

**ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE
ESTABLISHMENT OF FOUR (4) TOWNSHIPS EXTENSIONS
(OMULUNGA EXTENSION 9, 11, 12 & 13) IN GROOTFONTEIN**

ENVIRONMENTAL MANAGEMENT PLAN

Prepared for:
Grootfontein Municipality
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LIST OF ABBREVIATIONS AND ACRONYMS

BID:	Background Information Document
CV:	Curriculum Vitae
DEA:	Directorate of Environmental Affairs
EA:	Environmental Assessment
EAP:	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO:	Environmental Compliance Officer
EIA:	Environmental Impact Assessment
EMA:	Environmental Management Act
EMP:	Environmental Management Plan
ESR:	Environmental Scoping Report
GG:	Government Gazette
GIS:	Geographic Information Systems
GN:	Government Notice
HIV:	Human Immunodeficiency Virus
I&APs:	Interested and Affected Parties
MAWF	Ministry of Agriculture Water and Forestry
MET:	Ministry of Environment and Tourism
NAMPAB:	Namibia Planning Advisory Board
PPE:	Personal Protective Equipment
PR	Proponent Representative
PSC:	Project Steering Committee

1. INTRODUCTION

This document details the Environmental Management Plan (EMP) as informed by the Environmental Impact Assessment (EIA) conducted for the townships establishment of Omulunga extension 9, 11, 12 and 13 in Grootfontein. Green Gain Consultants cc will not be held responsible for any changes to the layout and any environmental impacts that may result as a consequence of such changes. In line with the Environmental Management Act (No. 7 of 2007) an Environmental Assessment (EA) has been conducted for the proposed development.

The proposed development site is roughly triangular in shape. It is bounded by the buffer strip parallel to the sewage reclamation works on its eastern side, the southern boundaries of Omulunga Extensions 7, 8 in the north, by the farms, Highlands No. 600 and Tiefwasser No. 376 on its western boundary and by a narrow boundary with the Remainder of the Farm Grootfontein Town and Townlands No. 754 on its southern side

