

ASSMANG MANGANESE BLACK ROCK MINE OPERATIONS



BLACK ROCK MINE OPERATIONS

CONSTRUCTION AND OPERATIONAL ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED TECHNICAL TRAINING COLLEGE, KURUMAN, NORTHERN CAPE PROVINCE

Submitted to:

Northern Cape Province: Department of Environment & Nature Conservation

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NC/BA13 I/JTG/GAIKUR4/20 13

NCP/EIAI0000245/20 13



REPORT



Report Number:

BA-EMP-024-13_14

CC/ 17 April 2014

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GLOSSARY

Table 1: Terms and definitions

TERM	DEFINITION
Applicant:	The Applicant is the Developer – Assmang Ltd – Manganese Black Rock Mine Operations.
Building and demolition waste:	Waste (excluding hazardous waste) produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during construction alteration, repair or demolition.
Container:	Disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste and include bins, bin liners and skips.
Contaminated water:	Means any water contamination by the Contractor's activities, e.g. concrete water and run-off from plant / personnel wash areas.
Contractor:	Persons/organisations contracted by the Applicant to carry out parts of the work for the planned upgrade. The Contractor shall ensure compliance with this EMP, and shall request advice from the Environmental Control Officer where considered appropriate.
Construction Activities:	Activities associated with physical disturbance to the land, including the storage machinery, equipment and materials.
Construction Phase:	The Construction Phase is the period of commencement of physical disturbance to the land, excluding rehabilitation activities, such as re-vegetation and replacing of topsoil.
Corrective (or remedial) action:	Response required to addressing an environmental problem that is in conflict with the requirements of the EMP. The need for corrective action may be determined through monitoring, audits or management review.
Degradation:	The lowering of the quality of the environment through human activities, e.g. river degradation, soil degradation.
Developer:	The Developer is the Applicant: Assmang Ltd – Manganese Black Rock Mine Operations.
Disposal:	The burial, deposit, discharge, abandoning, dumping, placing or release of waste into or

	onto any land.
Domestic Waste:	Waste (excluding hazardous waste), that emanates from premises that area wholly or mainly for residential, educational, health care, sport or recreation purposes.
Emergency:	An unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.
Environment:	The surroundings within which humans live and that consist of : (i) the land, water an atmosphere of the earth; (ii) micro-organisms, plant and animal life (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
Environmental Audit:	A systematic, documented verification process of objectively obtaining and evaluating evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicating the results of this process to the client.
General Waste:	Waste that does not pose a immediate threat or hazard to health or to the environment, and includes: (a) Domestic waste (b) Building and demolition waste (c) Business waste; and (d) Inert waste
Groundwater:	All subsurface water that fills voids between highly permeable ground strata comprised of sand, gravel, broken rocks, porous rocks, etc. and move under the influence of gravitation.
Hazardous Waste:	Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have detrimental impact on health and the environment.
Holder of Waste:	Any person who imports, generates, stores, accumulates, transports, processes, treats or exports waste or disposes of waste.
Impact:	A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

Inert Waste:	<p>Waste that:</p> <ul style="list-style-type: none"> (a) Does not undergo significant physical, chemical or biological transformation after disposal; (b) Does not burn, react physically or chemically, biodegrade or otherwise adversely affect any other matter or environmental with which it may come into contact and <p>Does not impact negatively on the environment because of its pollutant content and because the toxicity of its leachate is insignificant</p>
Infrastructure:	The network of facilities and services that are needed for economic activities, e.g. roads, electricity, water, sewerage.
Integrated :	Mixing or combining all useful information and factors into a joint or unified whole. See Integrated Environmental Management.
Integrated Environmental Management (IEM):	A way of managing the environment by including environmental factors in all stages of development. This includes thinking about physical, social, cultural and economic factors and consulting with all the people affected by the proposed developments. Also called "IEM".
Interested and Affected Parties (I&AP's):	Those individuals or organisations that have an interest in the proposed development or will be directly affected by the activities of the development, as identified in the environmental impact assessment process.
Local Authority:	Ga-Segonyana Local Municipality
Method statement:	<p>Written statements that contain details about construction procedures required for work near sensitive environments in the site, including environmentally sensitive activities such as waste management, storage of hazardous substances, dust control, erosion and sediment control, etc.</p> <p>A work method statement is predominately used in construction to describe a document that gives specific instructions on how to safely perform a work related task, or operate a piece of plant or equipment.</p>
Mitigation:	Measures designed to avoid, reduce or remedy adverse impacts.
Natural environment:	Our physical surroundings, including plants and animals, when they are unspoiled by human activities.
Pollutant:	A contaminant at a concentration high enough to endanger the environment or the public health.

Pollution:	<ul style="list-style-type: none"> • <i>National Water Act, 36 of 1998</i>: “Water pollution means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it – <ul style="list-style-type: none"> (a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or (b) harmful or potentially harmful – <ul style="list-style-type: none"> (aa) to the welfare, health or safety of human beings; (bb) to any aquatic or non-aquatic organisms; (cc) to the resource quality; or (dd) to property”. • <i>National Environmental Management Act, No. 107 of 1998</i>:- “pollution means any change in the environment caused by – <ul style="list-style-type: none"> (i) substances; (ii) radioactive or other waves; or (iii) noise, odours, dust or heat <p>emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.”</p>
Recycle:	A process where waste is reclaimed for further use, this process involves the separation of waste from a waste stream for further use and the processing of that separated materials as a product or raw material.
Rehabilitation:	Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) which it was before disruption.
Re-use:	To utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.
SANS 10234:	Latest edition of the South African National Standard Globally harmonised System of the Classification and Labelling of Chemicals (GHS)
Storage:	The accumulation of waste in a manner that does not constitute a treatment or disposal of that waste.

Waste:	<p>Any substance, whether or not that substance can be reduced, re-used or recycled and recovered-</p> <ul style="list-style-type: none"> (a) That is surplus, unwanted, rejected, discarded, abandoned or disposed of; (b) Which the generator has no further use of for the purposes of production; (c) That must be treated or disposed of; or (d) That is identified as waste by the Minister by notice in the Gazette and includes waste generated by the mining, medical or other sector, but – <ul style="list-style-type: none"> (i) A by-product is not considered waste <p>Any portion of waste, once reused, recycled and recovered, ceases to be waste.</p>
Waste Classification:	<p>Establishing –</p> <ul style="list-style-type: none"> (a) Whether a waste is hazardous or not based on the nature of its physical, health and environmental hazardous properties (hazard classes); and (b) The degree or severity of the hazard posed (hazard categories)
Waste Generator:	<p>Any person whose actions, production processes or activities including waste management activities, results in the generation of waste.</p>
Waste Management:	<p>Classifying, recycling, treatment and disposal of waste generated during construction and decommissioning activities.</p>
Waste Manager:	<p>Any person who re-uses, recycles, recovers, treats or disposes of waste.</p>

1. INTRODUCTION

1.1 Background

The Applicant, Assmang Ltd – Manganese Black Rock Mine Operations, is making an Application for Environmental Authorisation for the construction of Technical Training College, Kuruman in the Northern Cape Province, in terms of the National Environmental Management Act, Act No. 107 of 1998 (as amended) (NEMA) and the Environmental Impact Assessment (EIA) Regulations 2010. This Application for Environmental Authorisation is being made to the Competent Authority (CA), namely, the Northern Cape Province: Department of Environment & Nature Conservation and is required since the proposed development triggers activities which are listed in terms of the NEMA Environmental Impact Assessment Regulations 2010.

Environmental Assurance (Pty) Ltd. has been appointed by Assmang Ltd – Manganese Black Rock Mine Operations to complete the Basic Assessment Process including the Environmental Management Programme (EMP) dealing with the construction and operational phases associated with the following development proposal:

A technical training college and associated infrastructure with a total development footprint of 15 ha will be on Erf 5529, Kuruman. The initial development will be approx. 3 ha and shall include *inter alia*:

College - single and double storey buildings with:

- Parking facilities;
- Workshops;
- Recreational area including a swimming pool;
- Student enrolment / administrative area;
- Residential units;
- Dining facility;
- Media and computer area;
- Relevant services (water, sanitation and electrical); and
- Relevant road and storm water infrastructure.

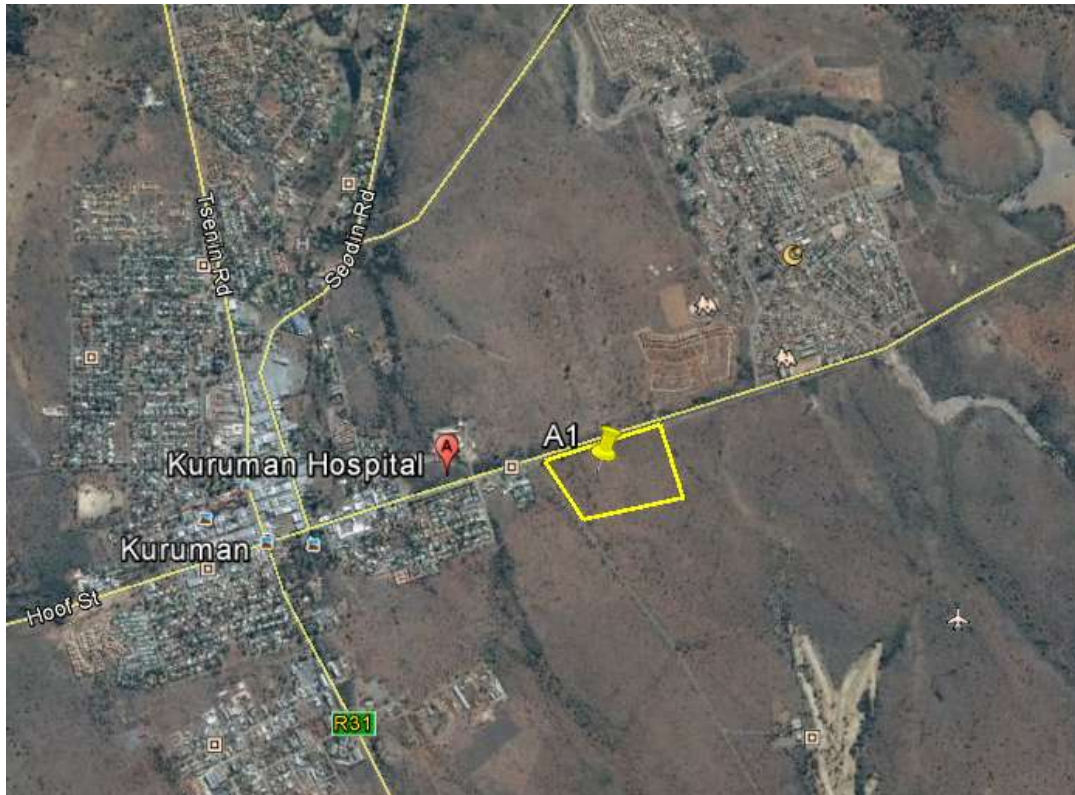


Figure 1: Locality plan

1.2 Legislative requirements

The proposed development requires compliance with the EIA Regulations of 2010, promulgated in terms of NEMA. The proposed activity requires a Basic Assessment process as listed activities 9, 10, 22, 23, 37 & 38 under Government Notice No R. 544 are triggered. The compilation of this EMP forms part of the requirements of the EIA Regulations (2010) and compliance with the contents of this report is required during the construction and operational phases. More specifically, the EMP is a legal requirement in terms of Section 24N of NEMA (Amendment Act, 2008). The EMP is an environmental management tool, providing a site specific structured plan of mitigatory measures, which serves as a guide to assist in minimising the potential environmental impact of the activity that may arise during the construction and operational phases.

1.3 Affected environmental and impact statement

Topography, soils and geology

The site is underlain by dolomite and chert formations of the Campbell Rand Subgroup, Ghaap Group, Transvaal Supergroup. Kuruman lies on the southern edge of the Kalahari Group sedimentary deposits and these are present in places within the general areas. These deposits consist of beds of gravel, red and brown clays with scattered pebbles, calcrete and at the top unconsolidated sand. It is therefore likely that much of the overburden above the dolomite consists

of the Kalahari Group sediments (Cenozoic age). Alluvial deposits associated with the Kuruman River, and possibly other older river systems, occur extensively with this area.

Surrounding land-uses

The site is located to the east of the town of Kuruman in the Northern Cape Province. The site is surrounded by the following (Figure 2 below):

- **North:** N14 highway with the Wrenchville residential area beyond including the Assmang housing development.
- **East:** Open veld area with Kuruman tributary.
- **South:** Open veld with the Kuruman Country Club beyond.
- **West:** Eldorado Hotel with the town of Kuruman beyond.



Figure 2: Surrounding land-uses

Impact summary

Table 2 below summarises the impacts identified in the Basic Assessment Process and specialist assessments.

