	<b>Specification</b>	<b>Group Capital</b>
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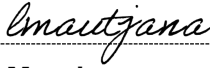
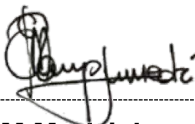
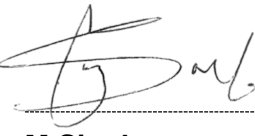
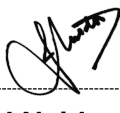
Compiled by	Supported by	Functional Responsibility	Authorized by
 <b>L Mautjana</b> <b>Senior Environmental Advisor</b>	 <b>M Mudzielwana</b> <b>Chief Environmental Advisor</b>	 <b>M Singh</b> <b>Environmental Manager</b>	 <b>J Naidoo</b> <b>Senior Manager SHEQ</b>
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**1. Eskom Project Manager:**

The responsible project manager is responsible for managing the contract and ensures that the Environmental specification is complied with. The PM also shall ensure tender process includes this Environmental specification. Eskom Project/site Manager is responsible for the overall management of the project on-site.

**2. Eskom Engineering Manager:**

The Project Engineer is the person responsible for ensuring that the designer fulfils their professional and legal obligations with respect to the implementation of the designs.

**3. Designer:**

The Designer is the person responsible for the overall management of the project design as well as ensuring the management of the compliance of the completed works to the design during and after construction on site.

The designer shall ensure compliance with the relevant environmental legislations, approved Environmental Authorisation's, EMPr's, permits/ approvals and other recommendations as stipulated in the Environmental Impact Reports or related specialists reports.

**4. Eskom Environmental Manager/Advisor/ Officer:**

The responsibility of the Environmental Manager/ Advisor/Officer is to provide assurance, advice, assistance and support to the Eskom Site/Project Manager in the management of the environmental issues on the project, which includes ensuring compliance to the Environmental Authorisation (EA) and the Environmental Management Programme (EMPr), Water Use License (WUL), Waste Management Licence (WML), Tree cutting permits, Vegetation disturbance/ clearance permits, Atmospheric Emission License (EAL), Eskom standards and any environmental compliance obligation/s applicable to the Project.

This position may be a permanent position on the Project Organogram, or it might be a service rendered by a line Division (which may be managed by a Service Level Agreement).

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## **1. Introduction**

Eskom Group Capital is committed to achieving and demonstrating sound Environmental management by controlling Environmental risks/impacts consistent with its SHEQ policy's objectives.

The aim of Eskom's adoption of Zero Harm as one of its values is to strive to, and achieve world class environmental performance, where all Guardians (employees and contractors) return home safely every day and without harm done to the environment we operate in.

The aim of the Environmental specification is to provide contractor/s with:

- The overarching framework within which the contractor is required to demonstrate compliance with certain high-level requirements for Environmental Management.
- Establish the manner in which the contractor is to manage Environmental risks in the execution of the contract; and
- The mandatory high-level project and scope of work specific Environmental requirements that the contractor needs to adhere to in order to align and demonstrate commitment towards the Zero Harm of the persons and environment for the duration of the contract.

The Environmental Specification shall be included with the tender enquiry documentation to ensure that the tenderer is timeously made aware of:

- Eskom's requirements, including
- Eskom's compliance obligations (including Funders SHEQ requirements if applicable);
- Activities that may have an impact on the direct and surrounding environment.

The contractor and their sub-contractors are expected to develop an Environmental Management plan (or incorporate Environmental Management into the SHE plan) which meets these requirements as well as the relevant applicable legislation.

This specification may not thoroughly address all aspects and impacts associated with any specialised activity or operation. In such situations, contractors shall be responsible for developing their own environmental management plans/procedures/manuals/work instructions/method statements to adequately address their specialised activities and scope of operation.

## **2. Supporting Clauses**

### **2.1 Scope**

This specification sets out the minimum legislative and organisational requirements for the Group Capital Projects. This specification sets out the minimum legislative and organisational requirements for construction work that is specific to the scope of work, site and type of project.

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## **2.2 Purpose**

The purpose of this document is to indicate to all potential types of contractors the Environmental requirements on the project, upon which their planning for the management of the Environment will be based on and thus produce their Environmental Management plan, i.e. the contractor's Environmental Management plan (or incorporated in their SHE plan). All contractors are required to execute their works in accordance with this document as well as other applicable legal documents.

## **2.3 Applicability**

This specification is applicable to all Principal Contractors, Sub-Contractors, Service Providers, Suppliers and all the activities and processes carried out for and on behalf of Group Capital where **construction work is performed**.

## **2.4 Effective date**

This specification shall be implemented from date of approval or signatures.

## **3. Normative/Informative References**

Parties using this specification shall apply the most recent edition of the documents listed below.

***Note: Where the date for revision of a document on the Eskom Document Centre website has passed, the document is still current, irrespective of its revision date having passed.***

### **3.1 Normative**

- [1] 32-727: Safety, Health, Environment and Quality Policy
- [2] Hazardous Substances Act, 1993 (Act 85 of 1993)
- [3] The Constitution of the Republic of South Africa (particularly Section 24 of the Bill of Rights)
- [4] National Environmental Management Act 107 of 1998, as amended
- [5] National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)
- [6] National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003)
- [7] National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)
- [8] National Environmental Management: Waste Act, 2008 (Act 59 of 2008)
- [9] National Water Act, 1998 (Act 36 of 1998)
- [10] Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)
- [11] Animals Protection Act, 1962 (Act No. 71 of 1962)
- [12] National Road Traffic Act, 1996 (Act No. 93 of 1996)