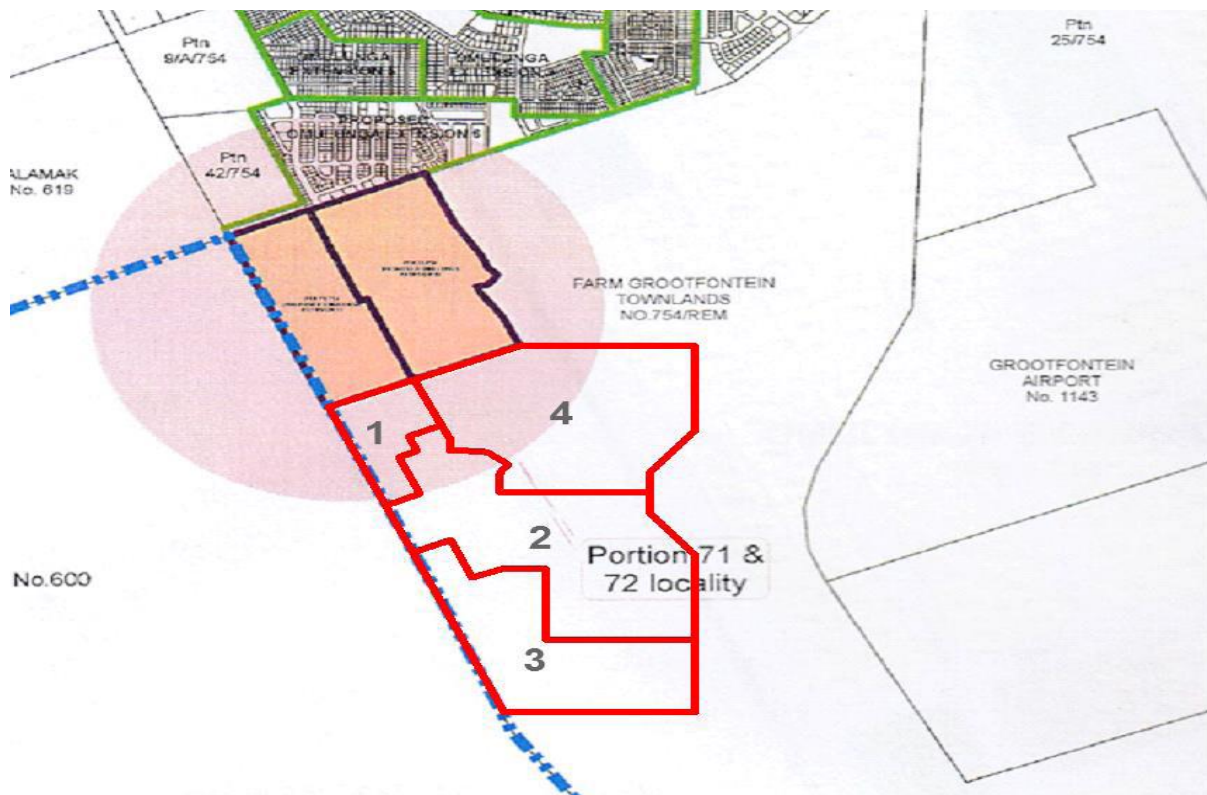


Figure 1: Township establishment on Portion 1, 2, 3, & 4 of Grootfontein Townlands No 754.

An EMP is one of the most important outputs of an EA process as it synthesises all of the proposed mitigation and monitoring measures, laid out according to the various stages of the project life cycle, with clearly defined follow-up actions and responsibility assigned to specific actors. It provides a link between the impacts identified in the EIA process and the required environmental management on the ground during the project implementation and operation. It is important to note that an EMP is a legally binding document and has been drafted in accordance with the Environmental Management Act (No. 7 of 2007) and its Environmental Impact Assessment Regulations (2012). This plan describes the mitigation and monitoring measures to be implemented during the following phases of these developments:

- **Planning and Design** – the period, prior to the drafting of construction tender documents, during which preliminary legislative and administrative arrangements, necessary before any erven are sold, are made and detailed engineering designs/drawings are carried out;
- **Construction** – the period during which Grootfontein Municipality, having secured the necessary legislative and administrative arrangements, prepare construction tender documents for the development of services infrastructure to service the various erven as well as any other construction process(s) within the development areas. It also includes the period during which the services infrastructure will be constructed to service the various erven within the townships; and
- **Operation and Maintenance** – the period during which the services infrastructure will be fully functional and maintained by the Grootfontein Municipality as deemed necessary.

Due to the nature of this development it is anticipated that all the infrastructure would be permanent, hence decommissioning and rehabilitation is not envisaged for these developments. The commitments described here form part of the Environmental Clearance Certificate (ECC) between Grootfontein Municipality and the state, as represented by the Ministry of Environment and Tourism (MET). Non-compliance is considered illegal and may have legal consequences. The amendment, transfer or renewal of the ECC should be communicated to the Environmental Commissioner as stipulated in the (EMA) of 2007 (S 39-42) and its EIA Regulations (S 19-20). Any changes to this EMP will require an amendment to the ECC for these developments. When approved by DEA, this draft EMP will be considered the final. It should be read in conjunction with the EIA report and contract documentation to ensure the contractor works in an environmentally sensitive manner, thus ensuring that the impacts on the environment and neighboring community are kept to a minimum. Should there be any conflict between the EMP and project specifications, then terms herein shall be secondary.

2. PURPOSE OF THE EMP

The purpose of this document is to guide environmental management throughout the lifecycle stages of the proposed development, namely: planning and design, construction and operation & maintenance. Furthermore, it is to ensure that impacts on the environment due to the proposed development are limited. The EMP has the following objectives:

- To identify possible impacts of the proposed activity on the environment and mitigation thereof;
- To provide information on construction activities associated with the identified environmental issues;
- To provide guidelines for the management of the identified environmental issues; and
- To provide guidelines to the responsible person to follow appropriate contingency plans in the case of possible impacts.

3. RESPONSIBILITIES

Grootfontein Municipality (the Proponent/Developer) is ultimately responsible for the implementation of the EMP. The Proponent may delegate this responsibility at any time, as they deem necessary, from construction and operation & maintenance. The implementation of this EMP requires the involvement of several key individuals, each fulfilling a different but vital role to ensure sound environmental management during each phase of these developments. The following positions and their respective responsibilities are outlined below:

3.1 The Developer

Responsibility: To implement the final EMP document approved by DEA before commencement of the planning phase and to ensure that the proposed development comply with the EMA requirements and the Environmental Authorization.