Table 2: Impact Summary

NATURE OF IMPACT	DESCRIPTION OF IMPACT	STATUS	SIGNIFICANCE POST-MITIGATION
PREFERRED ALTERNATIVE A1 - CONSTRUCTION PHASE			
GEOLOGICAL	Potential for sinkholes to develop and the presence of an abundance of shallow dolomite pinnacles and flat areas of outcrop which will impede excavations for foundations and services.	Negative	Low
GEOLOGICAL	Contamination of soils through indiscriminate disposal of construction waste and accidental spillage of petroleum products.	Negative	Low
GEOLOGICAL	Soil erosion through vegetation clearance and soil compaction by heavy duty construction vehicles.	Negative	Low
BOTANICAL / ECOLOGICAL	Potential loss of species and diversity through removal and clearance of vegetation.	Negative	Low
VISUAL	Visibility from sensitive receptors / visual scarring of the landscape as a result of the construction activities.	Negative	Low
HERITAGE / ARCHAEOLOGICAL	Damage to or destruction of archaeological resources during the construction.	Negative	Low
DUST	Dust impacts on the surrounding environment associated with construction activities.	Negative	Low
NOISE	Noise impacts on surrounding environment associated with construction activities (construction vehicles and equipment).	Negative	Low

WASTE	Generation of additional waste/ litter and building rubble/hazardous material during the construction phase.	Negative	Low
SOCIO-ECONOMIC	Employment opportunities during the construction phase for local people.	Positive	Medium
TRAFFIC	Temporary disruption of traffic due to construction vehicles.	Negative	Low
HEALTH AND SAFETY	Health and safety impacts associated with construction activities.	Negative	Low
PREFERRED ALTERNATIVE A1 - OPERATIONAL PHASE			
WASTE	Generation of additional general waste/ litter hazardous material (workshops) during the operational phase.	Negative	Low
SOCIO-ECONOMIC	Skills development for historically disadvantaged individuals (HDI's) from the local communities in the Northern Cape Province. Individuals will be more employable which will benefit themselves, the workforce, the community and the economy.	Positive	High
VISUAL	Heightening of aesthetic qualities of the receiving area through modern green building.	Positive	Medium
HEALTH AND SAFETY	Health and safety impacts associated with training in the workshops.	Negative	Low
NOISE AND LIGHTING	Noise and lighting impacts associated with operations of the college.	Negative	Low
NO-GO ALTERNATIVE			
SOCIO-ECONOMIC	No skills development for historically disadvantaged individuals (HDI's) for the local communities in the Northern Cape Province. No net benefit to the community or industry.	Negative	High

2. OBJECTIVES AND SCOPE OF THE EMP

This EMP provides environmental management measures and mitigation to limit environmental impacts associated with the planning / design, construction and operational phases of the proposed technical training college development. The EMP in context is seen as a dynamic or 'living' document, which can be amended or revised during the life-cycle of the project as and when it is may be required. The effectiveness of the EMP is limited by the level of adherence to the conditions set forth in this report by the Applicant/Developer and the Contractor. It is further assumed that compliance with the EMP will be monitored on a regular basis as set out in the EMP and contractual clauses.

The objectives of the EMP are to:

- Identify and set out a range of mitigation measures and environmental specifications which must be implemented during the construction and operational phases of the project to reduce and mitigate the adverse environmental impacts to minimal or insignificant levels and to improve the condition of the environment (as and where possible).
- Provide a pro-active and practical framework to enable the measurement and monitoring of environmental performance on site.
- Ensure that the environmental specifications are identified, effective and contractually binding to enable compliance on site.
- To outline the relevant standards which must be achieved on site as outlined in terms of the relevant legislation and conditions of the environmental authorisation.

3. IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

3.1 *Compliance to legislative requirements*

The specifications and mitigation measures outlined in this EMP must comply with relevant legislation and conditions of the Environmental Authorisation as issued by the Northern Cape Department of Environmental and Nature Conservation (NCDENC). Of particular importance is Section 28 (1) of the National Environmental Management Act (NEMA – Act 107 of 1998) which places an obligation on all individuals to take due care of the environment and to ensure remedial action is instituted to minimise and mitigate environmental impact.

The EMP forms part of the Contract Documentation and is thus a legally binding document. In terms of this Act an individual responsible for environmental damage must pay costs both to environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring. This is referred to as the Polluter Pays Principle.

Listed in Table 3 below is the key legislation (relevant laws, permits and authorisations) applicable to the development.

Table 3: Applicable legislation

LEGISLATION	APPLICABILITY TO THE PROJECT
<p>National Environmental Management Act 107 of 1998 (as amended)</p> <p>EIA Regulations (Government Notices 543; 544; 546)</p>	<p>Section 28(1): Duty of Care and responsibilities to minimise and remediate environmental degradation.</p> <p>Section 24 and 24D: Environmental Authorisation issued in terms of NEMA. Conditions of Environmental Authorisation must be adhered to.</p>
<p>National Water Act, 1998 (Act 36 of 1998)</p>	<p>Section 3: Regulation of flow and control of all water.</p> <p>Section 19: Prevention of pollution to watercourses.</p>
<p>National Heritage Act , 1999 (Act 25 of 1999)</p>	<p>Section 38 and 44: Heritage resource management and permitting.</p>
<p>National Forest Act, 1998 (Act 84 of 1998)</p>	<p>Section 12(1)(d) read with Section 15 (1) and Section 62(2)(C): Removal of protected tree species identified in the Act. Permitting conditions and requirements.</p>
<p>National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)</p>	<p>Section 27, 32, 34 & 35: Prevention of air pollution (includes dust, smoke and noise).</p>
<p>National Environmental Management: Waste Act, 2008 (Act 59 of 2008)</p> <p>Waste Classification and Management Regulations, 2013 (GNR: 634 – 635):</p>	<p>Section 16: General duty in respect of waste management</p> <p>Section 17: Reduction, re-use, recycling and recovery of waste</p> <p>Section 18: Extended producer responsibility</p> <p>Section 21: General requirements for storage of waste</p>
<p>Occupational Health and Safety Act, 1993 (Act 85 of 1993)</p>	<p>Section 9: Operations must be undertaken in such a manner as to ensure that persons other than his employees who may be directly affected by his activities are not thereby exposed to hazards to their health and safety.</p>
<p>Northern Cape Planning And Development Act, 1998 (Act 7 Of 1998)</p>	<p>Rezoning</p>
<p>Northern Cape Nature Conservation Act 2009 (Act 9 of 2009)</p>	<p>Permitting conditions and requirements.</p>

3.2 Implementation of the EMP

The Applicant, with assistance from the Consulting Engineer (CE), is responsible for the implementation of the EMP and for internal compliance monitoring of the EMP. The EMP will be made binding on all Contractors operating on the site and will be included with the official contract documentation of each of the principal Contractors to be appointed to the contract. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance. A schedule of fines for environmental damage or EMP transgressions is listed in Annexure 3.

The Applicant must appoint an ESM (Environmental Site Manager), fulfilling the duties of internal ECO (Environmental Control Officer), who will monitor and facilitate compliance with the EMP and other conditions of approval as they relate to environmental matters. All Contractors must inform the ESM immediately of events that have/will cause serious environmental damage or of any breaches of the Environmental Authorisation. The ESM will then inform the Applicant which must then immediately inform the Competent Authority (within 24 hours) and the Local Authority of such events and the measures taken to address them.

3.3 Organisational Structure: Roles and Responsibilities

Details of the management and implementation structures for this EMP, as applicable to the construction and operational phases showing official communication and reporting lines (including instructions, directives and information), are presented in Table 4 and Figure 3 below.

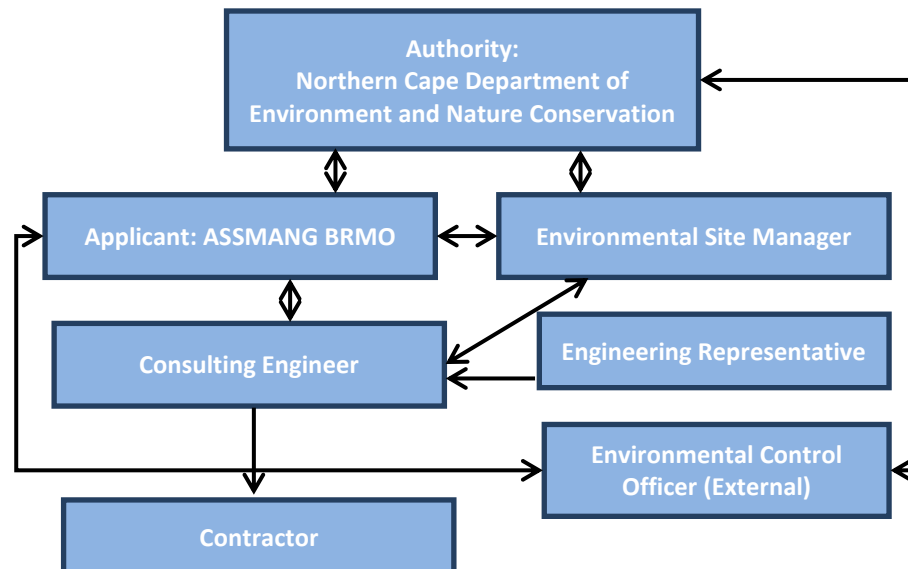


Figure 3: Organisational structure for environmental management

Table 4: Roles and responsibilities of the role-players

ROLE-PLAYER	RESPONSIBILITIES
Authority	<p>The NCDENC is the designated authority responsible for authorising this EMP. NCDENC has overall responsibility for ensuring that the Applicant complies with the conditions of Environmental Authorisation and the EMP.</p> <p>NCDENC shall also be responsible for approving any amendments to the EMP (if required). NCDENC may also perform random site inspections to check compliance with the EMP.</p>
Applicant	<p>The Applicant is the Developer and has overall responsibility for compliance with the EMP as it is a fundamental component of the authorisation requirements for the project.</p> <p>The Applicant/Developer must:</p> <ul style="list-style-type: none"> ✓ Ensure that relevant authorisations and permits are obtained prior to the commencement of construction on site; ✓ Ensure compliance with the EMP and conditions of Environmental Authorisation as issued by NCDENC; ✓ Appoint an ESM prior to the commencement of construction activities; ✓ Ensure that the professional team and the Contractors are appropriately briefed and that their appointment includes environmental requirements as relevant; ✓ Ensure that he/she is kept fully informed of the performance of the project against the requirements of the EMP; ✓ Ensure that appropriate action is taken where consistent incidents of non-compliance are taking place; ✓ Ensure that any corrective action required by the authorities is implemented; ✓ Give written notice to NCDENC prior to the commencement of construction on site; and ✓ Provide all Contractors with a copy / access to the EMP (as part of the tender contract documentation). A hardcopy of the EMP shall also be kept on site to access at all times.
Contractor	<p>The Contractor is required to:</p> <ul style="list-style-type: none"> ✓ Prepare Method Statements as required; ✓ Be conversant with the requirements of the EMP; ✓ Brief staff about the requirements of the EMP; ✓ Comply with requirements of the Engineering representative (ER) in terms of this EMP; ✓ Bear the costs of any damages/ compensation resulting from non-adherence to the

	<p>EMP or written site instructions;</p> <ul style="list-style-type: none"> ✓ Comply with all applicable legislation; ✓ Keep record of any complaints raised by the public and record any comments and responses, in response to the complaints; ✓ Inform the ESM and ECO of any incidents or complaints received; ✓ Ensure that the Applicant is timeously informed of any foreseeable activities that will require input from the ER; and ✓ The Contractor will conduct all activities in a manner that minimises disturbances to and impacts on the environment. <p>The Contractor is deemed not to have complied with this EMP if:</p> <ul style="list-style-type: none"> ▪ There is evidence of contravention of clauses within the boundaries of the property and adjacent areas during the Construction Phase; ▪ If environmental damage ensues due to negligence; ▪ The Contractor fails to comply with corrective or other instructions issued by the Local Authority, Engineer, Engineer's Representative, ECO, or the Applicant within a specified time; ▪ Failure to take any reasonable measure to protect the environment if there is a perceived or identified environmental risk associated with an activity that has not been defined in the EMP; and ▪ The Contractor fails to respond adequately to complaints from the public. <p>Application of a penalty clause will apply for incidents of non-compliance as per the Schedule of Fines at Annexure 3. Such fines will be paid by the Contractor to the Applicant and will be used in rehabilitation and/ or landscaping.</p>
<p>Environmental Site Manager (Internal Environmental Officer)</p>	<p>The ESM's responsibilities include the following:</p> <ul style="list-style-type: none"> • Facilitation and monitoring of EMP requirements and EA conditions; • Education of staff and contractors and to raise awareness on environmental requirements relating to the site and onsite activities; • Review and approval of method statements; • Record keeping of environmental incidents/issues on site; • Upkeep of complaints register; • Completing start-up and site closure checklists; • Completing a monthly summary report detailing levels of compliance to be forwarded to the project team and case officer at NCDENC; and • Keeping a photographic record of progress on site from an environmental perspective for the ECO (external).
<p>Consulting Engineer</p>	<p>The Consulting Engineer runs the works contract and has overall responsibility for managing the project engineering aspects and Contractors, and for ensuring that the environmental management requirements are met.</p>

Engineering Representative	The Consulting Engineer's Representative on site, the ER, has the power/mandate to issue site instructions and variation orders to the Contractor.
External Environmental Control Officer	<ul style="list-style-type: none"> • Facilitation and monitoring of EMP requirements and EA conditions; • Review and approval of method statements; • Review of ESM's record keeping of environmental incidents/issues on site; • Completing a monthly summary report detailing levels of compliance to be forwarded to the project team and case officer at NCDENC; and • Keeping a photographic record of progress on site from an environmental perspective.

