlands/Digteby bulk sewage line. This line will connect to the new Jamestown-Vlottenburg bulk sewage line, which is currently being built. The treatment capacity at the Stellenbosch WWTW has been confirmed by the Municipality.

**Solid and domestic waste**

The Stellenbosch Municipality has confirmed that there is currently (limited) capacity available at the Stellenbosch Municipal landfill site to accommodate additional domestic and solid waste from the development. A new cell has also recently been constructed at the Stellenbosch Municipal landfill site to create additional disposal capacity. The waste generated on the site of the development during the operational phase must be sorted on site and entered into the recycling waste stream of Stellenbosch. This would include the separation of garden (green) waste which can be taken to the WWTW where compost is envisaged to be made by the Municipality.

**Electricity**

The electricity for the Longlands area is currently supplied by Eskom. The Stellenbosch Municipality will be installing a new electrical cable from its substation near the Stellenbosch WWTW to a substation at the bottom of the Longlands subsidy housing development. Electricity to the Longlands Village development will be obtained from the Longlands substation.

Street and area lighting will be installed as necessary, and as per the guidelines of the Stellenbosch Municipality. It has been recommended by the visual impact assessment specialist that low, downlit bollard-type lighting should be provided.

The use of electricity can be reduced by using LED lights, solar geysers etc. In addition, thermal installation must be used in roofs, and windows should be aligned away from the western sector.

**Stormwater**

The Stellenbosch Municipality requires that the guidelines of the Red Book be implemented with regard to stormwater management, and that measures are put in place to ensure that the post-development peak stormwater runoff from the site from a 1 in 50-year storm event should not exceed the pre-development peak flow. The difference between the pre- and post-stormwater run-off will need to be temporarily detained on site in detention ponds.

A detention pond system will be constructed within the green corridors of the development. Any overflow water will be led into the Sanddrif River via the existing outlet from the detention pond to the east of the

Longlands subsidy housing development. Such stormwater will be allowed to dissipate into the existing wetlands to the west of the Sanddrif River.

It has been recommended that each household should store rainwater for use in gardens.

## **B.2 Qualifications and Expertise of the EAP who compiled this EMP**

Mr Withers holds a BSc (Hon) Geology degree (1978) from the University of Port Elizabeth and has 12 years' experience in lecturing, minerals exploration, groundwater development (specifically in Namibia, Northern Province, North West Province and Western Cape Province), and geotechnical geology, civil engineering and building construction, and 31 years in professional practice as an environmental assessment practitioner (EAP), undertaking such tasks as:

- environmental planning for the compilation of Spatial Development Frameworks;
- paving the way for the formation of potential Biosphere Reserves, i.e. bioregional planning;
- EIA and Basic Assessments for a host of development projects from large housing projects, resort developments, sewer pipeline, golf course developments, industrial parks, engineering projects of all facets, to the development of large and small nature reserves;
- compiling environmental management plans for such projects and supervising the implementation of such projects as the environmental control officer (ECO).

## SECTION C: PROJECT POLICIES, VISION, GOALS AND PRINCIPLES

The purpose of the EMPr is to provide guidelines to the Implementing Agent or the applicant and Contractor for managing the potential impacts of the development on the surrounding environment during the Construction and Operational Phases, by implementing / ensuring that:

- the mitigation measures for the potential environmental impacts identified AWEC;
- the objectives and targets set by AWEC, and that meets the general environmental policy set for the project, are implemented; and
- the environmental recommendations, including environmental monitoring put forward for the Operational Phase are implemented.

To achieve the above, it is important that the EAP takes into account the site characteristics, natural surroundings, the relevant legislation and the recommendations of the specialists, and that the EMPr is practically structured and implemented so that negative environmental impacts are minimised during the Construction Phases (installation of services and construction of buildings) and the Operational Phase of the project. Any positive impacts should on the other hand be enhanced to ensure that the proposed development is sustainably managed.

### C.1 ENVIRONMENTAL POLICY

The environmental policy statements of the developer are the following:

- All aspects of the development and its management will be undertaken in accordance with the relevant legislation and with the vision, goals and principles put forward in this EMPr.
- The environment<sup>1</sup> forms the fundamental basis of the proposed project. All construction and operational activities must, therefore, conform to the principle of environmental sustainability and must be carried out in such a way that potentially negative environmental impacts on the development site and surrounds are minimised, and that water and energy saving measures (solar hot water systems) are implemented and measures are put in place to recycle waste as much as possible.

### C.2 VISION AND GOALS

The conceptual planning, development and operation of the Longlands Village Residential development are based on the vision statement and goals set by the developer as described below.

#### C.2.1 Vision

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

*To develop and manage the proposed Longlands Village Residential development in such a way that it will:*

- *ensure sustainable development in all its facets and in particular during the Construction and Operational Phases of the project;*
- *ensure the conservation of the surrounding environment (biophysical, socio-economic and cultural-historic characteristics);*

<sup>1</sup> "Environment" (as defined in NEMA, [Act 107 of 1998]) means the surroundings within which humans exist and that are made up of- (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

- *lead to a better appreciation, understanding, use and conservation of the limited resources (water and energy) by the owners/occupiers of new houses, and visitors to the development;*
- *ensure an ethic of waste separation on site and recycling;*
- *provide a pleasant environment in which to live in; and*
- *provide both temporary and permanent job opportunities within the local community.*

### C.2.2 Goals

The **Goals** for upholding the above vision for the proposed Longlands Village Residential Estate in and around Vlottenburg, are the following:

- To implement a water demand management system to reduce the use of potable water within the development by ensuring the use of water saving devices such as low flow showerheads, aerated taps and dual flush toilets and the collection of rainwater for household use;
- To prevent seasonal water-logging of open areas through the establishment of an effective stormwater drainage system;
- To introduce an ethic of using electricity sparingly by specifying appropriate light fittings and appliances and, if feasible, through the use of renewable energy forms (e.g. solar heaters and panels to generate electricity);
- To promote an ethic of waste minimisation and recycling;
- To enhance the built environment by ensuring environmentally friendly and aesthetically pleasing “green” building designs and colour schemes that are in harmony with the surrounding architectural vernacular, and to ensure conservation of energy (window orientation, thermal insulation, etc.);
- To minimise negative environmental impacts that could arise during the Construction Phase, such as dust during earthworks, wind and/or water erosion of cleared surfaces, construction noise etc.;
- To enhance positive environmental impacts (particularly socio-economic) that could arise during the Construction and Operational Phases of the project, such as the creation of job opportunities and the development of skills for the local community; and
- To ensure the health and safety of construction workers during the Construction Phases and permanent staff during the Operational Phases of the project in accordance with the Occupational Health and Safety Act (Act No. 85 of 1993), and if need be the implementation of the prevention of Covid-19 measures.

### C.3 FUNDAMENTAL PRINCIPLES OF THE EMPr

The EMPr is based on fundamental principles<sup>2</sup> derived from applicable government policy statements contained in various government documents and legislation (e.g. the *National Environmental Management Act, (Act 107 of 1998)*). The following principles contained in these documents and laws will be used in the EMPr to guide the Construction and Operational Phases of the proposed Longlands Village Residential Estate, namely:

- **Environmental management** must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

<sup>2</sup> **Principles** are shared assumptions and truths that policy and action can be based upon.