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- [13] National Heritage Resources Act, 1999 (Act No. 25 of 1999)
- [14] Fencing Act, 1963 (Act No. 31 of 1963)
- [15] Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
- [16] National Veld and Forest Fires Act, 1998 (Act No. 101 of 1998)
- [17] Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)
- [18] Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947)
- [19] Nature and Environmental Conservation Ordinance 19 of 1974
- [20] All relevant South African legislation (national, provincial, and local)
- [21] Applicable South African National Standards (SANS) for the scope of work/Project.
- [22] Applicable International Standards
- [23] Environmental Management Programme (draft dated October 2019 and future approved version)
- [24] Environmental Authorisation reference number (12/12/20/1142) dated 21/02/2012
- [25] Licenses/Permits
- [26] 240-62946386: The Vehicle and Driver Safety Management Procedure
- [27] 32-37: Substance Abuse Procedure
- [28] 32-245: Waste Management Standard
- [29] 32-124: Eskom Fire Risk Management
- [30] 240-43848327: Employees' right of refusal to work in an unsafe situation
- [31] 240-100979499: Personal Protective Equipment for work at Heights Specification
- [32] 32-520: Procedure Manual for Performing Occupational Health and Safety Management and Environmental Management: Conducting EH&S Risk Assessment
- [33] 32-123: Emergency Planning
- [34] 32-726: SHE Requirements for the Eskom Commercial Process
- [35] 32-524: Manual, Developing a SHE Specification
- [36] 32-1126: Eskom Smoking Policy
- [37] 32-1134: Access Control at Eskom Premises
- [38] 240-44175132: Eskom Personal Protective Equipment Specification (PPE)
- [39] 32-477: Safety, Health and Environment Training and Development Procedure
- [40] 32-736: Eskom Land and Biodiversity Policy
- [41] 32-246: Work instruction for Reporting on Environmental Expenditure and Income

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[42]240-13307117: Environmental Incident Management Procedure

[43]32-815: Land and Biodiversity standard

[44]240-701725/32-247: Vegetation management and maintenance within Eskom Land, servitude, and rights of way

[45]240 – 99022571: Environmental Emergency Preparedness and Response

[46]WTB003: Management of Protected and Indigenous Vegetation

[47]240 – 79588146: Transportation of hazardous goods

[48]240 – 83895653: Environmental training, awareness, and competence procedure in Accordance with ISO14001 environmental Management Systems requirements

[49]240 – 101685878: Environmental Communication Procedure

[50]240 – 44175038: Control of Non-Conforming Product or Service Procedure

### **3.2 Informative**

***Note: The following is a list of documents that can be used as a guide in order to meet legal and Eskom requirements***

[51]ISO 14001:2015, Environmental Management System Requirement

[52]Relevant South African National Standards for the task/Project.

## **4. Definitions**

For the purposes of this Specification, the following definitions shall apply:

Borrow area means any areas within designated boundaries, approved for the purpose of obtaining borrows material. This mining activity is subject to a mining permit issued in accordance with the Mineral and Petroleum Resources Development Act 28 of 2002.

Borrow material means any material, be it gravel, sand or soil obtained from designated areas for use as bedding material or fill. It does not include rock or stone or any material obtained from commercial sources. This mining activity is subject to a mining permit issued in accordance with the Mineral and Petroleum Resources Development Act 28 of 2002.

Borrow pit means the excavated pit in a borrow area. This mining activity is subject to a mining permit issued in accordance with the Mineral and Petroleum Resources Development Act 28 of 2002.

Botanical specialist for the purposes of this Specification means a specialist suitably qualified to deal with the type of vegetation occurring in the affected environment. This should be the specialist who undertook the botanical investigation as part of the Environmental Impact Assessment (EIA), or where he/ she is unavailable, a suitable replacement identified by the employer.

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Clearing means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified.

Contaminated water means any water contaminated by chemicals, soil, and effluent due to the contractor's activities, e.g. concrete water, diesel refuelling, runoff from equipment, construction camps, and ablution facilities and personnel wash areas.

Dangerous goods means goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards.

Demolish means the demolition and complete removal and disposal of buildings, sheds, poles, concrete and any other objects and structures.

Environment means the surroundings within which humans exist and that are made up of:

- i) The land, water and atmosphere of the earth;
- ii) Micro-organisms, plant and animal life;
- iii) Any part or combination of i) and ii) and the interrelationships among and between them; and
- iv) The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being (*i.e.* the social environment).

Environmental Authorisation means the project authorisation issued by the Department of Environmental Affairs, Forestry and Fisheries (DEFF) in terms of the National Environmental Management Act 107 of 1998 (NEMA), and any amendments thereto.

Establishment period means the period that commences from the time of actual planting of vegetation or revegetation until at least six months after planting.

Flood plain means the area encompassed by the 1:100 year flood line.

Grubbing means the removal and disposal of roots and stumps of trees and vegetation already cleared.

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Hazardous substance means a substance governed by the Hazardous Substances Act, 1973, as well as the Hazardous Chemical and Substances Regulations. In addition, any other substance that, in the reasonable opinion of the employer, can have a deleterious effect on the environment will be regarded as a potentially hazardous substance.

Heritage resource as per the provisions of the National Heritage Resources Act (No 25 of 1999), means those heritage resources that are of cultural significance or other special value for present and future generations, and which are accordingly considered part of the national estate. In this regard, the national estate includes those items identified in terms of Section 2 of the Act.

Heritage specialist for the purposes of this specification means a specialist suitably qualified to assess, evaluate, manage and advice on heritage resource. For example where the resource is an archaeological artefact or site, the heritage specialist would be an archaeologist and where it is a fossil the specialist would be a palaeontologist.

Indigenous vegetation means vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

Invasive alien vegetation means vegetation, which either does not naturally occur in the country and/or region or which under certain conditions proliferates and becomes problematic since it outgrows other plants and may represent a significant maintenance cost.

Maintenance period means the period after the establishment period up to and until the end of the defects liability period or as prescribed by the employer, during which the contractor shall be responsible to maintain the vegetation.

