ENVIRONMENTAL MANAGEMENT PLAN

SPITZ LAND MIXED USE HOUSING DEVELOPMENT

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03/05/2018	0	Spitzland Mixed Used Development EIA Rev 4

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1 INTRODUCTION

A scoping and environmental impact assessment process for a proposed mixed-use housing development on the Remaining Extent of Portion 14 of the Farm Roodepoort 237 IQ was undertaken in 2015. The environmental management programme has been developed to provide management and mitigation measures for the environmental and social impacts identified during the impact assessment process.

The site, known as “Spitz Land” is a 300 hectare property and the site constitutes defunct mining land located within the Main Reef Mining Belt and was historically mined by DRD Gold.

It is proposed that the site be developed as a residential township in the affordable to middle income bonded housing market. The proposed development will include a residential component of varying market and density ranges including educational, commercial and social land uses.

The proposed development is located south west of the Roodepoort Central Business District, directly west of the Durban Roodepoort Deep Gold Mine, within the City of Johannesburg Municipality.

Activities listed in Government Notice 544 and R 545 in terms of the 2010 Environmental Impact Assessment Regulations promulgated in terms of Section 24 and 24D of the National Environmental Management Act 107 of 1998 (NEMA) which require authorisation from the competent decision-making authority (the Gauteng Department of Agriculture and Rural Development) before commencement are included in the table below.

Table 1: Listed activities which require environmental authorisation

Notice	Activity	Description
GN R 545 *(Listing Notice 2)*	*Activity 15*	*Physical alteration of undeveloped, vacant or derelict land to residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more*
GN R 544 *(Listing Notice 1)*	*Activity 11*	*The construction of canals, channels, bridges, dams, weirs, bulk storm water outlet structures, marinas, jetties, slipways, buildings or infrastructure or structures (covering 50 square metres or more) where such construction occurs within a watercourse or within 32m of a watercourse, excluding where such construction will occur behind the development set back line.*

Table 2: NEMA 2014 Regulations listed activities triggered by the project

Notice	Activity #	Description of listed activity	Applicability
GNR 983 (Listing Notice 1)	12	The development of— ~~(i)dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or~~ (ii)infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— ~~(a) within a watercourse;~~ ~~(b)in front of a development setback; or~~ (c)if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding— (aa)the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb)where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc)activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.	Development of housing and infrastructure with a footprint of over 100 square meters will occur within 32m of a watercourse
GNR 983 (Listing Notice 1)	26	Residential, retail, recreational, tourism, commercial or institutional developments of 1 000 square metres or more, on land previously used for mining or heavy industrial purposes; excluding (i)where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or (ii)where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or (iii)where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for such land.	Development of housing in land previously used for mining
GNR 985 (Listing Notice 3)	4	The development of a road wider than 4 metres with a reserve less than 13,5 metres in a. Gauteng	Roads will be required and a section of the site falls within a CBA

		~~i.A protected area identified in terms of NEMPAA, excluding conservancies;~~ ~~ii. National Protected Area Expansion Strategy Focus Areas;~~ ~~iii. Gauteng Protected Area Expansion Priority Areas;~~ iv.Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; ~~v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);~~ ~~vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;~~ ~~vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas;~~ ~~viii.Important Bird and Biodiversity Area (IBA);~~ ~~ix.Sites or areas identified in terms of an international convention;~~ ~~x.Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;~~ ~~xi.Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or~~ ~~xii.Sites zoned for conservation use or public open space or equivalent zoning.~~	area. It is likely that roads will traverse a CBA area.
GNR 985 (Listing Notice 3)	14	The development of— ~~(i)dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or~~ (ii)infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— ~~(a) within a watercourse;~~ ~~(b)in front of a development setback; or~~ (c)if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; in: c. Gauteng ~~i.A protected area identified in terms of NEMPAA, excluding conservancies;~~ ~~ii. National Protected Area Expansion Strategy Focus Areas;~~ ~~iii. Gauteng Protected Area Expansion Priority Areas;~~ iv.Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng ~~Conservation Plan or~~	Development of housing and infrastructure with a footprint of over 10 square meters will occur within 32m of a watercourse within a area identified as a CBA.

		~~in bioregional plans;~~ ~~v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);~~ ~~vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;~~ ~~vii.Sites or areas identified in terms of an international convention;~~ ~~viii.Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;~~ ~~ix.Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or~~ ~~x.Sites zoned for conservation use or public open space or equivalent zoning.~~	
GNR 985 (Listing Notice 3)	18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometer in; c. Gauteng ~~i.A protected area identified in terms of NEMPAA, excluding conservancies;~~ ~~ii. National Protected Area Expansion Strategy Focus Areas;~~ ~~iii. Gauteng Protected Area Expansion Priority Areas;~~ iv.Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; ~~v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);~~ ~~vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;~~ ~~vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas;~~ ~~viii.Sites or areas identified in terms of an international convention;~~ ~~ix.Important Bird and Biodiversity Area (IBA);~~ ~~x.Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;~~ ~~xi.Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or~~ ~~xii.Sites zoned for conservation use or public open space or equivalent zoning.~~	Existing roads may be widened or lengthened. A section of the site falls within a CBA area. It is likely that roads will traverse a CBA area.

This 2018 GSW EMPR document presents an update and amendment of the EMPR completed by Marsh Environmental Services in 2015. The significant ratings of impacts in the EIA report did not correspond with those in the original EMPr. The EMPR has therefore been

updated and amended to be in line with the methodology and impacts described in the Spitz Land Mixed Use Housing Development EIA report compiled by GSW in 2016. No other material changes have been made to the contents of the EMPR.

The environmental impact assessment process was undertaken in accordance with the requirements outlined in Government Notice 543. The Environmental Management Programme must be read in conjunction with the Draft Environmental Impact Assessment Report.

Through the assessment of the receiving environment, consultation with interested and affected parties, consultation with specialist consultants and based on the experience of the Environmental Assessment Practitioner; the environmental and social impact expected from the proposed development project has been identified. Nine (9) areas / aspects will be affected by the anticipated impacts including:

- Public health and safety;
- Natural resources (high potential agricultural land);
- Socio-economic environment;
- Biodiversity and ecosystem functioning;
- Air quality and human health;
- Traffic and public safety;
- Ambient noise levels;
- Surface water quality; and
- Visual environment.

Mitigation and management measures have been proposed for the identified impact based on a hierarchy of avoidance, and where avoidance is not possible, the mitigation of impacts.

High mitigation efficiencies can be achieved through the implementation of the Environmental Management Programme. During the planning phase of the project, mitigation and management measures are proposed with a view to avoid environmental and social impacts. 30% of all anticipated impact can be reduced to a low significant and 23% to a medium significance. Based on the comments received (from the Sol Plaatjes Youth and the Mandela Crisis Centre), the developed / proponent agreed to consider the offset of perceived economic displacement related to the existing affected subsistence farmers through a financial contribution to the Mandela Crisis Centre. A valuation of the economic displacement has not been undertaken as part of the environmental impact assessment process and further negotiations will be undertaken once environmental authorisation has been granted.

Very high mitigation efficiencies can be achieved during the construction phase of the proposed development project. 74% of all negative impact can be reduced to a have a low

significance. During the operation phase 50% of all identified negative impact can be mitigation to have a medium significance.

Positive impacts identified relate to employment opportunities during the construction phase of the proposed development project and potential positive economic impacts on local business after the township has been established and occupied.

1.1 DETAILS AND EXPERIENCE OF EAP

The consultants responsible for the preparation of the Environmental Management Programme are listed below:

Table 3: Consultants responsible for preparation of original EMPR

Consultant Name and Responsibilities	Relevant Experience
Lizelle Prosch Lead Consultant – Marsh Consulting	Lizelle has 13 years' experience in the environmental consulting industry. Lizelle was a Marsh employee from 2007 to 2012 and the Marsh Environmental Services Practice Leader from 2010 to 2012. After starting her own business in 2013, she has been partners with Marsh on key strategic projects on a consulting basis. Lizelle has extensive experience in environmental and risk consulting. She has been the lead consultant on a number of large strategic environmental projects. Her experience in consulting includes conducting Environmental Impact Assessments, Environmental Due Diligences, Compliance Auditing (including compliance auditing against the Environmental, Health and Safety standards as published by the International Finance Corporation for project funded by Equator Principle Financial Institutions), and assisting clients in understanding and addressing their environmental risks.

It is important to note, that original application for environmental authorisation was submitted to GDARD in 2012 and as such, the listed activities described above and report are to be adjudicated on in terms of the previous regulations namely, Government Notice 544 and R 545 of the 2010 Environmental Impact Assessment Regulations promulgated in terms of Section 24 and 24D of the NEMA (Act No.107 of 1998).

1.2 DETAILS OF THE APPLICANT/PROJECT PROPONENT

The applicant and project proponent is Copper Moon Trading 631 (Pty) Ltd, who, on analysis of the housing market has identified the need for the proposed development. Upon obtaining the necessary development approvals and authorisations as well as observation of the necessary legal requirements specific to the proposed residential development, it is the applicants' intention to transfer the property to property development entities. The applicant will therefore not be responsible for the installation of services or the construction of top-structures. Any conditions of township approval (including conditions of an environmental

authorisation and the Environmental Management Programme) shall be applicable to any future developers and including as part of the transaction.

1.3 DETAILS AND EXPERIENCE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

The original EAP was Marsh Environmental Services, a division of Marsh (Pty) Ltd. The report, specifically the Environmental Impact Report (EIR) has been revised as per the requirements of GDARD by Geo Soil and Water (GSW) CC. GSW is a geological and environmental consultancy with over 15 years' experience in environmental management across various industry sectors (Appendix Y). The consultants responsible for revising this report are listed below:

Table 4: Details of EAP responsible for preparation of revised EMPR

Name	Relevant Experience
Adri Joubert - Supervising Principle	Adri Joubert is the director of GSW and has in excess of 20 years' experience in the environmental management field. Adri is a registered professional natural scientist and has undertaken and competed assessments on behalf of Continental Coal, Mashala Hendrina Coal, Resgen, BHP and Exxaro. In addition, Adri has a wealth of experience that also includes environmental auditing, due diligence and environmental aspect monitoring.
John von Mayer - Senior Consultant (EIMS)	John von Mayer is a registered Professional Natural Scientist who holds a Bachelor of Science Honours degree and has over 9 years' experience in the environmental field. His main focus is on environmental impact assessments, environmental management programmes, environmental compliance and monitoring, the identification of environmental management solutions and mitigation/risk minimising measures as well as providing technical input for projects in the environmental management field. He has been involved as an EAP in a number of large-scale infrastructure projects and EIAs throughout South Africa.

1.4 TERMS OF REFERENCE

The environmental impact assessment is compiled in accordance with the provisions of the Environmental Impact Assessment Regulations (August 2010) promulgated in terms of Chapter 5 of the National Environmental Management Act 107 of 1998. The content of this report is prescribed by Regulation 28 of Government Notice R543 of the afore-mentioned Environmental Impact Assessment Regulations.

2 LEGILSATIVE BACKGROUND

Table 5 provides a summarized description of the relevant environmental legislation and policies observed and considered during the preparation of the Environmental Management Programme.

Table 5: Legal Framework

Legislative reference	Extract and / or interpretation	Applicability and required action
Section 2(2-4(a)) of the National Environmental Management Act 107 of 1998	**NEMA Sections 2(2-4(a))** 2. 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. 3. Development must be socially, environmentally and economically sustainable. 4. - a) Sustainable development requires the consideration of all relevant factors as listed in Section 4(a)(i –viii)	Factors to be considered as it relates to Section 2(4)(a) includes the protection of ecosystems and biodiversity, pollution prevention, the protection of heritage resources, waste use reduction, the depletion of non-renewable natural resources as well as social and environmental risk management. The act calls for an environmental management hierarchy of avoidance, minimisation and remediation. ***Action*:** Continually identify and evaluate environmental and social risks and impacts. Adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize and, where residual impacts remain, compensate/offset for risks and impacts. Promote improved environmental and social performance through the effective use of management systems. Based on concept of materiality, set measurable objectives and targets as part of the environmental management system to work towards social, environmental and economic sustainability.
Section 2(4)(b) of the National Environmental Management Act 107 of 1998	2. - 4. - b) 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	***Action*:** Develop a systematic approach to consider alternatives in environment management and mitigation measures, to identify the option that provides the most benefits or the least damage to the environment, at acceptable cost (financial), in the long term as well as in the short term.
Section 2(4)(e) of the National Environmental	2. Sustainable development requires the consideration of all relevant factors including the following: 4. - e) Responsibility for the environmental health and safety	***Action:*** Access and manage environmental risks and impacts throughout its lifecycle. This principle places an obligation to ensure all contractors, suppliers and other external companies conduct their business in

Management Act 107 of 1998	consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.	an environmentally responsible manner and that the products used do not cause adverse environmental impacts.
Section 2(4)(p) and 28(1), (3) (a), (b), (c), (d), (e) and (f) of the National Environmental Management Act 107 of 1998 and Section 19 (a) and (b) of the National Water Act 36 of 1998	**Section 2(4)(p) of the National Environmental Management Act** 2. - 4. - p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment **Section 28 of the National Environmental Management Act** 28. – 1. Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment. 3. The measures required in terms of Subsection (1) may include measures to- a) Investigate, assess and evaluate the impact on the environment; b) Inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment; c) Cease, modify or control any act, activity or process	***Action:*** Undertaken the required risk assessments monitoring activities to determine pollution risk and proactively manage project activities to mitigate and manage identified risks based on a hierarchy of avoidance, minimisation and remediation Allocate sufficient funds to cover the cost of for the effective implementation of environmental management and mitigation measures, corrective action and the remediation of pollution.

	causing the pollution or degradation; d) Contain or prevent the movement of pollutants or the cause of degradation; e) Eliminate any source of the pollution or degradation; or f) Remedy the effects of the pollution or degradation. **Section 19 of the National Water Act** 19. An owner of land, a person in control of land or a person who occupies or uses the land on which- a) Any activity or process is or was performed or undertaken; or b) Any other situation exists, which causes, has caused or is likely to cause pollution of a water resource must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.	
Section 23 (2)(a), (b), (c), (d), (e) and (f) of the National Environmental Management Act 107 of 1998	The general objective of integrated environmental management is to promote the integration of principles as set out in Section 2 of the Act in decision-making, identify and evaluate potential impacts, risks, consequences and options for mitigation, ensure adequate and appropriate opportunity for public participation, ensure the consideration of environmental attributes in management and decision-making.	***Action:*** Ensure continuous compliance with the management and mitigation measures as included in the environmental management programme. Undertaken monthly internal compliance auditing against the provisions of the environmental management programme. Identify non-conformances and undertake the required corrective actions. Appoint a suitably qualified environmental consultant to undertaken external compliance auditing (at a frequency as determined by the environmental management programme (or as directed by the Department) against the provisions of the environmental

		management programme. Identify non-conformances and undertake the required corrective actions. Through a process of continual risk assessment and monitoring, review and amend the environmental management programme as appropriate, to address social and environmental impacts if prescribed management measures are found to be ineffective or if new risks that require additional management and / or mitigation are identified. Conduct training on the content and requirements of the environmental management programme and environmental management plan at all level within the organisation and including third party contractors.