3.4 Environmental awareness and training

The ESM shall ensure that the construction team and all sub-contractor/s are familiar with the EMP requirements and have a basic level of environmental awareness training. The ESM shall undertake basic environmental awareness induction training prior to the start of construction activities on site. Topics to be covered by the training should include:

- ✓ What is meant by "environment"?
- ✓ Why the environment needs to be protected and conserved.
- ✓ Tree and plant identification and protection (training and posters).
- ✓ How construction activities can impact on the environment.
- ✓ What measures can be taken to mitigate against these impacts.
- ✓ Prevention of pollution and litter control and the minimisation of disturbance to sensitive areas.
- ✓ The need for a "clean site" policy also needs to be conveyed to construction workers.
- ✓ Worker conduct on site which encompasses a general regard for the social and ecological well-being of the site and adjacent areas. Workers need to be made aware of the following general rules of behaviour:
 - No alcohol/drugs to be present on site.
 - No firearms permitted on site or in vehicles transporting staff to /from site, (unless used by security personnel).
 - Bringing pets on site is forbidden.
 - No harvesting of firewood from the site or from areas adjacent to it.
 - Workers are to make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. the use of surrounding bush as a toilet facility is forbidden; cooking fire in designated area only).
 - Driving under the influence of alcohol is prohibited.
 - Leaving the designated work and recreation area is forbidden.
 - No workers shall be permitted to live on site.
 - No plant or animal is to be harmed or disturbed in any way.
 - Should any bones be unearthed, the ER is to be contacted immediately. The bones are to be undisturbed until the go-ahead is given from the relevant Authority.

4. CONSTRUCTION PHASE

Section 4 provides the management measures and controls to mitigate the potential impacts associated with the construction phase of the project. The construction period is approximately 18 months. The main activities of the construction phase will include inter alia all the civil works (concrete works, road works, foundation drilling etc). A laydown / contractors yard (including a storage area) will be erected.

4.1 Site establishment: clearance and bulk earth works

- All work areas and boundaries of the site shall be demarcated as per the approved Site Layout Plan authorised by NCDENC.
- Working areas shall not exceed authorised footprint by more than 10%.
- Any sensitive areas (vegetation, hydrological, geological and heritage) within or adjacent to the relevant works area, shall be demarcated prior to the commencement with earth works.
- Plant species of special concern shall be identified for rescue and relocation *prior* to the commencement of site clearance for bulk earth works. Plant search and rescue: removal, transportation, storage and relocation of relevant plants must be in accordance with specifications detailed under *Section 4.9 Vegetation Management*.
- The locations of any existing above- and underground services shall be marked and identified.
- Vegetation clearance shall be limited insofar possible. It is however allowed for all areas that will be affected by construction activities which include *inter alia*: Access roads, buildings, servitudes, parking areas and the contractor's laydown area.
- The Contractor shall monitor site clearance and excavation activities for animal presence. All animals shall be rescued and relocated. Records of animal encounters shall be kept by the EMS.
- The Contractor shall, prior to the commencement of topsoil stripping, determine the average depth of topsoil for each construction area. This will be agreed to in consultation with the ESM and ECO. Typically topsoil constitutes the top 150mm of soil including organic matter. However, note that depth may vary from 0-300mm. The Contractor shall ensure that:
 - Topsoil and subsoil are not mixed during stripping operations;
 - Topsoil and subsoil shall be separately stockpiled and areas for storage clearly demarcated;
 - Temporary stockpiling should be limited insofar possible;
 - To the greatest extent possible topsoil and subsoil shall be handled only once for removal and once for replacement;
 - Contamination of stockpiles or littering shall be avoided at all times;
 - Stockpiles shall be kept free of weeds and alien invader plant species;
 - Topsoil stockpiles shall not exceed 2m in height to limited visual intrusion;
 - Stockpiles greater than 2m in height shall require approval from the ECO and shall be located in designated controlled areas;
 - Erosion measures shall be implemented where stockpiles are at the risk of erosion (*Refer Section 4.4 ; Stormwater and erosion control*);
 - Topsoil may not be handled in windy conditions;
 - Soil stockpiles shall not be positioned so that they obstruct any water drainage line or area of concentrated runoff;

- Topsoil may only be used for rehabilitation purposes and will not be used for backfilling purposes.
- Trenches and excavations shall be closed as soon as possible after services have been laid in them, to prevent them from posing safety hazards to staff, traffic and animals as well as to prevent rainwater and wind erosion.
- Excavated pits shall be safe for working and have adequate barricading and caution signage.
- Heavy machinery and construction equipment should be at least 6m away from the edge of the excavated area.
- Dust control measures shall be implemented during excessive wind periods. Refer to Section 4.8 Dust Control.
- Should any paleontological or archaeological remains of significance be uncovered during excavations, works shall be stopped. The Contractor shall notify the ESM and ECO immediately. No paleontological or archaeological material shall be removed. SAHRA shall be notified. Appropriate actions to be taken. All findings shall be recorded and photograph in situ.

4.2 Waste management

All waste generated during construction shall be managed in accordance with the requirements of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) Waste Classification and Management Regulations, 2013 (GNR: 634 – 635):

4.2.1 Waste stream identification and classification

- a) All waste generated shall be classified into separate waste streams (i.e. general waste, hazardous waste and recyclables);
- b) Waste shall not be mixed prior to classification and all waste types generated must be kept separate;
- c) Classification of any hazardous waste shall be done in accordance with SANS 10234 requirements;
- d) Safety data sheets shall be kept for any hazardous waste in accordance with SANS 10234 requirements;
 - Safety sheets must be prepared in accordance with SANS 10234 for the product that the waste originates from;
 - Safety sheets must be prepared in accordance with SANS 10234 reflecting the details of the specific hazardous waste/s or hazardous chemicals in the waste; and
 - All safety data sheets must be kept on file.

4.2.2 Waste management (collection, storage and handling)

- a) A central waste storage and transition area shall be established within the site camp;
- b) The location of this central waste storage and transition area shall be decided upon by the ESM and ECO (external);
- c) The central waste storage and transition area shall be surfaced and demarcated appropriately;
- d) Portable wheelie bins shall be placed throughout the site camp as well as at the remainder of the site and at all working areas in the field;
- e) Wheelie bins shall be colour coded and labelled to identify the waste stream for which it is intended;

Colour coding is as follows

General Waste	Grey (Waste type labelling)
Hazardous Waste	Red (Waste type labelling)
Fluorescent tubes and E-Waste	Yellow (Waste type labelling)
Scrap Metal	Dark Blue (Waste type labelling)
Wood	Brown (Waste type labelling)
Recyclables	Grey (Waste type labelling)

- ✓ Signs with English wording.
 - ✓ Full descriptions of the waste are required to assist site and external personnel to handle the material safely.
 - ✓ Any unidentified wastes will be treated initially as hazardous and will be subject to the classification process outlined above.
 - ✓ All waste containers on-site (bins, skips, drums, etc.) will be clearly labelled to show which wastes can be disposed into them and which wastes they contain.
 - ✓ Any previous labelling will be removed or covered to avoid confusion.
- f) All portable wheelie bins and other containers shall be emptied at the central waste storage and transition area a minimum of once a week as to avoid waste build up;
- g) The waste shall be removed (within 30 days) by a licensed waste service provider as shall be disposed of at a licensed waste landfill site and records of safe disposal (as required for hazardous wastes) shall be supplied to the Contractor. These records shall be kept on site by the ESM.

4.3.3 Waste specific management measures

Hydrocarbons and hazardous waste

- All hazardous waste generated shall be kept separate and shall not be mixed with general waste;
- All hazardous waste shall be stored within a sealed drum on a impermeable surfaced area within the central waste storage and transition area;
- All hazardous waste shall have material safety data sheets and such waste shall be disposed of as per the product Material Safety Data Sheet (MSDS);
- Hazardous waste shall be collected by a licensed waste service provider and be disposed of at a licensed landfill site with certificates of safe disposal;
- Certificates of safe disposal shall be acquired from the service provider for record purposes and these shall be maintained by the ESM on site;
- The total quantity of hazardous waste stored at the site at any one time shall not exceed 35m³.
- All containers (skips) within the central waste storage/ transition area must be labelled, or where labelling is not possible, records must be kept, reflecting the following:
 - ✓ Date on which waste was first placed in the container;

- ✓ Date on which waste was placed in the container for the last time and when the container was filled, closed, sealed or covered;
- ✓ Dates when, and quantities of waste removed;
- ✓ Proof of safe disposal by licensed contractor must be kept by the ESM.

Scrap metal

- Steel and any other scrap metals are to be collected and stored within the central waste storage/ transition area within a skip or other suitable container.
- Scrap metal material shall be collected by a licensed waste management company and taken to an approved and licensed local recycling company / scrap metal dealership.
- Documentary proof of delivery to the recycling facility will be maintained on site by the ESM.

Timber

- Timber generated from various activities around the site will be collected and stored within the central waste storage/ transition area.
- The timber shall be kept free of any water (rain) and other hazardous leachate.
- The timber shall be collected and transported to a designated waste / recycle site.
- Documentary proof of delivery to the recycling facility will be maintained on site by the ESM.

Building rubble

- The ESM shall ensure that the entire site (including the site camp/ contractor's laydown area and any other working area) is cleaned of waste at least once a week.
- Clean rubble* shall be temporarily stockpiled in a waste skip / central stockpile (away from any drainage / sensitive areas) and shall be used as a base course material or removed from site to a crusher plant or licensed landfill site.

**No plastics, shrink wrap, paint buckets or any other debris that does not constitute clean building rubble, shall be stored at such stockpile sites.*

Domestic waste

- The ESM shall ensure that the constructor's camp and eating areas are cleaning daily.
- All domestic waste generated shall be disposed of into bins.
- Bins shall be provided at all eating areas.
- Bins shall be emptied twice a week.
- No staff shall be allowed to deposit waste / litter anywhere on the site except into the bins provided.

Medical waste

- Any medical waste generated on site shall be appropriately stored.

- Medical waste shall be collected by a licensed waste service provider and be disposed of at a licensed landfill site with certificates of safe disposal to be kept onsite by the ESM.

Waste water

- Discharge of any waste water directly into the environment shall be prevented at all times
- Waste water from toilets, kitchen facilities etc. shall be pumped into a conservancy tank and temporary stored for removal and safe disposal by accredited contractor.
- Records of removal and safe disposal shall be kept by the ESM.

Recyclables

- Wherever possible and practical, waste materials generated on site must be recycled;
- Recyclable materials includes the following:
 - ✓ Paper / cardboard
 - ✓ Metals
 - ✓ Glass
 - ✓ Plastic
 - ✓ Timber
 - ✓ Clean rubble
- Separate containers (with appropriate colour coding) must be provided for recyclable materials.

4.3 Water use and management

4.1.1 Water conservation management measures

- The minimisation of loss or waste of water, and the efficient and effective use of water shall be maintained on site at all times.
- All hoses shall be fitted with trigger-gun spray nozzles to limit water wastage.
- Dry sweeping shall be undertaken in preference to washing of areas and equipment wherever possible.
- Vehicles may not be washed on site.
- The Contractor shall be responsible for ensuring that there is access to clean drinking water for all employees on site. If water is stored on site, drinking water and multi-purpose water storage facilities shall be clearly distinguished and demarcated.

4.4 Stormwater and erosion management

- Damage to the environment (botanical and geo-hydrological) due to the construction activities shall be minimised at all times.
- The loss of topsoil must be minimized.

- Erosion and subsequent siltation must be limited.
- Impedance of the flow of both surface and sub-surface water associated within the drainage areas must be minimized.
- All access roads shall be constructed according to the design specifications.
- Any drainage channels shall be suitably designed to ensure that erosion does not occur.
- All areas susceptible to erosion shall be protected and stabilisation measures implemented:
 - Packing of sandbags, gabions, straw bales or brush to reduce the speed of water flow where water is scouring the topsoil and results in the formation of erosion gullies.
 - The installation of water cut-off and flow channels; and
 - Protection of road crossings across the drainage lines.
- All runoff generated within the site camp and substation area must be collected in a formalised stormwater infrastructure system and shall be managed accordingly.
- All stormwater infrastructure on site shall be maintained and kept clean throughout construction period.
- Use of bunds or traps to ensure full containment of hydrocarbon and other hazardous materials are mandatory.
- Fuel and oil spills shall be treated immediately by appropriate mop-up products.
- Any contaminated material is disposed of in an appropriate manner and the potential risks associated with such spills are limited.
- Immediate reporting of any polluting or potentially polluting incidents so that appropriate measures can be implemented.
- Exposed surfaces shall be kept to a minimum to minimise the volume of dirty run-off generated.
- All operational areas shall be kept clean by regular washing or sweeping and such waste material generated is disposed of accordingly.
- All equipment shall be well maintained and fully operational at all times.
- Any surface runoff generated which has a high suspended solid content shall be collected at the point source in an appropriate containment facility, then be allowed to settle before discharged into the environment.
- All water discharged to the environment shall first be cleared of hydro-carbons and subsequent release into the environment shall be within the allowable limits as per DWA General Limits.
- Removal of spills, rainwater and waste produced during cleanup of the bunds – shall be done in accordance to relevant specifications.

4.5 *Restriction of working areas and protection of sensitive areas*

- All activities shall be undertaken in accordance with the recommendations proposed by the visual, heritage and ecological specialist assessments.
- No activities shall be undertaken in sensitive areas identified in the various specialist assessments.
- All sensitive and no-go-areas must be demarcated.
- All private property outside of the construction areas (including any detour routes) as set out in the site layout plan shall be considered no-go areas.