- **Development** must be socially, environmentally and economically sustainable, i.e. meet the “triple bottom line” criteria for development.
- **Sustainable development** requires the consideration of all relevant factors including the following:
  - ◆ that the disturbance of ecosystems and loss of biological diversity are avoided, are minimised and remedied;
  - ◆ that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
  - ◆ that the development, use and exploitation of renewable resources and the ecosystems of which they are a part do not exceed the level beyond which their integrity is jeopardised;
  - ◆ that a risk-averse and cautious approach is applied (also called the **Precautionary Approach**), which takes into account the limits of current knowledge about the consequences of decisions and actions.
- **Environmental management must be integrated**, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the **best practicable environmental option**.
- **Community well-being and empowerment** must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
- **Capacity building and education:** The EMPr must play a dynamic role in developing the understanding, skills and capacity of the employees and people in the area in order to promote sustainable development.
- **Consider all alternatives:** Considering all alternatives results in making the best decisions. In this case, a Design Evolution was undertaken by the urban planners, resulting in a sustainable site development plan. The EMPr must therefore ensure that the preferred site development plan is considered in all decision-making. Developmental and environmental planning, problem solving and decision-making are often complex. Possible consequences of conflicting interest, as well as the consequences of not acting, need careful consideration.
- **Co-ordination:** Various aspects and issues cut across the key sectors and functions in the area. Sustainability and integrated planning and management (including monitoring) therefore will depend on co-ordination and integration of all sectors and I&APs in the Vlothenburg region.
- **Due process:** Due process must be applied in all integrated management activities. This includes adherence to the provisions in the Constitution and statutes dealing with just administration and public participation in regional and local governance.
- **Duty of care:** Every person (developer, contract workers and community members) associated with the proposed Longlands Village Residential Estate have a duty to act with due care to avoid damage to the environment, or pollution of the environment or waste a precious resource. Also called the **Environmental Responsibility Principle**.
- **Equity:** The EMPr is to ensure equitable access to natural resources, benefits and services to meet basic needs and ensure human well-being. Each generation has a duty to avoid impairing the ability of future generations to ensure its well-being.
- **Full cost accounting:** Decisions must be based on an assessment of the full social and environmental costs.
- **Good governance:** Good governance depends on mutual trust and reciprocal relations between the various groups and sectors of the area and the controlling officials. This must be based on the fulfilment of constitutional, legislative and executive obligations, and the maintenance of transparency and accountability.
- **Prevention:** The EMPr must anticipate problems and prevent negative impacts on the environment and on people's rights.
- **Polluter Pays:** Those responsible for environmental damage must pay the repair costs both to the environment and human health, and the costs of preventative measures to reduce or prevent further pollution or degradation.

- **Subsidiary:** Regulatory responsibilities belong at the most local level at which the tasks can be carried out effectively. Environmental management structures must match the ecological scale of the managed resource.
- **Waste management:** Waste management must minimise and avoid the creation of waste at source. The EMP is to encourage waste recycling, separation at source and safe disposal of unavoidable waste.

## **SECTION D: APPOINTMENT OF ENVIRONMENTAL CONTROL OFFICER**

### **D.1 INTRODUCTION AND METHODOLOGY**

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

The ECO will then need to undertake periodic site visits to assess whether any environmental degradation is resulting from the Construction Phases of the project and to check compliance with the EMPs and the environmental authorisation (EA) issued by the DEADP. The daily on-site activities will be controlled by the Construction Manager (or Site Agent) and Resident Engineer (RE). The roles and responsibilities of the ECO throughout the contract period are provided in **Section D.1.1** below.

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

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

#### **D.1.1 ROLES AND RESPONSIBILITIES OF THE ECO**

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

- regulate the various phases of the project in accordance with the recommendations made in the EMPr;
- assist the developer and the Contractor with instituting the EMPs prescribed in this EMPr;
- meet with the Contractor and construction teams, before construction begins, to enlighten them regarding the environmental sensitivities of the site and how to go about their construction methodology and site husbandry, so as to prevent negative environmental impacts from occurring, i.e. conduct an environmental induction training programme;
- conduct periodic site visits (as scheduled in D.1.3 below) to assess any environmental degradation resulting from the project, to monitor compliance of the recommendations of the EMPs (to ensure that environmental impacts are minimised and mitigated), and to assess and monitor the success of the rehabilitation/landscaping programmes;
- report to the developer, construction managers, relevant construction personnel and consultants during monthly site meetings of progress on the implementation of the EMPr, and implementation of the relevant mitigation measures contained in the EMPr;
- recommend to the RE to stop construction works if, in his/her opinion, there is a serious threat to or impact on the environment as a result of the construction operations;
- attend regular site meetings to discuss progress of the project with construction personnel and consultants;
- issue an ECO Checklist after each site meeting to act as site instructions for recording any irregularities or non-compliance with the EMPs and construction progress in general. Submit these ECO Checklists to the developer and contractor; and
- Issue a final ECO Audit at the end of the construction phase and submit such an Audit report to the Stellenbosch Municipality, the developer and the contractor.

If the ECO at any stage indicates to the Contractor that the relevant requirements of the EMPs are not being complied with, he/she will issue the necessary instructions (verbally to the Construction Manager or Site Agent and in writing in the ECO Checklist) for the required mitigation.

If mitigation is not timeously applied and environmental degradation continues, the ECO will then instruct the RE to stop construction works until such time that the necessary measures have been satisfactorily undertaken to remedy the degradation. Only once all prescribed environmental control mechanisms have been implemented to the satisfaction of the ECO will instructions be given to commence with the contract. The ECO Checklist will record any irregularities or non-compliance with the EMPs. Such instructions can also be followed up with an email to the Site Agent (Contractor).

### D.1.2 LEVEL AND TYPE OF COMPETENCY OF ECO

A suitably experienced environmental practitioner, with at least 5 years relevant site supervision experience, will need to act as the overseeing ECO.

### D.1.3 FREQUENCY OF SITE VISITS

Initially, the ECO will:

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

The ECO will undertake an audit after the Construction Phase for installation of civil services. This audit will be undertaken to assess compliance with the EMPs and to ensure that satisfactory rehabilitation of the disturbed areas has taken place.

### D.1.4 EDUCATION PROGRAMME

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

The content of the Education Programme/Environmental induction to be presented to the contractors will include:

- (i) **Introduction:** Explain environmental and socio-economic sensitivities of the site (including the potential discovery of archaeological material or burial sites). Reinforce an environmental ethic amongst staff and explain the consequences of not complying with the content of the EMPr (e.g. issuing of a stop works order).
- (ii) **Environmental Pollution:** Engender an ethic of waste pollution management, emphasising how plastic bags and paper waste cause, not only visual pollution, but can lead to blockages of stormwater drains, which in turn can lead to flooding, and if ingested by animals can lead to their death. Cover the storage of solid waste in wind proof bins to prevent waste being blown around the site and that burning of waste, especially PVC can cause toxic air pollution that is harmful to man and to the atmosphere, and that unsupervised fires can lead to run-away fires. The importance of the use of chemical or other toilets will also be emphasised. The smoking on site should be prohibited and smoking should only take place within specific dedicated smoking areas.



- (iii) **Oil and diesel pollution:** The negative consequences of oil and diesel pollution will also be explained, and that it is imperative to work carefully with such hazardous substances.
- (iv) **Adherence to Speed Limits:** Engender a sense of responsibility in terms of speeding, in that speed limits of construction vehicles whilst driving in and around the Vlotenburg area must be adhered to in order to protect pedestrians, children and animals, and to prevent accidents.
- (v) **Soil Erosion:** Include the prevention of erosion from diversion, restriction or increase in stormwater. Rainwater should be appropriately channelled to prevent erosion or flooding. If erosion occurs, appropriate measures will need to be undertaken to prevent erosion.
- (vi) **Dust Pollution:** Explain that reasonable measures to minimise the generation of dust should be undertaken. Areas where earth is moved may require wetting with non-potable water in order to reduce dust. If wind erosion (dust problems) persist, the affected areas may require covering with straw or wood chips being rotovated into the upper sandy surface.
- (vii) **Noise Pollution:** Explain that local by-laws and regulations in terms of noise will be enforced on site. Construction should only take place during the week, including Saturdays if need be, and during normal working hours, and no amplified music will be allowed on site.
- (viii) **Trespassing on Private Property:** Emphasize that construction staff will **not be allowed access to neighbouring properties** and must remain within the bounds of the construction site.
- (ix) **Personal Hygiene:** The importance of **personal hygiene and the use of chemical toilets** will be explained to the Contractor's staff. If Covid-19 restrictions are in force, staff will be encouraged to wear masks and wash their hands regularly.