3.2 The Proponent's Representative

If the Proponent does not manage all aspects of the planning & design, construction and operation & maintenance phase activities, referred to in this EMP, they should assign this responsibility to a suitably qualified individual referred in this plan as the Proponent's Representative (PR). The Proponent may decide to assign the role of a PR to one person for both phases. Alternatively, the Proponent may decide to assign a separate PR for each developmental phase (planning & design, construction and operation & maintenance).

During the Planning & Design and Construction (tender preparation) Phase, the PR will have the following responsibilities regarding the implementation of this EMP:

- Ensuring that the necessary legal authorisations have been obtained;
- Developing, managing implementation of and maintaining all Development Guidelines;
- To ensure the contractor sign the EMP before commencement of the development.
- Ensure that the management requirements inform the planning and design of the relevant infrastructure developments (i.e. that these requirements are considered during the Planning and Design Phase not as an afterthought); and
- Ensure that the management requirements inform the preparation of tender documents for the construction of the relevant infrastructure developments.

During the Construction and Operation & Maintenance Phases the PR shall assist the ECO where necessary and will have the following responsibilities regarding the implementation of this EMP:

- Ensuring that the necessary legal authorisations and permits have been obtained by the Contractor;

- Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where necessary;
- Management and monitoring of individuals and/or equipment on site in terms of compliance with the EMP;
- Issuing fines for transgression of site rules and penalties for contravention of the EMP; and
- Providing input into the ECO's ongoing internal review of the EMP. This review report should be submitted on a monthly basis to the Proponent.

3.3 Environmental Control Officer

The Environmental Control Officer (ECO) should be a competent person appointed by the Proponent. The ECO is the Developer's on-site representative primarily responsible for the monitoring and review of on-site environmental management and implementation of the EMP by the Contractor. Failure to appoint an ECO, the duties fall upon the proponent.

Responsibility:

- Assisting the PR in ensuring that the necessary legal authorizations have been obtained;
- Management and facilitation of communication between the PR, Proponent, the Contractor, and I&APs with regard to this EMP and matters incidental thereto;
- Conduct monthly site inspection of all construction and/or infrastructure maintenance areas with regard to compliance with this EMP;
- Monitor and verify adherence to the EMP (audit the implementation of the EMP) and verify that environmental impacts are kept to a minimum;
- Taking appropriate action if the specifications of the EMP are not adhered to;
- Assisting the Contractor in finding environmentally responsible solutions to problems;
- Advising on the removal of person(s) and/or equipment not complying with the provisions of the EMP in consultation with the PR;
- Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMP; and
- Undertaking an annual review of the EMP and recommending additions and/or changes to the document.

3.4 The Contractor & Sub-contractor (s)

It is envisaged that various contractors might be appointed at various times for various tasks throughout the life cycle (construction through to operation & maintenance phase) of this project. In order to ensure sound environmental management, the relevant sections of this EMP should be included in all contracts of work outsourced thus legally binding all appointed contractors and sub-contractors.

Responsibility:

- To comply with the Environmental Authorization and undertake construction activities in an environmentally sensitive manner and rehabilitation of the site.
- To undertake good housekeeping practices during the duration of the project.
- To ensure that adequate environmental awareness training takes place in the in the employees' language of choice.

3.5 The Environmental Assessment Practitioner (EAP)

The EAP is responsible to conduct the required EA which includes compiling an EMP for the proposed development. The EMP is to be submitted with the scoping EA report as supporting documents to the application for an ECC to the Environmental Commissioner at MET: DEA. This EMP will be used by Contractors and Engineers as well as the Proponent in guiding them during the construction and operational of the townships to ensure that the impacts on the environment are limited or avoided all together. Lastly, the EAP should be available to make amendments or additions to this EMP in accordance with the recommendations of the EIA study.

4. LEGAL REQUIREMENTS

The contents of the EMP must meet the requirements S8 (j) of the EIA Regulations. The EMP must address the potential environmental impacts of the proposed activity on the environment throughout the project life cycle. The Grootfontein Municipality is advised to make use of each applicable legislation listed in the table below in addressing different aspects of the planned development.