- Any additional no-go areas may be declared at any time during the construction phase as deemed necessary and/or at the request of the ECO / ESM or authorities.
- Should any archaeological / paleontological material be discovered during works then:
 - ✓ Work must be stopped in the area immediately.
 - ✓ The area must be demarcated according to the relevant specifications.
 - ✓ Demarcation materials (fencing, signage, etc.) shall not be moved or removed at any stage of the project without approval from the ESM.
 - ✓ Areas where construction activities prohibited are referred to as no-go areas. Entry into these areas by any person (except the ESM and ECO by foot for monitoring purposes), vehicle or equipment without permission will result in a penalty.

4.6 Hazardous materials handling and storage

- All fuels/flammable including other hazardous substances shall be stored within a demarcated area in the Contractor's camp/ laydown area on site.
- The hazardous storage area and perimeter must be free of vegetation and be well away from buildings or stored combustible materials.
- The rated capacity of a tank/container must be able to accommodate expansion of the product contained therein due to the rise in temperature during storage.
- All materials to be stored in accordance with the MSDS requirements.
- All hazardous substances shall be stored in containers with lids, which are kept firmly shut.
- All containers must be kept in such a condition as to be reasonably safe from damage and to prevent leakage there from.
- Flammable liquids in small quantities for e.g. paints, thinners, oils, etc. can be stored in a fireproof cabinet and marked with relevant fire prevention signs and have a copy of the MSDS posted up.
- The requirements of fuel storage and management as detailed in SANS 10089 part 1 and SANS 10131 must be implemented by the Safety Manger.
- All vehicles and equipment must be maintained in a good condition in order to minimise the risk of leakage and possible contamination of the soil or stormwater by fuels, oils and hydraulic fluids.
- All vehicles / plant requiring servicing, or which are on site as well as any static plant e.g. generators and concrete mixers are to make use of a drip tray placed strategically to avoid incidental spillage of oils and fuels onto the ground.
- Drip trays shall be inspected at least weekly (daily, if affected by rainwater) and appropriate spill kits used to remove spillages.
- Drip trays shall be closely monitored during rain events to ensure that they do not overflow.
- All hazardous material spills must be cleaned up immediately.
- All hazardous materials must be classified (as detailed), recorded in register and be reported to the ESM.
- Vehicles and machinery must be refuelled at designated refuelling areas only.
- Any person handling or using a hazardous substance must be made aware of the Personal Protective Equipment (PPE) Requirements and he/she shall use the prescribed PPE.
- Should decanting be necessary the spill precaution as recommended on the MSDS must be adhered to.
- Decanting of liquids will only be done over drip trays.

- When hazardous substances are decanting into other containers, all such containers must be labelled correctly.
- Containers into which decanting is being done must be of the same material as in which the original substance is contained.
- PPE as recommended on the MSDS must be used when decanting hazardous substances.
- The disposal of Hazardous Substances must comply with the Hazardous Substances Act.
- Ensure safe disposal certificates are obtained and kept on site.
- Ensure a reputable/approved waste removal contractor is appointed for the safe removal of all hazardous waste on a regular basis.

4.6.1 Concrete and cement works

- Concrete must be mixed on an impermeable surface or on a mixing tray and not directly on soil surfaces.
- Cement must be stored in a designated storage area (secure from water and wind) and kept dry at all times.
- Should there be a batching plant on site, it must be located on appropriate concrete slab, which will be large enough to accommodate the batching plant and cement silos.
- Any Cement silos at the batching plant shall be hoarded off with shade cloth and dust suppression bags will be used when the cement is pumped into the silos.
- Any Spillages will be swept to minimise dust dispersion.
- Recycle pit: The recycle (washout pit) will be large enough to contain run-off from the surrounding area. The water captured by the recycle pit will be reused in the batching operations. Any slush that collects in the bottom of the recycle pit will be mixed with sand (using the loader) to make it easier to transport. It will then be loaded onto a truck and legally disposed of.
- Sand and Stone Storage area: Sand, crusher dust and stone will be stored in stockpiles on compacted ground. All stockpiles shall be covered under high wind conditions (excess of 45km/hr) or watered down to limited dust emissions.

4.7 Noise and lighting control

Noise

- Construction and demolition activities generating output of 85dB or more, shall be limited to normal working hours and not allowed during weekends to limit the impact of noise on neighbours. Should the Contractor need to work outside normal working hours, the surrounding neighbours shall be informed prior to the work taking place.
- No amplified music shall be allowed on site.
- Appropriate directional and intensity settings are to be maintained on all hooters and sirens.
- Hearing protection shall be issued by staff in work areas where noise levels exceed 85dB or as otherwise specified in the Contractor's Health and Safety Plan.
- Regular maintenance to ensure that factory fitted noise abatement measures is effective.
- Excessively noisy machinery must only be used during regular operating hours and not after hours where possible.

- If and where possible, excessively noisy activities shall not be conducted simultaneously.
- Should any complaints regarding noise be received from the adjacent community / staff, a baseline noise assessment and subsequent noise monitoring shall be conducted.
- Any noise complaints received shall be recorded in complaints register by the ESM.
- The Contractor shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations.
- The Contractor shall limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Subclause 4.1 regarding “built-up” area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas.

Lighting

- Construction operations must occur during daylight hours.
- If lighting is required, the lighting will be located in such a place and such a manner so as to minimise any impact on the surround community and animal/insect life.
- Lighting shall not be unreasonably intrusive into the landscape. The use of outdoor security lighting shall be restricted to the site camp. Additional locations for outdoor area lighting shall be approved by the ESM with input of the visual impact assessment and EIA consultant where significant.
- Any lighting nuisance complaints received shall be recorded in complaints register by the ESM.
- Every complaint shall be investigated by the ESM and mitigating measures be implemented where possible to the satisfaction of the ESM and ECO.

4.8 Dust control

- Generation of dust shall be minimised and dust nuisance for the surrounding recreational, hospitality and residential areas shall be kept to a minimum wherever possible.
- Dust from exposed soil surfaces shall be minimised at all times.
- Reasonable measures must be undertaken by the Contractor to ensure that any exposed areas and material stockpiles are adequately protected against the wind.
- Dust screens of a suitable height should be erected wherever required and possible.
- All exposed surfaces should be minimised in terms of duration of exposure to wind and stormwater.
- All exposed un-stabilised / un-compacted surfaces shall be surfaced; re-vegetated / stabilised as soon as works are completed.
- Potable water shall not be used for the dust suppression of stockpiles.
- Stockpiles shall not exceed 2m
- Unpaved roads / tracks must be sprayed with water / dust suppressant.
- Excavation, handling and transportation of erodible materials shall be avoided under high wind conditions (excess of 35km/hr) / when visible dust plume is present.
- The transportation of erodible materials onsite shall be covered at all times.

4.9 Vegetation management

- Unnecessary access areas outside of the development footprint must be avoided.
- No watercourse or stream shall be diverted or modified in any way without approval from the ESM and ECO.
- Construction activities shall not permanently alter the surface or sub-surface flow of water through any aquatic ecosystem.
- Vegetation associated with sensitive areas may not be disturbed or removed.
- Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Particular attention must be paid to imported material.
- Re-vegetation and rehabilitation of the cleared areas shall be undertaken once construction has been completed.
- Areas to be re-vegetated with endemic trees and grass species; and Remaining waste areas to be flattened, sloped, covered with topsoil and vegetated.
- No protected trees shall be removed without required permit in terms of the National Forest Act (Act 84 of 1998).
- Relevant Flora permits shall be obtained for the removal of any indigenous, protected and specially protected vegetation in terms of the Northern Cape Nature Conservation Act (Act 9 of 2008).

4.10 Animal control

- Wild animals encountered on site may not be trapped, captured, disturbed, injured or killed. ESM to be notified immediately of animal encounters. Note: Animals may be trapped when such an animal (e.g. venomous snake) poses a hazard to staff or where the animal itself is in danger of being harmed by activities in the area.
- Venomous Snake encounters:
 - ✓ ESM to be contacted immediately to advise on the capture and release of the animal;
 - ✓ Local conservation staff / reptile handlers to assist with capture and release (if required); and
 - ✓ The ESM will provide basic snake awareness training to all staff and sub-contractors.
- No dogs or cats may be brought to site.

4.11 Safety and security

- The site camp is to be established under supervision of the ESM and Safety Manager. The site and site camp should be secured and unauthorised access prohibited.
- The site camp and site are to be fenced off to prohibit unauthorised access and/or the possibility of works occurring outside the border of the site.
- Such fencing must be accompanied by signage indicating the site and contractors, emergency numbers, and good practice safety and security signs.
- No temporary site camps or any works associated with the development will be allowed outside the footprint of the development area.
- No personnel, except for security staff, are allowed to stay/live on the site. Security staff is to be provided with accommodation and ablution facilities and communication equipment.
- Visitors are to complete the site visitor diary as well as a brief induction. The site visitor diary is to be kept at the site camp by the ESM for record purposes. Induction shall include an introduction to the site and project, the authorised and unauthorised accesses as well as good practice safety procedures i.t.o. OHS Act.
- All personnel working for, or on behalf of, the contractor as well as all visitors are to be outfitted with the required PPE.

- Site camp and construction areas are to be clearly demarcated.
- Site and construction personnel are prohibited from special environments which may be prohibited from access or activities.
- Ablution facilities and areas are to be clearly demarcated and clear signage to be erected.
- One chemical toilet is to be provided for every 8 site workers.
- Chemical toilets are to be serviced (emptied) twice a week.
- Potable water points are to be demarcated.
- Ensure potable water complies with the NWA general limit requirements for drinking water. If necessary potable water shall be treated prior to consumption. If no filtration system is available potable water will be supplied to all site workers on a daily basis.
- Eating areas are to be clearly demarcated and maintained.
- The potential fire hazards must be managed by ensuring that no fires are permitted on site and that the constructors must be aware of the consequences of starting a fire on site to avoid damage to the neighbouring farms.
- Fire extinguishers are to be supplied to vehicles, site camp, security quarters, etc. Fire extinguishers are to be serviced on a six-monthly basis.
- The applicant must train safety representatives, managers and workers in workplace and site safety. All applicable safety standards and regulations, including for subcontractors must be enforced. Training should include emergency procedures.

4.12 Traffic management

- The Contractor must control the movement of all vehicles (construction and private) including that of his suppliers so that they remain on designated routes.
- Temporary road signs must be erected during the construction phase.
- Single directional traffic shall be controlled through a stop-go system or any other appropriate traffic control method.
- During all stages of the construction, the Contractor shall be responsible to for ensuring that suitable access is maintained for public traffic to all relevant businesses and properties.
- The final position of the temporary signs and the proposed traffic accommodation plan must be approved by the Engineer.
- All traffic accommodation measures are to conform to the latest edition of the South African Road Signs Manual.

4.13 Fire management

Fire prevention

- All workers (including sub-contractors) will be sensitized to the risk of fire – no smoking / no fire policy on site through the mandatory safety specific induction. Smoking is only allowed in designated smoking areas.
- The Contractor shall ensure that the basic fire-fighting equipment is available on site.

- The Contractor shall supply the site with tested and approved fire-fighting equipment (minimum 2 X 9kg fire extinguishers). All “hot” work areas (e.g. welding, gas cutting or cutting of metal) must have fire extinguishers readily at hand.
- The disposal of waste material by burning is prohibited.
- The Contractor shall be liable for all costs incurred by the organisations sub-contracted to extinguish all fires started by any person(s) under their control.
- The Contractor shall be liable for all costs incurred to remediate burnt areas.

Fire response and evacuation

- The Contractor shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on site.
- The Contractor shall ensure that the basic fire-fighting equipment is to the satisfaction of the Local Fire Services.
- No fires for heating purposes shall be allowed.
- The disposal of any matter by burning is prohibited.
- No smoking will be allowed on site, except in designated smoking points.
- An Emergency Plan (including Fire Protection, Response and Evacuation Plan) is to be prepared by the Contractor and conveyed to all staff on the site. This shall identify:
 - ✓ a Fire Marshall for the site;
 - ✓ all potential fire hazards;
 - ✓ fire-fighting equipment to be provided on site;
 - ✓ procedure in case of a fire;
 - ✓ a fire evacuation route and plan; and
 - ✓ emergency contact numbers.
- Key staff members will be trained to deal with the control of fire-fighting equipment on site and to assist with evacuations as required.
- All staff is to be familiar with the position of fire control equipment on site and response and evacuation procedures. This should be covered in the Contractor's H&S inductions for all new site staff.
- In the case of a fire occurring on site, the following actions are to be taken immediately:
 - Contact Local Fire Department/farm response unit.
 - Warn neighbours of potential danger.
 - All fire requirements shall be carried out as contained in the National Building Regulations SABS 0400.

4.14 Emergency management

Safety and emergency procedures, risk management and training

- The application of all occupational health and safety regulations must be ensured. This includes the distribution and use of protective clothing and equipment to at least include safety shoes, overalls, gloves, dust masks, and where appropriate ear muffs and eye/face protection shields.
- Handout and use of safety and protective equipment must be recorded. Staff who fails to use the protective equipment provided by site staff must not be allowed to work at the facility.