1.2 OTHER ENVIRONMENTAL LEGISLATION

2.1.1 ENVIRONMENTAL RIGHTS: SECTION 24 OF THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

In accordance with Section 24 of the Constitution of the Republic of South Africa Act 108 of 1996, the environmental impact assessment was undertaken with a view to ensure that all person's rights to an environment that is not harmful to their health or well-being are protected. The approach to impact identification, management and mitigation is intended to safeguard the environment for the benefit of present and future generations.

2.1.2 WEEDS AND INVADERS: THE CONSERVATION OF AGRICULTURAL RESOURCES ACT, 1983 (ACT NO. 43 OF 1983)

The Act specifies that certain plants are declared weeds and invader plants and that these must be controlled or eradicated. These species are divided into three categories, and the control measures applicable to the respective categories are as follows:

- Category 1: Invader plants which have been declared weeds and which may not be allowed to occur on land or in inland water surfaces (other than in biological control reserves).
- Category 2: Invader plants that may only occur in areas that have been specifically demarcated for this purpose.
- Category 3: Invader plants that may continue to grow where they already exist. However, no propagating, new planting or trade is allowed and such plants may not occur within 30 metres of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland.

2.1.3 SECTION 57 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT

Section 57 of the National Environmental Management: Biodiversity Act 10 of 2004 specifies that a person may not carry out a restricted activity[1] involving a specimen of a listed threatened or protected species without a permit issued in terms of Section 7 of the Act.

[1] *"restricted activity" in relation to a specimen of a listed threatened or protected species, means-*

- *Hunting, catching, capturing or killing any living specimen of a listed threatened or protected species by any means, method or device whatsoever, including searching, pursuing, driving, lying in wait, luring, alluring, discharging a missile or injuring with intent to hunt, catch, capture or kill any such specimen;*
- *Gathering, collecting or plucking any specimen of a listed threatened or protected species;*
- *Picking parts of, or cutting, chopping off, uprooting, damaging or destroying, any specimen of a listed threatened or protected species;*
- *Importing into the Republic, including introducing from the sea, any specimen of a listed threatened or protected species;*
- *Exporting from the Republic, including re-exporting from the Republic, any specimen of a listed threatened or protected species;*

2.1.4 THE GAUTENG NOISE CONTROL REGULATIONS (GN 5479), REGULATION 8, PROMULGATED UNDER THE ENVIRONMENT CONSERVATION ACT OF 1989

This clause prohibits causing a disturbing noise.

"Disturbing noise" is defined as a noise level that causes the ambient noise level to rise above the designated zone level, or if no zone level has been designated, the typical rating levels for ambient noise in districts, indicated in Table 2 of SANS 10103.

"Zone sound level" means a derived dBA value determined indirectly by means of a series of measurements, calculations or table readings and designated by a local authority for an area.

Additionally, in terms of Regulation 10: Land Use, the company may not make changes to existing facilities or existing uses of land or buildings or erect new buildings, if these will house or cause activities that will, after such changes, cause a disturbing noise, unless precautionary measures to prevent such noise have been taken to the satisfaction of the local authority with jurisdiction in the area concerned.

SANS10103:2004 - extract from Table 2: Acceptable rating levels for noise in districts

Type of district	Equivalent continuous rating for noise (Dba) - Outdoors	
	Day-time (06h00 – 22h00)	Night-time (22h00-06h00)
Residential District		
Rural District	45	35
Suburban district with road traffic	50	40
Urban district	55	45
Non-Residential District		
Urban district with some workshops, business premises and main roads	60	50
Central business district	65	55
Industrial district	70	60

- *Having in possession or exercising physical control over any specimen of a listed threatened or protected species;*
- *Growing, breeding or in any other way propagating any specimen of a listed threatened or protected species, or causing it to multiply;*
- *Conveying, moving or otherwise translocating any specimen of a listed threatened or protected species;*
- *Selling or otherwise trading in, buying, receiving, giving, donating or accepting as a gift, or in any way acquiring or disposing of any specimen of a listed threatened or protected species; or*
- *Any other prescribed activity which involves a specimen of a listed threatened or protected*

2.1.5 CONTRACTORS AND TENANTS

The National Environmental Management Act 107 of 1998, Section 28(1) states that reasonable measures must be taken to prevent pollution or degradation of the environment. Section 28(2) states that the persons on whom subsection (1) imposes an obligation to take reasonable measures include an owner of land or premises, a person in control of land or premises or a person who has a right to use the land or premises.

Section 154(a) of the National Water Act 36 od 1998 states that; w*henever an act or omission by an employee or agent constitutes an offence in terms of this Act, and takes place with the express or implied permission of the employer or principal, as the case may be, the employer or principal, as the case may be, is, in addition to the employee or agent, liable to conviction for that offence.*

The developer / proponent would be considered the employer or principal, the employee or agent being the tenant or contractor. A developer / proponent is therefore responsible for ensuring that contractors and tenants are compliant with the legislation where it affects the site. The developer / proponent may be liable for any illegal discharges, spills or accidents caused by these contractors or tenants (in addition to these contractors or tenants being liable).

The developer / proponent can also not escape liability to third parties in terms of an agreement between themselves and a contractor. Such an agreement is not binding on third parties. A third party will still be able to hold the developer / proponent liable. It is possible for a developer / proponent to join the contractor as a defendant in legal proceedings, alternatively, recover the damages (or part thereof) paid to the third party from the contractor on a contractual basis.

The agreement between a developer / proponent and the contractor must at least state that the contractor is aware of all the applicable environmental legislation pertaining to his tasks and that the contractor will strictly adhere to this legislation. The Developer / Proponent must take reasonable measures to ensure that contractors/stakeholders on site are aware of their responsibility on site and the environmental legal requirements associated with the contractors/stakeholders activities.

This section applies to any contractor working on site or tenant on the property controlled by the Developer / Proponent.

2.1.6 COMMON LAW

Common law principles form the basis of current neighbour law and the law of nuisance. It protects an individual's use and enjoyment of property, but limits the use of property so such use does not interfere with the rights of other people (i.e. neighbours).

Delict, nuisance & neighbour law

Nuisance and neighbour law are both fall under the law of delict. Nuisance law means to cause a disturbance to another person. This means that the requirements for a successful delict as outlined below apply to neighbour law and the law of nuisance.

The common law rules of delict, nuisance and neighbours can be used to protect any person's environmental rights relating to:

- Noise Pollution;
- Air Pollution; and
- Water Pollution.

The law of delict – actions of other people that cause harm

The common law of delict allows an individual to claim compensation from someone who does something that causes harm.

Requirements for a successful delictual claim

For such a claim to succeed the person making the claim (the claimant) must prove:

- That the action of the other person was wrong;
- That the person doing the action was negligent, i.e. that the other person was at fault;
- That the claimant suffered a loss which can be given a monetary value;
- That the action of the negligent person caused the monetary loss; and
- The requirements of wrongfulness and negligence must be proven.

Was the action wrong?

In deciding whether an action was wrong the law attempts to define which actions are seen as wrong by the community as a whole. The action must be wrong because it violates a legal duty to take care (e.g. the National Environmental Management Act 107 of 1998, Section 28: 'Duty of Care') or because it results in an unjustified infringement of the legally protected rights of another person. Generally speaking it is wrong to cause harm to another person or their property through negligent conduct.

Was the action negligent?

A person's liability to pay a claim usually depends on whether or not the court finds that they were at fault – i.e. whether they acted negligently or not. In order to test whether the person doing the action was negligent, the courts apply the test of the "reasonable man". In applying this test the court asks:

- Would the reasonable man, in the position of the person doing the action, have foreseen that the action would cause harm?
- Would the reasonable man have taken steps to avoid the harm?
- The court may find the action of a person caused the damage to the claimant and he or she will have to pay the claimant a sum of money equal to the amount of damage that the claimant suffered to compensate the claimant for his loss, if the court finds:
  - That the reasonable person would have foreseen that the action would cause harm;
  - That the reasonable person would then have taken steps to avoid the harm; and
  - That the person who actually did the action did not take steps to avoid the harm.

The law of nuisance

The law of nuisance is divided into three categories:

- Public nuisance – where someone's action causes an inconvenience to the general public;
- Private nuisance – where an action by one person interferes with another person in the ordinary use of his or her property; and
- Statutory nuisance – where a legislative authority declares an action or process to be a nuisance.

The law of private nuisance

The law of private nuisance recognises the right of an owner of land to enjoy their land in physical comfort, convenience and well-being without unreasonable interference from others. Due to the fact that we have to make some allowances for the actions of the people with whom we share our society, each landowner must be prepared to put up with some interference with their right to enjoy their land. It is therefore possible for this right to enjoy land to be interfered with by smoke, gas, fumes or noise generated by another person, as long as it is not unreasonably interfered with. If the interference is unreasonable then the landowner can take legal action to protect his right to enjoy his land under the law of private nuisance.

In the case of private nuisance the person who is usually liable is the person who owns the land from which the nuisance originates. The following people may be liable:

- The owner or occupier of the land who actually causes the nuisance; and
- The person who did not cause the nuisance in the first place, but who has control of the land or has taken over control of the land.

The person who has taken over the land is only liable if that the nuisance is on-going, he or she became aware of the nuisance, and failed to take reasonable steps to stop or limit the nuisance.

The law of neighbours

It is a general rule of our law that a landowner may not use his or her property in a way that causes harm to another person. This means that a landowner's right to use the property is

limited and that there is an obligation on him or her not to act in a way that will infringe the rights of a neighbour.

The test of whether the landowner's use of his property fails to comply with this obligation is one of reasonableness and fairness. This principle of reasonableness is relevant to all forms of polluting activities.

2.1.7 HERITAGE: NATIONAL HERITAGE RESOURCES ACT, ACT 125 OF 1999

The South African Heritage Resources Agency (SAHRA) must be notified during the early stages certain planned activities (barriers, bridges, change of site character). Certain permit and reporting requirements apply for heritage sites, structures older than 60 years, archaeological, palaeontological and meteorite findings, burial grounds and graves and public monuments and memorials.

3 IMPACT ASSESSMENT

The key environmental issues listed in this section have been determined by way of desktop analyses, site visits, specialist studies, expertise conducting environmental assessments on mining impacted land and from inputs from interested and affected parties.

3.1 PRESSURES EXTENDING TO THE PROPOSED DEVELOPMENT

Potential environmental issues **exerting pressures onto proposed development** and where further input or investigation is required include the following:

- The potential health risk and safety risk posed to development by mine residue (talings) facilities and old mining areas (including unclosed mine shafts) currently situated on the site;
- The potential occurrence of radioactivity and pollutants of concern across the site due to activities relating to gold mining; and
- The potential future mining activities by holders of mining rights on the property (Mintails and West Wits Mining).

3.2 PRESSURES RESULTING FROM THE PROPOSED DEVELOPMENT

Issues identified in this report deemed to be potentially significant **resulting as a consequence of the proposed development** and where further input or investigation is required include the following:

- The potential impact on flora and fauna and the remaining natural areas of the site deemed sensitive in terms of the C-Plan;
- The potential impact on the ridge located on the site;
- The potential impact on the wetland systems;
- The potential impact of increased stormwater flows into the watercourses and wetlands;
- The potential loss of viable agricultural areas of the site used for subsistence agriculture;
- The potential impact on residents of Dunusa informal settlement (Matholesville X4);
- Traffic impacts associated with construction activities as well as an influx in residents;
- The potential impact on bulk services and pressures placed on urban infrastructure; and
- The potential impact on servitudes registered over the site.

3.3 IMPACT IDENTIFICATION

Through the assessment of the receiving environment, consultation with interested and affected parties, consultation with specialist consultants and based on the experience of the Environmental Assessment Practitioner; the environmental and social impact expected from the proposed development project has been identified. The impacts are listed in Table 7 per project phase and project activity as follows:

Table 6: Presentation of impacts identified

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted
Planning, construction and operational phases. The decommissioning phase of the township is not foreseen and therefore not addressed as part of the environment impact assessment	A description of the activity that will be undertaken as part of the project phase.	A description of the anticipated impacts associated with the project activities	The status of the impacts – negative or positive.	The identification of the environmental aspect that will be impacted on

Table 7: Impacts associated with the development phases per activity[2]

Phase	Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
Planning – Township layout and service planning							
Township Layout and Services Planning	Residential, commercial, business and institutional stands, road layout and services	Layout planning	Gaseous radon emissions, contaminated dust emissions, gamma radiation exposure, water pollution and dam failure risks posed by the existing mine residue deposits	N	Restoration of the catchment dam on the north-eastern slimes dam in two places. Storm water spill over to be deposited into the paddock walls on the north-eastern slimes dam. Amelioration and diverse and sustainable vegetation cover required on the slimes dams. Rehabilitation of the dams to be maintained by a management plan. Sampling of surface water and groundwater. All legal requirements as it relates to the management of mine residue deposits must be complied with by the owner of the deposits	M	L	B

[2] Updated in May 2018 to correspond with significance ratings in EIA report

Phase	Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
		Loss of high potential agricultural land located to the south on the proposed development area	N	No mitigation proposed.	L	M	A
		Economic displacement of persons currently undertaking informal subsistence farming activities	N	Based on the comments received (from the Sol Plaatjes Youth and the Mandela Crisis Centre), the developed / proponent agreed to consider the offset of perceived economic displacement related to the existing affected subsistence farmers through a financial contribution to the Mandela Crisis Centre. A valuation of the economic displacement has not been undertaken as part of the environmental impact assessment process and further negotiations will be undertaken once environmental authorisation has been granted.	M	L	A
		The destruction of watercourses, wetlands, wetland habitats affecting ecological functioning	N	A 32 meter buffer zone around all identified watercourses and wetland will be excluded from the development area. If areas are impacted on by construction and / or associated activities, the persons responsible for such impact will be responsible for the rehabilitation of the disturbance.	M	L	A
		Increased storm water flow affecting watercourses resulting in erosion and the alteration of ecosystems	N	Stormwater management will be implemented in accordance with the storm water management plan.	M	L	A
		Loss of biodiversity, destruction and alteration of floral communities affecting faunal habitats and ecosystem functioning	N	Highly sensitive floristic habitat will be excluded from the development footprint.	M	L	B
		Loss of orange listed species (*Hypoxis hemerocallidea*)	N	Restriction regarding landscaping activities within the 32m buffer of watercourses will be imposed.	M	L	B