## D.1.5 COMMUNICATION PROCEDURES ON SITE

A site instruction book/file should be kept on site by the appointed Contractor for the purposes of recording specific important site instructions that need immediate attention. The monthly ECO Checklist will serve as a general record of environmental contractual issues that need to be addressed in the course of the Construction Phases.

### (i) Site Instruction Entries

The monthly ECO Checklist will be used for the recording of general site instructions as they relate to the environmental scope of works on site. The site instruction book will, however, also be used for issuing "stop work" orders for the purposes of immediately stopping any particular activities of the contract due to the environmental risk or where significant impacts are happening.

The ECO is to complete an ECO Checklist after each site visit and circulate this checklist amongst the contractors, engineering consultants and developer to serve as a record of proceedings. The ECO Checklist must be circulated no more than 5 days after the site meeting and the contractors must give immediate attention to any environmental issues that need to be dealt with.

### (ii) Minutes of the Site Meetings

The Minutes of each monthly site meeting must be forwarded to the ECO, Contractor and developer by the RE within one week of the meeting taking place. The minutes of the meeting must record any environmental issues that have been raised by the ECO, and that need to be addressed or rectified.

### **(iii) Method Statements**

Method statements from the Contractor may be required for specific sensitive activities, e.g. deep trenching for sewage lines, or for the storage of topsoil. A method statement forms the baseline information for work that takes place in sensitive areas or under sensitive conditions and is a “live document”, i.e. modifications can be negotiated between the Contractor and ECO/RE as circumstances unfold. All method statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr.

**SECTION E: CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME**

**E.1 GENERAL CONSTRUCTION MANAGEMENT PROGRAMMES**

<b>ENVIRONMENTAL POLICY:</b>		
The construction of the Longlands Village Residential development must ensure that all negative environmental impacts are mitigated to prevent any temporary or permanent environmental impacts or effects and ensure the safety and good health of all construction staff.		
<b>OBJECTIVE:</b>		
To control all aspects of the Construction Phase (which encompasses both the construction of civil services and the construction of buildings/houses) by implementing the necessary mitigation and recommendations to prevent any temporary or permanent negative environmental impacts from occurring.		
<b>PROJECT</b>	<b>REQUIRED ACTIONS</b>	<b>TARGET &amp; RESPONSIBILITY</b>
<b>Establish appropriate partnerships</b> and good relationships with local authorities, local community and contractors	<ol style="list-style-type: none"> <li>1. Ensure appropriate communication with all local authorities, local communities, and contractors.</li> <li>2. Contractors to be fully informed by the ECO as to their environmental contractual obligations.</li> <li>3. The ECO to give a presentation to Contractor and site staff to familiarise them with the environmental aspects of the contract. The Contractor and staff must attend this meeting.</li> <li>4. Appropriate signage that indicates the contact details of the Implementing Agent, Contractor, RE (or RE's representative) and ECO must be provided on site.</li> </ol>	<p>To be undertaken by professional team and ECO, project manager (consulting engineer and/or site agent) as ongoing process. ECO to monitor environmental contractual obligations of contractors on ongoing basis. ECO and RE to meet with Contractor and staff before construction commences<sup>3</sup> to initiate the EMPr.</p> <p>Developer/RE to ensure that appropriate signage is put in place.</p>
Set up of construction site and site offices and undertake <b>construction and earthworks</b> without adversely affecting the environment	<ol style="list-style-type: none"> <li>1. Communicate with Contractor to ensure that all the environmental specifications are understood and carried out.</li> <li>2. The Contractor must point out and demarcate the construction site and site offices. This area is to be fenced off and must be locked outside working hours. The site office and construction camp, together with portable chemical toilets must be located on level ground.</li> <li>3. Control all construction in terms of the content of this EMPr. This will include the storage of topsoil.</li> </ol>	<p>To be undertaken by ECO and site agent before construction commences.</p> <p>To be sanctioned by the ECO before construction begins.</p> <p>ECO to inform and induct the construction staff with respect to the content of the Construction Guidelines prior to commencement of construction.</p>

<sup>3</sup> It is recommended that the construction of the project infrastructure should be synchronised, as far as possible with the seasonal pattern of surrounding farming activities in order to minimize the possible negative impacts on the latter.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<p>Set up of construction site and site offices and undertake <b>construction and earthworks</b> without adversely affecting the environment (continued)</p>	<ol style="list-style-type: none"> <li>4. Construction material (concrete raw materials) must be stored in designated areas in a neat and orderly manner.</li> <li>5. Contractor to store building rubble in a suitable designated area, with rubble removed from site on a weekly basis (if not to be used as fill or for the construction of earth berms).</li> <li>6. The disposal site for all spoil must be indicated by the Contractor and must be approved by the DEADP: Waste Management if relevant. Trucks removing spoil must remain on designated access road/s. Access road/s must be well maintained of any soil or clay residues.</li> <li>7. Road construction signs to be erected along the Polkedraai Road.</li> <li>8. Personal Protective Equipment must be provided to ensure safety of workers and adequate facilities must be provided to ensure that relevant minimum standards apply to working conditions. Working conditions must be in line with the requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).</li> <li>9. All solid waste to be kept in appropriate weather and scavenger proof containers and removed from the site by the Contractor on a weekly basis to a licensed waste disposal facility. The burning of solid waste and paper on site will not be allowed. Recyclable waste (e.g. paper, glass, tin, plastic) should be recycled if possible.</li> <li>10. Workers will not be allowed access onto neighbouring properties.</li> <li>11. If applicable, only one refuelling area should be provided at the stores/site office site. If a large fuel container is to be used on site, a bunded pit (to contain 110% of fuel to be stored) must be built beneath the fuel container. If a mobile bowser is to be used for refuelling the construction vehicles, it is to have a drip tray beneath it when parked. A hydrocarbon spill kit must be on site at all times. No servicing of vehicles is to take place on site.</li> </ol>	<p>Area for construction material to be designated by the ECO and to be in secured area. ECO to monitor compliance.</p> <p>Area for building rubble storage to be designated by the ECO. Contractor to remove builder's rubble on weekly basis. ECO to monitor compliance.</p> <p>ECO to assess spoil disposal site, and to monitor condition of road/s.</p> <p>ECO and Safety Officer to monitor road safety conditions throughout contract periods.</p> <p>Safety Officer to monitor working conditions and safety throughout.</p> <p>Contractor to remove solid waste on a weekly basis. ECO to monitor compliance.</p> <p>Contractor to ensure that workers do not trespass. ECO to monitor compliance.</p> <p>ECO to supervise and monitor. Contractor to report all fuel and oil spills to the ECO and to remove contaminated soil to a licensed waste disposal facility.</p>