- Emergency procedures for fire, adverse conditions due to inclement weather, spillages, stoppage of operations due to refusal to work by employees, etc. must be included in the emergency procedures.
- All relevant fire-fighting equipment should be kept on site.
- All staff working on site shall be trained in all relevant aspects of the Occupational Health and Safety Act No. 86 of 1993 and relevant regulations promulgated under this act.
- The Site Manager shall be assigned as the Safety Coordinator for the facility and the Site Manager shall assign a person as deputy to act when appropriate.

The following requirements would be the minimum for the safety program:

- ✓ Orientation of new employees including safety training and emergency contingency planning.
- ✓ Accident reporting procedures for notification to the Employer and thereafter appropriate agencies.
- ✓ Thorough investigation and documentation of all accidents to ascertain the cause and future methods of preventing recurrence.
- ✓ Mandatory first aid instruction for all staff members.
- ✓ Regularly scheduled safety meetings.
- ✓ Fire prevention and fire-fighting instruction.
- ✓ Routine inspection and testing procedure for all safety and emergency equipment and protective devices, and routine walk through inspections conducted by the Operator through all areas to identify and correct potential unsafe conditions.
- ✓ Posting of safety bulletins and posters required by regulatory agencies and other materials concerning accident prevention and hazardous conditions.
- ✓ The Contractor shall abide by all local, provincial and national safety requirements.
- ✓ The Contractor shall provide for a first aid station and emergency medical response for injured staff.
- ✓ All plant/equipment failure must be repaired or replaced by the Contractor without any undue delay or adverse effect to the operation of the site.
- ✓ This includes all mechanical equipment and tools, safety and warning systems.
- ✓ The Operator will ensure that all equipment is maintained in a safe operating condition.

Accident and incident control and reporting

- All accidents must be recorded irrespective of the severity or seriousness of injuries and damage. Data about the accident must be provided within 24 hours after occurrence.
- Appropriate recording documents must be available on site and a person must be designated as the Health and Safety Officer.
- Appropriate authorities and law enforcement officers must be included in investigations into accidents.
- Steps to avoid recurrence of similar accidents must be identified and implemented. The steps must be recorded and monitored.
- Incidents must be recorded in an incident register noting the time, date and place where the incident occurred, who and what was involved, and a detailed description of the incident must be included in the report.
- Actions taken to address the occurrence of the incident, as well as the avoidance of recurrence of the incident must be recorded.

Refer to Annexure 8: Example of Emergency Procedure.

5. OPERATIONAL PHASE

Section 5 provides the management measures and controls to mitigate the impacts during the operational phase of the technical college.

5.1 *Stormwater and erosion management*

- Roads infrastructure must be maintained to ensure that there are no changes to surface water runoff and erosion is not initiated.
- Existing drainage infrastructure must be kept clean and clear of waste and debris.
- Drainage channels shall be suitably designed to ensure that erosion and/or silt retention does not occur.
- The comprehensive stormwater management plan (SWMP) must be adhered to at all times.
- All runoff generated within the site office and maintenance areas must be collected in a formalised stormwater infrastructure system and shall be managed accordingly.
- All stormwater infrastructure on site shall be maintained and kept clean throughout operational period;
- Use of bunds or traps to ensure full containment of hydrocarbon and other hazardous materials are mandatory;
- Fuel and oil spills shall be treated immediately by appropriate mop-up products (refer to SOP Hazardous material management).
- Any contaminated material is disposed of in an appropriate manner and the potential risk associated with such spills is limited;
- Immediate reporting of any polluting or potentially polluting incidents so that appropriate measures can be implemented;
- Exposed surfaces shall be kept to a minimum to minimise the volume of dirty run-off generated;
- All operational areas shall be kept clean by regular washing or sweeping and such waste material generated is disposed of accordingly;
- All equipment shall be well maintained and fully operational at all times.
- Any surface runoff generated which has a high suspended solid content shall be collected at the point source in an appropriate containment facility, then be allowed to settle before discharged into the environment.
- All water discharged to the environment shall first be cleared of hydro-carbons and subsequent release into the environment shall be within the allowable limits as per DWA General Limits.
- Removal of spills, rainwater and waste produced during clean-up of the bunds – shall be done in accordance to relevant specifications.
- All sumps, oil separators shall be inspected regularly and maintain in working order.

5.2 *Waste management*

All waste generated during the operational phase shall be managed in accordance with the requirements of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) Waste Classification and Management Regulations, 2013 (GNR: 634 – 635):

5.2.1 Waste stream identification and classification

- e) All waste generated shall be classified into separate waste streams (i.e general waste, hazardous waste and recyclables);
- f) Waste shall not be mixed prior to classification and all waste types generated must be kept separate;
- g) Classification of any hazardous waste shall be done in accordance with SANS 10234 requirements;
- h) Material safety data sheets shall be kept for any hazardous waste in accordance with SANS 10234 requirements;
 - Safety sheets must be prepared in accordance with SANS 10234 for the product that the waste originated from;
 - Safety sheets must be prepared in accordance with SANS 10234 reflecting the details of the specific hazardous waste/s or hazardous chemicals in the waste; and
 - All safety data sheets must be kept on file.

5.2.2 Waste management (collection, storage and handling)

- h) A central waste storage and transition area shall be established within the site camp;
- i) The central waste storage and transition area shall be surfaced and demarcated appropriately;
- j) Portable wheelie bins shall be placed throughout the site camp as well as at the remainder of the site and at all working areas in the field;
- k) Wheelie bins shall be colour coded and labelled to identify the waste stream for which it is intended;

Colour coding is as follows

General Waste	Grey (Waste type labelling)
Hazardous Waste	Red (Waste type labelling)
Fluorescent tubes and E-Waste	Yellow (Waste type labelling)
Scrap Metal	Dark Blue (Waste type labelling)
Wood	Brown (Waste type labelling)
Recyclables	Grey (Waste type labelling)

- ✓ Signs with English wording.
- ✓ Full descriptions of the waste are required to assist site and external personnel to handle the material safely.
- ✓ Any unidentified wastes will be treated initially as hazardous and will be subject to the classification process outlined above.

- ✓ All waste containers on-site (bins, skips, drums, etc.) will be clearly labelled to show which wastes can be disposed into them and which wastes they contain.
 - ✓ Any previous labelling will be removed or covered to avoid confusion.
- l) All portable wheelie bins and other containers shall be emptied at the central waste storage and transition area a minimum of once a week as to avoid waste build up;
 - m) The waste shall be removed (within 30 days) by a licensed waste service provider and shall be disposed of at a licensed waste landfill site and records of safe disposal (as required for hazardous wastes) shall be supplied to the Contractor. These records shall be kept on site.

5.2.3 Waste specific management measures

Hydrocarbons and hazardous waste

- All hazardous waste generated shall be kept separate and shall not be mixed with general waste;
- All hazardous waste shall be stored within a sealed drum on a impermeable surfaced area within the central waste storage and transition area;
- All hazardous waste shall have safety data sheets and such waste shall be disposed of as per the product Material Safety Data Sheet (MSDS);
- Hazardous waste shall be collected by a licensed waste service provider and be disposed of at a licensed landfill site with certificates of safe disposal;
- Certificates of safe disposal shall be acquired from the service provider for record purposes shall be kept.
- The total quantity of hazardous waste stored at the site at any one time shall not exceed 35m³.
- All containers (skips) within the waste central waste storage/ transition area must be labelled, or where labelling is not possible, records must be kept, reflecting the following:
 - ✓ Date on which waste was first placed in the container;
 - ✓ Date on which waste was placed in the container for the last time and when the container was filled, closed, sealed or covered;
 - ✓ Dates when, and quantities of waste removed;
 - ✓ Proof of safe disposal by licensed contractor must be kept by the ESM.

Scrap metal

- Steel and any other scrap metals are to be collected and stored within the central waste storage/ transition area within a skip or other suitable container.
- Scrap metal material shall be collected by a licensed waste management company and taken to an approved and licensed local recycling company / scrap metal dealership.
- Documentary proof of delivery to the recycling facility will be maintained on site.

Timber

- Timber generated from various activities around the site will be collected and stored within the central waste storage/ transition area.
- The timber shall be kept free of any water (rain) and other hazardous leachate.

- The timber shall be collected and transported to a designated waste / recycle site.
- Documentary proof of delivery to the recycling facility will be maintained on site by the ESM.

Building rubble

- Clean rubble* shall be temporarily stockpiled in a waste skip / central stockpile (away from any drainage / sensitive areas) and shall be used as a base course material or removed from site to a crusher plant or licensed landfill site.

**No plastics, shrink wrap, paint buckets or any other debris that does not constitute clean building rubble, shall be stored at such stockpile sites.*

Domestic waste

- All eating areas must be cleaning daily.
- All domestic waste generated shall be disposed of into bins.
- Bins shall be provided at all eating areas.
- Bins shall be emptied twice a week.
- No staff shall be allowed to deposit waste / litter anywhere on the site except into the bins provided.

Medical waste

- Any medical waste generated on site shall be appropriately stored.
- Medical waste shall be collected by a licensed waste service provider and be disposed of at a licensed landfill site with certificates of safe disposal to be kept onsite.

Waste water

- Discharge of any waste water directly into the environment shall be prevented at all times
- Waste water from toilets, kitchen facilities etc. shall be pumped into a conservancy tank and temporary stored for removal and safe disposal by accredited contractor.
- Records of removal and safe disposal shall be kept onsite.

Recyclables

- Wherever possible and practical, waste materials generated on site must be recycled;
- Recyclable materials includes the following:
 - ✓ Paper / cardboard
 - ✓ Metals
 - ✓ Glass
 - ✓ Plastic
 - ✓ Timber

- ✓ Clean rubble
- Separate containers (with appropriate colour coding) must be provided for recyclable materials.

5.3 Hazardous material handling and storage

- All fuels/flammable including other hazardous substances shall be stored within a demarcated area.
- The hazardous storage area and perimeter must be free of vegetation and be well away from buildings or stored combustible materials.
- The rated capacity of a tank/container must be able to accommodate expansion of the product contained therein due to the rise in temperature during storage.
- All materials to be stored in accordance with the MSDS requirements.
- All hazardous substances shall be stored in containers with lids, which are kept firmly shut.
- All containers must be kept in such a condition as to be reasonably safe from damage and to prevent leakage there from.
- Flammable liquids in small quantities for e.g. paints, thinners, oils, etc. can be stored in a fireproof cabinet and marked with relevant fire prevention signs and have a copy of the MSDS posted up.
- The requirements of fuel storage and management as detailed in SANS 10089 part 1 and SANS 10131 must be implemented by the Safety Manger.
- All vehicles and equipment must be maintained in a good condition in order to minimise the risk of leakage and possible contamination of the soil or stormwater by fuels, oils and hydraulic fluids.
- All vehicles / plant requiring servicing, or which are on site as well as any static plant e.g. generators and concrete mixers are to make use of a drip tray placed strategically to avoid incidental spillage of oils and fuels onto the ground.
- Drip trays shall be inspected at least weekly (daily, if affected by rainwater) and appropriate spill kits used to remove spillages.
- Drip trays shall be closely monitored during rain events to ensure that they do not overflow.
- All hazardous material spills must be cleaned up immediately.
- All hazardous materials must be classified (as detailed), recorded in register.
- Vehicles and machinery must be refuelled at designated refuelling areas only.
- Any person handling or using a hazardous substance must be made aware of the Personal Protective Equipment (PPE) Requirements and he/she shall use the prescribed PPE.
- Should decanting be necessary the spill precaution as recommended on the MSDS must be adhered to.
- Decanting of liquids will only be done over drip trays.
- When hazardous substances are decanting into other containers, all such containers must be labelled correctly.
- Containers into which decanting is being done must be of the same material as in which the original substance is contained.
- PPE as recommended on the MSDS must be used when decanting hazardous substances.
- The disposal of Hazardous Substances must comply with the Hazardous Substances Act.
- Ensure safe disposal certificates are obtained and kept on site.
- Ensure a reputable/approved waste removal contractor is appointed for the safe removal of all hazardous waste on a regular basis.

5.4 *Noise and lighting control*

- Hearing protection shall be issued to staff in work areas where noise levels exceed 85dB or as otherwise specified in the Health and Safety Plan.
- Should any complaints regarding noise be received from the adjacent community or staff, a baseline noise assessment and subsequent noise monitoring shall be conducted.
- Monitoring of noise (if required) shall:
 - ✓ Be performed weekly at agreed monitoring points;
 - ✓ Be done with a calibrated, integrating noise level meter and will be done according to the relevant SANS Standards; and
 - ✓ Noise monitoring data shall be recorded and captured in the Environmental Monitoring Database.
- All equipment and machinery are well maintained and equipped with silencers.
- Appropriate directional and intensity settings are to be maintained on all hooters and sirens;
- Hearing protection shall be issued to staff in work areas where noise levels exceed 85dB or as otherwise specified in the Contractor's Health and Safety Plan;
- Regular maintenance to ensure that factory fitted noise abatement measures is effective;
- Excessively noisy machinery must only be used during regular operating hours and not after hours where possible;
- If and where possible, excessively noisy activities shall not be conducted simultaneously.
- Any lighting nuisance complaints received from stakeholders shall be recorded in a complaints register. Every complaint shall be investigated and mitigating measures be implemented where possible.

5.5 *Security management*

- The site should be secured and unauthorised access prohibited at all times
- The site administration and maintenance areas to be fenced off to prohibit unauthorised access and/or the possibility of works occurring outside the border of the site.
- Fencing shall have adequate signage indicating the site and contractors, emergency numbers, and good practice safety and security signs.
- No personnel, except for security staff, are allowed to stay/live on the site. Security staff are to be provided with accommodation and ablution facilities and communication equipment
- Staff and contractors are prohibited from special environments which may be prohibited from access or activities.
- No maintenance activities are to be undertaken outside of daylight hours.