Table 1: Applicable and relevant legislations at various phases throughout the project lifecycle

LEGISLATION	PROVISION	PROJECT IMPLICATIONS
Water resources management act 2004	This act provides provision for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes. In addition the Act clearly gives provision that pertain with license or permit that required abstracting and using water as well as for discharge of effluent. The effluent of human waste under this framework is the main focus; hence mobile toilets are earmarked to be used to avoid any seepage into existing water course, infiltration into soil and etc.	To be complied with
Draft Urban and Regional Planning Bill and Regulations	It is envisaged that the current system of land use planning and development controlled in Namibia will be comprehensively reformed by the enactment of the draft Urban and Regional Planning Bill and regulation. The Bill provides for the establishment of national, regional and urban structure plans, and the development of zoning schemes. It also deals with a variety of related land use control issues such as the subdivision and consolidation of land and the establishment and extension or urban areas.	To be complied with
Pollution Control and Waste Management Bill	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. This Bill licenses discharge into watercourses and emissions into the air.	To be complied with
National Heritage Act 27 of 2004	Heritage resources to be conserved in development. (National Heritage of Namibia)	To be complied with
Labour Act (No 11 of 2007)	135 (f): "the steps to be taken by the owners of premises used or intended for use as factories or places where machinery is used, or by occupiers of such premises or by users of machinery in connection with the structure of such buildings of otherwise in order to prevent or extinguish fires, and to ensure the safety in the event of fire, of persons in such building;" (Ministry of Labour and Employment Creation)	To be complied with
Sewerage and Drainage Regulations (amendments) Local authorities Regulations	Affords the prevention of pollution and environmental damage caused by the improper construction of sewerage and water pipelines in drainage lines.	To be complied with
Noise Control Regulations	It is essential to ensure that before any development project is approved and undertaken, an assessment or evaluation of expected noise level is done.	To be complied with

5. MANAGEMENT REQUIREMENTS

5.1 Method Statement

A method statement outlines construction activities to be undertaken with mitigation measures, which should be prepared by all contractors. The contractor must give a written statement to the resident engineer at least two weeks before the activity so that any irregularities can be handled before construction commences and also communicated to the employees. The format of the method statement should clearly indicate the following:

- Construction and Operational Procedures
- Materials and Equipment used
- How and where materials will be stored
- When actions will be undertaken

Based on the EMP specifications, the following method statements are required as minimum:

- Site clearing
- Site layout and establishment
- Storage of hazardous substances and accidental spillages of hazardous substances
- Cement mixing
- Waste management procedures
- Wastewater management procedures
- Traffic accommodation
- Erosion remediation
- Fire control and emergency procedures

5.2 Environmental Awareness Training

All contractors should ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers and new employees receive an induction presentation on the importance and implications of the EMP prior to the work commencing. The presentation should be conducted by the ECO, in the employees' language of choice.

5.3 Record Keeping

The Contractor should keep records of all environmental training sessions, including names, dates and the information presented. Records of environmental incidents report, training records, audit reports and public complaints register should be kept at the site office during the period of the project. It is advised that photographs of the site should be taken before, during and after-construction as visual references. These records should be kept for a minimum of two (2) years after completion of the project.

5.4 Non-compliance and Penalties

In case of transgressions and non-compliance to the EMP by the contractor, there should be a penalty fine. Transgressions should be recorded in a register, and be kept at the site office for the duration of the project. The resident engineer will issue the penalties in terms of the severity on the environment.

Adherence to this EMP during construction will ensure that the environmental impacts associated with the proposed development will be mitigated to a greater extent thus promoting sustainable development. The commitment and co-operation of the identified responsible person(s) will ensure effective implementation of the EMP pre-construction and post-construction.

6. IDENTIFIED IMPACTS AND MITIGATIONS

The following management tasks as detailed in the tables below need to be carried out during the planning & design and before preparation of tender documents for the construction of services infrastructure. These management requirements are also applicable for the period during which detailed engineering designs/drawings are carried out.

Table 2: Planning, Design and Construction Management actions

ASPECTS	ISSUES	MANAGEMENT PLAN	RESPONSIBILITY
EMP Implementation	Adherence to the EMP	<ul style="list-style-type: none"> The Municipality needs to appoint a Proponent's Representative (PR) act as the Employer's on-site implementing agent. This person should be responsible to ensure that the Municipality and Contractor's responsibilities are executed in compliance with relevant legislation and the township's EMP. The EMP should also form part of the tender documentation. 	Grootfontein Municipality
Construction Schedule	Poor planning might be detrimental	<ul style="list-style-type: none"> A convenient construction schedule should be prepared and distributed with adjacent neighbours and posted on the site notice boards. This will ensure that the community is aware of when to expect the construction team onsite. 	Town Planner
Water Supply	Excess to potable water	<ul style="list-style-type: none"> Potable water must be available at the camp depot, site office and construction site. Equipment considered during the design of new infrastructure (e.g. water meters) must be readily available. 	Developer
Access Routes	Erosion and dilapidation of the access route	<ul style="list-style-type: none"> Upgrade the access road used during construction to an acceptable condition. Proper maintenance should be done to ensure the quality of the access road. The access onto the trunk road will need to be designed and constructed to the standards and specifications of the Roads Authority, at no cost to the Roads Authority. 	Grootfontein Municipality / Developer
Power Supply	Safety impacts	<ul style="list-style-type: none"> Limit the power supply cables & ensure the safety of the workers and neighbouring residents. 	Grootfontein Municipality