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<p>Set up of construction site and site offices and undertake <b>construction and earthworks</b> without adversely affecting the environment (continued)</p>	<ol style="list-style-type: none"> <li>12. Concrete mixing must be restricted to a designated area on site, which must be bunded/enclosed by an impermeable surface. All remaining cement residues are to be removed from site at the end of each phase of the development. A wastewater catch-pits must be constructed in series for the capture of cement residues from cleaning of the cement mixer. Residues are to be removed from site from time to time.</li> <li>13. All parked mechanical vehicles must have a drip tray present to prevent spillage of oils and fuels and used oil (from servicing of vehicles) should be recycled or disposed of at a hazardous waste disposal facility.</li> <li>14. All excavations deeper than 1.5m must be protected from collapsing by shoring up with boards if unstable conditions prevail.</li> <li>15. Disturbed areas where dust can arise should be kept moist by spraying with non-potable water from a water bowser or other suitable means such as straw or wood-chip stabilisation or covering with shade cloth.</li> </ol>	<p>ECO to monitor compliance. Contractor to remove cement residues from site as directed or at end of contract.</p> <p>ECO to monitor compliance. Contractor to recycle or dispose of used oils at hazardous waste disposal site.</p> <p>ECO and appointed Safety Officer to monitor compliance.</p> <p>ECO to monitor the generation of any dust and advise the Contractor to mitigate accordingly.</p>
<p>Prevent possible <b>negative impacts of construction personnel</b> on the environment</p>	<ol style="list-style-type: none"> <li>1. Contractors will be responsible for the conduct of their personnel on site, as it pertains to trespassing, littering, and unacceptable social behaviour.</li> <li>2. ECO must inform construction personnel of environmental rules to apply during construction period.</li> <li>3. Maintain strict supervision over all construction activities.</li> <li>4. All construction workers should stay within the development area demarcation. All no-go areas must be identified and demarcated before construction commences.</li> <li>5. Driving regulations within the Vlothenburg area and on site must be adhered to at all times.</li> <li>6. The Contractors must secure the properties with appropriate means to ensure their security.</li> </ol>	<p>Contractor responsible for social management. ECO to monitor for duration of contract.</p> <p>ECO to meet with Contractor prior to commencement of construction in new areas to inform workers of the sensitivities of the site and how they should conduct themselves. ECO to monitor construction activities and if any adverse impacts occur, he must inform the Site Agent, RE and client of such conduct on an on-going basis. ECO to monitor for duration of contract.</p> <p>ECO and Safety Officer to monitor for duration of contract.</p> <p>ECO to monitor compliance of adequate security enclosure.</p>

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Prevent possible <b>negative impacts of construction personnel</b> on the environment (continued)	7. The Contractor must provide temporary chemical toilet facilities at the stores/site office area and at each of the sites when building work is being conducted there. A minimum of one toilet shall be provided per 15 persons at each working area or as stipulated by the local authority. The toilets must be kept in a clean and sanitary condition and must be regularly serviced. 8. Construction staff should not be allowed to stay on site and should be bussed to site each day. Security personnel may be required to stay on site at night.	ECO to monitor for duration of contract.  ECO to monitor for duration of contract.
Ensure <b>appropriate training</b> of staff to prevent accidents and ensure <b>health and safety of staff</b> on site	1. The Contractor is to ensure that the working conditions on site adhere to the minimum requirements of the Occupational Health and Safety Act (Act No. 85 of 1993). 2. The appropriate training of staff must be given to prevent accidents and the appropriate protective gear is to be issued.	The Site Agent is to ensure compliance and that a Health and Safety official is appointed to undertake the necessary audits to ensure compliance.  The Site Agent is to ensure that appropriate training and protective gear is given to personnel for specific tasks. Appointed Safety officer to monitor.
Ensure that the Construction Phase meets the required <b>performance criteria</b>	1. Inform all contractors and their staff of the performance criteria. 2. Institute and maintain a monitoring programme of construction performance. 3. Monitor construction work. 4. Ensure that contractors adhere to the guidelines in respect of littering, sanitation, spills of toxic substances and general behaviour.	To be undertaken by ECO prior to commencement of construction. Site Agent to supervise worker behaviour on a daily basis and to be monitored by ECO. RE/Architect to monitor progress and impacts and inform client of any time delays or non-performance during contract period. ECO/RE/Architect to monitor significant impacts.

## E.2 BIOPHYSICAL MANAGEMENT PROGRAMMES

<p><b>ENVIRONMENTAL POLICY:</b>                  Conserve all aspects of the environment at the Longlands Manor Residential Estate, which includes the following:</p> <ul style="list-style-type: none"> <li>• Conserve and protect fauna and flora.</li> <li>• Ensure the conservation and sustainable use of resources (water and electricity) and the re-use of recyclable materials.</li> <li>• Prevent soil erosion and dust from taking place on site.</li> <li>• Reduce the risk of potential fires occurring.</li> <li>• Prevent environmental pollution.</li> </ul>
--

**E.2.1 Fauna and Flora**

**OBJECTIVE:**

To conserve any indigenous plants and animals that may occur within and around the proposed development site, and to remove alien vegetation.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<p><b>Minimise the removal of any vegetation during the construction phase</b></p>	<ol style="list-style-type: none"> <li>1. Remove only the bare minimum of vegetation for construction purposes.</li> <li>2. Retain non-invasive large trees as far as possible to promote the aesthetics of the area.</li> <li>3. Where appropriate stockpile topsoil removed from the building area in suitable designated areas for later use in the rehabilitation of the site.</li> <li>4. Stockpiling of topsoil must not exceed a height of 2m above ground level. Topsoil stockpiles may need to be covered with a suitable material (or seeded with a suitable indigenous grass species) to prevent topsoil from being windblown or contaminated.</li> </ol>	<p>ECO to monitor.</p> <p>ECO to monitor.</p> <p>Designated areas for storage topsoil to be ratified by the ECO at start of contract.</p> <p>ECO to monitor.</p>
<p><b>Alien plant management</b></p>	<ol style="list-style-type: none"> <li>1. Any alien vegetation must be removed by appropriate means by the contractor.</li> </ol>	<p>Methods for on-site alien vegetation removal are to be advised by the ECO.</p>
<p><b>Use of Pesticides and Insecticides</b></p>	<ol style="list-style-type: none"> <li>1. Care must be taken when using pesticides, herbicides and insecticides to prevent pollution of the environment. No pollution of surface or ground water may occur due to any activity on the property. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with at all times.</li> <li>2. The relevant requirements of the Hazardous Substances Act, Act 15 of 1973 must be complied with at all times. Control over the use, storage, application, and disposal of these substances (and empty containers) is needed.</li> <li>3. The relevant requirements of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, Act 36 of 1947 must be complied with at all times.</li> </ol>	<p>Chemicals to be ratified by the ECO and landscape architect. The use of such chemicals is to be conducted by experienced contractors. The ECO (in collaboration with the landscape architect) is to monitor all aspects of herbicide, insecticide and fertilizer use everywhere on the property(ies).</p>

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<p><b>Use of Pesticides and Insecticides</b> (continued)</p>	<ol style="list-style-type: none"> <li>4. Pesticides/herbicides/insecticides should have low environmental toxicity (the active ingredients should have short half-lives). Use pesticides that possess chemical properties that are less conducive to runoff (such as low water solubility and high adsorption coefficients).</li> <li>5. Maintain, and clean pesticide application equipment in a designated area, which eliminates the potential for on-or-off site environmental pollution.</li> <li>6. Mix and load pesticides and herbicides in a designated area where spills may be effectively contained and which eliminates the potential for on-or-off site environmental pollution.</li> <li>7. Read and follow label instructions when applying chemical products.</li> <li>8. Dispose of empty containers and waste materials (left over chemicals) at a registered waste disposal facility.</li> <li>9. Current Material Safety Data Sheets must be available on site for all chemicals (pesticides, herbicides, fertilizers etc.) used. Such chemicals must be stored in appropriate lockable stores.</li> </ol>	<p>Chemicals to be ratified by the ECO and landscape architect. The use of such chemicals is to be conducted by experienced contractors. The ECO (in collaboration with the landscape architect) is to monitor all aspects of herbicide, insecticide and fertilizer use everywhere on the property(ies).</p>
<p><b>Minimise disturbance to fauna</b></p>	<ol style="list-style-type: none"> <li>1. Contractors must not harm or disturb any domestic animals or any wildlife, especially moles, rats, snakes, tortoises, lizards, birds or buck.</li> <li>2. Moles, snakes, tortoises and other animals must not be harmed and must be physically removed from the construction site without harming them and taken to an appropriate location (e.g. into nearby naturally vegetated areas). Note that only competent snake handlers must be employed to move snakes, should it be necessary.</li> </ol>	<p>ECO/Contractor to monitor. The Contractor must report all incidents of harm to any fauna to the ECO.</p> <p>ECO/Contractor to monitor on a going basis. CapeNature can be contacted at 021 866 8000 for a list of competent snake handlers in the area.</p>
<p><b>Take the necessary measures to reduce the risk of fire on the property</b></p>	<ol style="list-style-type: none"> <li>1. Staff may only smoke within demarcated areas. Cigarette butts must be disposed of in lidded waste bins, which must be provided. Waste bin lids must be replaced if these are lost.</li> <li>2. No fires will be allowed on the site unless authorised by the Safety Officer.</li> </ol>	<p>ECO, Safety officer and Contractor to monitor.</p> <p>ECO, Safety Officer and Contractor to monitor.</p>