Phase	Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
				These open spaces shall be maintained in its natural state and / or where appropriate be rehabilitated.			
		The introduction of alien invasives and non-endemic plant species as a result of landscaping activities resulting in the alteration of ecosystem functioning and the possible transformation of habitats associated with watercourses and ridge	N	Refer above	M	L	B
		Land development and occupation providing incentives for the eradication of alien invasives and weeds currently affecting watercourses and natural areas	P	No mitigation proposed.	L	M	A
		Ambient dust exceeding the areas to the north west of the site will exceed the 2015 standard of 75µg/m³ impacting on human health	N	The north west section of the property which will be affected by dust outfall exceeding the regulatory limit will be excluded from the development footprint.	M	L	A
		Dust emissions from existing mine residue deposits affecting human health	N	Amelioration and diverse and sustainable vegetation cover required on the slimes dam to prevent possible dust emissions. Rehabilitation of the dams to be maintained by a comprehensive management plan. All legal requirements as it relates to the management of mine residue deposits must be complied with by the owner of the deposits.	M	L	A

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
					Dust monitoring will be undertaken until such time as it has been confirmed that dust emission from the mine residue deposits does not result in the exceedance of the regulatory limits.			
			Relocation and re-settlement of informal settlement located to the north east on a portion of the proposed development site	N	The developer will agree with the City of Johannesburg Metropolitan Municipality on the process of community relocation.	M	L	A
Construction - Construction of temporary office building and associated facilities including temporary worker ablution facilities, worker cooking and eating facilities, fuel and chemical storage facilities, vehicle maintenance areas and material storage and handling areas.								
Site establishment	Construction of temporary office building and associated facilities including: Worker temporary ablution facilities; Worker cooking facilities and eating areas; Fuel and chemical storage facilities; Vehicle maintenance sites; and Material storage areas.	Site access via access road through Solplaatjes Township area and site access roads	Increased construction and delivery vehicle movement affecting traffic flow and increasing the risk of road accidents	N	All drivers will have a valid driver's licence. All drivers will be trained in road use. All vehicles will be roadworthy and inspected on a regular basis. Limit construction vehicle movement on public roads to avoid peak traffic hours (7h00 – 8h00 and 16h00 - 18h00)	M	L	B
			Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition	M	L	B
			Destruction and / disturbance of identified sensitive vegetation and faunal habitats resulting from land clearing activities of (wetlands, watercourses and ridge)	N	Biodiversity areas identified / allocated for conservation must be demarcated and, if required, temporarily or permanently fenced. Site clearing activities will be kept to a minimum.	L	M	A

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
					Any area where land clearing will be undertaken will be surveyed by an appropriately qualified biodiversity specialist. Inform the South African National Biodiversity Institute of the identification of red and orange data plants species, the proposed procedure for avoidance and / or relocation and will obtain any relevant approvals for the planned activities.			
			Increased ambient noise levels from construction and delivery vehicle movement resulting in nuisance noise impacts	N	All vehicles shall be in good working order and inspected for regular maintenance. Vehicles shall be fitted with silencers.	M	L	C
		Removal of vegetation for erection of temporary office building	Destruction and / disturbance of identified sensitive vegetation and faunal habitats resulting from land clearing activities of (wetlands, watercourses and ridge)	N	Clearing of vegetation shall be limited to the footprint. Areas that are to be protected shall be clearly indicated on all construction drawings. No construction activities will be undertaken within these demarcated protected areas. No persons will be allowed to undertake any other activities within the areas earmarked for protection. The contractor, his / her staff and all other permanent and temporary workers shall be informed of this restriction. If deemed necessary, the wetland and natural areas earmarked for protection shall be fenced to prevent any disturbance.	L	M	A

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
			Increased risk of soil erosion and windblown dust emissions resulting from the removal of vegetation cover impacting of air quality and total suspended solids in surface water	N	The removal of vegetation shall be kept to a minimum. If required, wet and / or chemical dust suppression shall be undertaken. Any instances of soil erosion will be corrected. Any disturbed areas will be re-vegetation as soon as is practicable.	M	L	B
		Earthworks to create platform for the erection of the temporary office building	Increased dust emissions resulting from earthmoving activities affecting human health and resulting in nuisance dust fallout	N	If required, wet and / or chemical dust suppression shall be undertaken. Any disturbed areas will be re-vegetation as soon as is practicable.	M	L	A
		Erection of temporary office building and associated facilities	Visual impacts caused by the construction camp and site activities	N	No mitigation proposed.	M	H	C
Construction activities								
Construction Activities	Construction of roads and services installation	Daily contractor's access via access road through Solplaatjes Township area and site access roads	Increased construction and delivery vehicle movement affecting traffic flow and increasing the risk of road accidents	N	All drivers will have a valid driver's licence. All drivers will be trained in road use. All vehicles will be roadworthy and inspected on a regular basis. Limit construction vehicle movement on public roads to avoid peak traffic hours (7h00 – 8h00 and 16h00 - 18h00)	M	L	B

Phase	Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
		Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition	M	L	B
		Destruction and / disturbance of identified sensitive vegetation and faunal habitats resulting from land clearing activities of (wetlands, watercourses and ridge)	N	The removal of vegetation shall be kept to a minimum. Any area will be surveyed by an appropriately qualified biodiversity specialist. Inform the South African National Biodiversity Institute of the identification of red and orange data plants species, the proposed procedure for avoidance and / or relocation and will obtain any relevant approvals for the planned activities.	L	M	A
		Increased ambient noise levels resulting in nuisance noise impacts	N	All vehicles shall be in good working order and inspected for regular maintenance. Vehicles shall be fitted with silencers. Inform any persons which may be affected by noise.	M	L	C
	Presence and movement of contractors and construction workers on site	Destruction and / disturbance of identified sensitive vegetation and faunal habitats resulting from land clearing activities of (wetlands, watercourses and ridge)	N	In additional to the mitigation measures as described in other sections. Persons will be restricted from entering areas earmarked from protection. No person may collect vegetation, trap and or interfere with animals.	L	M	A

Phase	Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
		Influx of casual jobseekers resulting in increased incidents of crime	N	Regardless of a provision for the use of local labour, recruitment will not be undertaken on site. A system for the identification and possible employment of local labour will be undertaken.	M	L	C
		Opportunistic poaching and harvesting of plant species	N	In addition to the mitigation measures included in other sections. Any person found to poach animals encountered on site or harvest any plants shall be subject to a fine.	L	L	C
		Increased risk of fire resulting from construction activities and open fires for cooking and heating	N	Open cooking and heating fires will only be allowed in designated areas. An emergency preparedness plan and emergency response procedure will be developed.	H	H	B
		Surface water pollution resulting from temporary on site ablution facilities	N	These facilities will be in good working order and inspected for leaks on a daily basis. All chemical toilets will be emptied completely before being moved or removed from site to avoid the risk of spills.	M	L	C
		Soil and water pollution resulting from general waste generated (refer waste management section below)	N	Refer to “waste management”	M	L	B

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
		Earthworks and trench excavation (services installation)	Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition	M	L	B
			Dust emissions from earthworks impacting of human health and resulting in nuisance dust outfall	N	The removal of vegetation shall be kept to a minimum. If required, wet and / or chemical dust suppression shall be undertaken. Any disturbed areas will be re-vegetation as soon as is practicable.	M	L	A
			Increased risk of soil erosion and windblown dust emissions resulting from the removal of vegetation cover impacting of air quality and total suspended solids in surface water	N	In addition to the mitigation measures as outlined in other sections. Any instances of soil erosion will be corrected.	M	L	B
			Increased ambient noise levels resulting in nuisance noise impacts	N	All vehicles shall be in good working order and inspected for regular maintenance. Vehicles shall be fitted with silencers.	M	L	C
		Earth shaping and compaction (roads and services)	Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition	M	L	B

Phase	Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
		Dust emissions impacting of human health and resulting in nuisance dust outfall	N	If required, wet and / or chemical dust suppression. Any disturbed areas will be re-vegetation as soon as is practicable.	L	L	C
		Increased ambient noise levels resulting in nuisance noise impacts	N	All working order and inspected for regular maintenance. Vehicles shall be fitted with silencers.	L	L	C
	Road kerb installation and road surfacing (asphalt)	Soil and water pollution resulting from concrete mixing and the use of asphalt as road surfacing material	N	Concrete mixing will be undertaken on an impermeable surface and any watery effluent from the mixing process will be contained. In the event that concrete and / cement is spilled, the affected area will be cleaned and the material will be disposed of appropriately.	L	L	C
	Construction materials transport, receipt and storage	Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition	M	L	C
		Increased construction and delivery vehicle movement affecting traffic flow and increasing the risk of road accidents	N	All drivers will have a valid driver's licence. All drivers will be trained in road use. All vehicles will be roadworthy and inspected on a regular basis. Limit construction vehicle movement on public roads to avoid peak traffic hours (7h00 – 8h00 and 16h00 - 18h00)	M	L	B

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
			Destruction and / disturbance of identified sensitive vegetation, faunal habitats and wetland areas resulting from land clearing activities to establish storage areas	N	Clearing of vegetation shall be limited to the footprint. Areas that are to be protected shall be clearly indicated on all construction drawings. No construction activities will be undertaken within these demarcated protected areas. Additionally, no persons will be allowed to undertake any other activities within the areas earmarked for protection. The contractor, his / her staff and all other permanent and temporary workers shall be informed of this restriction. If deemed necessary, the wetland and natural areas earmarked for protection shall be fenced to prevent any disturbance.	L	M	A

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
		Storage of dangerous goods (diesel fuel, oils and lubricants)	Soil and water pollution resulting from the on-site storage of dangerous goods and chemicals affecting water quality and ecosystems	N	All fuel and chemical storage areas will be constructed to be impermeable and have a bund wall which can contain 110% of the total volume of the materials stored. Any spills within the contained bund will be collected and the effluent will be disposed of. All chemical and fuel storage tanks will be labelled and material safety data sheets will be available. All persons will be trained on the content of the safety sheets. An emergency preparedness plan and emergency response procedure will be developed.	M	L	A
		Construction vehicle maintenance and repair	Soil and water pollution resulting from the on-site vehicle maintenance and repairs affecting water quality and ecosystems	N	Vehicle maintenance shall be undertaken off site. In the event of on-site vehicle maintenance activities, care shall be taken to eliminate the risk of hydrocarbon spills. On-site vehicle maintenance shall not be undertaken in areas that are to be protected. If any spills do occur, the total extent of the affected soil will be removed, placed in containers and disposed of.	M	L	A

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
		Waste management	Soil and water pollution resulting from the generation of general and hazardous waste affecting water quality and ecosystems	N	Waste separation will be undertaken. Waste will be removed from site weekly, or as appropriate. All waste bins will be fitted with lids. The site will be inspected for litter on a daily basis and litter clean-up will be done if required.	M	L	A
		Employment opportunities	The employment of local labour and the use of local service providers affecting socio-economic conditions	P	The principle contractor will, as part of his tender, allow for the use of local labour and other service providers within the Roodepoort area.	M	L	B
Layout / Services								
Township Layout and Services Planning	Residential, commercial, business and institutional stands, road layout and services	Layout planning	Safety risks associated with undermining affecting the south west corner of the proposed development site	N	Undermined area excluded from the proposed developable area	L	L	C
			Gasous radon emissions, contaminated dust emissions, gamma radiation exposure, water pollution and dam failure risks posed by the existing mine residue deposits	N	Restoration of the catchment dam on the north-eastern slimes dam in two places. Storm water spill over to be deposited into the paddock walls on the north-eastern slimes dam. Amelioration and diverse and sustainable vegetation cover required on the slimes dams. Rehabilitation of the dams to be maintained by a management plan.	L	L	C

Phase	Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
				Sampling of surface water and groundwater. All legal requirements as it relates to the management of mine residue deposits must be complied with by the owner of the deposits			
		Loss of high potential agricultural land located to the south on the proposed development area	N	No mitigation proposed.	L	L	C
		Economic displacement of persons currently undertaking informal subsistence farming activities	N	Based on the comments received (from the Sol Plaatjes Youth and the Mandela Crisis Centre), the developed / proponent agreed to consider the offset of perceived economic displacement related to the existing affected subsistence farmers through a financial contribution to the Mandela Crisis Centre. A valuation of the economic displacement has not been undertaken as part of the environmental impact assessment process and further negotiations will be undertaken once environmental authorisation has been granted.	L	H	A
		The destruction of watercourses, wetlands, wetland habitats affecting ecological functioning	N	A 32 meter buffer zone around all identified watercourses and wetland will be excluded from the development area. If areas are impacted on by construction and / or associated activities, the persons responsible for such impact will be responsible for the rehabilitation of the disturbance.	L	M	C
		Increased storm water flow affecting watercourses resulting in erosion and the alteration of ecosystems	N	Stormwater management will be implemented in accordance with the storm water management plan.	M	M	B

Phase	Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
		Loss of biodiversity, destruction and alteration of floral communities affecting faunal habitats and ecosystem functioning	N	Highly sensitive floristic habitat will be excluded from the development footprint.	L	H	B
		Loss of orange listed species (Hypoxis hemerocallidea)	N	Restriction regarding landscaping activities within the 32m buffer of watercourses will be imposed. These open spaces shall be maintained in its natural state and / or where appropriate be rehabilitated.	L	H	C
		The introduction of alien invasives and non-endemic plant species as a result of landscaping activities resulting in the alteration of ecosystem functioning and the possible transformation of habitats associated with watercourses and ridge	N	Refer above	M	M	C
		Land development and occupation providing incentives for the eradication of alien invasives and weeds currently affecting watercourses and natural areas	P	No mitigation proposed.	L	M	C
		Ambient dust exceeding the areas to the north west of the site will exceed the 2015 standard of 75µg/m³ impacting on human health	N	The north west section of the property which will be affected by dust outfall exceeding the regulatory limit will be excluded from the development footprint.	L	M	C
		Dust emissions from existing mine residue deposits affecting human health	N	Amelioration and diverse and sustainable vegetation cover required on the slimes dam to prevent possible dust emissions. Rehabilitation of the dams to be maintained	L	M	C

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
					by a comprehensive management plan. All legal requirements as it relates to the management of mine residue deposits must be complied with by the owner of the deposits. Dust monitoring will be undertaken until such time as it has been confirmed that dust emission from the mine residue deposits does not result in the exceedance of the regulatory limits.			
			Relocation and re-settlement of informal settlement located to the north east on a portion of the proposed development site	N	The developer will agree with the City of Johannesburg Metropolitan Municipality on the process of community relocation.	M	L	A
Operation								
Mixed Use Township	Occupation of mixed use township	Occupation	Dust emissions from mine residue deposits affecting human health	N	As part of the township management, the ward councillor / home owners committee / local council / and / or another organisation shall be made responsible for liaising with the current owner of the mine residue deposits to manage the risks of the mine residue deposits. Rehabilitation of the mine residue deposits to be maintained by a comprehensive management plan.	L	H	C
			Increased traffic flows as a result of higher trip generation resulting from mixed uses	N	The recommendations of the Traffic Impact Assessment must be implemented.	M	H	C
			Increased ambient noise levels resulting from mixed uses and increased traffic flows	N	No mitigation proposed.	L	H	C

Phase		Activities	Potential Impacts	Status	Summary of Mitigation and Management Measures	Extent	Duration	Probability
			Increased municipal services demand (including electricity and water)	N	Where practicable, energy and water efficiency technologies will be considered by developers during the design and building of houses and other facilities.	M	H	A
			Provision of mixed use township to address housing demand	P	The development must address the specific housing need.	M	H	A
			Employment opportunities	P	No mitigation and / management measures are proposed.	M	H	C
			Increased us of local service providers	P	No mitigation and / management measures are proposed.	M	H	C
			Development and occupation resulting in a reduction of incidents of crime related to uncontrolled open land	P	No mitigation and / management measures are proposed.	M	H	C

3.3.1 POTENTIAL CUMULATIVE IMPACTS

The identified cumulative impacts are included in the table below:

Table 8:Identified cumulative impacts

Aspect	Impacts	Description
Climate	Release of greenhouse gas emissions.	The release of greenhouse gasses and other contaminants to the atmosphere is expected as a result of land based vehicle activity.; and The clearing of vegetation negatively affects carbon sequestration efficiency and increase emissions resulting from decomposition. These impacts are regarded as insignificant in terms of contribution, however, the risks are recognised as a cumulative impact
Soils	Loss of natural resource (topsoil)	The loss of topsoil as a natural resource, as a result of soil contamination and erosion negatively affecting land capability.
Hydrology	Surface water pollution	Surface water quality impacts may extend beyond the boundary of the site if not managed appropriately.
Geohydrology	Groundwater pollution	Groundwater contamination, if it occurs, is regarded as a cumulative impact. Impacts may result from incidents of surface water.
Biodiversity (flora, fauna and avifauna)	Loss of biodiversity and disruption of existing ecosystem functioning	The cumulative impacts relate to land transformation resulting in the loss of habitat.
Visual	Visual disturbance and change of landscape character.	The cumulative impacts relate to visual disturbance is regarded to impact the regional “sense of place”.
Traffic	Increased traffic	The increase in traffic flow may have an impact on local, regional and national roads in the area.