		<ul style="list-style-type: none"> All health and safety laws and regulations should be adhered to. 	
Waste Management	Cleanliness and mismanagement of waste	<ul style="list-style-type: none"> The site should be kept tidy at all times No waste may be buried or burned on site or anywhere else. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. Separate waste containers/bins for hazardous and domestic/general waste must be provided onsite. The waste containers should be emptied after construction and removed from site to the waste disposal site. 	Grootfontein Municipality
Reticulation	Overflowing sewage or poorly planned systems might pose risks to the surrounding	<ul style="list-style-type: none"> A complete fresh water and sewer reticulation for all areas needs to be done and should comply with this Townships EMP Sufficient potable water reserves should be available to workers at all times. Sewerage lines to be placed outside the flood risk area (13m buffer zone). Sewer pipes should avoid crossing any river/basins or major drainage lines. Where this is not possible the design should comply with the International Standards (ISO) 1200m for sewer pipe designs. The planning of New Wastewater Treatment Facility and sewer system (if any) should undergo an EIA as required by the EIA Regulations and obtain an Environmental Clearance Certificate. 	Grootfontein Municipality
Run-off	Poor planning might be detrimental	<ul style="list-style-type: none"> Contractor should make provision for flood design and ensure the proposed residential & commercial areas are protected from unusual flooding and runoff. A Storm water Management Plan should be developed by the Municipality for all areas and should address the following: <ul style="list-style-type: none"> Canalising of run-off with concrete should be avoided as far as possible and natural run-off surfaces utilised or enhanced. Cumulative storm water issues. 	Developer

		<ul style="list-style-type: none"> ○ Storm water channels should be accommodated next to roads in the reserve. 	
Burrow Pits	Using of unregulated burrow pits is illegal	<ul style="list-style-type: none"> • Ensure that all borrow pits utilised, commercial or private, have an ECCs and EMPs in place and are being implemented. • Avoid sensitive areas (e.g. areas with high biodiversity, protected archaeological sites, rivers or drainage lines). • When excavating, topsoil should be stockpiled in a demarcated area. Stockpiled topsoil should be used to rehabilitate the nearest borrow area (existing borrow pits), if such an area is located less than 20 km from the stockpile. • Upon completion of the construction phase consultations should be held with the local community/adjacent neighbours regarding the post-construction use of exhausted borrow pits. • Borrow pits are to be fenced-off with steel wire fencing. 	Grootfontein Municipality
Socio-economic and Miscellaneous	Dissatisfaction from the community might cause conflicts within	<ul style="list-style-type: none"> • A project steering committee (PSC), which comprises of the Municipality, Engineers, contractors and community representatives must be convened and details of the project discussed. • The PSC must meet regularly to address any concerns/issues from the neighbouring land users and employing local labourers. • Ensure that consideration is given to matters regarding cultural and general wellbeing of the affected community and matters incidental thereto. 	Grootfontein Municipality
EMP Training	Lack of EMP awareness and the implications thereof	<ul style="list-style-type: none"> • Employees appointed for construction work on respective infrastructure must ensure that all personnel are aware of the necessary health, safety and environmental considerations applicable to their respective work. • Comprehensive induction forms a critical component during the construction and operational period. This includes the following: <ul style="list-style-type: none"> ○ Ensuring that all employees are aware of their individual impact on the environment. 	ECO