**ENVIRONMENTAL METHOD STATEMENT
TEMPLATE**

1. Introduction and Scope of the Method Statement

2. Location and Period

3. Safety Health and Environmental Impacts identified

4. Legal References

5. Methods for Mitigation of Impacts

6. Monitoring and Record Keeping

7. Declarations

A. Site Manager

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent avoidable environmental harm.

Print Name

Signed

Date

B. Contractor

I understand the contents of this Method Statement and the Scope of Works required from me.

Print Name

Signed

Date

C. Environmental Officer

I understand the contents of this Method Statement and the Scope of Works required from me.

Print Name

Signed

Date

D. Environmental Control Officer (External)

The works described in this Method Statement are approved.

Print Name

Signed

ANNEXURE 2 – ENVIRONMENTAL AUTHORISATION

ANNEXURE 3 – SCHEDULE OF FINES FOR ENVIRONMENTAL TRANSGRESSIONS

SCHEDULE OF FINES FOR ENVIRONMENTAL DAMAGE OR EMP TRANSGRESSIONS

(Based on City of Cape Town: Standard Environmental Specifications – Ver. 5 (03/2002))

Note: The maximum fine for any environmental damage will never be less than the cost of applicable environmental rehabilitation.

EMP TRANSGRESSION OR RESULTANT ENVIRONMENTAL DAMAGE	MIN. FINE	MAX. FINE
Failure to comply with prescriptions regarding appointment of an ECO and monitoring of Construction EMP compliance.	R500	R1000
Failure to comply with prescriptions regarding environmental awareness training.	R500	R5000
Failure to comply with prescriptions regarding method statements.	R500	R5000
Failure to report environmental damage or EMP transgressions to the ECO.	R500	R1000
Failure to carry out instructions of the ECO regarding the environment or the EMP.	R500	R1000
Failure to comply with prescriptions posting of emergency numbers.	R500	R5000
Failure to comply with prescriptions regarding a complaints register.	R500	R1000
Failure to comply with prescriptions regarding information boards.	R500	R1000
Failure to comply with prescriptions regarding site demarcation and enforcement of 'no go' areas.	R500	R5000
Failure to comply with prescriptions regarding site clearing.	R500	R5000
Failure to comply with prescriptions for supervision for loading and off loading of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for securing of loads to ensure safe passage of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for the storage of imported materials within a designated contractor's yard.	R500	R1000
Failure to comply with prescribed administration, storage or handling of hazardous substances.	R500	R1000
Failure to comply with prescriptions regarding equipment maintenance and storage.	R500	R1000

Failure to comply with fuel storage, refuelling, or cleanup prescriptions.	R500	R1000
Failure to comply with prescriptions regarding procedures for emergencies (spillages and fires).	R1000	R5000
Failure to comply with prescriptions regarding construction camp.	R500	R5000
Failure to comply with prescriptions for the use of ablution facilities.	R500	R1000
Failure to comply with prescriptions regarding water provision.	R500	R1000
Failure to comply with prescriptions for the use of designated eating areas, heating source for cooking or presence of fire extinguishers	R500	R1000
Failure to comply with prescriptions regarding fire control.	R500	R5000
Failure to comply with prescriptions for solid waste management.	R500	R5000
Failure to comply with prescriptions regarding road surfacing.	R500	R5000
Failure to comply with prescriptions to prevent water pollution and sedimentation	R500	R5000
Failure to comply with prescriptions to the protection of natural features, flora, fauna and archaeology.	R500	R5000
Failure to comply with prescriptions regarding off road vehicle access to the beach	R500	R5000
Failure to comply with prescriptions regarding speed limits.	R500	R1000
Failure to comply with prescriptions regarding noise levels of construction activities.	R500	R5000
Failure to comply with prescriptions regarding working hours.	R500	R5000
Failure to comply with prescriptions regarding aesthetics.	R500	R1000
Failure to comply with prescriptions regarding dust control.	R500	R1000
Failure to comply with prescriptions regarding security and access onto private property	R500	R1000
Failure to comply with prescriptions regarding cement and concrete batching	R500	R5000

For each subsequent similar offence committed by the same individual, the fine shall be doubled in value to a maximum value of R50,000.00.

ANNEXURE 4 – SITE LAYOUT PLAN

CONTAINMENT WALL STANDARD

	Originated By	Review By	Approved By
Name			
Designation			
Signature			
Date			

1. Introduction

The goal of operations onsite is to operate without fuel and oil spills. This Standard details the responsibilities and preventive measures to be implemented to avoid potential spills from occurring. This Standard is designed to advise the constructors on a series of preventative measures to be implemented on site, specifically in areas of storage and handling of fuel and oil (hydrocarbon) substances.

2. Objectives of the Containment Wall Standard

The objectives of this Standard are:

- To limit, contain, divert, minimise, and manage the impact of spillages and fires.
- To prevent contamination of clean surface and sub surface water.
- To ensure that the facilities to transfer or store hazardous substances are contained.
- To minimise environmental impacts.
- To ensure all necessary materials and equipment are available on site.
- To provide a written procedure in line with EMP requirements.
- Personnel will be trained to implement this procedure.

3. Legislation guiding the Standard

Without limiting the responsibility / obligation of all employees to comply with all applicable laws at all times, particular attention should be given to the following:

- SANS standards; and
- OHS Regulations.

4. Organisational requirements

For site management to implement effective preventative measure, implementation of the below aspects are imperative:

- Site Management must enforce the below standard at all areas of hazardous storage.
- Weekly inspections to ensure effective operation of the containment walls.

5. Containment Walls

- The design of containment walls must consider the optimisation of the installation and size of the area in conjunction with the fire-fighting requirements of the installation. The design should also consider the risk of pollution to surface and ground water, soil and the environment.
- SANS for petroleum products specify that surface tanks located on sites in urban and rural areas require containment walls.

6. Bund Capacity

- The volumetric capacity of the containment area for surface facilities must take account of allowances to cope with the maximum storm rainwater of the area (for example 100 mm rainfall in one hour).
- The SANS 10131:2004 and SANS 10089-1:2003 specify minimum requirements for the volumetric capacity of the containment area around tanks. It shall not be less than:

- the greatest volume of the product that can be released from the largest tank in the containment area, assuming that the tank is full
- to allow for the volume contained by more than one tank, the capacity of the containment area where the wall encloses more than one tank, shall be calculated after the volume of all tanks (other than the largest tank) below the height of the wall has been deducted
- SANS 10089-1:2003 implies a design capacity of 110% of the capacity of the tank when one tank is within the enclosed area to be used, unless otherwise specified by the local by-laws of the area.
- SANS 10089-1:2003 also specifies specific intermediate containment requirements for certain products whenever two or more tanks are enclosed in a common containment area.
- Whenever containment wall requirements are designed for hazardous products, the responsible engineer must consult all the applicable SANS guidelines.
- Service tanks must be provided with containment walls and where service tanks are located in buildings, the capacity must be equivalent to that of the service tank.

7. Bund materials

- The containment walls and floors are usually constructed of solid masonry, concrete or brickwork, with vertical sides or near vertical sides, depending on the type of tank and product contained.
- Bricks used for construction of load-bearing structures must be of specific quality (such as burnt clay bricks) in accordance with SANS 10227.
- It must be free of cracks, flaws, stones and lumps of raw materials. Under no circumstances, may porous, cement block bricks be used.
- When required, containment walls of steel may be used. These must be in accordance with SANS 19131:2004 and should prevent spills, in case of a fire.
- The containment walls and floor must be designed to be liquid-tight.
- The main containment walls must be able to withstand a full hydrostatic head of water when filled.

8. Bund wall, floor and other

- The containment area floor must be of sound concrete construction and slope at least 1:100 away from the tank towards the lowest point of the area where the drain sump must be located.
- The area within the containment wall surrounding the tank or drums must be entirely free and unoccupied (must not be used as a storage area).
- Allowance must be made for the trajectory/spurt of a leak from a full tank with an elevated point of leakage. The minimum distance between the surface tank and the toe of an interior containment wall must be at least 1,5m on all sides.
- No electric motor must be placed where it can come in contact with flammable liquid or its vapour, unless such motor is flameproof.
- High containment walls must have steps for quick escape and / or to facilitate easy access from the outside.
- A drainpipe and bleed off facility situated at the front of the containment area must be present.
- All pipes penetrating the containment wall must be suitably sealed to prevent corrosion and leakage of the product.
- Containment drain valves / stopcocks must be:
 - leak proof

- able to continue to function in a fire
- able to be opened manually
- kept locked in the closed position, unless in use
- the open and closed positions on the valve must be indicated and obvious
- only steel valves that are fire safe, are allowed inside containment areas
- Areas where fuel / oil is dispensed / refuelled must have containment facilities to collect leaks and spillages, as well as a means of collecting and disposing of this waste in a way that will not cause soil or water pollution.

9. Other requirements

- Minimum symbolic signage must include:
 - Danger – Flammable Liquid
 - No Smoking
 - No Naked Flame
 - No Cell phones
- Local site emergency numbers must be displayed and if possible, the following emergency (local) numbers should also be displayed:
 - The Fire Department
 - Doctor
 - Ambulance Service
- Under no circumstances may any modifications to tanks or stands be made without approval of the responsible engineer and / or applicable hazardous substance contracting provider.
- Surface storage tanks and bulk storage facilities must be visually inspected on a regular basis for structural integrity (including the stands) for rust, bent or missing components and appropriate inspection records kept.
- The site around the storage facilities must be kept free from obstructions and combustible rubbish. Vegetation, that is likely to dry out and become a fire hazard, must be kept short and cuttings immediately removed.

10. Management Review

This standard shall be subject to a management review annually and following a major spill event. The reviews shall be recorded.

11. Document Change Record

A	As result of incidents	B	As result of audit findings
C	Changes in operating procedures	D	Changes in legislation
E	Changes in technology	F	Changes in machinery / equipment
G	Result of risk assessments	H	Change in training requirements
I	New Document format	J	Small changes

K	To integrate a special instruction into the document control system		
Date of Change	Revised Item	Reason	Reviewed By

SPILL PROCEDURE

	Originated By	Review By	Approved By
Name			
Designation			
Signature			
Date			

1. Introduction

The goal of operations at the construction site is to operate without spills. In spite of preventive measures taken, there is still the potential for spills to occur. This Procedure details the responsibilities and actions in the event of a spill occurring. This Procedure is designed to implement a series of emergency response actions on site when a spillage occurs. This Procedure itemises the steps that are to be taken to reduce the risks of environmental damage to as low as is reasonably practicable. The basic actions (quick and simultaneous), to be performed by responsible person are detailed in Appendix 1 – Spill Response Flowchart. Success in containing a spill depends on the competence, imagination, resourcefulness of personnel, and the availability and state of readiness of equipment and material. A critical analysis of the sequence of the actual events will be prepared after any incident and distributed to site management and external ECO.

2. Objectives of the Spill Response Procedure

The objectives of this Procedure are:

- To detail arrangements for handling spillages.
- To minimise environmental impacts.
- To ensure all necessary materials and equipment are available on site.
- To provide a written procedure in line with EMP requirements.
- Personnel will be trained to implement this procedure.

3. Classification and Identification of Spills/Spill Potential

For the purposes of this procedure, spills are classified as follows:

Major (Level 3): Any incident that has the potential to result in a greater consequence than recorded and would include serious/disabling injury, fatality, catastrophic failure, major environmental impact/discharge. Spills of hazardous materials equal or superior to 500L, to land or water will be considered a Major incident. Major incidences must be reported to the relevant Authorities. **This limit should be used as a guideline only, and all spills should be assessed in terms of severity, hazard and damage to the environment.**

Medium (Level 2): An incident with the potential to breach licence conditions¹ or environmental regulations² and which is not necessarily reportable to the authorities. This incident must be reported to the employer, ESM and ECO. Example: hydrocarbon spill (between 10 and 500L).

Minor (Level 1): It is an event with little potential to breach license conditions or environmental regulations, and which is not reportable to the authorities or employer, if addressed immediately and adequately. (Spills less than 10L). Such spills must be reported to the ESM and ECO.

4. Response Actions

¹ As described in the Environmental Authorisation issued by the Department of Environmental Affairs, reference number DEAT/EIA/12205/2011. Refer to points 30.5 under Fauna and Flora, 31 as a whole as.

² Relevant Environmental Regulations pertaining to water and storm water management such as Regulation 704 specifically addressing clean and dirty water systems.

Organisational requirements for response action

For site management to implement effective spill response, all items listed below are supplied or adhered to:

- The site must have a minimum of spill response materials and equipment on site, as described in this document.
- The Emergency Commander (environmental officer) and the Emergency Response Team (Supervisor of the area and his work crew) are to be instructed on the implementation of this Procedure by the SHE Manager.
- Emergency contact numbers must be displayed at all locations.

A detailed report of any incident, with the associated mitigation measures and rehabilitation steps, must be submitted within 2 (Two) days (as soon as possible) after the spill occurred, using a standard report format. An incident notification report must be submitted within 12 hours of the incident.