3.4 IMPACT SIGNIFICANCE

The impacts identified are rated in terms of the criteria indicated in Table 9 below:

Table 9: Impact rating methodology

Extent	
High	Widespread, Far beyond site boundary, Regional / national / international scale.
Medium	Beyond site boundary, Local area.
Low	Within site boundary.
Duration	
High (long term)	Permanent, Beyond decommissioning, Long term (more than 15 years).
Medium (medium term)	Reversible over time, Lifespan of the project, Medium term (5-15 years).
Low (short term)	Quickly reversible, Less than the project lifespan, Short term (0-5 years).
Probability Rating	
A High likelihood	Greater than 50:50 chance of occurrence (P>0.5)
B Low likelihood	Less than or equal to a 50:50 chance, but at least a 1:20 chance or occurrence (P<=0.5, but >1:20)
C Negligible	Less than 1:20 chance of occurrence (P<0.05)
Impact Magnitude and Significance Rating	
High	Of the highest order possible within the bounds of impacts that could occur. In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time-consuming or some combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt. In the case of beneficial impacts, the impact is of a substantial order within the bounds of impacts that could occur.
Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation is both feasible and fairly possible. Social cultural and economic activities of communities are changed but can be continued (albeit in a different form). Modification of the project design or alternative action may be required. In the case of beneficial impacts, other means of achieving this benefit are about equal in time, cost and effort.
Low	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both. Social, cultural, and economic activities of communities can continue unchanged. In the case of beneficial impacts, alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming.
No Impact	Zero Impact

Table 10: Impact assessment (unmitigated)

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted	Extent	Duration	Probability	Significance
Planning – Township layout and service planning								
Residential, commercial, business and institutional stands, road layout and associated services	Layout planning	Safety risks associated with undermining affecting the south west corner of the proposed development site	N	Public Health and Safety	M	H	C	M
		Radiological risk associated historic mining land-use	N	Public Health and Safety	M	L	B	M
		Gaseous radon emissions, contaminated dust emissions, gamma radiation exposure, water pollution and dam failure risks posed by the existing mine residue deposits	N	Public Health and Safety	M	L	B	M
		Loss of high potential agricultural land located to the south on the proposed development area	N	Natural resource (high potential agricultural land)	L	M	A	M
		Economic displacement of persons currently undertaking informal subsistence farming activities	N	Socio-economic	M	L	A	M
		The destruction of watercourses, wetlands, wetland habitats affecting ecological functioning	N	Biodiversity and ecosystem functioning	M	L	A	M
		Increased storm water flow affecting watercourses resulting in erosion and the alteration of ecosystems	N	Biodiversity, ecosystem functioning and surface water quality	M	L	A	M
		Loss of biodiversity, destruction and alteration of floral	N	Biodiversity and ecosystem	M	L	B	M

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted	Extent	Duration	Probability	Significance
		communities affecting faunal habitats and ecosystem functioning		functioning				
		Loss of orange listed species (*Hypoxis hemerocallidea*)	N	Biodiversity and ecosystem functioning	M	L	B	M
		The introduction of alien invasives and non-endemic plant species as a result of landscaping activities resulting in the alteration of ecosystem functioning and the possible transformation of habitats associated with watercourses and ridge	N	Biodiversity and ecosystem functioning	M	L	B	M
		Land development and occupation providing incentives for the eradication of alien invasives and weeds currently affecting watercourses and natural areas	N	Biodiversity and ecosystem functioning	L	M	A	M
		Ambient dust exceeding the areas to the north west of the site will exceed the 2015 standard of 75µg/m³ impacting on human health	N	Air quality and human health	M	L	A	M
		Dust emissions from existing mine residue deposits affecting human health	N	Air quality and human health	M	L	A	M
		Relocation and re-settlement of informal settlement located to the north east on a portion of the proposed development site	N	Socio-economic	M	L	A	M
Construction - Construction of temporary office building and associated facilities including temporary worker ablution facilities, worker cooking								

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted	Extent	Duration	Probability	Significance
and eating facilities, fuel and chemical storage facilities, vehicle maintenance areas and material storage and handling areas.								
Site establishment	Site access via access Site access through road through Sol Plaatjes Township area and site access roads	Increased construction and delivery vehicle movement affecting traffic flow and increasing the risk of road accidents	N	Traffic and public safety	M	L	B	M
		Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Air quality (PM, nuisance dust and vehicle emissions) and human health	M	L	B	M
		Destruction and / disturbance of identified sensitive vegetation and faunal habitats (wetlands and ridge)	N	Biodiversity and ecosystem functioning	L	M	A	M
		Increased ambient noise levels form construction and delivery vehicle movement resulting in nuisance noise impacts	N	Ambient noise levels	M	L	C	L
	Removal of vegetation for erection of temporary office building	Destruction and / disturbance of identified sensitive vegetation and faunal habitats (wetlands and ridge)	N	Biodiversity and ecosystem functioning	M	H	A	H
		Increased risk of soil erosion and windblown dust emissions resulting from the removal of vegetation cover impacting of air quality and total suspended solids in surface water	N	Air Quality (PM & nuisance dust) and surface water quality	M	M	A	M
	Earthworks to create platform for the erection	Increased dust emissions resulting from earthmoving activities affecting human health and resulting in nuisance dust	N	Air Quality (PM & nuisance dust)	M	L	A	M

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted	Extent	Duration	Probability	Significance
	of the temporary office building	fallout						
	Erection of temporary office building and associated facilities	Visual impacts caused by the construction camp and site activities	N	Visual disturbance	M	H	C	M
Construction – Construction activities								
Construction of roads and services installation	Daily contractor's access via access road through Sol Plaatjes Township area and site access roads	Increased construction and delivery vehicle movement affecting traffic flow and increasing the risk of road accidents	N	Traffic and public safety	M	L	B	M
		Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Air quality (PM, nuisance dust and vehicle emissions) and human health	M	L	B	M
		Destruction and / disturbance of identified sensitive vegetation and faunal habitats resulting from land clearing activities	N	Biodiversity and ecosystem functioning	L	M	A	M
		Increased ambient noise levels resulting in nuisance noise impacts	N	Ambient noise levels	M	L	C	L
	Presence and movement of contractors	Destruction and / disturbance of identified sensitive vegetation and faunal habitats (wetlands and ridge)	N	Biodiversity and ecosystem functioning	L	M	A	M

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted	Extent	Duration	Probability	Significance
	and construction workers on site	Influx of casual jobseekers resulting in increased incidents of crime	N	Socio-economic	M	L	C	L
		Opportunistic poaching and harvesting of plant species	N	Biodiversity and ecosystem functioning	L	L	C	L
		Increased risk of fire resulting from construction activities and open fires for cooking and heating	N	Biodiversity, ecosystem functioning and public safety	H	H	B	H
		Surface water pollution resulting from temporary on site ablution facilities	N	Surface water quality, ecosystem functioning and human health	M	L	C	L
		Soil and water pollution resulting from general waste generated (refer waste management section below)	N	Surface water quality, ecosystem functioning and human health	M	L	B	M
	Earthworks and trench excavation (services installation)	Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Air quality (PM, nuisance dust and vehicle emissions) and human health	M	L	B	M
		Dust emissions impacting of human health and resulting in nuisance dust outfall	N	Air Quality (PM & nuisance dust)	M	L	A	M
		Increased risk of soil erosion and windblown dust emissions resulting from the removal of vegetation cover impacting of air quality and total suspended solids in surface water	N	Air Quality (PM & nuisance dust) and surface water quality	M	L	B	M

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted	Extent	Duration	Probability	Significance
		Increased ambient noise levels resulting in nuisance noise impacts	N	Ambient noise levels	M	L	C	L
	Road kerb installation and road surfacing (asphalt)	Soil and water pollution resulting from concrete mixing and the use of asphalt as road surfacing material	N	Surface water quality, ecosystem functioning and human health	M	L	A	M
	Construction materials transport, receipt and storage	Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	N	Air quality (PM, nuisance dust and vehicle emissions) and human health	M	L	B	M
		Increased construction and delivery vehicle movement affecting traffic flow and increasing the risk of road accidents	N	Traffic and public safety	M	L	B	M
		Destruction and / disturbance of identified sensitive vegetation, faunal habitats and wetland areas resulting from land clearing activities to establish storage areas	N	Biodiversity and ecosystem functioning	L	M	A	M
	Storage of dangerous goods (diesel fuel, oils and lubricants)	Soil and water pollution resulting from the on-site storage of dangerous goods and chemicals affecting water quality and ecosystems	N	Surface water quality, ecosystem functioning and human health	M	L	A	M
	Construction vehicle maintenance and repair	Soil and water pollution resulting from the on-site vehicle maintenance and repairs affecting water quality and ecosystems	N	Surface water quality, ecosystem functioning and human health	M	L	A	M

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted	Extent	Duration	Probability	Significance
	Waste management	Soil and water pollution resulting from the generation of general and hazardous waste affecting water quality and ecosystems	N	Surface water quality, ecosystem functioning and human health	M	L	A	M
	Employment opportunities	The employment of local labour and the use of local service providers affecting socio-economic conditions	P	Socio-economic	M	L	B	M
Operational – Mixed use township								
Occupation of mixed use township	Occupation	PM10, PM2.5 and dustfall impacts due to TSFs 1, 2 and 3 – Development Parcel (no mitigation)	N	Air Quality (PM & nuisance dust) and human health	M	M	C	M
		PM10, PM2.5 and dustfall impacts due to TSFs 1, 2 and 3 – Development Parcel 2 (no mitigation)	N	Air Quality (PM & nuisance dust) and human health	M	M	C	M
		PM10, PM2.5 and dustfall impacts due to TSFs 1, 2 and 3 – Development Parcel 3 (no mitigation)	N	Air Quality (PM & nuisance dust) and human health	L	L	L	L
		PM10, PM2.5 and dustfall impacts due to all 6 TSFs – Development Parcel 1, 2 and 3 (no mitigation)	N	Air Quality (PM & nuisance dust) and human health	M	M	C	M
		Increased traffic flows as a result of higher trip generation resulting from mixed uses	N	Traffic	M	H	A	H
		Increased ambient noise levels resulting from mixed uses and increased traffic flows	N	Ambient noise levels	L	H	C	M
		Increased municipal services	N	Resource use	M	H	A	H

Phase	Activities	Potential Impacts	Status	Environmental Aspect Impacted	Extent	Duration	Probability	Significance
		demand (including electricity and water)						
		Provision of mixed use township to address housing demand	N	Socio-economic	M	H	A	H
		Employment opportunities	P	Socio-economic	M	H	C	M
		Increased us of local service providers	P	Socio-economic	M	H	C	M
		Development and occupation resulting in a reduction of incidents of crime related to uncontrolled open land	P	Socio-economic	M	H	C	M

3.5 CUMULATIVE IMPACT RATING

Table 11: Cumulative impact ratings

Aspect	Impacts	Description	Status	Duration	Probability	Significance before mitigation
Climate	Release of greenhouse gas emissions.	1. The release of greenhouse gasses and other contaminants to the atmosphere is expected as a result of land based vehicle activity.; and	N	L	C	L
		1. The clearing of vegetation negatively affects carbon sequestration efficiency and increase emissions resulting from decomposition. These impacts are regarded as insignificant in terms of contribution, however, the risks are recognised as a cumulative impact	N	L	C	L
Soils	Loss of natural resource (topsoil)	2. The loss of topsoil as a natural resource, as a result of soil contamination and erosion negatively affecting land capability.	N	L	C	L
Hydrology	Surface water pollution	1. Surface water quality impacts may extend beyond the boundary of the site if not managed appropriately.	N	L	C	L
Geohydrology	Groundwater pollution	1. Groundwater contamination, if it occurs, is	N	L	C	L

		regarded as a cumulative impact. Impacts may result from incidents of surface water.				
Biodiversity (flora, fauna and avifauna)	Loss of biodiversity and disruption of existing ecosystem functioning	1. The cumulative impacts relate to land transformation resulting in the loss of habitat.	N	L	C	L
Visual	Visual disturbance and change of landscape character.	1. The cumulative impacts relate to visual disturbance is regarded to impact the regional "sense of place".	N	L	C	L
Traffic	Increased traffic	1. The increase in traffic flow may have an impact on local, regional and national roads in the area.	N	L	C	L

4 ENVIRONMENTAL MANAGEMENT PROGRAMME

Table 13 below outlines the proposed mitigation measures for the impacts identified and assessed. The mitigation measures are incorporated in the Environmental Management Programme.