### E.2.2 Water

<b>OBJECTIVE:</b>		
To ensure the conservation and sustainable use of scarce water resources by instituting measures to minimise water use during the Construction Phases of the project, including awareness programmes to educate workers on the efficient use of potable water.		
<b>PROJECT</b>	<b>REQUIRED ACTIONS</b>	<b>TARGET &amp; RESPONSIBILITY</b>
Institute <b>measures to minimise potable water use</b> during the Construction Phases of the project	<ol style="list-style-type: none"> <li>1. No pollution of surface or ground water may occur due to any activity on the properties (including the discharge of any pollution into the rivers and wetlands in die development). The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with at all times.</li> <li>2. Contractors must use water sparingly, e.g. use optimum moisture conditions for filling and road construction. All water leaks need to be repaired timeously. Should dust become a nuisance to surrounding residents, efficient use of non-potable water to wet dusty surfaces should be employed, keeping in mind that there are water restrictions in place.</li> <li>3. Training of staff should be implemented for good housekeeping techniques in water-use reduction.</li> </ol>	<p>ECO/Contractor to monitor throughout the construction period.</p> <p>ECO/Contractor to monitor throughout the construction period.</p> <p>RE and ECO to monitor during the Construction Phase.</p>
Institute measures for <b>stormwater</b> to prevent erosion, damage to property and environmental pollution.	<ol style="list-style-type: none"> <li>1. A detailed stormwater design for the proposed development must be implemented by the consulting engineers.</li> <li>2. The attenuation system should be designed to accommodate the 2-year storm event. Screening of stormwater should take place to prevent solid waste entering the Sanddrif Stream.</li> <li>3. Stormwater detention ponds will need to be constructed at natural low-points within the development area in order to contain the difference between pre- and post-stormwater runoff, or alternatively, existing small farm dams/water bodies within the development area can be utilised as stormwater detention ponds. The outlets of such detention ponds must be appropriately sized, and waste traps must be provided at the headwall outlets of such detention ponds in order to prevent/reduce solid waste pollution of entering the watercourse.</li> </ol>	<p>The Stellenbosch Municipality will need to approve the stormwater management system.</p> <p>ECO/Contractor to monitor construction.</p> <p>ECO and RE to monitor adequate storage of stormwater after moderate rain storms and after the wet winter period (Construction Phase). This function will later be taken over by the Home Owners Association (HOA) during the Operational Phase.</p>

### E.2.3 Soil

<b>OBJECTIVE:</b> To ensure the conservation of the soil on the sites of the proposed Longlands Village Residential Estate, and institute measures to prevent soil erosion and pollution (contamination of soil) from taking place.
--

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Prevent soil erosion</b>	<ol style="list-style-type: none"> <li>1. Minimise the area to be cleared of vegetation and grasses for the installation of services.</li> <li>2. The Contractor will protect areas susceptible to erosion by installing the necessary temporary and permanent stormwater drainage works as soon as possible. Additional measures deemed necessary by the ECO or RE must be taken to prevent surface water runoff from resulting in erosion.</li> </ol>	<p>ECO to monitor vegetation clearing operations and site preparation and check for any erosion that may take place.</p> <p>Anti-erosion measures to be discussed with and approved by the RE in consultation with the ECO, if and when necessary.</p>
<b>Rehabilitate all areas where soil erosion has taken place</b>	<ol style="list-style-type: none"> <li>1. Institute soil protection and soil rehabilitation measures where erosion has taken place.</li> <li>2. Conserve topsoil during earthworks and ensure proper rehabilitation of areas where earthworks have been undertaken.</li> <li>3. Eroded areas will need to be backfilled and compacted.</li> <li>4. Plant indigenous grass sods (or sow indigenous grass seeds on prepared surfaces) should any signs of erosion be noted. Straw or wood chips should be worked into the upper soil horizon to bind the soil and prevent dust and windblown sand where necessary.</li> </ol>	<p>To be planned and facilitated by ECO when necessary.</p> <p>Contractor to ensure that topsoil is conserved.</p> <p>Contractor to ensure that the backfilled material is compacted sufficiently so as to not collapse in the future.</p> <p>ECO to monitor and advise accordingly.</p>
<b>Prevent pollution/contamination of soil</b>	<ol style="list-style-type: none"> <li>1. Prevent any cement spills or clear such accidental spills as soon as possible as cement powder has a high alkalinity pH rating that can contaminate and affect both soil and water pH dramatically. All hydrocarbon spills are to be addressed immediately to prevent seeping into the ground.</li> <li>2. All servicing and refuelling of vehicles must be conducted over a drip tray to prevent accidental spillage of oils and fuels. Similarly, any stationary concrete mixers, dumpers, compressors or generators must have drip trays under them at all times, whether they are working or not.</li> </ol>	<p>ECO to monitor for duration of contract. Contractor to inform ECO of such spills. Special measures are to be implemented for any hydrocarbon fuel spills. A hydrocarbon spill kit is to be kept on site at all times.</p> <p>ECO to monitor for duration of contract.</p>

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Prevent pollution/contamination of soil (contin.)</b>	<ol style="list-style-type: none"> <li>All vehicles, equipment, fuel and petroleum tanks must be maintained in a good condition that prevents leakages and potential contamination of soil.</li> <li>The fuels, oils and hydrocarbon products (tars) kept in tins and drums must be stored in a bunded area (or, temporarily, on drip-trays) to prevent pollution in case of spills or leakages.</li> </ol>	<p>ECO to monitor for duration of contract.</p> <p>ECO to monitor compliance for duration of contract.</p>
<b>Prevention of dust</b>	<ol style="list-style-type: none"> <li>The bare minimum of vegetation must be removed during the installation of civil services to prevent windblown dust.</li> <li>All disturbed surfaces must be monitored for dust during windy periods. It may be necessary to work straw or wood chips into the disturbed surfaces to prevent dust.</li> <li>Road surfaces may cause dust pollution during their construction and should be kept moist until such time that their surfaces are paved (treated effluent must be used for such dust treatment).</li> </ol>	<p>ECO to advise during initial earthworks.</p> <p>ECO to advise on the use of straw/wood chips should dust become a nuisance.</p> <p>ECO to monitor and advise on the use of water to wet surfaces to prevent dust or to advise on alternative dust suppression measures</p>

### E.2.4 Energy Management

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Use electricity sparingly during construction</b>	<ol style="list-style-type: none"> <li>Contractors must be informed of the efficient energy (electricity) use during construction. When not in use lights, motors etc. must be switched off.</li> <li>Energy efficient building designs must be implemented by the architects, to minimise heat losses and gains of all buildings.</li> <li>Energy demand could be further decreased by inclusion of energy saving outdoor lights, which should be controlled by light sensors where applicable.</li> </ol>	<p>ECO and site agent to monitor for the duration of the contract period.</p> <p>Engineers and architects are to acknowledge the required actions with regard to energy saving and to incorporate these saving measures into their designs.</p>