Method Statement means a written submission by the contractor to the employer in response to this specification or a request by the employer, setting out the equipment, plant, materials, labour and method the contractor proposes using to carry out an activity identified by this specification or the employer when requesting the Method Statement, in such detail that the employer is able to assess whether the contractor's proposal is in accordance with this specification and/ or will produce results in accordance with this specification.

The Method Statement shall cover applicable details with regard to:

- i) Construction procedures;
- ii) Plant, materials and equipment to be used;

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- iii) Transporting the equipment to and from site;
- iv) How the plant/ material/ equipment will be moved while on site;
- v) How and where the plant/ material/ equipment will be stored;
- vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- vii) Timing and location of activities;
- viii) Compliance/ non-compliance with this specification; and
- ix) Any other information deemed necessary by the employer.

Natural vegetation means all existing species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on the site.

No-go areas mean areas outside of the approved and demarcated working area/ footprint where no construction activities are permitted.

Oil Separator means a trap that separates oil from the water and prevents oil from being transported from the Works into watercourses and water bodies.

Pollution Incident means any incident that may or has caused damage to or the contamination of the natural environment.

Reasonable means, unless the context indicates otherwise, reasonable in the opinion of the employer after he has consulted with a person, not an employee of the employer, suitably experienced in environmental management practices.

Settlement Ponds means ponds that retain water from the Works laden with sediment, suspended solids or other matter for a sufficient period for the sediment/ suspended solids/ matter to settle.

Sensitive area means any area that is denoted as sensitive by this specification or employer due to its particular attributes, which could include the presence of rare or endangered vegetation, the presence of heritage resources (e.g. archaeological artefact or graves), the presence of a unique natural feature, the presence of a watercourse or water body, the presence of steep slopes (in excess of 1:4) *etc.*

Slope means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units.

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Solid waste means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. Plastic packets and wrappers) in a solid state.

Spoil means excavated material, which is unsuitable for use as material in the Works or is material, which is surplus to the requirements of the Works.

Topsoil means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential and composition of the soil.

Watercourse means:

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermittently;
- (c) a wetland, lake or dam into which, or from which, water flows; and
- (d) any collection of water which is so declared to be a watercourse as made in the National Water Act, and a reference to a watercourse includes, where relevant, its bed and banks.

Water body means body containing any form of water and includes dams and wetlands, whether ephemeral or permanent.

Wetland means any area that is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil. Specifically, an area is classified as a “wetland” if it meets at least one of the following criteria:

- i) The area predominantly supports hydrophytes, at least periodically;
- ii) The substrate(soil) is predominantly undrained hydric soil; and/ or
- iii) The substrate is non-soil, and is saturated with water or covered by shallow water at some time during the growing season.

Works means the Works to be executed in terms of the contract and in accordance with this specification.

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Working Area means the land and any other place on, under, over, in or through which the Works are to be executed or carried out, whether permanent or temporary, and any other land or place made available by the employer in connection with the Works. The Working Area shall include the site office, construction camp, stockpile and laydown areas, batching areas, storage areas, all access routes and any additional areas to which the employer permits access. This term can be used interchangeably with “construction area” as approved as per section 6.8 of this document.

## 5. Abbreviations

Abbreviation	Explanation
EA	Environmental Authorisation
ECO	Environmental Control Officer
EO	Environmental Officer
SEA	Senior Environmental Advisor
EM	Environmental Manager
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
GC	Group Capital
DEFF	Department of Environmental Affairs, Forestry and Fisheries
DWS	Department of Water & Sanitation
DMRE	Department of Mineral Resource and Energy
EAPASA	Environmental Assessment Practitioners Association of South Africa
HCS	Hazardous Chemical Substances
HWC	Heritage Western Cape
ISO	International Organisation for Standardization
SDS	Safety Data Sheet
SOW	Scope of Work
NEMA	National Environmental Management Act 107 of 1998, as amended
NWA	National Water Act (Act No. 36 of 1996), as amended
NQF	National Qualifications Framework
OHS Act	Occupational Health and Safety Act No. 83 of 1993
SACNASP	South African Council for Natural Scientific Profession
SANS	South African National Standards
SAQA	South African Qualifications Authority.
SAQCC	South African Qualification and Certification Committee

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Abbreviation	Explanation
<b>SHEQ</b>	Safety, Health, Environment and Quality
<b>WUL</b>	Water Use License

## **6. Environmental Management**

### **6.1 GENERAL**

This section covers the requirements for controlling the impact of construction activities on the environment. Environmental management is concerned not only with the results of the contractor's operations to carry out the Works but also, and most importantly, with the manner in which his operations are carried out. It is thus a requirement that the contractor including (suppliers, sub-contractors, consultants (all tiers) and consultants etc.) that are contracted by the contractor in relation to the project scope shall comply with the environmental requirements on an ongoing basis. The Contractor shall comply with;

- All relevant laws, environmental legislation and regulations, conditions of environmental approvals, specialist studies, any other permit & licenses and employer Policies and Procedures or standards.
- The Principal contractor shall undertake the constructability reviews of all permit and licenses including but not limited to final EIA reports, Specialist reports, Designs Approval and all available Amendments of the projects prior for commencement. The contractor Environmental Manager and/or Officer shall take a special workshop twice (2) a year to ensure anyone or subsidiaries working or performing works on behalf of employer understand all permit and licenses of the project development.
- Where Oversight is identified and advisory from contractor EM/EO shall be communicated to employer PM/EM/EO of the Projects environmental permit and license related issues and /or the legal requirements and a Plan and/or Memo'
- Where permit and licenses requirements is confirmed and deemed necessary, the contractor EM/EO shall apply for relevant permit and licenses to allow the smooth of construction development until he/she has receive the approval or authorization applied for.