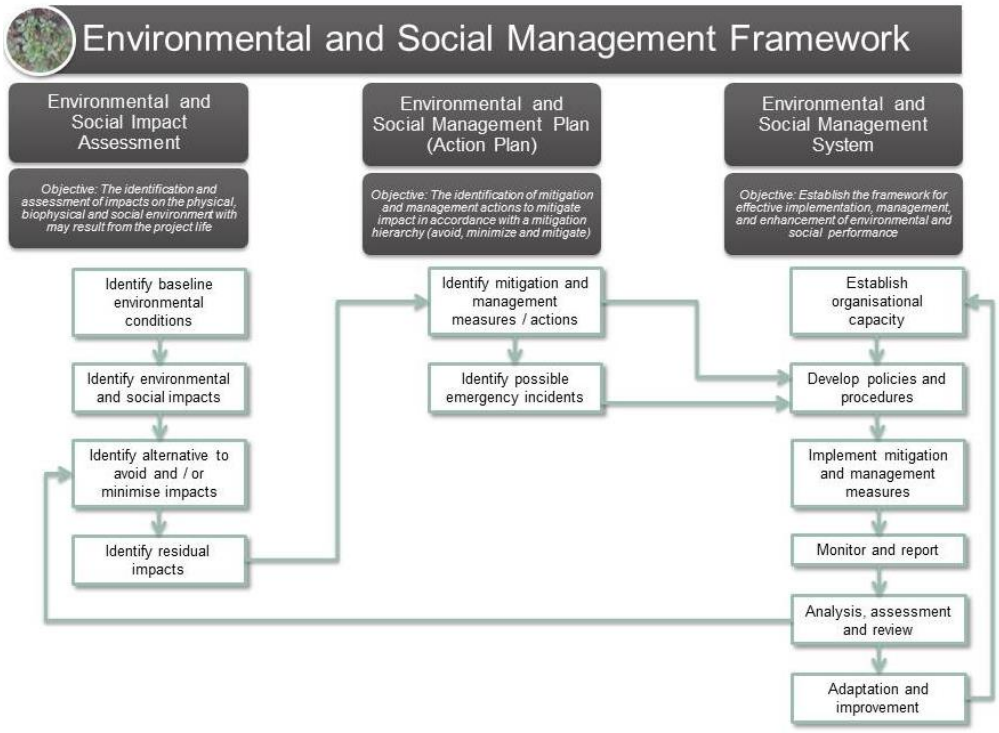
4.1 ENVIRONMENTAL MANAGEMENT

This management programme is developed to provide measures and actions to mitigate / manage potential adverse impacts, or to enhance positive or beneficial impacts based on the following mitigation hierarchy:

- Avoidance;
- Minimization; and
- Compensation/ Offset.

4.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

The environmental management framework allows for the continuous identification of environmental and social impacts, the development of mitigation and / or management actions and the establishment of a structure to ensure the effective implementation and adaption of mitigation and management measures.



4.3 CONTENT OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

The Environmental Management Programme is developed to prescribe management / mitigation measures, the management and / or mitigation objective, requirements for documentation (including the development of policies and procedures), allocate responsibility, and specify monitoring & reporting requirements.

It must be understood that the programme is not static in nature and regular reviews and updates are required to ensure sound environmental and social performance.

4.4 ORGANISATION COMMITMENT

This management programme is developed to provide measures and actions to mitigate / manage potential adverse impacts, or to enhance positive or beneficial impacts based on the following mitigation hierarchy:

- Avoidance;
- Minimization; and
- Compensation/ Offset.

4.4.1 CONSTRUCTION PHASE

Appointment of an Environmental Consultant: Responsibility of the Project Owner

The proponent / project owner shall appoint an Environmental Consultant prior to the initiation of the construction phase of the development project. The roles and responsibilities of the Environmental Consultant will be as follows:

1. Conduct initial meetings with the appointed principle contractor and provide training to the contractor's staff (including any appointed sub-contractors) on the content and requirements of the Environmental Management Programme.
2. Undertake monthly Environmental Management Programme compliance auditing including:
    a. The preparation of a compliance report;
    b. Instructions for corrective action to be taken;
    c. Recommendations regarding the requirements to update and / or amend the Environmental Management Programme; and
    d. Ad hoc consultation to provide support in the case of emergency incidents.

Appointment of an Environmental Officer: Responsibility of the Principle Contractor

During the construction phase, the principal contractor will allocate the responsibility of overseeing day-to-day compliance with the Environmental Management Programme to a suitably qualified and suitably experienced senior member of his/ her staff. The principal contractor and / or an appointed representative will be responsible for:

1. Ensuring compliance (by all persons undertaking on-site activities) to the measures included in the Environmental Management Programme;
2. Guiding project related activities to ensure environmental and social responsibility;
3. Adaptive management and consultation with the appointed Environmental Consultant;
4. Incident control, management and investigation; and
5. Record keeping, the coordination of monitoring activities including reporting requirements as outline in the Environmental Management Programme.

Additionally, the Environmental Officer shall be responsible for:

1. The submission of regular (frequency to be agreed on) compliance and monitoring reports to the appointed Environmental Consultant;
2. Communicate non-conformances, incidents and deviations from the Environmental Management Programme to the project appointed Environmental Consultant as soon as possible within 24hours form the time of occurrence

The Environmental Officer shall be a suitably qualified individual permanently employed by the principle contractor.

4.4.2 OPERATIONAL PHASE

The project proponent will ensure that the local municipality and the residents association is aware of the requirement of the operational phase Environmental Management Programme and specifically the measures as it relates to the responsibility of the mine residue deposit owner to manage impacts and risks associated with the on-site mine residue deposits.

4.5 CONTRACTUAL

The following general contractual matters apply:

1. All tendering contractors will be made aware of the contents of this Environmental Management Programme.
2. All tendering contractors are required to make specify financial provision for the implementation of the Environmental Management Programme.
3. The appointed Environmental Consultant will induct all contractors and sub-contractors and personnel working on the project on the contents of this Environmental Management Programme and any penalties arising from non-compliance.
4. The appointed Environmental Consultant shall clearly identify the areas that must be protected from disturbance by the contractors' activities at the commencement of the contractors' contract. The Contractor shall restrict all its activities, materials, equipment and personnel to within the area/s specified.
5. The project proponent and all appointed contractors must be aware of, and comply with, the provisions and requirements of the relevant local legislation.
6. The principle contractor will, as part of his tender, allow for the use of local labour and other service providers within the Roodepoort area.

4.6 TRAINING

All persons responsible for undertaking work during the life of the project must be trained on the contents of the Environmental Management Programme. The appointed Environmental Consultant is responsible for identifying the knowledge and skills necessary for the implementation of the Environmental Management Programme and associated programmes and to identify training requirements for the workers and staff involved in the implementation of the programme.

The contractor, Environmental Officer and appointed Environmental Consultant are responsible to ensure that all site personnel have a basic level of environmental awareness training. Training topics covered should include:

- What is meant by “Environment”?
- Why the environment needs to be protected and conserved.
- How construction activities can impact on the environment.
- What can be done to mitigate against such impacts.
- The content and practical implementation of the management and mitigation measures included in the Environmental Management Programme;
- Awareness of emergency and spills response provisions; and
- Social responsibility during construction e.g. being considerate to local residents.

4.7 ENVIRONMENTAL, HEALTH AND SAFETY LEGAL COMPLIANCE

The project proponent / owner and all appointed agents, contractors and suppliers must confirm and ensure compliance with all relevant environmental, health and safety legal requirements.

4.8 STAKEHOLDERS

Continued stakeholder consultation must be undertaken during the construction phase of the project. It is recommended that a stakeholder forum be established including directly affected parties, representatives from the local municipality and other identified persons. The forum will serve to communicate project progress, material changes to the project, grievances received and corrective action taken.

4.9 EMERGENCY INCIDENTS

During the construction phase of the project, the principle contractor (including all appointed agents, contractors and suppliers), must continue to assess possible risks to the environment and communities as it relates to emergency incidents (such as the uncontrolled release of pollutants and fire). Specific and timely information on appropriate behaviour and safety measures must be adopted in the event of an accident.

4.10 SAFETY AND SECURITY

Measures to reduce safety and security risk must include (but is not limited to) the following:

- Access to construction sites must be restricted;
- Trespassing on neighbouring properties (by workers) must be prohibited and the appropriate disciplinary action must be taken in the event of transgression; and
- The appropriate signage must be placed on the boundary or at the entrance to all construction sites, warning against entering the site and highlighting the health and safety risks.

4.11 GRIEVANCE MECHANISM

The principle contractor will develop and maintain a complaints register on site. The complaints register must include:

- The date when a complaint was received;
- The details of the complainant (name, address, contact number);
- A detailed description of the complaint received;
- A detailed description of the corrective action taken, and
- A record of any follow-ups with the complainant regarding the effectiveness of the corrective action.

4.12 EMERGENCY RESPONSE

Appropriate emergency preparedness and response plans must be developed to ensure the effective management and mitigation of emergency incidents. Procedures must be developed based on the appropriate classification of the possible incidents. The following aspects of emergency preparedness and response must be addressed:

- The identification of the emergency scenarios and the development of appropriate and specific emergency response procedures for each scenario.
- The training of emergency response teams on the appropriate procedures and the use of emergency response equipment.
- The identification of emergency contacts and support services and the development of effective communication systems / protocols (including communication with potentially affected communities).
- As part of the development of emergency preparedness and response plans, involve the appropriate government authorities to determine procedures for engagement, communication and reporting (emergency, health, environmental authorities).
- Emergency equipment and facilities must be provided (e.g., first aid stations, firefighting equipment, spill response equipment, personal protection equipment).
- Development of decontamination / clean-up procedures and identify critical remedial measures to contain, limit and reduce pollution.
- The identification of potential risk relating the uncontrolled release of hazardous materials and the preparation of a spill prevention, control, and response plans including:
    - Training of operators on spill prevention.

- Implementation of inspection programmes to confirm the integrity of secondary containment structures and equipment.
- Development of standard operating procedures for filling containers or equipment and the transfer of hazardous materials.
- Identification of locations of hazardous materials and associated activities on an emergency plan site map.
- Identification and availability of the appropriate personal protective equipment and equipment.
- Clarification of roles and responsibilities of individuals or groups as well as the decision process for assessing severity of the release and determining appropriate actions.

4.13 SUPPLY CHAIN

The project proponent / owner will ensure compliance with the objectives of the Environmental Management Programme by all suppliers.

4.14 UNDERMINING

Planning Phase

The township layout plan was amended to exclude the undermined area identified. Information regarding undermining and the associated development restrictions will be communicated to the local municipality.

4.15 MINE RESIDUE DEPOSITS

Risks and impact associated with the mine residue deposits are regulated by the Mineral and Petroleum Resources Development Act 28 of 2002 and the Regulations on Water Use for Mining and Related Activities, promulgated in terms of the National Water Act 36 of 1998. All legal requirements as it relates to the management of mine residue deposits must be adhered to by the owner of the deposits (as well as any other persons who may be regarded to have a responsibility for the management of such deposits).

4.15.1 PLANNING AND OPERATION PHASE

The project proponent / owner will consult with the current mine residue deposit owner to agree on the methods of continuous risk assessment as it relates to matters relating to the public health and safety risks. The legal requirements for the management of mine residue deposits are highlighted in Table 12.

Table 12: Legal references as it relates to mine residue deposits (including but not limited to)

#	Relevance	Section of Act	Objectives
1.	Requirements for Disposal of Mine	Section 42 of the MPRDA (2002)	Requires that residue stockpiles and residue

	Waste		deposits be managed in a manner as prescribed. Restricts the placement / disposal residue stockpiles and deposits in any area other than the areas approved through the environmental management plan or environmental management programme.
2.	Responsibility for any environmental liability, pollution or ecological degradation until mine closure is achieved.	Section 43 of the MPRDA (2002)	Allocates the responsibility for any environmental liability, pollution or ecological degradation, and the management thereof to the holder of a prospecting right, mining right, retention permit or mining permit, until the Minister has issued a closure certificate to the holder concerned.
3.	Requirements for Disposal of Mine Waste	Section 63 and 69 of the MPRDA Regulations (GNR 527, 2004)	Sets out the principles and prescribes the requirements for the disposal of mining waste.
4.	Management of Residue Stockpiles	Section 73 of the MPRDA Regulations (GNR 527 of 2004)	Includes the provision for the assessment and management of stockpiles through a process of characterisation to determine the risk, the appropriate siting and management thereof.
5.	Statutory health and safety obligations related to Mine Residue Deposits	Mandatory Code of Practice on Mine Residue Deposits (2000)	Guides the employer through the process of compiling a mandatory Code of Practice for Mine Residue Deposits which, if properly implemented and compiled with, will help to ensure that the employer's statutory health and safety obligations related to Mine Residue Deposits are met. To reduce as far as reasonably practicable the risk of death, injury and health damages to persons, and damage to property arising from Mine Residue Deposits while at the same time being consistent with measures to reduce pollution of the environment.
6.	Principles for Mine Closure	Section 56 of the MPRDA Regulations (GNR 527 of 2004)	Outlines the principles for mine closure that must be adhered to by the holder of a prospecting permit, mine right, retention permit or mining permit.

7.	Transfer of environmental liabilities	Section 58 and 59 of the MPRDA Regulations (GNR 527 of 2004)	Provides regulations for the application and the qualification regarding transfer of environmental liabilities.
8.	Environmental Risk Report as part of an application for Mine Closure	Section 60 of the MPRDA Regulations (GNR 527 of 2004)	Outlines the requirements for the development of an environmental risk report to be submitted as part of an application for mine closure.
9.	Closure Objectives and Closure Plans	Section 61 and 62 of the MPRDA Regulations (GNR 527 of 2004)	Sets the objectives for closer and prescribes the content of the closure plan.
10.	Pollution control and waste management	Section 64 of the MPRDA Regulations (GNR 527 of 2004)	Air Quality Management and Control.
		Section 66 of the MPRDA Regulations (GNR 527 of 2004)	Noise management and control.
		Section 67 of the MPRDA Regulations (GNR 527 of 2004)	Blasting, vibration and shock management and control.
		Section 68 of the MPRDA Regulations (GNR 527 of 2004)	Waste management and pollution control.
		Section 69 of the MPRDA Regulations (GNR 527 of 2004)	Disposal of waste material.
		Section 70 of the MPRDA Regulations (GNR 527 of 2004)	Soil pollution and erosion control.
		Section 71 of the MPRDA Regulations (GNR 527 of 2004)	Sanitation.
		Section 73 of the MPRDA Regulations (GNR 527 of 2004)	Management of residue stockpiles and deposits.
11.	Capacity requirement of clean and dirty water systems	Regulation 6 of Regulations on Water Use for Mining and	Provides the requirements for the design of a stormwater management

		Related Activities, promulgated in terms of the NWA (GNR 704 of 1999)	system.
12.	Water pollution	Regulation 7 of Regulations on Water Use for Mining and Related Activities, promulgated in terms of the NWA (GNR 704 of 1999)	Prohibits and outlines the requirements for water pollution prevention.
13.	Access control	Regulation 8(a), (b) and (c) of Regulations on Water Use for Mining and Related Activities, promulgated in terms of the NWA (GNR 704 of 1999)	Provides for access control measures to impoundment or dam containing any poisonous, toxic or injurious substance and in any area used for the stockpiling or disposal of any residue.
14.	Design of new water systems	Regulation 12(6)of Regulations on Water Use for Mining and Related Activities, promulgated in terms of the NWA (GNR 704 of 1999)	Required that the plans, specifications and design reports be approved by a professional engineer.