### E.3 SOCIO-ECONOMIC MANAGEMENT PROGRAMMES

**ENVIRONMENTAL POLICY:**

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

### E.3.1 Archaeological and Heritage Resources

<b>OBJECTIVE:</b>		
<p>To ensure the conservation of the archaeological and heritage resources on the property, by checking for such resources in the excavations undertaken for civil service and in those undertaken for foundations of roads and buildings and siting development away from such resources in the event that they are found.</p>		
<b>PROJECT</b>	<b>REQUIRED ACTIONS</b>	<b>TARGET &amp; RESPONSIBILITY</b>
<p>Conserve all <b>archaeological settings, artefacts and heritage resources</b></p>	<ol style="list-style-type: none"> <li>1. If any buried unmarked human remains are uncovered or exposed during earthworks, these must immediately be reported to the archaeologist, or Heritage Western Cape (021 483 9543). Sampling of deposits may need to be carried out if deemed necessary by the archaeologist. Archaeological remains may not be disturbed further until the necessary research has been undertaken. In the case of human burials, these will have to be removed under a permit issued by the SAHRA.</li> <li>2. Should any archaeological artefacts be found, the Developer must obtain a permit from HWC before the commencement of the construction activities, so that the archaeologist appointed for monitoring can log and collect samples of archaeological remains.</li> <li>3. If any graves or unmarked human burials are discovered, they must be treated with respect and the South African Heritage Resources Agency (SAHRA) must be notified immediately and must not be disturbed further until the necessary approval has been obtained from SAHRA. An archaeologist must be contracted to remove the remains at the expense of the Implementing Agent. A permit is required for such actions.</li> </ol>	<p>ECO and Contractor to monitor excavated materials and inform HWC of any significant finds. ECO to arrange an archaeologist to investigate any archaeological finds that are uncovered in excavations.</p> <p>HWC to assess and to provide the necessary approvals for destroying archaeological sites if these are located.</p> <p>HWC and South African Heritage Resources (SAHRA) must assess any grave sites. ECO and Developer are to ensure that directives pertaining to heritage resources and their protection are met. The Implementing Agent is to ensure that appropriately qualified, experienced archaeologists are appointed.</p>

### E.3.2 Socio-Economic Benefits of the Development

<b>OBJECTIVE:</b> Undertake a development that is socially, environmentally and economically sustainable. To optimise the social benefits of the development, local builders and contractors should enjoy preferential appointments to install civil services and for construction of buildings.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Job Opportunities</b>	1. Both the temporary job opportunities during the construction phase and more permanent jobs (e.g. domestic staff) during the operational phase should be allocated to persons from the local communities wherever possible.	The Stellenbosch Municipality should monitor the local employment strategy together with the appointed Contractors.

### E.3.3 Aesthetics

<b>OBJECTIVE:</b> To minimise the visual (aesthetic) impacts of the development on the surrounding environment.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Minimise the visual (aesthetic) impact</b> of the installation of services.	<ol style="list-style-type: none"> <li>1. Various mitigation methods can be employed to reduce visual impacts, during the installation of services.</li> <li>2. Shade cloth can be used to hide construction activities on site should it be necessary.</li> <li>3. Most of the mature trees on site should be maintained.</li> <li>4. All invasive alien vegetation must be removed from site.</li> </ol>	Contractor to ensure visual mitigation methods are considered in the installation of bulk services.
<b>Minimise the visual impact</b> of construction works on the surrounding area	<ol style="list-style-type: none"> <li>1. Limit the stockpiling of materials and equipment to clearly defined areas.</li> <li>2. Keep cut and fill to a minimum.</li> <li>3. Minimise disturbance through fencing off construction area, thereby protecting and retaining grass and vegetation in the areas that will not be built on.</li> </ol>	ECO to monitor compliance by Contractors.
<b>Ensure outdoor advertising associated with the project is not visually obtrusive</b>	<ol style="list-style-type: none"> <li>1. All outdoor advertising associated with this project, whether on or off the site, must comply with the South African Manual for Outdoor Advertising Control (SAMOAC).</li> </ol>	ECO to monitor compliance by Contractors.

### E.3.4 Security

<b>OBJECTIVE:</b>		
To maintain and/or enhance security levels around the development site, during the Construction Phases of the development.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Minimise security risk</b> during the Construction Phase	<ol style="list-style-type: none"> <li>1. The Contractor(s) will be responsible for the security of their builder's site and the conduct of their personnel for the duration of the services and building contracts.</li> <li>2. The Contractor will be responsible for the behaviour of staff and deliveries using the access roads to the property and no person will be allowed access onto the surrounding properties.</li> </ol>	The Contractor will need to monitor security steps to be taken.

### E.3.5 Noise

<b>OBJECTIVE:</b>		
To prevent unacceptable noise impacts during the Construction Phase of the development.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Minimise noise levels</b> during the construction phase.	<ol style="list-style-type: none"> <li>1. Construction should be limited to normal working hours, should not take place on Sundays or on public holidays, and no amplified music will be allowed on site. Should construction work be required after hours, residents should be given due notice of such works.</li> <li>2. Ensure equipment is fitted with requisite silencers and directional settings.</li> <li>3. A complaints register should be kept on site, so that neighbouring landowners' grievances regarding excessive noise can be addressed.</li> </ol>	<p>The Contractor will need to ensure that noise mitigation measures on site are implemented.</p> <p>ECO to monitor compliance by Contractors for duration of contract.</p>

**SECTION F: POST-CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME**

**ENVIRONMENTAL POLICY:**

The Post-Construction Phase of the proposed Longlands Village Residential development must ensure that all negative environmental impacts are mitigated to prevent any temporary or permanent environmental impacts or effects from occurring.

**OBJECTIVE:**

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

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<p><b>Post-construction site rehabilitation/ preparation of soil surfaces</b></p>	<ol style="list-style-type: none"> <li>1. All temporary structures to be removed from the site within three weeks after completion of each phase of the project.</li> <li>2. The Contractor must remove any remaining cement spills within one week after completion of each phase of the project, to appropriate, licensed dumping sites.</li> <li>3. All remaining building rubble and other forms of waste must be removed from the site, within one week after completing each phase of the project.</li> <li>4. The Contractor must repair disturbed areas (e.g. deep tracks left by construction vehicles) within one week after completing that phase of the project.</li> <li>5. The ECO is to undertake environmental audits of the project once installation of services (each phase) has been completed and again after construction of buildings (each phase) has been completed, to ensure that any contractual obligations not complied with are completed.</li> </ol>	<p>The ECO will monitor the post-Construction Phases of the project to ensure that degradation of the environment does not take place, surfaces are properly prepared and all remaining litter and building rubble is picked up.</p> <p>ECO to monitor with the RE.</p>

## SECTION G: OPERATIONAL ENVIRONMENTAL MANAGEMENT PROGRAMMES

### G.1 GENERAL OPERATIONAL MANAGEMENT PROGRAMMES

<p><b>ENVIRONMENTAL POLICY:</b>                  The recommendations of the EMPs for the Operational Phase of the proposed Longlands Village Residential Estate must ensure that all negative environmental impacts are mitigated by the Contractor to prevent any temporary or permanent environmental impacts or effects from occurring throughout the Operational Phase.</p>
<p><b>OBJECTIVE:</b>                  To control all aspects of the Operational Phase of the development by implementing the necessary mitigation and recommendations to prevent any temporary or permanent negative environmental impacts from occurring in the future.</p>