5. Duties and Responsibilities

Emergency Commander (EC)/ Environmental Officer

The Manager of the involved area or his nominated deputy is designated as the EC. His duties are as detailed below:

- He ensures that an incident notification report is submitted within 12 hours, which include the following aspects:
 - Area of spillage
 - Classification of spillage
 - Source of spillage
 - If the incident is reportable or not
- He ensures that the incident is investigated and a detailed report is circulated for action.
- He ensures all reportable incidents are submitted to the relevant authorities within the prescribed timelines.
- He maintains a complete and accurate chronological record of all events that occur.
- Provide advice on the clean-up and disposal of recovered spills and debris in a manner that is acceptable.
- Provide advice on the use and handling of chemicals such as dispersants, detergents and other non-mechanical methods used to combat spills.
- Continuously assess damage and potential damage to the environment, and advise on the response techniques.
- He advises site management on requirements for additional resources.

Site Management

The Site Manager's duties are as detailed below:

- He ensures that spill response equipment is adequate and well maintained.
- He satisfies himself, through regular reports from the SHE Manager, as to the frequency and effectiveness of drills.

- He ensures himself that response is adequate and takes appropriate action should shortcomings arise.
- He ensures that mandates and lines of responsibilities are adequately communicated to all key staff.

SHE Manager

The SHE Manager reports to the Project Manager:

- He has complete authority over the containment and clean-up operation at the spill scene.
- He has the responsibility to ensure proper and adequate spill control and clean up as well as ensuring correct disposal thereafter.
- Ensure that adequate spill prevention measures are taken.
- Ensure that staff is properly trained on the use of containment and clean-up equipment.
- Ensures the safe and adequate use and handling of chemicals such as dispersants, detergents and other non-mechanical methods used to combat spills.

6. Procedure - Identification of Spill Causes

Causes

The Risk Assessment and Aspects and Impacts Register both show that spills can occur due to:

- Refuelling activities
- Loss of containment of stored diesel
- Fires
- Malpractice
- Seepage
- Leakage
- Insufficient storage space
- Material failure
- Inadequate storage facilities
- Tampering / Sabotage

7. Actions on Discovery of a Spill

On discovery of a spill, the main objective of any action is to reduce potential damage to the local environment. Immediate actions to be taken are (refer also to Spill Response Flowchart - Appendix 1):

- Contain the spill, and if possible, recover with available equipment and personnel.
- Remove the source of the spill by closing taps, valves or plugging holes or openings, where applicable
- Report full details of the incident to site management.

- Assess expected disturbances from affected third parties, i.e. if the spillage and pass this on to site management.
- Request additional assistance if needed. The initial request will be made by the EC to the Site Manager /SHE manager.
- Take necessary steps to restore area or facility disturbed to normality.
- Take necessary steps to ensure safe disposal, and/or storage if required, for contaminated material.
- Prepare a critical analysis of the sequence of the actual event.

8. Spill Response Principles

- The method used to clean up a spillage depends on the type of surface contaminated.
- In all instances, appropriate Personal Protective Equipment (PPE) must be worn during cleanup procedures.
- Under no circumstances may any spillage be rinsed into any drain, trench or stormwater canal.
- Certain recovered chemicals i.e. hydrocarbons can be pumped, stored or transferred from the holding containers to waste containers, specially marked for this purpose or collection tanks until removed by an approved waste or recycling contractor.

Spill response on land

The principals to be followed for a spill response on land are as described below:

Spills on soil/land

Spills on land should be contained and cleaned up as quickly as possible to prevent infiltration into the soil and contamination of groundwater.

- The spread of the spill must be prevented.
- The source of the spill must be identified and removed by closing taps, valves or plugging holes or openings (whichever is applicable);
- If large spills occur and absorbent booms prove not to be sufficient to contain the spill, soil bunds or pre-packed sand-filled bags may be used.
- All entrances to surface drains, trenches and stormwater canals must be blocked using pre-packed sand filled plastic bags and/or absorbent booms or, if applicable, soil booms or diversion trenches should be created using spades from the spill-kits.
- All excess spillage must be scooped up and placed in clearly marked hazardous waste bins.
- Contaminated soil must be taken to a bioremediation site (if one exists) or treated in-situ with bioremediation agents.
- If no bioremediation is to be undertaken, the contaminated soil must be placed into clearly marked hazardous waste bins, and must be removed as hazardous waste by an approved contractor.

9. Spills on concrete and other non-tarmac surfaces

- If a spill occurs outside of a bunded area, the spill must immediately be contained to as small an area as possible.
- The spread of the spill must be prevented.
- The source of the spill must be identified and removed by closing taps, valves or plugging holes or openings (whichever is applicable);
- If large spills occur and absorbent booms prove not to be sufficient to contain the spill, soil bunds or pre-packed sand bags may be used.
- All entrances to surface drains, trenches and stormwater canals must be blocked using pre-packed sand filled bags and/or absorbent booms or, if applicable, soil booms or diversion trenches must be created using spades from the spill-kits.
- All excess spillage should be pumped, scooped or mopped up and placed in clearly marked hazardous waste bins.
- In cases of smaller spills where containment with booms are not necessary, suitable absorbent fibres from the spill kits must immediately be used to absorb the remaining spillage from the concrete or other non-tarmac surfaces.
- The used fibre, fibre booms and any contaminated rags, etc. must be placed into clearly marked hazardous waste bins, and must be removed as hazardous waste by an approved contractor.

Spills on tarmac surfaces

Spills should be cleaned immediately because certain chemicals i.e oil and diesel, soften the tar surface.

- If a spill occurs outside of a bunded area, the spill must immediately be contained to as small an area as possible.
- The spread of the spill must be prevented.
- The source of the spill must be identified and removed by closing taps, valves or plugging holes or openings (whichever is applicable);
- If large spills occur and absorbent booms prove not to be sufficient to contain the spill, soil bunds or pre-packed sand bags may be used.
- All entrances to surface drains, trenches and stormwater canals must be blocked using pre-packed sand filled bags and/or absorbent booms or, if applicable, soil booms or diversion trenches should be created using spades from the spill-kits.
- All excess spillage should be pumped, scooped or mopped up and placed in clearly marked hazardous waste bins.
- In cases of smaller spills where containment with booms are not necessary, suitable absorbent fibres from the spill kits could immediately be used to absorb the remaining spillage from the tarmac surfaces.
- The used fibre, fibre booms and any contaminated rags, etc. must be placed into clearly marked hazardous waste bins, it must be removed as hazardous waste by an approved contractor.

Spill response on Water

The principals to be followed for a spill response on Water are the same as those described above, but in addition the EC will consider;

- The spread of the spill must be prevented.
- The source of the spill must be identified and removed by closing taps, valves or plugging holes or openings (whichever is applicable);
- Floating absorbent booms must be used, if possible, to contain the spill to as small an area as possible on the water surface.
- If practical, scoop as much spillage as possible from the water surface into suitable holding containers.
- Suitable absorbents must be applied onto the spill in the water, which must manually be removed once the spill substance has been absorbed.
- The used fibre, fibre booms and any contaminated rags, etc. must be placed into clearly marked hazardous waste bins, and must be removed as hazardous waste by an approved contractor.
- Any recovered chemicals must be pumped, stored or transferred from the holding containers to either waste containers, specially marked for this purpose or collection tanks until removed by an approved waste or recycling contractor.

10. Administration

Spill Reporting

- All spills no matter the size/quantity must be reported to the Environmental Officer.
- An incident notification report will be circulated within 12 hours of the spillage
- The spillage will be investigated by the Environmental Officer. The detailed report is to be submitted within 48 hours of the incident.
- The detailed report must include the following aspects:
 - Area of spillage
 - Responsible person
 - Sub-standard act leading to spillage
 - Source/origin of spillage
 - Classification of spillage
 - Mitigation measures/steps taken to clean the spillage
 - Precautionary measures/steps put in place to avoid a re-occurrence of spillage
 - Follow up inspection date

11. Follow-up actions

All spills must be investigated to determine the possible causes as soon as the situation is brought under control. From the investigation, conclusions must be drawn to limit the occurrence of such spills. The EC shall;

- Do a follow up inspection to ensure cleanup was done effectively
- If the spillage is re-occurring:
 - Assess what can be done to stop it

- The time period this will take
- Expected volumes
- Initiate repair works
- Keep in constant communication with the Department Manager until clean-up/repair works has been completed satisfactorily; and
- Hold a follow up meeting to review actions taken with a view to enhancing future spill response and control.

12. Storage and Disposal of Debris

Debris is classified as contaminated absorbents, remaining spilled product, vegetation, grass, weeds etc. accumulated during and after clean-up operations of an impacted environment.

As stipulated above, all contaminated waste will be disposed of in a clearly marked hazardous waste container/bin for removal by an approved waste or recycling contractor.

- Proof of safe disposal of any hazardous substance/waste is required.
- Records must be kept on site at all times.
- Records must be kept by the ESM.

13. Rehabilitation of Impacted Area

Site rehabilitation policy will be governed by the location and level of impact.

14. Spill Equipment and Materials

The primary spill response equipment and materials are listed below. The use of this equipment for spill response will depend on gravity and the magnitude of the spill.

- Sorbent Sheets or sawdust
- Pumps
- Jerry Cans/Drums
- Diesel Generator
- Personal Protective Equipment
- Waste Oil Tanks
- Communications Equipment

15. Management Review

This procedure shall be subject to a management review annually and following a major spill event. The reviews shall be recorded.

16. Document Change Record

A	As result of incidents	B	As result of audit findings
C	Changes in operating procedures	D	Changes in legislation
E	Changes in technology	F	Changes in machinery / equipment
G	Result of risk assessments	H	Change in training requirements
I	New Document format	J	Small changes
K	To integrate a special instruction into the document control system		
Date of Change		Revised Item	Reason

EXAMPLE:
ENVIRONMENTAL EMERGENCY PROCEDURE

	Prepared By	Reviewed By	Approved By	Final Approval By
Name				
Designation				
Signature				
Date				

1. PURPOSE

To establish a procedure to guide actions required and to facilitate efficient response to an emergency event or situation on site.

2. SCOPE

To ensure that the mentioned site is prepared in case of an Emergency and includes the periodic testing of the emergency procedures, the periodic review of the procedures, particularly after an accident or emergency situation.

REFERENCES:

- ISO 9001:2008 Quality Management Systems - Requirements
- ISO 9004:2000 Quality Management Systems – Guidelines for Performance Improvement
- ISO 14001:2004 Environmental Management Systems – Requirements
- OHSAS 18001:2007 Occupational Health and Safety Management System Requirements
- OHS Act (No 85 of 1993) Construction Regulations (July 2003).
- Veld and Forest Fire Act (No. 101 of 1998) (fire prevention/control)
- SPILL PROCEDURE: E&C TWR MS 010_Hazardous materials storage and handling

3. DEFINITIONS, ACRONYMS AND ABBREVIATIONS

- MAS - Management System
- CDC - Custodian of documentation
- OHS Act - Occupational Health and Safety Act (85 of 1993)
- OHSAS - Occupational Health and Safety Assessment Series
- SHE - Safety, Health and Environment
- EMS - Environmental Management System

Emergency Incident will include;

- General – Information on local services and Site management posted in areas on site.
- Fire – any situation which could be contained.
- Fire Prevention – To prevent any situation where there is a risk of Fire.
- Fire Response and evacuation
- Explosion – involving flammable substances or electrical apparatus
- Chemical Fuel Spill – Any spillage of a liquid or chemical that could be contained
- Flooding- Any area that is in the line of flooding stormwater

- Fatal or serious incident
- Spillage of hazardous materials

4. RESPONSIBILITIES

Emergency Controller

In the event of a serious incident where intervention is required by emergency response teams the emergency controller assumes overall control to ensure actions are coordinated to reduce the effects of the emergency.

The emergency controller is responsible to communicate with external and internal emergency teams ensuring that clear status reports are available on the situation;

- ✓ type of incident,
- ✓ location of incident,
- ✓ possible number of injuries and types,
- ✓ Evacuation status

After notification of a possible emergency the emergency controller will:

- ✓ Proceed to Main Site Offices in the laydown Area and based on information available assess the situation and direct all activities.
- ✓ If deemed necessary to evacuate the premises then instruct the Site evacuation marshals on the conditions and evacuation status.
- ✓ Should the emergency involve a hostage or captive situation or where weapons are involved an immediate evacuation must be ordered of the area. No person may negotiate or attempt to attack the perpetrator. Security Breach and falls in line with the security procedure.
- ✓ Ensure the Laydown area or Site Office receptionist has notified the required external emergency response teams.
- ✓ If injuries are reported direct First aider to the locations where needed. This may only be done if the first aider's own safety will not be at risk.
- ✓ Notify the Authorities of the emergency and provide specific details.
- ✓ Communicate with Municipal Emergency Response team coordinator on status of emergency.
- ✓ Hand over "fire file" to Emergency Services Control Officer and then proceed to the Assembly point.
- ✓ Co-ordinate evacuation activities – collect and collate Assembly point attendance registers, communicate with Emergency Services Control Officer on status of missing persons.
- ✓ Ensure that records of all casualties are available and passed on to the Human resources representative. Names of the casualties may not be released to any source until their next of kin have been notified.
- ✓ Liaise with Appointed Management Representative to provide details of the nature of the emergency and casualties.
- ✓ The emergency controller is not responsible for releasing any information to the public or media, the controller may merely confirm an incident has occurred and that a statement will be issued by an appointed ASSMANG representative.
- ✓ When the emergency has stabilized the emergency controller may on the advice of the Emergency response team commander declare the all clear.