The contractor shall take full responsibility for protecting the natural environment and eliminating or minimising the negative impacts of construction on the environment during construction. The contractor shall prevent or limit the occurrence of accidents which may cause damage to the environment, prevent or limit the consequences of such accidents and shall return the environment to a state as close as possible to its condition prior to any such accident occurring. Nothing specified herein shall relieve the contractor of any obligations or responsibilities in this regard.

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The requirements of this specification apply to all areas under the contractor's control, including but not limited to the working Area, laydown areas, the construction camp and offices, all access/ haul routes, all labour accommodation areas and sensitive areas.

## **6.2 ENVIRONMENTAL POLICY**

The contractor shall prepare and implement an Environmental Policy, in line with various statutory regulations and this specification. The Policy shall be submitted to the employer within 28 days after the commencement of the contract. Upon the employer's approval, the contractor shall immediately implement the policy and any amendments and keep it in operation for the full duration of the contract. The policy shall be communicated to all personnel and copies of the policy shall be prominently displayed at all places of work.

The contractor shall keep the policy updated in accordance with their Environmental Management Procedures and make amendments as required by the employer and the circumstances prevailing at the time. Upon such revision, the contractor shall immediately supply the employer with two copies of an updated Environmental Policy, which shall clearly indicate the revisions undertaken.

## **6.3 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)**

The contractor must provide a plan and demonstrate that they have developed, implemented, and maintained an EMS and shall be expected to align to site/ projects ISO 14001: 2015 requirements.

## **6.4 ASPECTS AND IMPACTS**

The contractor shall determine and develop the aspects and impacts register related to the scope of work. All aspects of the planning, manufacturing, pre-construction, construction and operational phases shall be considered. During the designing activity, the contractor must always take into account the product's life cycle perspective in mind. The following aspects must be taken into account during the design activity:

- The life of the product – it is important to design a product which last longer and therefore reduces the number of stoppages and possible by-product spillages (environmental incidents).
- The technological complexity of the product – the design should ensure that the product can easily get maintained and the spares are easily accessible.
- The design composition of the product – the product should not be designed by pollutant material e.g., Asbestos product as insulation material.
- End of life management of the product – the product should be designed by material which is recyclable or usable after the life of the product.

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## **6.5 GENERAL AND COMPLIANCE OBLIGATIONS**

The contractor shall consider all environmental legislation and may be required to obtain relevant environmental permits and licenses including but not limited to infrastructures from seaport to the power plant and the activities that may be missed and classified as listed activities.

All construction activities shall observe and obey any relevant environmental legislation and in so doing shall be undertaken in a manner that will avoid or minimise impacts on the surrounding environment, the public and adjacent landowners. The contractor shall absolve the employer of any and all risk or liability in terms of non-compliance with relevant statutory obligations during the construction phase.

The contractor shall construct and/ or implement all the necessary environmental protection measures in each area before any production work will be allowed to proceed. The employer may suspend the works at any time in terms the conditions of contract should the contractor, in the employer's opinion, fail to implement, operate or maintain any of the environmental protection measures adequately.

### **6.5.1 ENVIRONMENTAL MONITORING**

#### **6.5.1.1 CONTRACTOR SITE ENVIRONMENTAL OFFICER (EO)**

A suitably qualified person employed full time on site by the contractor shall be responsible for environmental monitoring and control on a daily basis for the duration of construction. This position shall be designated as the site Environmental Officer (EO). The EO shall be a person with adequate environmental knowledge to understand and implement requirements of this specifications, as determined by the employer.

The following minimum requirements shall apply:

- An environmental tertiary qualification;. National Diploma Environmental Science or management with (3 years of experience), BSc Environmental Science (3 years of experience), Honours degree (3 years of experience), BTech (3 Years of experience), National Diploma (Nature Conservation (5 years experience) or a related field;
- The EO should be registered with professional bodies; SACNASP and where required EAPASA.
- Working experience on construction site managing environmental compliance, monitoring and auditing;
- Working experience on reporting of environmental compliance;
- Working knowledge and relevant exposure to environmental management policies, standards, policies and legal compliance;

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- Good writing and verbal communication skills in English.

Among others, the duties of the EO will include:

- i. Liaison with the Environmental Control Officer (ECO); client EO, CM, PM
- ii. Monitoring of all of the Principal Contractor's, Sub-Contractors, Service Providers, Suppliers activities for compliance with the various environmental requirements contained in this specification;
- iii. Monitoring and auditing of compliance with other relevant environmental legislation;
- iv. Conduct environmental permit, licenses and general environmental awareness training sessions;
- v. Attend construction project management meetings;
- vi. Development of requisite Method Statements;
- vii. Instituting remedial action in the event of non-compliance;
- viii. Implementation and management of environmental protection measures;
- ix. Keeping a register of public complaints, recordings and addressing any public comments or issues;
- x. Routine recording and reporting of environmental activities on a daily basis;
- xi. Recording and reporting of environmental incidents according to Incident Management Procedure and;
- xii. Compiling an audit report, with clear corrective measures and interventions for improvement, every second week and circulating it to the employer's Environmental Officer for perusal.

The contractor's attention is drawn to the fact that, as a result of the statutory authorisation process in terms of the National Environmental Management Act (No 107 of 1998) an independent Environmental Control Officer (ECO) will be appointed by the employer to monitor and enforce compliance by the contractor and his staff with the environmental requirements of this specification and approved licenses e.g. the EA./EMPr

#### **6.5.1.2 INDEPENDENT ENVIRONMENTAL CONTROL OFFICER (ECO)**

The employer shall appoint a suitably experienced, independent Environmental Control Officer (ECO) as required by EA and or EMPr. The ECO should be registered with professional bodies; SACNASP and where required EAPASA.

The contractor is expected to be available for ECO environmental compliance monitoring audit..

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### **6.5.1.3 ENVIRONMENTAL AUDITOR**

The employer shall appoint a suitably experienced, Environmental Auditor to audit the project environmental compliance with the conditions of the EA, EMP, WUL and other related Permit & Licenses if required.