4.16 TRAFFIC SAFETY

4.16.1 PLANNING AND OPERATIONAL PHASE

a. A detailed Traffic Impact Study was completed by WSP Group Africa (Pty) Ltd (Ref 14899.R, dated 23/08/2013). The study formed part of the planning phase of the project. The recommendation for intersection upgrades to mitigate impact associated with the proposed township development must be implemented.

b. Any proposed deviation from the recommendations included in the afore-mentioned report is subject to a new Traffic Impact Study.

4.16.2 CONSTRUCTION PHASE

Road traffic safety during the construction phase of the project must be managed as follows:

a. The contractor will ensure that all own and / or contracted drivers have a valid and appropriate driver's licence. Copies of all drivers' licenses shall be obtained and kept on file.

b. All drivers will be trained in road use principles as it relates to public roads and site access points.

c. All vehicles will be roadworthy and inspected on a regular basis.

d. Limit construction vehicle movement on public roads to avoid peak traffic hours (7h00 – 8h00 and 16h00 - 18h00)

e. Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr

f. An emergency preparedness and response procedure will be developed as it relates to vehicle breakdown and accidents.

g. All drivers will be informed of and trained on the contents of the emergency preparedness and response procedure.

4.17 NATURAL RESOURCES (HIGH POTENTIAL AGRICULTURAL LAND)

No mitigation measures are proposed for the loss of the high potential agricultural land. Based on the comments received (from the Sol Plaatjes Youth and the Mandela Crisis Centre), the developed / proponent agreed to consider the offset of perceived economic displacement related to the existing affected subsistence farmers through a financial contribution to the Mandela Crisis Centre. A valuation of the economic displacement has not been undertaken as part of the environmental impact assessment process and further negotiations will be undertaken once environmental authorisation has been granted.

4.18 BIODIVERSITY AND ECOSYSTEM FUNCTIONING

4.18.1 PLANNING PHASE

a. All identified wetland and a 32 meter buffer will be excluded from the development area. The approved township layout plan will clearly indicate wetland areas as ecologically sensitive areas that will be included as open space within the township.

b. The ridge will be excluded for the development footprint. The approved township layout plan will clearly indicate ridge as ecologically sensitive areas that will be included as open space within the township.

c. Increased stormwater flow which may result from the proposed development must be managed in accordance with the recommendation in included in the WSP Group Africa (PTY) Ltd, Civil & Structural Engineers: Storm Water Management Plan Report (Ref: 14899.R, dated 2013/10/17).

d. If required, the landscape design of all open space areas must be undertaken by a suitably qualified professional and must consider:

   i) The improvement or replacement of site biodiversity and species richness;

   ii) Exclude the introduction of non-endemic plant species which may alter natural ecosystem functioning;

   iii) The eradication of alien invasive species and weeds as part of landscape construction and maintenance activities;

   iv) The requirements for topsoil stripping and stockpiling to be undertaken prior to the clearing of are land for re-use during re-vegetation activities; and

   v) The requirements for soil amelioration to improve the success of re-vegetation activities.

4.18.2 CONSTRUCTION PHASE

Contractor Camp and Storage Areas

a. The contractor's camp, materials storage areas and all other associated infrastructure shall be established in a demarcated area as identified by the appointed environmental consultant.

b. The access road to the camp will be via a single access road which will be demarcated by the appointed environmental consultant.

c. Only the demarcated area may be cleared of any vegetation.

d. No construction, or any other associated activities may be undertaken within or in such a way that it may impact on identified wetland and a 32 meter buffer or the identified ridge. These areas must be clearly identified and the contractor, the contractor's employees, workers, any subcontractors and suppliers will be informed of the location and extent of the wetland and ridge.

e. In the event that construction activities negatively impact on the above-mentioned sensitive areas, the offending party(ies) will be responsible for the remediation of such damage. The remediation objective will be to restore the disturbed area to its original state prior to the impact occurring. The environmental consultant will be informed as soon as any impacts in these areas occur. The environmental consultant will advise whether the services of a specialist will be required in the preparation of the remediation plan, and will also approve the remediation plan prior to implementation.

f. The appointed environmental consultant will recommend whether the fencing of the sensitive areas is required based on actual, and the likelihood of anticipated impacts to occur.

Land Clearing for the Construction of Infrastructure

a. The clearing of land for the purposes of the construction of infrastructure (roads and services) will be limited to the footprint and an additional working area to enable construction vehicle movement.

b. Any area where land clearing will be undertaken for the constructions of roads and services will be surveyed by an appropriately qualified biodiversity specialist in order to identify any red / orange data species. *Hypoxis hemerocallidea*, an orange listed species, is confirmed to occur within the study area. The survey will not be limited to the occurrence of this species, and will include the identification of all other red and orange data species as identified in the biodiversity assessment undertaken by Bathusi Environmental Consulting as part of the environmental impact assessment (Ref MES – SZL – 2013/20, dated December 2012) and any species included in the list of critically endangered, endangered, vulnerable and protected species published in National Environmental Management: Biodiversity Act 10 of 2004: Threatened or Protected Species Regulations (GNR 152, GG 29657 of 23 February 2007).

c. Recommendations with regard to the avoidance of any afore-mentioned species will be made by the appropriately qualified biodiversity specialist. Where avoidance is not possible, recommendations with regard to the removal and possible relocation of such species must be made (also including comment on the requirement to obtain and the relevant permissions and permits). The recommendation made by the specialist will be approved by the appointment environmental consultant. The contractor will be responsible to appoint and for the payment of the above-mentioned biodiversity specialist, all costs associated with the relocation of plant species and all fees and cost associated with obtaining any permissions and permits.

d. The contractor will re-vegetate all areas that have been cleared and / or disturbed as a result of construction activities as soon as is practicable. An appropriate plant species list for the purposes of re-vegetation must be prepared by a suitably qualified specialist. The principle contractor will be responsible for the appointment and for the payment of the afore-mentioned specialist.

Associated Construction Activities: Poaching and harvesting

Opportunistic harvesting of plants, poaching and or killing of any animals on site is prohibited.

A penalty / fine will be imposed on any person who undertakes such activities. All contractors,

workers, subcontractors and suppliers will be informed of the prohibition. Fines will be calculated in consultation with the appointed environmental consultant through the consideration of the cost of replacement and / or penalties imposed in terms of the relevant legislation.

4.19 FIRE RISK

4.19.1 GENERAL

a. Open fires will not be allowed on site other than in designated areas to be establish in the contractors camp.

b. Do not locate any smoking areas close to or adjacent to any areas in which flammable substances are used, handled or stored or allow smoking in areas where such substances are handled or stored.

4.19.2 FLAMMABLE SUBSTANCES

a. Conduct a risk assessment on and classify all flammable materials present on site, including areas and conditions under which these are stored, handled and/or used. Assess whether activities may give rise to vapours to such an extent, that a fire risk is created.

b. Based on the above mentioned classification and risk assessment, develop and implement a policy and control & management measures related to flammable substances, following the hierarchy of control.

c. Ensure that the management of change process is followed for all new flammable substances being introduced to the site.

d. Ensure that adequate records and technical information regarding all flammable substances are obtained from the supplier prior to arrival of the substances and that such records are available in a central register, as well as at the place of handling, storage and use.

e. Ensure that all flammable substances are adequately labelled and areas where these are stored, used, handled, etc. are clearly demarcated.

f. Ensure that regular inspections, surveillance and monitoring in respect of flammable substances, related facilities and worker exposure are undertaken and recorded, and all such records retained.

g. Ensure that an adequate maintenance plan (including preventative, routine, breakdown, statutory, etc.) for all facilities and equipment related to flammable substances is implemented.

h. Provide appropriate firefighting equipment in all areas where flammable substances are used, handled or stored, and ensure that an adequate emergency response plan is in place.

i. Ensure that all relevant employees are trained to fully understand the relevant procedures, that regular refresher training is conducted and retain training records.

Emergency Response

An Emergency Prepared and Response Plan will be developed in the event of a fire and will include:

a. The identification of probable fire risk and emergency scenarios.

b. Assign a probability of occurrence and a potential severity to the outcome.

c. Assess the risk, (the product of the probability and severity mentioned above).

d. Determine the local response time.

e. Prepare for response by dealing with the highest risks.

4.20 WASTE MANAGEMENT

4.20.1 CONSTRUCTION PHASE

a. Develop and implement a waste management plan is accordance to avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste generated.

b. Establish waste disposal areas that will not pose a risk of pollution or cause a nuisance through noise, odour or visual impacts.

c. Waste must be removed at regular intervals and may not exceed a removal frequency of once per week. In the event that it is proposed certain waste streams are not removed on a weekly basis. The proposal will be discussed with the appointed environmental consultant.

d. Ensure that waste management practices are in accordance with the waste management plan and that the requirements are extended to all contractors and suppliers.

e. Through an effective waste document system, ensure that waste generated is disposed of at a licensed facility and in an environmentally sound manner.

f. Provide waste receptacles for different waste streams in designated areas. Waste receptacles should colour coded to ensure waste separation at source. Waste streams for separation may include (but not limited to):

    i) Hazardous waste;

    ii) Waste oil (for recycling)

    iii) Domestic / general waste;

    iv) Plastic waste (for recycling, if practicable); and

    v) Cans (for recycling, if practicable).

g. Undertake training on the content and the principles of waste management at all levels in the organisation.

h. Provide adequate training to all staff at all levels of the organisation on the content of the waste management plan.

4.20.2 OPERATIONAL PHASE

Municipal waste removal and management services will be provided.

4.21 POLLUTION PREVENTION

4.21.1 CONCRETE MIXING

In terms of housekeeping for all activities involving concrete (batching plant or smaller site specific mixing operations):

a. The batching / mixing area shall be kept neat and clean at all times.

b. No batching / mixing activities shall occur on a permeable surface.

c. All runoff from such areas shall be strictly controlled, with contaminated water collected, stored / contained and disposed of at an approved waste disposal site.

d. Unused cement bags shall be stored so as not to be affected by rain / runoff.

e. Used cement bags shall be stored so as to prevent windblown dust and potential water contamination. Used bags shall be disposed of regularly via the solid waste management system.

f. Concrete transportation shall not result in spillage.

g. Cleaning of equipment and flushing of mixers shall not result in pollution, with all contaminated wash water entering the waste water collection system.

h. To prevent spillage onto roads, ready mix trucks shall rinse off the delivery shoot into a suitable sump prior to leaving the site.

i. Suitable screening and containment shall be in place to prevent windblown contamination from cement storage, mixing, loading and batching operations.

j. All contaminated water and fines from exposed aggregate finishes shall be collected and stored in sumps for disposal at an approved waste disposal site.

k. All visible remains of excess concrete shall be physically removed on completion of the plastering or concrete pouring and disposed of in an acceptable manner.

4.21.2 HYDROCARBON SPILLS

Hydrocarbon contamination of soils and surface water features should be avoided through the implementation of good housekeeping practices, including:

a. Vehicle and equipment repairs are to take place only in designated workshop areas where the appropriate management measures have been implemented;

b. The designated workshop and fuel storage areas are to be inspected to confirm the integrity of the containment structures and the drainage of surface water and maintenance of the collection sump;

c. Where vehicles or equipment are repaired under emergency conditions outside of the designated areas, drip trays capable of accommodating all fluids are to be used in as far as is practically possible. All liquids collected are to be contained and taken to the designated area for appropriate treatment or disposal.

d. Hydrocarbon and / or chemical spills are to be contained through the use of a physical barrier, to prevent the spread of the spill;

e. The spatial extent of the spill must be determined (surface and depth) and the affected materials are to be excavated from the in-situ location, containerised, and disposed off at a facility capable of dealing with hydrocarbon contaminated materials.

4.21.3 TEMPORARY ABLUTION FACILITIES

Soil and water pollution risks as it relates to temporary ablution facilities to be provided during the construction phase will be managed as follows:

a. Ablution facilities will involve the installation of drum or tank type portable toilets.

b. The potable structures will be inspected on a regular basis to identify and leaks and if nay leaks are detected, the portable toilet will be replaced and the affected soil removed and disposed off appropriately.

c. Prior to the removal of portable toilets, the drum will be emptied to eliminate the risk of spills during the moving thereof.

4.22 AIR QUALITY

4.22.1 PLANNING PHASE

a. The areas affected by excessive dust emissions (exceeding the 2015 standard of 75µg/m^3) will be excluded for the proposed development footprint allocated for residential units.

b. A 100m buffer will be established around all existing mine residue deposits which affects the development area.

4.22.2 CONSTRUCTION PHASE

a. All construction vehicles and other equipment used on site will be maintained to eliminate dark smoke emissions and other engine through tailpipe emissions. For the purposes of this section, "unacceptable level of dark smoke" means: smoke emitted from the exhaust outlets of naturally aspirated compression ignition engines which has a density of 70 Hartridge smoke units or more; or a light absorption co-efficient of more than 1.6m^{-1}; and smoke emitted from the exhaust outlets of turbo charged compression ignition engines which has a density of 56 Hartridge smoke units or more; or a light absorption co-efficient of more than 1.10m^{-1}.

b. In order to minimise vehicle entrained dust emission the following mitigation measures will be put in place:

   i) Vehicle speeds on unpaved roads will be restricted to 40km/hr; and

   ii) Wet and / or chemical dust suppression will be undertaken, if based on visual observation; excessive dust is generated as a result on vehicle movement.

c. The following mitigation measures will be implemented to limit wind-blown dust from cleared areas and soil stockpiles.

   i) Cleared areas will be re-vegetated as soon as is practicable (refer to the mitigation and management measures included in Section as it relates to re-vegetation).

   ii) Any soil removed will be stockpiled in an area that will not interfere with other construction work and / or activities. Stockpiles will be no higher than 1m. The following erosion prevention and mechanical stabilisation of slopes will be undertaken to mitigate against wind-blown dust emissions:

   iii) Any soil stockpiles that have been established and will remain for a period of longer than 6 months will be re-vegetated (refer to the mitigation and management measures included in Section as it relates to re-vegetation).

   iv) If required and based on the extent of dust emissions, temporary and additional mitigation measures may include the use of mechanical erosion control methods. This may include the use of geotextiles such as Kaytech SoilSaver ©.

4.23 NOISE

4.23.1 CONSTRUCTION PHASE

Vehicles, machinery or equipment and other construction activities which may cause noise pollution must be managed in accordance with the following:

a. Construction vehicles, generators and other construction equipment must be fitted with the appropriate silencers.

b. Vehicle driving speed and driving style adaption to minimise noise when travelling through residential areas.

c. Construction activities will be limited to the daytime, from 7h00 and 18h00.

d. When construction activities, which may be regarded as particularly noisy is undertaken; potentially affected parties must be informed 24 hours prior to the undertaking of such activities.