- ✓ If employees are allowed back into the building the emergency controller will coordinate this with the evacuation marshals.
- ✓ Should the Emergency Response commander require a full evacuation that is away from the building then the Emergency controller will coordinate this with the evacuation marshals.
- ✓ Where the emergency results in permanent damage to the buildings the emergency controller will along with the Contingency plan manager notify employees of further action to be taken.
- ✓ In the case of a spill that can be contained the emergency response commander will delegate the spill reaction unit to take action in the event of a spill to ensure minimum contamination.
- ✓ The emergency controller is responsible to ensure the emergency plan is reviewed from time to time to ensure actions remain current.

Evacuation Marshals

The evacuation marshal will be notified of an emergency in one of the following ways:

- Contacted directly by persons discovering incident
- Floor receptionist will notify marshals via telephone system
- Emergency controller will contact marshals.
- On notification of an emergency the following actions are required:
 - The evacuation marshal will assume overall control of the Site area allocated to them.
 - An assessment of the situation will take place to determine action as appropriate, unless the emergency controller gives the direct instruction to immediate evacuation or partially evacuation of the Site area.
 - Should the emergency involve a hostage or captive situation or where weapons are involved an immediate evacuation must be ordered of the area. No person may negotiate or attempt to attack the perpetrator.
 - If there are injured persons the first aid assistance will be required, the emergency controller will be notified and first aid assistance will be sent to the required location if this can be achieved safely.
 - Arrangements will be made to guide the first aider or emergency repose team to the location of the injured persons.
 - The emergency controller will be informed of the nature and extent of the emergency, which areas, if any, should be evacuated and safest escape routes to be taken.
 - All personnel not required for essential duties are directed to the relevant emergency exits and assembly points outside.
 - A final sweep will be made of the floor or site area to ensure all persons have evacuated, this may only be completed if this action will not endanger the evacuation marshal.
 - When the evacuation marshal is satisfied that the floor and site areas are cleared then they proceed to the Assembly areas, to collect roll call lists which must be passed on to the Emergency controller.
 - The evacuation marshal shall assist in arranging to have casualties removed to hospital.
 - Where possible the marshal will assist appointed persons establish the cause of the incident and record relevant facts.

First Aid

Only trained persons with a valid first aid certificate may be appointed as a first aid team member.

The first aider may be notified of an incident by:

- The injured person or a colleges
- The Site receptionist
- The Emergency Controller or evacuation marshal

On notification of an emergency the first aider will respond by:

- If the injured person comes to the first aider then an assessment of the injury should be made. Where of a minor nature then treat and record in first aid register. If more serious treat and report to ground floor reception and request assistance.
- Remain with injured until help arrives.
- Where the emergency is of a more serious nature where emergency response teams are required the first aider may be require to provide first response assistance until the paramedics arrive:
- The first aider proceeds to the scene of incident with their first aid kit.
- An assessment of the situation is made to ensure the first aider is not endangered before attempting to render first aid assistance.
- First Aid assistance is rendered as required. Where assistance is required then the Evacuation Marshall and/or floor receptionist will be notified.
- Where possible the first aider remains with the injured and then hands over the injured to the emergency response team.
- If required to evacuate the Evacuation marshal will notify the first aider – after evacuating to assembly point the first aider will standby to render any first aid if so required and assist in arranging for casualty evacuation
- If casualty evacuation is required the first aider will assist in establishing and recording as many facts about the incident as possible.
- In the event of a fatal accident, care must be taken not to disturb any objects involved before the arrival of an inspector – such action may only be taken to prevent further accidents or to rescue persons from danger.

Receptionists

The receptionist plays a crucial role in the successful implementation of the Emergency Procedure of the site Office. This person is required to remain calm to ensure clear communication is provided between the emergency response teams.

The receptionist should remain at the station until instructed to evacuate. He / She must not endanger their own lives so should assess the situation and if believing they should evacuate then proceed to the Assembly point.

On being informed of an emergency the receptionist will:

- Contact the Evacuation Marshal and First Aider stating clearly what the emergency is.
- Receptionist is to contact the site manager to keep Him informed of the situation.
- Upon instruction from the Emergency controller the receptionist, if so instructed by a senior member of management activate the fire alarm.
- If the alarm was not raised by the emergency controller then they must be notified of the nature and extent of the emergency.
- The receptionist must close down all switchboards for all calls except those related to the emergency.

- The receptionist will standby for instructions and then contact relevant Emergency Response services as required.
- Standby for instruction from the Evacuation Marshal to evacuate to relevant assembly point when instructed to do so.
- Where the incident involves injuries or a medical emergency the following applies:
 - Contact the relevant first aider and direct them to the location of the emergency and await further information.
 - The receptionist is to contact the site manager and notify of situation and possibility an emergency response team may be required.
 - If required then the He / She will be the only person to notify the emergency response service required.
 - Liaise with the Responsible Manager and inform of the nature of the emergency and casualties.
 - No information will be given out to the press, next of kin or any other person, other than through the appointed persons.

Duty Security Officer

Normal Working Hours

On hearing the alarm or if the security officer is informed of an emergency event:

- The officer will Contact the Receptionist to inform them of the situation on hand.
- If the Security Officer is reporting the incident then clear information on status of emergency must be passed on to the receptionist.
- Exact location
- Type of emergency
- Access to and from the Site Laydown area and construction Yard must be restricted to all vehicles except Emergency Response Vehicles.
- The security officers will standby inside the entrance to the site and await further instruction.
- The security officer will be required to arrange for the gate to the assembly area is opened. Contact must be made with security personnel to ensure clear access is provided.

After Hours

- On discovery of an emergency the security officer will telephonically contact the Construction manager.
- Depending on the type of emergency the officer will contact the Emergency Response coordinator or the authorities telephonically.
- The construction manager will telephonically inform the site area manager and make arrangements for site visits.
- Exact information must be given on status of emergency.
- Restrict access to the Site to all vehicles except Emergency Response Vehicles and authority.
- A "fire file" will be given to the Fire chief when the Emergency Response Teams arrive on site.
- The officer will direct the response team to the location of the emergency.
- The Security officer or the Security Controller may give no information out to the media, next of kin or any other person, other than through the appointed persons.
- The Construction manager will decide the extent of the communication to the project manager and line manager at early hours.

Persons discovering an emergency

- Any person who discovers a situation which may develop into an emergency the person is responsible to react in a calm and responsible way. Actions taken must ensure the most efficient actions can be taken to reduce the effects of the potential emergency:
- Should the emergency involve a hostage or captive situation or where weapons are involved an immediate evacuation must be ordered of the area. No person may negotiate or attempt to attack the perpetrator.
- The person must immediately notify the floor Receptionist who will, based on the nature of the incident contact the relevant persons.
- To assist in providing an efficient response the receptionist may request the reporting person notify the Department Head and/or Floor evacuation marshal
- If the person discovers a fire and has been trained to use a fire extinguisher they may attempt to extinguish the fire. This should not be attempted alone notify a colleague who will then report to the receptionist.
- Where electrical equipment is involved, switch off power supply, if this can be done safely.
- If there is an injury or medical emergency then inform the floor first aider and/ or Departmental Head:
- If the injury is of a serious nature the casualty must not be moved except where there is a possibility of further injury and this should only be done by the first aider.
- Do not remove any objects involved in the incident.
- Take note of the time and circumstances of accident after reporting the incident and if the situation requires then move out of the site office to the assembly point.

All Personnel

- On hearing the alarm all persons must remain calm and await instructions from the evacuation marshal unless the situation clearly requires immediate evacuation.
- All persons in the site office must terminate all telephone calls, this will free up the lines for emergency communication only.
- Unplug all electrical equipment if this can be done safely.
- Persons responsible for lap top computers and who are at the location of this equipment should close and take the lap top out of building with them.
- All persons working in the assembly hall will shut down and switch off all electrical and mechanical equipment and move to the assembly point.
- All persons in the eating facility will shut down all electrical appliances and leave their lunch boxes to move to the assembly point in an orderly fashion.
- All persons working at the batch plant area will switch off all electrical and mechanical equipment and move to the assembly point in an orderly fashion.
- All persons working on site will switch off all electrical equipment and leave their current activities and evacuate to the assembly area in an orderly fashion.
- If the emergency is only at the site laydown area all persons that is in the construction area will keep out of the laydown area and report to their direct supervisors.
- Move to the assembly points without panic; follow instructions from Evacuation Marshall where they are present.
- Move directly to the assembly point and be sure you are marked present on the roll call register.

- No information may be given out to the press, next of kin or any other person, other than through the appointed persons.
- Persons allocated as assistants to disabled persons must ensure they assist them to the assembly points
- At the assembly points if you are aware of any persons who have left the building or who were not present then this must be reported to the evacuation marshal.
- Wait at the assembly points for further instruction, if the all clear is given then move back to your work station. Report any out of the ordinary situations to the Department head or direct supervisor.
- Should a general evacuation be required from the assembly point then the Emergency response teams will guide all persons to a safe location.

6. Environmental Emergency

- Each operating area shall; periodically initiate a process to identify and record potential emergency situations.
- Actual Emergency situations shall be recorded and a formal response, with well documented mitigation measures will be held.
- The ability of the operating area to deal with an Environmental emergency should be tested frequently; this should be done by simulating environmental emergencies and recording the most appropriate management measures.
- There will be a supply of absorbent material on site in spill wheelie bins available in identified positions to absorb any emergency hydrocarbon (fuel/oil) spills as soon as possible after an occurrence, and where possible be designed to encapsulate minor hydrocarbon spillage.
- All Environmental incidents will be reported and recorded.

7. Training

- The Site office will endeavour to ensure all persons resident in the buildings and site is made aware of the requirements of the Emergency Procedures.
- Initial training with all personnel and then follow up training will be schedule annually to keep persons informed of any changes which may take place and ensure they remain mindful of requirements.

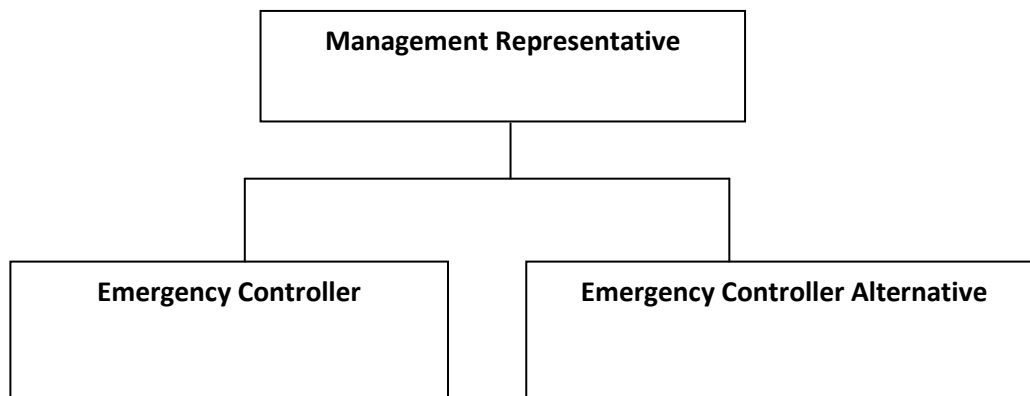
Emergency Drills

- Due to the nature of the operations full practice drills may be required to be done monthly. In sequence the emergency response drills will be executed at least 2 times a year.
- Full Fire – any situation which could or couldn't be contained.
- Explosion – involving flammable substances or electrical apparatus
- Fatal or serious incident
- Security breach resulting in person held captive or hostage.
- Spillage of hazardous materials and environmental incidents.
- Social unrest
- This exercise will be performed and a record made of this exercise, time date and attendance.

Prevention

- Hazard Avoidance: Office, Aisles, passages and on site thoroughfares to be kept clear of obstructions. Permanent aisles and passageways should be appropriately marked. The area around exits shall be maintained so that they are unobstructed and accessible at all times
- Fire protection: Portable fire extinguishers suitable to each areas conditions and hazards shall be provided and in a ready to use condition. They should be conspicuously located and mounted so as to be readily accessible. Fire extinguisher training to be provided to designated fire marshals.
- Environmental inspection: Site inspection to include observation and reporting on site-specific aspects relating to this guide-line.
- Evacuation: Appropriate evacuation procedures and a program of periodic drill shall be drawn up and maintained. The site manager shall provide a suitable Building and/or site evacuation procedure and take responsibility for the maintenance thereof.

8. Emergency Teams



EVACUATION MARSHAL	SITE RECEPTIONIST	FIRST AIDERS
OFFICE		
MECHANICAL FITTING TEAM		
FIRE		
STORES / INSTALLATION TEAM		
FIRE		

Emergency Call Out List

NAME	DEPT.	CELL	EXT. NO.

External Emergency Contact Numbers

SERVICE	Contact Number
POLICE BOMB SQUAD	10 111 / 10177
HOSPITAL AMBULANCE CASUALTY	10177
TRAFFIC	053 712 1086 (Municipality)
FIRE	
WATER 24 hours	083 457 8311 (Municipality)

ELECTRICITY	
POISON CENTRE	
ELECTRICAL	
GENERATORS	

9. Records

- Practice drill records
- Emergency Assembly point registers
- Emergency Procedures Communication.
- Simulation Checklist
- Environmental Reports from ESM & Site management
- Inspections and findings report.
- Site Compliment registers