The contractor is expected to be available for Environmental Auditor for environmental compliance monitoring, audit activities and the provision of evidence required by the Environmental Auditor and employer to prove environmental compliance to the environmental specification.

## **6.6 SITE MEETINGS**

Compliance with this specification shall be an item on the agenda of the monthly site meetings. The contractor shall attend the monthly site meeting and report on environmental performance.

When additional meetings/ site visits are called for environmental matters e.g. EMS audit, internal audits, site inspections by relevant competent authorities, the contractor shall avail the relevant individuals to support the audit/ meeting.

The Project/ Construction/ Contractor and Environmental Manager/ EO shall be updated monthly on total personnel/ contractor numbers on site so that adequate environmental services can be planned, especially if construction ramp up is required. Environmental resources i.e. water, waste, sewage, ergonomics, congestion and construction personnel needs to be planned well in advance and should be addressed at management meetings.

## **6.7 ENVIRONMENTAL TRAINING**

The contractor shall ensure that all of his employees, and those of his Sub-Contractor's, attend environmental awareness Training course/s. The environmental awareness training material shall be structured to ensure that attendees:

- i. Acquire a basic understanding of the key environmental features within the working area and its immediate environment.
- ii. Understanding of the conditions of the EA, EMP, WUL, including but not limited to Specialists Reports with its recommendations, Designs Approvals and any other related Environmental Permit & Licenses requirements.
- iii. Become familiar with the environmental controls contained within this specification and prescribed licenses;
- iv. Receive pertinent, written instructions regarding compliance with the relevant environmental management requirements (viz. environmental "do's" and "don'ts"); and
- v. Are made aware of any other environmental matters as deemed necessary by the employer.
- vi. Logistics for the Environmental Awareness, including the date, time and location of the course/s, the course content and provision for refresher courses;

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The initial environmental awareness training shall be held before the Commencement date of construction activity, and subsequent to that, training shall be arranged for new employees coming onto site after the initial induction. Provision shall also be made for refresher training to be undertaken on a quarterly basis during the course of the Contract.

The contractor shall provide a suitable venue with facilities and ensure that the specified employees attend the environmental awareness training. The training shall be held during normal working hours. The contractor shall allow for sufficient sessions to train all personnel. The contractor shall provide proof of attendance by all of his employees in the form of a signed attendance register and the content shared on the day for each session.

## **6.8 LAYOUT DIAGRAM OR MAP**

The contractor shall provide a detailed site construction layout diagram or map, for approval by the employer and/or authorities where required prior to commencement or during construction. All available biodiversity information and conditions set out in the EA, EMP, WUL, design approval and related specialist reports shall be used in the finalisation of the map layout. Existing infrastructure must be used as far as possible.

The following minimum information shall be included and this may differ depending on legal requirements :

- Existing infrastructure on Site;
- Location of key infrastructure and services required for construction, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and laydown areas, hazardous storage areas (including fuels), the batching plant/s, designated access routes, equipment cleaning areas and the placement of any staff accommodation, cooking and ablution facilities;
- Location and structure of the fuel storage area, including the types of fuel and volume of storage container/s and the design and capacity of the bund;
- Location and layout of concrete batching facilities;
- Location and layout of the waste holding area and waste bins across the Site;
- Location and layout of temporary storm water management controls;
- All other associated infrastructure;
- All sensitive features e.g. critical biodiversity areas, ecological support areas, wetlands, storm water channels, wetlands, drainage channels as identified in specialist reports and the EIA;
- All “no-go” and buffer areas.

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## **6.9 SITE ESTABLISHMENT**

The contractor shall inform the employer of the intended actions and programme for site establishment and of the proposed location of the construction camp/s and provide him with a plan showing the fences, roads, construction area, yellow plant area, layout of the construction camp, ablution facilities including the positions of all buildings and infrastructure, stockpile and laydown areas, fuel storage for equipment areas, batching areas and other infrastructure. The construction camp shall occupy as small an area as possible, and no site establishment shall be allowed within 100m of any watercourse. A proposed construction camp shall be included in the method statement for approval by employer. The contractor shall only be permitted to disturb this area as part of construction work.

The site layout shall be planned to facilitate access for deliveries, facilitate future works and to curtail any disturbance or security implications for neighbours. The final site layout shall be subject to the employer's approval, which shall not be unreasonably withheld.

## **6.10 SITE DEMARCATION**

### **6.10.1 GENERAL**

The contractor shall maintain in good order all demarcation fencing and barriers for the duration of construction activities, or as otherwise instructed by the employer.

#### **6.10.1.1 CONSTRUCTION CAMP**

The contractor shall erect fencing around the construction camp and batching plants in accordance with this specification and the employer's instructions. The material and erection shall be in accordance with the provisions of this section, but the material need not necessarily be new. Where used materials are offered, they shall nevertheless be in a good condition and approved in advance by the employer. When no longer required, the fencing and gates shall be dismantled and removed.

#### **6.10.1.2 "NO GO" AREAS**

Unless otherwise agreed to by the employer, the contractor shall ensure that all activities are restricted to within the defined working Area. The areas outside of the defined working areas as well as any other areas identified by the employer or in this specification shall be regarded as "no go" areas. Insofar as he has the authority, the contractor shall ensure that no unauthorised entry, driving, stockpiling, dumping or storage of equipment, plant or materials, etc shall be allowed within the "no go" areas.

Unless demarcated with other fencing, the boundary of the working area shall be demarcated using "no go" fencing line as discussed and agreed by both the employer and contractor.

The employer may also identify patches of natural vegetation or any other natural/ sensitive or special features inside the working area as "no go" areas. These areas shall be demarcated using "no go" fencing or any method that may be agreed upon..

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Once construction within an area has been completed and the area has been rehabilitated, it shall be considered a “no go” area.