		<ul style="list-style-type: none"> ○ Ensuring that preventative measures and procedures are undertaken in order to reduce the risk of a potential impact 	
Health and Safety	Safeguard health and safety of labourers and general public.	<p>The following requirements should form part of the Tender document:</p> <ul style="list-style-type: none"> • The site should be locked to limit unauthorised public access to the site. • The contractor should ensure that all personnel are provided with personal protective (PPE), such as gloves, safety boots, to protect them from hazards being presented and that will allow them to work without risking their health. • Safety signs complying with relevant construction standards should be placed on-site in a manner clearly visible to the public. • Construction methods should adhere to the Occupational Health and Safety clause of the National Labour Act. • Construction workers should be trained on how to handle materials and equipment on site (if they do not already know how to) in order to avoid injuries. • A safety officer should be appointed prior to commencement of construction. • No workers should be allowed onsite if under the influence of alcohol. • All building materials and equipment are to be stored only within set out and demarcated work areas. • Separate toilets should be available for men and women and should clearly be indicated as such. Portable toilets (i.e. easily transportable) should be available at every construction site: 	Developer
Monitoring	EMP non-compliance	<ul style="list-style-type: none"> • The ECO/Proponent/Contractor should monitor the implementation of this EMP. • The ECO should inspect the site throughout construction at least on a weekly basis. 	ECO
Residents	Dust and Noise disturbance	<ul style="list-style-type: none"> • A watering truck should be used on gravel roads with the most heavy vehicle movement especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought. 	Developer

		<ul style="list-style-type: none"> • Work hours should be restricted between 08h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas. If an exception to this provision is required, all residents within the 500 m radius should be given 1 week's written notice. 	
Pollution	Increase of noise and vehicle traffic	<ul style="list-style-type: none"> • Construction work that could cause noise should be restricted to normal working hours unless special permission is granted by authority and surrounding neighbours. • Consider the use of construction vehicles without reversing beepers. Rather use flagmen and flashing lights in hazardous situations. 	ECO

The following mitigation measures should be complied with and carried out during any maintenance works associated with the services infrastructure within the planned development areas.

Table 3: Operation and Maintenance Management action

ASPECTS	POSSIBLE IMPACTS	MANAGEMENT PLAN	RESPONSIBILITY
EMP implementation	Non-compliance during maintenance	<ul style="list-style-type: none"> If any construction is to be conducted as part of maintenance works for the services infrastructure within the area, please refer to the construction mitigation measures in this EMP 	Grootfontein Municipality
Power supply	Service delivery and safety impacts	<ul style="list-style-type: none"> The existing electrical network should be extended to the proposed development. Energy efficiency measures should be adopted to reduce consumption of electricity. The electrical work should comply with Occupational Health and Safety procedures of the National Labour Act. A registered electrician acknowledged by the Municipality should undertake all the electrical work. 	Grootfontein Municipality
Water Supply	Water scarcity as a result of the development	<ul style="list-style-type: none"> The Municipality have sufficient bulk water supply to cater for the development 	Grootfontein Municipality
Soil Erosion	Management of erosion	<ul style="list-style-type: none"> Ensure correct drainage within the areas. The layout of the area should be optimized to limit the erosion potential. Erosion control measures should be implemented to stop further erosion and to reduce the safety hazards created by the dangerous slopes. 	Grootfontein Municipality
Waste management	Littering from new settlements and possibility of illegal dumping	<ul style="list-style-type: none"> All domestic waste should be removed from the site to the Municipal solid waste dumpsite. Illegal dumping should be prohibited. 	Grootfontein Municipality & Proponent Representative
Sewage	Pollution due to overflowing of the existing oxidation ponds due to inability to accommodate the extra effluent from development	<ul style="list-style-type: none"> The bulk services plan should make proper recommendation on sewage system for the new extensions Regular monitoring and maintenance of the sewer network should be in place. 	Grootfontein Municipality

<p>Aesthetic view of the area</p>		<ul style="list-style-type: none"> • The site must be clear of litter and all waste must be removed and disposed of to the landfill site. • All stockpiles must be removed to spoil or handled as directed by the engineers. • Spoil heaps should be flattened to the similar adjacent ground, to prevent soil erosion, thus encouraging natural vegetation. • All excavations should be backfilled, levelled and compacted. • All surfaces hardened due to construction must be ripped and material imported thereon be removed. • The original site topography should be restored where as much as possible. • All disturbed areas should be vegetated with indigenous grass to ensure progressive plant succession. Topsoil should be applied at cleared area and where material was stockpiled for this purposed. • A final audit must be completed before the contractor may leave the site to ensure that all requirements were adhered to. • The contractor should rehabilitate the site when construction is completed, thus a detailed rehabilitation plan should be drawn up by the contractor. 	<p>Grootfontein Municipality</p>
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