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Ensure that the Operational Phase meets the required <b>performance criteria</b>	<ol style="list-style-type: none"> <li>1. All purchasers of land within the Longlands Manor development must be given a copy of this Operational Phase EMP.</li> <li>2. Ensure that residents adhere to the guidelines in respect of littering, separation of waste at source, recycling, sparing use of energy and water, guidelines for the keeping of domestic animals and their sanitation and general behaviour.</li> <li>3. Driving regulations within the Estate must be adhered to at all times.</li> </ol>	Developer to ensure that each property owner has a copy of the Operational EMP.  To be undertaken by the HOA        To be monitored by the HOA

### G.2 BIOPHYSICAL MANAGEMENT PROGRAMMES

<p><b>ENVIRONMENTAL POLICY:</b>                  Conserve all aspects of the environment, which includes the following:</p> <ul style="list-style-type: none"> <li>• Ensure the conservation and sustainable use of resources (water and electricity) and the re-use of recyclable materials.</li> <li>• Prevention of soil erosion and dust control.</li> <li>• Prevention of environmental pollution.</li> <li>• The keeping and management of domestic animals.</li> </ul>
---

#### G.2.1 Fauna and Flora

<p><b>OBJECTIVE:</b>                  To take care of indigenous and domestic animals and to prevent degradation of the environment.</p>
--

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Landscaping of public open spaces</b>	<ol style="list-style-type: none"> <li>1 No kikuyu grass should be planted. Only buffalo grass or couch grass (fynkweek) should be used for lawns.</li> </ol>	To be monitored by the HOA and landscape architect.



PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<p><b>Use of pesticides, herbicides and Insecticides to control alien vegetation in public open spaces and / or in indigenous vegetation adjacent to the housing development</b></p>	<ol style="list-style-type: none"> <li>1. Care must be taken when using pesticides, herbicides and insecticides to prevent pollution of the environment. No pollution of surface or ground water may occur due to any activity on the property. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with at all times.</li> <li>2. The relevant requirements of the Hazardous Substances Act, Act 15 of 1973 must be complied with at all times. Control over the use, storage, application, and disposal of these substances (and empty containers) is needed.</li> <li>3. The relevant requirements of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, Act 36 of 1947 must be complied with at all times.</li> <li>4. Pesticides/herbicides/insecticides should have low environmental toxicity (the active ingredients should have short half-lives). Use pesticides that possess chemical properties that are less conducive to runoff (such as low water solubility and high adsorption coefficients).</li> <li>5. Clean pesticide equipment in a designated area, which eliminates the potential for on-or-off site pollution.</li> <li>6. Mix and load pesticides and herbicides in a designated area where spills may be effectively contained and which eliminates the potential for on-or-off site environmental pollution.</li> <li>7. Read and follow label instructions when applying chemical products.</li> <li>8. Dispose of empty containers and waste materials (left over chemicals) at a registered hazardous waste disposal facility.</li> <li>9. Current Material Safety Data Sheets must be available on site for all chemicals (pesticides, herbicides, etc.) used. Such chemicals must be stored in appropriate lockable stores or receptacles.</li> </ol>	<p>The use of such chemicals should be conducted by experienced contractors or properly trained persons. The HOA to monitor the use of all chemicals on the Estate</p>

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Minimise disturbance to fauna and not allow introduction of exotic species</b>	1. Snakes, tortoises and other animals must be physically removed from the properties without harming them and relocated an appropriate site (e.g. nearby naturally vegetated areas). Competent snake handlers must be contacted to move snakes, should it be necessary.	All incidents of harm to any fauna must be reported to the authorities (CapeNature and/or police). CapeNature can be contacted at 021 866 8000 for a list of snake handlers in the area.
Keeping and management of <b>domestic animals</b>	<ol style="list-style-type: none"> <li>1. Domestic animals must be managed in a responsible and humane manner. All dogs and cats should be sterilised.</li> <li>2. Domestic animals, should ideally be kept within yards and should not be allowed to roam freely in the streets and open space areas (especially cats). Dogs may not be chained up under any circumstances.</li> <li>3. The sanitation of keeping pets should be controlled. Faeces should ideally be flushed through the sewage system.</li> <li>4. When walking pets, they should be kept on a leash.</li> </ol>	The HOA to monitor the keeping of domestic pets.

### G.2.2 Water

<b>OBJECTIVE:</b> To ensure the conservation and sustainable use of scarce water resources within the proposed Longlands Village Residential Estate by instituting measures to minimize potable water use during the Operational Phase of the project.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Institute <b>measures to minimise potable water use</b> during Operational Phase of project	1. The Architects of houses should specify water saving sanitary ware to use as little potable water as possible. Dual flush toilet systems (and/or use of greywater), water saving devices such as tap aerators and low flow showerheads. Rainwater must be harvested. Irrigation of gardens should be from boreholes on the property.	The Developer/HOA should look into the use of treated effluent for irrigation of open space systems and road verges and/or domestic gardens. Negotiations with the Municipality should be considered.

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Institute <b>measures to minimise potable water use</b> during Operational Phase of project (continued)	<ol style="list-style-type: none"> <li>The HOA should continue to undertake water awareness programmes within their community from time to time and should draft and distribute educational pamphlets amongst residents regarding sustainable water use and implementation of water saving measures.</li> <li>Institute water rationing (restrictions) in times of drought timeously.</li> <li>No pollution of surface or ground water may occur due to any activity on the property. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with at all times.</li> <li>Only waterwise locally indigenous plants should be used in gardens</li> </ol>	<p>HOA to inform residents of the proposed development of water awareness programmes and restrictions if and when required.</p> <p>The HOA to manage and monitor.</p> <p>The HOA to manage and monitor.</p> <p>HOA and landscape architects to control and monitor.</p>
Institute measures for <b>stormwater management</b> to prevent erosion, damage to property and the pollution of the Sanddrif River	<ol style="list-style-type: none"> <li>Ensure that the stormwater drainage system remains operational and that erosion and/or pollution does not occur on the property as a result of ineffective stormwater management.</li> <li>Rainwater harvesting should be undertaken by all residents (tanks).</li> </ol>	<p>The HOA to monitor adequate storage of stormwater after moderate rain storm and after the wet winter period. The HOA is also to make sure that screens are regularly checked and cleared of debris (which must be properly disposed of at a licensed facility).</p>

### G.2.3 Waste Management

<p><b>OBJECTIVE:</b> To ensure waste minimization, waste separation and recycling of all waste at source and ensure that recyclables enter the waste stream by engendering an ethic of waste management amongst residents, visitors and staff.</p>		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
The HOA is to monitor <b>waste separation management, minimisation and recycling</b>	<ol style="list-style-type: none"> <li>An integrated waste management approach must be used that is based on waste minimisation and must include reduction, separation and recycling, re-use and disposal where appropriate. Garden and wet waste should also be recycled (composted).</li> <li>Minimise the amount of waste generated by not buying plastic bags or at least reuse them when shopping again.</li> <li>Waste should be sorted by separating plastic, paper, tins, and bottles into different containers and ensuring that those items get into the recycling stream of Stellenbosch.</li> <li>Any solid waste must be disposed of at a licensed waste disposal facility.</li> <li>Storage of waste on site must comply with the Norms and Standards published in terms of the NEM: Waste Act, if applicable.</li> </ol>	<p>The HOA is to provide guidance and provide pamphlets engendering an ethic of recycling amongst homeowners and staff.</p> <p>The HOA should ensure that recyclables enter the waste stream of Stellenbosch.</p> <p>The HOA is to support the recycling programme of Stellenbosch.</p> <p>The HOA is to arrange for collection and disposal of recyclables. The HOA is to liaise with the Municipality regarding the collection of recyclables.</p>