## **6.11 METHOD STATEMENTS AND/OR SCOPE OF WORK**

Unless indicated otherwise by the employer, the contractor shall among others, provide the following Method Statements no less than 07 days for approval prior to construction commencement date.

- i) Management of chemical substances, dangerous goods and flammable substances. This Method Statement shall include the Safety Data Sheets (SDS's) for all fuels, lubricants, paints, solvents and other chemicals to be used or stored on site;
- ii) Procedures for the filling and dispensing of fuel both at the fuel storage area and on site.
- iii) Preparation of concrete batching facilities including the methods employed for the mixing of concrete and the management of runoff water from such areas. An indication shall be given of how concrete spoil will be minimised and cleared;
- iv) Solid waste (refuse) control and removal of waste from the Site, including the number, type and location of rubbish bins, the manner and frequency with which the waste will be removed from site, obtaining and maintaining records of safe disposal certificates and a description of the identified registered disposal sites.
- v) Method for dealing with runoff and drainage, including a storm water management plan, mechanisms for the control of erosion and sedimentation, location and layout of settlement ponds (including the treatment of sludge), approach to the treatment and control of all contaminated return water to watercourses and approach to water quality monitoring;
  - Due to the removal of vegetation from the cleared areas flowing water will follow the path of least resistance causing scouring. Water in these scoured channels has increased velocity thus resulting in increased erosion and loss of soil.
- vi) Use of herbicides, pesticides and other poisonous substances, including means of storage;
- vii) Dust control, including methods to prevent dust generation and method to reduce dust where its generation is unavoidable;
- viii) Emergency procedures for spillages of hazardous substances, fire and serious accidents.
- ix) Procedure for delivery, transport and off-loading / transfer of natural gas and/ or river sand materials

The contractor shall not commence with the activity until the employer have approved the method statements. Except in the case of emergency activities, the contractor shall allow a period of three (03) calendar days for approval and acceptance of the method statements. Such acceptance shall not unreasonably be delayed or withheld.

The employer may require changes to a method statement if the proposal does not comply with relevant specification or if, in the reasonable opinion of the employer, the proposal may result in, or carries a greater than reasonable risk of damage to the environment in excess of that permitted by relevant specification.

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Approved method statements shall be readily available on site and shall be communicated to all relevant personnel prior to undertaking construction work. Where necessary the requisite training shall be given to the personnel to facilitate compliance with the approved method statement. The contractor shall carry out the works strictly in accordance with the approved method statements. Approval of the method statement shall not absolve the contractor from any of his/her obligations or responsibilities in terms of the contract and taking Environmental Duty of Care in terms of applicable legislations.

## **6.12. IDENTIFICATION AND MANAGEMENT OF SENSITIVE VEGETATION AND ANIMALS**

### **6.12.1 GENERAL**

At the commencement of the contract, the contractor shall identify the areas of natural vegetation that may be disturbed during the execution of the works. In case of any rare or endangered flora and fauna species are identified, a search and rescue operation shall be undertaken by the contractor as per the EA or EMPr requirements, or relevant legislations in consultation with the employer. Search and rescue shall be undertaken by a relevant specialist appointed by the contractor, as approved by the employer.

#### **6.12.1.1 SEARCH AND RESCUE**

The plants shall be transplanted to the location(s) indicated by the employer or specialist report and be fully maintained by the contractor in an on-site nursery or any location where species are housed (in agreement with the client) until they are utilised for revegetation.

#### **6.12.1.2 THE MANAGEMENT AND PROTECTION OF FLORA AND FAUNA**

The contractor shall implement the mitigation measures as stated in the EMP to manage and maintain the indirect impact resulting from the construction activities. The contractor shall ensure that the working area is kept clean, tidy and free of rubbish that would attract animal pest species, and that no feeding of animals occur.

#### **6.12.1.3 CLEARING OF VEGETATION**

No clearing of trees or vegetation shall occur prior to the contractor obtaining written permission from the employer, who shall designate in detail the exact areas to be cleared and the time at which it shall be done.

The contractor shall ensure that the clearance of vegetation is strictly restricted to that required to facilitate the execution of the works. Any natural vegetation, particularly trees, within or immediately adjacent to the working areas, which do not require removal, shall be fully protected against damage. Vegetation clearance shall be restricted to the construction camp, approved access roads, approved stockpiling and laydown areas, batching plant sites and portions of the working area where vegetation interferes with construction activities.

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Site clearance shall occur in a planned manner, and cleared areas shall be stabilised as soon as possible. The detail of vegetation clearing shall be subject to the employer's approval. All cleared vegetation shall either be mulched and mixed into the topsoil stockpiles or disposed of at an approved disposal site.

Should fauna be encountered during site clearance, activities shall cease until such fauna have been safely relocated.

#### **6.12.1.4 STOCKPILING, REMOVAL AND DISPOSAL OF VEGETATION AND TREES**

All cleared vegetation shall be mulched and mixed into the topsoil stockpiles or disposed of at an approved disposal site as approved by the or employer. The disposal of vegetation by burying or burning shall be strictly prohibited. Failing this, logs shall be disposed of at an appropriate landfill site. Under no circumstances shall members of the public be allowed to collect logs from the working area unless approved by the employer.

#### **6.12.1.5 STRIPPING AND STOCKPILING OF TOPSOIL**

The contractor shall strip the topsoil from all areas of the working area where topsoil will be impacted by construction activities, including areas for temporary facilities, as directed by the employer. Topsoil includes the top 300 mm of soil (or to the depth of the bedrock where the soil is shallower than 300 mm) (the depth may change depending on geological location) and root material of cleared vegetation, for subsequent use during rehabilitation and re-vegetation. If the contractor fails to conserve topsoil as instructed, he shall obtain suitable substitute material from other sources, approved by the employer, without any additional payment.

Topsoil collected from different areas shall be stockpiled separately and replaced in the same areas from which it was taken. Furthermore, topsoil shall be stockpiled separately from subsoil.