4.24 EROSION CONTROL

4.24.1 CONSTRUCTION PHASE

The following mitigation measures will be implemented to limit water erosions of soils from cleared areas and soil stockpiles as follows.

a. Cleared areas will be re-vegetated as soon as is practicable (refer to the mitigation and management measures included in Section □).

b. The use of mechanical erosion control methods must be implemented if required. This may include the use of geotextiles such as Kaytech SoilSaver ©.

c. The installation of erosion control blankets should be undertaken in instances where soil erosion is severe and the cost of installation regarded as viable for the effective mitigation of impacts associated with soil erosion.

4.25 HAZARDOUS SUBSTANCES

4.25.1 CONSTRUCTION PHASE

Significant risks are presented by hazardous materials stored and used on the construction site. These include the pollution of soil and surface water as a result of uncontrolled release as well as health and safety risks from fire, explosion of health impacts from exposure. Management measures to mitigate the potential impact include:

a. Explore opportunities to use non-hazardous materials in place of hazardous materials.

b. Where practicable, avoid or minimize the use of hazardous materials.

c. Summarize hazards presented by chemicals and other dangerous goods by means of a Material Safety Data Sheet (MSDS).

d. Systematically identify systems and procedures that could result in accidental pollutant release and quantify these risks to the extent possible, prioritize the allocation of resources for emergency response equipment and training programs.

e. Establish hazardous materials and dangerous goods management priorities based on a hazard analysis of the risk presented by the material.

f. Prevent the uncontrolled releases of hazardous materials and dangerous goods to the environment or uncontrolled reactions that might result in fire or explosion.

g. Use engineering controls (containment, automatic alarms, and shut-off systems) commensurate with the nature of hazard.

h. Implement management controls (procedures, inspections, communications, training, and drills) to address residual risks that have not been prevented or controlled through engineering measures.

i. Establish the level of risk of hazardous materials and dangerous goods through an on-going assessment process based on:

- The types and amounts of hazardous materials present on site, including:
- Name and description (e.g. composition of a mixture).
- Classification (e.g. code, class or division).
- Internationally accepted regulatory reporting threshold quantity or national equivalent.
- Quantity used per month.
- Characteristic(s) that make(s) the material hazardous (e.g. flammability, toxicity).
- An analysis of the potential spill and release scenarios using available industry statistics on spills and accidents where available.
- An analysis of the potential for uncontrolled reactions such as fire and explosions.
- An analysis of the potential consequences based on the physical-geographical characteristics of the project site, including aspects such as its distance to settlements, water resources, and other environmentally sensitive areas.

j. Develop a Hazardous Materials and Dangerous Goods Management Plan to address:

- Release Prevention and Control Planning.
- Applicable, essential elements of occupational health and safety management.
- Written process safety parameters (i.e., hazards of the chemical substances, safety equipment specifications, safe operation ranges for temperature, pressure, and other applicable parameters, evaluation of the consequences of deviations, etc.), written operating procedures and compliance audit procedures.

4.26 SOCIO-ECONOMIC ENVIRONMENT

4.26.1 PLANNING PHASE

Relocation

The possible relocation of Informal settlement (Dunusa), located on the north eastern portion of the development area must be discussed with the Johannesburg Metropolitan Municipality. In accordance with the proposed township layout the portion of the site is proposed to be zoned as “Undetermined” and sufficient time has thus been provided for to reach agreement regarding possible relocation alternatives.

4.26.2 CONSTRUCTION PHASE

Job Seekers

Regardless of a provision for the use of local labour, recruitment will not be undertaken on site. A system for the identification and possible employment of local labour will be undertaken through the implementation of a rational method that will be agreed with the local

council and relevant ward councillors and other parties who might have an interest or mandate in this regard.

5 MITIGATION MEASURES AND MANAGEMENT ACTION PLAN

The action plan has been developed to provide detailed information regarding:

a. The mitigation objective;
b. The applicable project phase;
c. The requirements for the development of plans, policies, procedures and record keeping;
d. Monitoring Requirements and Frequency;
e. Allocate responsibility; and
f. Reporting requirement.

The action plan is presented in Table 14. It should be noted that the majority of the management and mitigation measures applicable to the planning and operational phase of the project has been affected as part of the township layout plan and is not included in the action plan.

Table 13: Impacts and proposed mitigation measures

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
Planning – Township layout and service planning			
Residential, commercial, business and institutional stands, road layout and associated services	Layout planning	Gaseous radon emissions, contaminated dust emissions, gamma radiation exposure, water pollution and dam failure risks posed by the existing mine residue deposits	Risks and impact associated with the mine residue deposits are regulated by the Mineral and Petroleum Resources Development Act 28 of 2002 and the Regulations on Water Use for Mining and Related Activities, promulgated in terms of the National Water Act 36 of 1998. All legal requirements as it relates to the management of mine residue deposits must be complied with by the owner of the deposits (as well as any other persons who may be regarded to have a responsibility for the management of such deposits). Restoration of the catchment dam on the north-eastern slimes dam in two places with the installation of a storms water decanting pipe allowing for a freeboard of one and a half meters. Storm water spill over to be deposited into the paddock walls on the north-eastern slimes dam for added freeboard. Removal or stripping of areas immediately adjacent to and down gradient of the slimes dams situated on site where sensitive developments will occur (i.e. in gardens or recreational areas) Amelioration and diverse and sustainable vegetation cover required on the slimes dam to prevent possible dust emissions. A suitably qualified professional will be appointed to develop a rehabilitation plan and oversee the implementation thereof. Sampling of surface water and groundwater.
		Loss of high potential agricultural land located to the south on the proposed development area	No mitigation proposed.
		Economic displacement of persons currently undertaking informal subsistence farming activities	Informal subsistence farming is being undertaken in the absence of landowner consent. The developer acquired the property with a view to develop the land for residential and mixed use purposes. Based on the comments received (from the Sol Plaatjes Youth and the Mandela Crisis Centre), the developed / proponent agreed to consider the offset of perceived economic displacement related to the existing affected subsistence farmers through a financial contribution to the Mandela Crisis Centre. A valuation of the economic displacement has not been undertaken as part of the environmental impact assessment process and further negotiations will be undertaken once environmental authorisation has been granted.
		The destruction of watercourses, wetlands, wetland habitats affecting ecological functioning	A 32 meter buffer zone around all identified watercourses and wetland will be excluded from the development area and designated as open space. If required, the watercourse buffer and / or wetland area will be fenced to minimise further impact. In the event that these areas are impacted on by construction and / or associated activities, the persons responsible for such impact will be responsible for the rehabilitation of the disturbance. A suitably qualified professional will be appointed to develop a rehabilitation plan and oversee

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
			the implementation thereof.
		Increased storm water flow affecting watercourses resulting in erosion and the alteration of ecosystems	Stormwater management will be implemented in accordance with the storm water management plan (WSP Group Africa (Pty) Ltd, Storm Water Management Plan Report, October 2013).
		Loss of biodiversity, destruction and alteration of floral communities affecting faunal habitats and ecosystem functioning	Highly sensitive floristic habitat as identified through the Biodiversity Assessments (Bathusi Environmental Consulting, December 2012) will be excluded from the development footprint and designated as open space.
		Loss of orange listed species (*Hypoxis hemerocallidea*)	
		The introduction of alien invasives and non-endemic plant species as a result of landscaping activities resulting in the alteration of ecosystem functioning and the possible transformation of habitats associated with watercourses and ridge	Restriction regarding landscaping activities within the 32m buffer of watercourses will be imposed through conditions imposed. These open spaces shall be maintained in its natural state and / or where appropriate be rehabilitated. Any rehabilitation plan will be developed by a suitably qualified professional and in consultation with a biodiversity specialist.
		Land development and occupation providing incentives for the eradication of alien invasives and weeds currently affecting watercourses and natural areas	Refer above
		Ambient dust exceeding the areas to the north west of the site will exceed the 2015 standard of 75µg/m³ impacting on human health	The air quality constraint zones identified for each development parcel in the EIA report must be excluded from development.
		Dust emissions from existing mine residue deposits affecting human health	The air quality constraint zones identified for each development parcel in the EIA report must be excluded from development. Dust monitoring will be undertaken until such time as it has been confirmed that dust emission from the mine residue deposits does not result in the exceedance of the regulatory limits. Dust monitoring will be undertaken in the event that any of the mine residue deposits are re-mined, moved and or altered.
		Relocation and re-settlement of informal settlement located to the north east on a portion of the proposed development site	The developer will agree with the City of Johannesburg Metropolitan Municipality on the process of community relocation.
Construction - Construction of temporary office building and associated facilities including temporary worker ablution facilities, worker cooking and eating facilities, fuel and chemical storage facilities, vehicle maintenance areas and material storage and handling areas.			
Site	Site access	Increased construction and delivery vehicle	The contractor will ensure that all own and / or contracted drivers have a valid driver's licence.

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
establishment	via access Site access through road through Sol Plaatjes Township area and site access roads	movement affecting traffic flow and increasing the risk of road accidents	All drivers will be trained in road use principles as it relates to site access points. All vehicles will be roadworthy and inspected on a regular basis. Limit construction vehicle movement on public roads to avoid peak traffic hours (7h00 – 8h00 and 16h00 - 18h00)
		Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition
		Destruction and / disturbance of identified sensitive vegetation and faunal habitats (wetlands and ridge)	Biodiversity areas identified / allocated for conservation must be demarcated and, if required, temporarily or permanently fenced. Site clearing activities will be kept to a minimum in all instances. Any area where land clearing will be undertaken for the constructions of roads and services will be surveyed by an appropriately qualified biodiversity specialist in order to identify any red / orange data species. All identified species will be marked, disturbance to such sites will be avoided, and where avoidance is not possible, red and orange data species will be relocated to a suitable site. The developer and / or contractor shall inform the South African National Biodiversity Institute of the identification of such plants species, the proposed procedure for avoidance and / or relocation and will obtain any relevant approvals for the planned activities.
		Increased ambient noise levels form construction and delivery vehicle movement resulting in nuisance noise impacts	All construction and delivery vehicles shall be in good working order and inspected for regular maintenance. Vehicles shall be fitted with silencers.
	Removal of vegetation for erection of temporary office building	Destruction and / disturbance of identified sensitive vegetation and faunal habitats (wetlands and ridge)	Clearing of vegetation shall be limited to the footprint of the office building and supporting areas (i.e. parking and access areas). Areas that are to be protected (and which will be included in the township as public open space) shall be clearly indicated on all construction drawings. No construction activities will be undertaken within these demarcated protected areas. Additionally, no persons (contractors, their staff and all other permanent and temporary workers) will be allowed to undertake any other activities within the areas earmarked for protection. The contractor, his / her staff and all other permanent and temporary workers shall be informed of this restriction. If deemed necessary, the wetland and natural areas earmarked for protection shall be fenced to prevent any disturbance.

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
		Increased risk of soil erosion and windblown dust emissions resulting from the removal of vegetation cover impacting of air quality and total suspended solids in surface water	The removal of vegetation shall be kept to a minimum. Only areas necessary to be cleared for the effective continuation of construction work shall be cleared of vegetation. If required, wet and / or chemical dust suppression shall be undertaken based on the extent of windblown dust emissions. Any instances of soil erosion will be corrected through soil shaping (the construction of berms) and if required mechanical erosion control measures will be implemented. Any disturbed areas will be re-vegetation as soon as is practicable. Re-vegetation will be done through the use of an approved hydroseed mix to be specific by a suitably qualified professional. Care will be taken to avoid the use of any plant species that may result in adversely affect wetland systems and / or natural area.
	Earthworks to create platform for the erection of the temporary office building	Increased dust emissions resulting from earthmoving activities affecting human health and resulting in nuisance dust fallout	If required, wet and / or chemical dust suppression shall be undertaken based on the extent of windblown dust emissions. Any disturbed areas will be re-vegetation as soon as is practicable. Re-vegetation will be done through the use of an approved hydroseed mix to be specific by a suitably qualified professional. Care will be taken to avoid the use of any plant species that may result in adversely affect wetland systems and / or natural area.
	Erection of temporary office building and associated facilities	Visual impacts caused by the construction camp and site activities	No mitigation proposed.
Construction – Construction activities			
Construction of roads and services installation	Daily contractor's access via access road through Sol Plaatjes Township area and site access roads	Increased construction and delivery vehicle movement affecting traffic flow and increasing the risk of road accidents	The contractor will ensure that all own and / or contracted drivers have a valid driver's licence. All drivers will be trained in road use principles as it relates to site access points. All vehicles will be roadworthy and inspected on a regular basis. Limit construction vehicle movement on public roads to avoid peak traffic hours (7h00 – 8h00 and 16h00 - 18h00)
		Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
		Destruction and / disturbance of identified sensitive vegetation and faunal habitats resulting from land clearing activities	The removal of vegetation shall be kept to a minimum. Only areas necessary to be cleared for the effective continuation of construction work shall be cleared of vegetation. Any area where land clearing will be undertaken for the constructions of roads and services will be surveyed by an appropriately qualified biodiversity specialist in order to identify any red / orange data species. All identified species will be marked, disturbance to such sites will be avoided, and where avoidance is not possible, red and orange data species will be relocated to a suitable site. The developer and / or contractor shall inform the South African National Biodiversity Institute of the identification of such plants species, the proposed procedure for avoidance and / or relocation and will obtain any relevant approvals for the planned activities.
		Increased ambient noise levels resulting in nuisance noise impacts	All construction and delivery vehicles shall be in good working order and inspected for regular maintenance. Vehicles shall be fitted with silencers. If any activities regarded to be particularly noisy is to be undertaken during the construction phase, any persons, businesses and / or other parties which may be affected by such noise, will be informed of the duration and extent of the activities one week prior to the initiation thereof.
	Presence and movement of contractors and construction workers on site	Destruction and / disturbance of identified sensitive vegetation and faunal habitats (wetlands and ridge)	In additional to the mitigation measures as described in other sections. Contractors, their staff and / or other temporary and permanent employees will be restricted from entering areas earmarked from protection (expect in the case of emergency such as escape). No person (as referred to above) may collect vegetation, trap and or interfere with animals which may be encountered on site.
		Influx of casual jobseekers resulting in increased incidents of crime	Regardless of a provision for the use of local labour, recruitment will not be undertaken on site. A system for the identification and possible employment of local labour will be undertaken through the implementation of a rational method that will be agreed with the local council and relevant ward councillors and other parties who might have an interest or mandate in this regard.
		Opportunistic poaching and harvesting of plant species	In addition to the mitigation measures included in other sections. Any person (the contractor, his / her staff and all other permanent and temporary workers) found to poach animals encountered on site or harvest any plants shall be subject to a fine.
		Increased risk of fire resulting from construction activities and open fires for cooking and heating	Open cooking and heating fires will only be allowed in designated areas. Such areas shall be made safe as far as is practicable to eliminate the risk of the uncontrolled spread of fire. Firefighting equipment must be provided in case of an emergency. An emergency preparedness plan and emergency response procedure will be developed and the contractor, his / her staff and all other permanent and temporary workers will be trained on