### G.2.4 Soil

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

### G.2.5 Energy Management

<b>OBJECTIVE:</b> To ensure the conservation of our scarce energy resources by implementing an integrated energy management system where energy saving appliances and fittings are used to save energy and where an ethic of energy management is engendered amongst residents of the development. The architects must apply their minds to optimise the most energy efficient designs of their buildings to minimise heating in winter and air-conditioning during summer.
--

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Specify energy saving appliances and fittings	<ol style="list-style-type: none"> <li>The Architect should specify energy efficient building designs and energy saving electrical appliances such as solar heating systems and thermal insulation in roofs and on ceilings. Daylighting of buildings should be properly integrated with the electric lighting system for its potential to be realised. Advanced T5 technology fluorescent lighting, CFL lighting and the use of LEDs should be mandatory for all buildings.</li> <li>Residents should apply an ethic of energy saving by only using electrical appliances when necessary (heaters, lights, geysers and air conditioners) and switching off lights and other appliances that are not necessary.</li> </ol>	<p>Municipality to ensure that such specifications are put onto building plans. The developer or alternatively the HOA is to ensure that these measures have been implemented and are maintained. The developer or alternatively the HOA is to ensure that incandescent lighting is never used.</p> <p>The developer or alternatively the HOA is to promote energy saving amongst the residents of the proposed Longlands Manor Residential development.</p>

## G.3 SOCIO-ENVIRONMENTAL MANAGEMENT PROGRAMMES

<b>ENVIRONMENTAL POLICY:</b> To conserve all aspects of the social environment and cultural-historic environment (including archaeological and heritage resources) on and around the site for the proposed development and to ensure the employment of local labour and services from the Stellenbosch Municipal area.
---

### G.3.1 Archaeological and Heritage Resources

<b>OBJECTIVE:</b> To ensure the conservation of the archaeological and heritage resources on the property by checking for such resources in the excavations undertaken for any excavations that may be necessary in the future.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Conserve all archaeological settings, artefacts and heritage resources and aesthetics (visual impacts)	<ol style="list-style-type: none"> <li>1. If any archaeological remains are discovered during excavation (e.g. during landscaping/gardening and/or digging of foundations), they must immediately be reported to Heritage Western Cape (HWC) and/or an appointed archaeologist and must not be disturbed until the necessary research has been undertaken.</li> <li>2. If any graves or unmarked human burials are discovered, they must be treated with respect and the South African Heritage Resources Agency (SAHRA) must be notified immediately and must not be disturbed until the necessary approval has been obtained from SAHRA.</li> </ol>	<p>Individuals to inform the HOA who must employ a consulting archaeologist to check finds. The HOA must also inform HWC of any finds.</p> <p>The HOA to inform HWC and South African Heritage Resources (SAHRA). An archaeologist must be contracted to remove the remains at the expense of the HOA, should this be necessary. A permit is required for such action.</p>

### G.3.2 Socio-Economic Benefits of the Development

<b>OBJECTIVE:</b> To ensure that the development that is socially, environmentally and economically sustainable. To optimise the social benefits of the development local builders, contractors, service providers etc. should enjoy preferential appointments to construct buildings, to provide necessary goods and services etc.		
PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
<b>Job Opportunities</b>	<ol style="list-style-type: none"> <li>1. Contractors should employ a social engagement strategy. Permanent jobs (Operational Phase) should be allocated to persons from the local communities wherever possible.</li> <li>2. Appropriate training must be given to any appointed staff.</li> <li>3. The minimum measures of the Occupational and Health and Safety Act must be implemented and appropriate personal protective equipment must be supplied.</li> </ol>	The HOA to ensure compliance with the employment and social engagement strategy.
<b>Goods and Services</b>	<ol style="list-style-type: none"> <li>1. The residents of the proposed Longlands Manor Residential Estate should employ a "Stellenbosch First Policy" with respect to the purchasing of goods and the use of services (fencing, painting, housekeeping, security, landscaping, etc.).</li> </ol>	The HOA should encourage such use where possible from the residents within the Estate.

**G.3.3 Aesthetics**

<b>OBJECTIVE:</b>		
To minimise the visual (aesthetic) impact of the development on the surrounding environment.		
<b>PROJECT</b>	<b>REQUIRED ACTIONS</b>	<b>TARGET &amp; RESPONSIBILITY</b>
<b>Minimise the visual (aesthetic) impact</b> of the buildings in the development	1. Various mitigation methods can be employed to reduce visual impacts, such as the use of natural building materials, earthy colours, building orientation, colour of roofs, landscaping, etc.	Developer or Alternatively the HOA to ensure.
	2. Open spaces on the sites should be landscaped (where applicable) and should be planted with indigenous water-wise plants and trees	The HOA should ensure that only indigenous and water-wise shrubs and trees are planted.
	3. The boundaries of the private open space and road verges within the development must be planted with suitable trees and indigenous shrubs (hedges) to screen the proposed development from the Polkedraai Road to reduce the visual impact on the cultural landscape. Swartland Granite Renosterveld plants should be used in the Landscaping of road verges and private open space corridors.	Developer or alternatively the HOA to ensure.
	4. Outdoor lighting should be bollard lighting to light up the local streets, paths and parking areas sufficiently without being visible from other areas beyond the site.	Developer or alternatively the HOA to ensure
	5. Residential gardens should be judiciously planted with water-wise Granite Renosterveld plants.	Developer or alternatively the HOA to ensure

**G.3.4 Security**

<b>OBJECTIVE:</b>		
To maintain and/or enhance security levels around the development site, during the Operational Phase of the development.		
<b>PROJECT</b>	<b>REQUIRED ACTIONS</b>	<b>TARGET &amp; RESPONSIBILITY</b>
<b>Minimise security risk</b> during the Operational Phase.	1. Security plans should be put into place for ensuring the security of properties during the Operational Phase.	The HOA is to ensure that appropriate security measures are applied in terms of their bylaws.

**SECTION H: ENVIRONMENTAL AUDITING**

**ENVIRONMENTAL POLICY:**

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

**OBJECTIVE:**

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

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

PROJECT	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Conduct an <b>environmental audit</b> at the end of each phase of the construction programme.	1. The ECO to undertake an audit after the construction phase of the installation of civil services has been completed.	To be undertaken by ECO at the end of the installation of bulk services in association with the RE/Contractor and Developer and HOA.
<b>Corrective measures</b> in accordance with the MBO (Management by Objectives) concept	<ol style="list-style-type: none"> <li>1. Revise EMPr in accordance with the findings of the environmental audits, if changes are necessary.</li> <li>2. Set a strategy for implementing any necessary corrective measures.</li> <li>3. Set specific objectives for correction or modification of procedures.</li> </ol>	To be facilitated by ECO as part of audits, thereafter a function of the HOA
Assess the success of <b>management programmes</b> for water, waste and energy.	1. The HOA is to assess the success of implementation of the various management programmes and is to try to engender an ethic of "duty of care" amongst residents of the proposed Longlands Village Residential development.	The HOA is to monitor.

## **SECTION I: CONTINUAL IMPROVEMENT OF EMPr**

### **I.1 REQUIREMENTS FOR EFFECTIVE IMPLEMENTATION**

#### **I.1.1 The Commitment of the Developer/HOA.**

To ensure the successful management of the proposed Longlands Village Residential development, it is imperative that initially the developer and/or the HOA commit themselves to:

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

#### **I.1.2 Document Control**

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

### **I.2 REQUIREMENTS FOR CONTINUAL IMPROVEMENT**

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

#### **I.2.1 Management Review**

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

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



## **SECTION J: CONCLUSIONS**

The EMPr is a fundamental element of the management process that is aimed at ensuring the environmental sustainability of the proposed Longlands Village Residential development.

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

The HOA needs to play a pivotal role in managing the Operational Phase of the development into the long-term future.

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

**A.W.WITHERS**  
**Aubrey Withers Environmental Consultants**  
**February 2021**