Where possible, stockpiles shall be located on previously disturbed areas or in areas where they pose the minimum risk of causing further environmental degradation. Topsoil and subsoil stockpiles shall not exceed two (2) meters in height and shall be so placed as to occupy the minimum width compatible with the natural angle of repose of the material, and measures shall be taken to prevent the material from being spread over too wide a surface. Where required, appropriate precautions shall be taken to prevent the erosion and limit the compaction of the stockpiles. The contractor shall ensure that all stockpiles do not cause the damming of water or run off or are themselves washed away.

### **6.13 PROTECTION OF NATURAL FEATURES AND HERITAGE RESOURCES**

No material of special significance identified within the study area should be unearthed during construction activities.

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The contractor shall make provision for accidental discovery of further heritage resources. The contractor shall take reasonable precautions to prevent any person from removing or damaging any heritage resources (including but not limited to fossils, coins, articles of value or antiquity, graves and structures and other remains of archaeological interest) discovered on the Site, immediately upon discovery thereof and before removal. All works shall be suspended upon any heritage discovery. The Contractor shall inform the employer immediately of such a discovery and carry out the employer's instructions for dealing therewith. The area shall be cordoned off until the employer authorises resumption of the works in writing. The employer shall take all necessary actions to ensure that delays are minimised.

Upon notification by the contractor, the employer shall arrange for the removal of remains or graves to be examined by an appropriate heritage specialist as soon as practicable. Acting upon the advice of the heritage specialist, the employer shall advise the contractor of the required actions that comply with this specification and other relevant regulations.

#### **6.14 PROTECTION OF WATERCOURSES, WATER BODIES AND WETLANDS**

The contractor shall ensure that all watercourses and water bodies are protected from contamination or degradation as a result of his activities. All watercourses and water bodies shall be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the contractor's activities. In the event of a spill, prompt action shall be taken to clear the polluted or affected areas, and the employer shall be notified immediately.

The contractor shall not work within the flood plain or 1: 100 year flood line or any watercourses or waterbodies without the written approval of the employer as required for the execution of the work. The contractor shall not permit his employees to make use of any natural watercourse or waterbody for the purposes of swimming, personal washing and the washing of machinery or clothes.

No excavation or construction shall be permitted within any wetland area and streams unless authorised by relevant departments.

The contractor shall ensure that no construction equipment traverses any seasonal or permanent wetland. Where seasonally wet areas must be traversed, the contractor shall obtain the prior approval of the employer and shall ensure that this only occurs during the dry season.

Where any water abstraction is required from a watercourse or water resource (e.g. pumped from a dam or channel) the contractor shall obtain permission from the employer. Additional permits may be required prior to water abstraction e.g. water use license and/or general authorisation from Department of Water and Sanitation.

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## **6.15 PREVENTION AND CONTROL OF FIRES**

The contractor shall take adequate precautions to ensure that the fire hazard on and near the Site is managed. The contractor shall ensure that there is basic fire-fighting equipment available on Site at all times, and any fires that occur shall be reported to the employer immediately. The contractor shall ensure that the responsible firefighter is knowledgeable or trained with the use of the equipment. The fire breaks shall be established and well maintained throughout the site.

Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include the workshop and fuel storage areas, any areas where the vegetation or other material may likely cause the rapid spread of an initial flame. All designated eating areas shall include provision for a smoking area.

The contractor shall not be permitted to burn waste as a disposal method.

## **6.16 EMERGENCY PROCEDURES**

The contractor shall develop an Environmental Emergency Preparedness Plan (Environmental EPP). The plan shall among others include the management of the following:

- i. Hazardous chemical/ oil spills (causing water or environmental pollution/ damage);
- ii. Environmental incidents causing reputable damage to Eskom;
- iii. Fires including veld fires;
- iv. Cutting of protected trees and vegetation without a permit;
- v. Emergency animal interactions e.g. snakes, bees and spider bites.

The Environmental EPP may be integrated with the site Emergency Preparedness Plan. The Environmental EPP shall contain a list of local emergency contact numbers which includes contact numbers of the Eskom PM, Eskom Environmental Officer, Eskom Safety Officer and Emergency Oil Spill Contractors.

Emergency numbers shall be displayed on site and be readily accessible by all staff in case of an emergency.

## **6.17 ENVIRONMENTAL INCIDENTS**

All environmental incidents such as an oil spill, waste spill, pollution of water, property damage, snakebite, non-conformity, public complaints etc. shall be reported to Eskom PM and Eskom Environmental Officer immediately via telephone, email, etc.

A flash report shall be submitted by the contractor to Eskom within 24 hours as per the Eskom Environmental Incident Management Procedure 240-133087117.

Eskom believes that all incidents are preventable. The contractor shall therefore identify all hazards and risks on site that may result in an incident and control the risk accordingly to avoid incidents from occurring.

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In the event of a spill, the source of the spillage shall be isolated, and the spillage contained. The area shall be cordoned off and secured. The contractor shall maintain spill kits on site at all times and shall ensure that there is always an adequate supply of absorbent material available in the spill kits to absorb/ breakdown and, where possible, be designed to encapsulate minor spillage.

The contractor shall maintain a list of Emergency Response numbers in case deployment is required for uncontrollable incidents. The contractor is fully responsible and accountable for the management of their incidents.

## **6.18 TEMPORARY SITE CLOSURE**

If the site has to be closed for a period exceeding one week (7 calendar days), the contractor, in consultation with the employer, shall carry out a checklist procedure, which should as a minimum address the following:

### **Hazardous substances storage**

- i) Outlet secure/ locked;
- ii) Bund emptied (where applicable);
- iii) Fire extinguishers serviced and accessible;
- iv) Secure area from accidental damage e.g. oil spillage management
- v) Emergency and contact details displayed; and
- vi) Adequate ventilation.
- vii) Hazardous waste storage areas empties

### **Erosion**

- i) Wind and dust mitigation in place;
- ii) Slopes and stockpiles at stable angle; and
- iii) Revegetated areas watering schedules and supply secured.