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
			the content thereof. If required, practice drills will be undertaken on regular intervals.
		Surface water pollution resulting from temporary on site ablution facilities	Temporary chemical toilets will be provided on site. These facilities will be in good working order and inspected for leaks on a daily basis. The contractor and / or appointed service provider will empty these facilities on a regular basis. All chemical toilets will be emptied completely before being moved or removed from site to avoid the risk of spills
		Soil and water pollution resulting from general waste generated (refer waste management section below)	Refer to “waste management”.
	Earthworks and trench excavation (services installation)	Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition
		Dust emissions impacting of human health and resulting in nuisance dust outfall	The removal of vegetation shall be kept to a minimum. Only areas necessary to be cleared for the effective continuation of construction work shall be cleared of vegetation. If required, wet and / or chemical dust suppression shall be undertaken based on the extent of windblown dust emissions. Any disturbed areas will be re-vegetation as soon as is practicable. Re-vegetation will be done through the use of an approved hydroseed mix to be specific by a suitably qualified professional. Care will be taken to avoid the use of any plant species that may result in adversely affect wetland systems and / or natural area.
		Increased risk of soil erosion and windblown dust emissions resulting from the removal of vegetation cover impacting of air quality and total suspended solids in surface water	In addition to the mitigation measures as outlined in other sections. Any instances of soil erosion will be corrected through soil shaping (the construction of berms) and if required mechanical erosion control measures will be implemented.
		Increased ambient noise levels resulting in nuisance noise impacts	All construction and delivery vehicles shall be in good working order and inspected for regular maintenance. Vehicles shall be fitted with silencers.
	Earth shaping and compaction (roads and services)	Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition
	Road kerb	Soil and water pollution resulting from concrete	Concrete mixing will be undertaken on an impermeable surface and any watery effluent from

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
	installation and road surfacing (asphalt)	mixing and the use of asphalt as road surfacing material	the mixing process will be contained. In the event that concrete and / cement is spilled, the affected area will be cleaned and the material will be disposed of at a suitably licensed landfill site.
	Construction materials transport, receipt and storage	Vehicle entrained dust and engine through combustion emissions resulting in air quality impacts affecting human health and resulting in nuisance dust outfall	Vehicle speeds on unpaved roads will be restricted to a speed of 40km / hr All vehicles will be roadworthy and in a good condition
		Increased construction and delivery vehicle movement affecting traffic flow and increasing the risk of road accidents	The contractor will ensure that all own and / or contracted drivers have a valid driver's licence. All drivers will be trained in road use principles as it relates to site access points. All vehicles will be roadworthy and inspected on a regular basis. LLimit construction vehicle movement on public roads to avoid peak traffic hours (7h00 – 8h00 and 16h00 - 18h00)
		Destruction and / disturbance of identified sensitive vegetation, faunal habitats and wetland areas resulting from land clearing activities to establish storage areas	Clearing of vegetation shall be limited to the footprint of the office building and supporting areas (i.e. parking and access areas). Areas that are to be protected (and which will be included in the township as public open space) shall be clearly indicated on all construction drawings. No construction activities will be undertaken within these demarcated protected areas. Additionally, no persons (contractors, their staff and all other permanent and temporary workers) will be allowed to undertake any other activities within the areas earmarked for protection. The contractor, his / her staff and all other permanent and temporary workers shall be informed of this restriction. If deemed necessary, the wetland and natural areas earmarked for protection shall be fenced to prevent any disturbance.
	Storage of dangerous goods (diesel fuel, oils and lubricants)	Soil and water pollution resulting from the on-site storage of dangerous goods and chemicals affecting water quality and ecosystems	All fuel and chemical storage areas will be constructed to be impermeable and have a bund wall which can contain 110% of the total volume of the materials stored. Any spills within the contained bund will be collected and the effluent will be disposed of at a suitably licensed landfill site. All chemical and fuel storage tanks will be labelled and material safety data sheets will be available at the location of the storage tank. All contractors, their staff and all other permanent and temporary workers will be trained on the content of the safety sheets. An emergency preparedness plan and emergency response procedure for spills and other emergency incidents will be developed and the contractor, his / her staff and all other permanent and temporary workers will be trained on the content thereof.

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
	Construction vehicle maintenance and repair	Soil and water pollution resulting from the on-site vehicle maintenance and repairs affecting water quality and ecosystems	Vehicle maintenance shall be undertaken off site where practicable. In the event of on-site vehicle maintenance activities, care shall be taken to eliminate the risk of hydrocarbon spills. This may be achieved through the use of drip trays, plastic sheeting and / or other methods that will prevent the spills of hydrocarbons onto soil. On-site vehicle maintenance shall not be undertaken in areas that are to be protected (and which will be included in the township as public open space) and which have been indicated on the construction drawings and township layout plans. If any spills do occur, the total extent of the affected soil will be removed, placed in containers and disposed of at a suitably licensed landfill site.
	Waste management	Soil and water pollution resulting from the generation of general and hazardous waste affecting water quality and ecosystems	Waste separation will be undertaken on-site and separate marked waste bins for general waste and hazardous waste will be provided. Waste will be removed from site weekly, or at an appropriate frequency. All waste bins will be fitted with lids to prevent rainwater from entering the bins and all bins will be inspected to ensure that they do not leak. The site will be inspected for litter on a daily basis and litter clean-up will be done if required.
	Employment opportunities	The employment of local labour and the use of local service providers affecting socio-economic conditions	The principle contractor will, as part of his tender, allow for the use of local labour and other service providers within the Roodepoort area.
Operational – Mixed use township			
Occupation of mixed use township	Occupation	Dust emissions from mine residue deposits affecting human health	Amelioration and diverse and sustainable vegetation cover required on the slimes dam to prevent possible dust emissions. A suitably qualified professional will be appointed to develop a rehabilitation plan and oversee the implementation thereof. The Mineral and Petroleum Resources Development Act 28 of 2002, allocates the responsibility for any environmental liability, pollution or ecological degradation, and the management thereof to the holder of a prospecting right, mining right, retention permit or mining permit, until the Minister has issued a closure certificate to the holder concerned. The management of the mine residue deposits therefore lies with the current owner. As part of the township management, the ward councillor / home owners committee / local council / and / or another organisation shall be made responsible for liaising with the current owner of the mine residue deposits to verify the risks and management of such risks to ensure the effective control of any impacts that may affect residents.
		Increased traffic flows as a result of higher trip generation resulting from mixed uses	The recommendations of the Traffic Impact Assessment as it relates to the upgrade of road infrastructure and intersections must be implemented. No further mitigation and management measures are proposed.

Phase	Activities	Potential Impacts	Proposed Mitigation Measures
		Increased ambient noise levels resulting from mixed uses and increased traffic flows	No mitigation proposed.
		Increased municipal services demand (including electricity and water)	Incentives for electricity and water use reduction and initiatives for reducing waste, waste separation at source and recycling is usually promoted and implemented by service providers and the local municipality. Where practicable, energy and water efficiency technologies will be considered by developers during the design and building of houses and other facilities. The engineering services study (Appendix M) indicates there is sufficient existing municipal water and sewer infrastructure for the proposed development to proceed.
		Provision of mixed use township to address housing demand	The development must address the specific housing need and be based on a needs and desirability analysis to ensure that the requirements of the local and regional housing market is met.
		Employment opportunities	No mitigation and / management measures are proposed. It is expected that local employment opportunities will be generated by the township.
		Increased us of local service providers	No mitigation and / management measures are proposed. It is expected that local service providers will benefit from increased demand.
		Development and occupation resulting in a reduction of incidents of crime related to uncontrolled open land	No mitigation and / management measures are proposed.

Table 14: Management Action Plan

Mitigation and / Management Action	Objective	Project phase	Plans, policies, procedures and record keeping	Monitoring Requirement and Frequency	Responsible person	Reporting requirements
The proponent / project owner shall appoint an Environmental Consultant prior to the initiation of the construction phase of the development project.	Oversee compliance with the approved Environmental Management Programme and environmental legislation.	Construction Phase	Compliance reports	Monthly	Environmental Consultant	Monthly compliance report to be submitted to: ▪ Project Owner ▪ Principle Contractor Gauteng Department of Agriculture and Rural Development
	Amend the Environmental Management Programme to address new impacts and risks not identified during the environmental impact assessment.	Construction Phase	Amended Environmental Management Programme (IF REQUIRED)	As required	Environmental Consultant	Amended Environmental Management Programme to be submitted for approval by: Gauteng Department of Agriculture and Rural Development
Appointment of an Environmental Officer: Responsibility of the Principle Contractor	Ensure day-to-day compliance with the Environmental Management Programme and environmental legislation.	Construction Phase	Compliance reports	Weekly	Environmental Officer	Weekly compliance reports to be submitted to: Environmental Consultant
	Incident management and control.	Construction Phase	Incidents Reports	As required	Environmental Officer	Incident reports to be submitted to: ▪ The relevant government departments Environmental Consultant

Contractual matters	To ensure that adequate financial provision is made for the implementation of the Environmental Management Programme and environmental legal compliance.	Planning Phase	N/A	N/A	Project owner	Financial provision as included in the tender documentation to be assessed as part of adjudication process.
	To optimise the positive impacts associated with local employment and local economic benefit.	Construction Phase	N/A	N/A	Project owner	Employment and local spending strategy as included in the tender documentation to be assessed as part of adjudication process.
Training	To ensure that all persons (contractors, workers, subcontractors and suppliers are aware of the provisions of the Environmental Management Programme and the relevant environmental legislation.	Construction Phase	Training material and training attendance registers	Training at induction and weekly awareness talks	Principle Contractor (training may be conducted by the appointed environmental consultant or other subject matter expert)	N/A (reported as part of Environmental Management Programme Compliance)

Emergency incidents management and control	That emergency incidents are managed in such a way that environmental and social impacts are eliminated and / minimized.	Construction Phase	▪ Development of an Emergency Preparedness and Response Procedure including (not limited to): – Hazardous and / dangerous goods; – Fire; – Safety and Security; and – Other risks as identified. Incident investigation reports	▪ Procedure development : Once-off ▪ Procedure review and update: Monthly Incident management: As required	Environmental Officer and / or appointed specialist	Incident reports to be submitted to: ▪ The relevant government departments Environmental Consultant
Grievance mechanism	Identification of impacts as experienced by affected parties and the effective management thereof.	Construction Phase	Complaints register and corrective action taken	As required	Environmental Officer	Complaints register to be submitted to: ▪ Project owner ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)

Management of mine residue deposits	The manage health, safety and environmental risks associated with mine residue deposits.	All Project Phases	To be determined	Continuous	Mine residue deposit owner	To be determined
Road traffic safety	Ensure public safety	Construction Phase	▪ Drivers licenses of ALL operators Training material and training attendance registers	▪ Confirmation and copy of valid driver's license: on appointment ▪ Training at induction and weekly awareness talks	Environmental Officer	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
Natural Resources	Offset as it relates to economic displacement	Construction and Operational Phases	Written agreement	Once-off	Project owner	Record to be submitted to: ▪ Environmental Consultant Gauteng Department of Agriculture and Rural Development
Biodiversity and Ecosystem Functioning	To protect and conserve sensitive environmental areas	Construction Phase	Compliance reports	Weekly	Environmental Officer	Weekly compliance reports to be submitted to: Environmental Consultant

		Construction Phase	Demarcation of construction camp and associated infrastructure	Once-off prior to site establishment	Environmental Consultant	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
		Construction Phase	Vegetation surveys (red and orange data species and any species included in the list of critically endangered, endangered, vulnerable and protected species list)	Once-off prior to site clearing	Specialist (as appointed by the Principle Contractor)	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
		Construction Phase	Remediation Plans and Plant Species Lists	Once-off prior to remediation and / or re-vegetation	Specialist (as appointed by the Principle Contractor)	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)

		Construction Phase	Demarcation of construction camp and associated infrastructure	Once-off prior to site establishment	Environmental Consultant	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
Fire Risk	To assess the risk of fire, implements preventative measures and respond to incidents in such a way that environmental and social impacts are eliminated and / minimized.	Construction Phase	▪ Designate areas for open fires. ▪ Designate smoking areas. ▪ Risk assessment of all flammable substances and MSDSs ▪ Demarcate areas for the storage of flammable substances ▪ Label all flammable substances ▪ Inspection and maintenance reports of all flammable substance storage areas and containers ▪ Maintenance records of all firefighting equipment	▪ Designation of areas: Once-off ▪ Risk assessments: As required ▪ Inspections: Daily Maintenance of equipment: As indicated	Environmental Officer	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)

Waste Management	To avoid pollution caused by inappropriate waste management practices	Construction Phase	▪ Waste Management Plan Waste manifests for disposal	Continuous	Environmental Officer	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
Pollution Prevention	The management of on-site activities that may cause pollution.	Construction Phase	N/A	Continuous	Environmental Officer	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
Air Quality	The management of emissions that my impact on human health and cause nuisance impacts.	Construction Phase	N/A	Continuous	Environmental Officer	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)

Noise	To manage any potential noise impacts.	Construction Phase	N/A	Continuous	Environmental Officer	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
Erosion control	To mitigate the impacts of soil erosion.	Construction Phase	N/A	Continuous	Environmental Officer	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
Hazardous Substances	Manage the potential pollution of soil and water resources.	Construction Phase	N/A	Continuous	Environmental Officer	Records to be submitted to: ▪ Environmental Consultant (Reported to the Gauteng Department of Agriculture and Rural Development as part of the Environmental Management Programme Compliance Report)
Relocation (Dunusa)	Manage social impact associated with relocation.	To be determined	To be determined	To be determined	Project Owner	To be determined
Job seekers	Manage opportunistic crime which may result from the influx of persons seeking employment	Construction Phase	N/A	N/A	Principle Contractor	N/A

5.1.1 DEVELOPMENT OF PROCEDURES AND CHECKLISTS

The following procedures will be developed and all the staff and workers will be adequately trained on the content and implementation thereof.

Emergency Preparedness and Response

The procedure will be developed to specifically include risk identification, preparedness, response measures and reporting. The procedure will specifically include spill and fire risk, preparedness and response measures. The appropriate emergency control centers (fire department, hospitals) will be identified and the contact numbers obtained and made available on site. The procedure must be developed in consultation with all potentially affected landowners.

In the event that risks are identified which may affected adjacent landowners (or other persons), the procedure will include the appropriate communication strategy to inform such persons and provide response measures to minimize the impact.

Incident Reporting Procedure

Incident reporting will be undertaken in accordance with an established incident reporting procedure to (including but not limited to):

- Provide details of the responsible person including any person who: (i) is responsible for the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control when the incident occurred;
- Provide details of the incident (time, date, location);
- The details of the cause of the incident;
- Identify the aspects of the environment impacted;
- The details corrective action taken, and
- The identification of any potential residual or secondary risks that must be monitored and corrected or managed.

Environmental and Social Audit Checklist

An environmental audit checklist will be established to include the environmental and social mitigation and management measures as developed and approved as part of the Environmental Management Programme. Non-conformances will be identified and corrective action taken where required.