### **Water contamination and pollution**

- i) Cement and materials stores secured;
- ii) Toilets empty and secured;
- iii) Refuse bins emptied and secured;
- iv) Drip trays emptied and secure (where possible); and
- iv) Structures vulnerable to high winds secure.
- v) Sedimentation management

### **Waste Management**

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- i) General and hazardous waste collected on site and bins empties
- vii) sewage waste removed off site

## **6.19 PLANT AND MATERIALS HANDLING, USE AND STORAGE**

The contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with this specification. The contractor shall ensure that these delivery drivers are supervised during off loading, by someone with an adequate understanding of the requirements of this specification.

Plant and materials shall be appropriately secured to ensure safe passage between destinations. Loads that pose a risk of dust generation or spillage during transit, including but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover. The contractor shall be responsible for any clean up resulting from the failure by his employees or suppliers to secure transported plant and materials properly.

All manufactured and/ or imported plant and material shall be stored within the contractor's camp. All stockpiling and laydown areas outside of the construction camp within the authorised area shall be subject to the employer's approval..

## **6.20 DANGEROUS GOODS AND FLAMMABLE SUBSTANCES**

### **6.20.1 SPILLAGE OF HAZARDOUS CHEMICAL SUBSTANCES**

- i. Safety Datasheets (SDS) shall be provided and available on-site, in an easily accessible location.
- ii. Method statements must be developed and approved by the employer regarding commissioning activities that involve any hazardous chemical or dangerous good.
- iii. Any spillages that occur shall be treated in accordance with the requirements indicated on the Safety Data Sheet (SDS), EA and EMPr, and Eskom requirements and any other relevant procedure that may be legally acceptable
- iv. Identify appropriate storage areas for stockpiling of materials, storage of hydrocarbons and storage of hazardous substances and ensure that these areas are appropriately prepared for their purpose;
- v. All oil / chemical spills shall be cleaned immediately with spill kit;
- vi. Oil traps must be removed regularly and remain free of debris;
- vii. Mobile oil and chemical clean-up kits must be available for accidental spills;
- viii. Drip trays which have the capacity to hold 110% of the oil / chemical shall accompany each and every heavy vehicle, machine, equipment (e.g. generator) and plant on site which poses a spill risk. Accommodation must be made for back-up drip trays in case of emergencies. Drip trays shall be fit for purpose;

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- ix. Oil based products and chemicals shall be stored in undamaged, sealed containers which are fit for purpose, labelled accordingly and has secondary containment up to 110% of the quantity in the container;
- x. Disposal of hazardous substances shall be done in terms of the relevant legal requirements;
- xi. Develop emergency protocols for dealing with spillages particularly where these pose a pollution risk or involve hazardous substances;
- xii. Compile and implement the necessary Method Statements, and undertake environmental awareness training of all staff.

## **6.21 HERBICIDES AND PESTICIDES**

Only herbicides registered by the Registrar as per the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947 may be used in the control of pests and weeds. The manufacturer's specification must not be deviated from.

Only registered Pest Control Operators (PCO) as per the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947 may apply herbicides. The PCO registration certificate shall be available on site for verification purposes.

An herbicide register must be kept detailing the chemical used, quantities on site and quantities used by the PCO. A copy shall be handed to the Eskom Project Manager / Environmental Advisor/ Manager on completion of the project / contract. The contractor shall strictly adhere to the manufacturer's specifications regarding applications rates, storage and safety precautions.

The leaching action, residual action, manner of application and the surrounding area (especially wetlands and crops) should be considered in the choice of chemical. This aspect must be carefully monitored when herbicides are applied as the slope of the ground together with the proximity of the stream to the substation site could cause leaching problems.

Unused chemicals shall not be disposed of on site, but shall be disposed of at a relevant licensed facility.

## **6.22 EQUIPMENT**

### **6.22.1 GENERAL**

The contractor shall be cognisant of the requirements of this specification in the selection and operation of his equipment, to ensure that environmental degradation is kept to a minimum. To this end, the contractor shall ensure that his equipment operators are made aware of the environmental requirements and any other reasonable controls.

In sensitive areas, wheeled equipment shall be used in preference to tracked equipment. Reasonable speeds, as specified, shall be maintained at all times, but particularly where construction activities are taking place near populated areas.

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### **6.22.2 EQUIPMENT MAINTENANCE AND STORAGE**

All vehicles and equipment shall be kept in good working order. Leaking equipment shall be repaired immediately or removed from Site.

Servicing of equipment on siteshall only be permitted in designated areas. Portable drip trays shall be used to collect the waste oil and other lubricants. Drip trays shall also be provided in construction areas for mobile equipment (such as compressors) and for "parked" equipment (such as excavators, loaders and cranes). Drip trays shall be inspected and emptied daily. Drip trays shall be closely monitored during rain events to ensure that they do not overflow. Where practical, the contractor shall ensure that equipment is covered so that rainwater is excluded from the drip trays. Oil waste from the drip trays shall be temporarily stored in drums located in a bunded area as required for fuel storage. These shall be removed on a regular basis to an oil-recycling centre and proof of disposal must be kept and made available for inspection.

Oil and diesel shall be skimmed off the sump water on a monthly basis and recycled or disposed of at an appropriately licensed recycling or waste disposal site.

### **6.23 BATCHING PLANTS**

The use of "ready-mix" concrete or cement is preferred above on-site batching plants. The use of on-site batching plants should only be considered if the sourcing of "ready-mix" concrete or cement is problematic.

The siting of batching plants shall take cognisance of the requirements of this specification and shall be subject to the employer's approval. The Contractor's attention is specifically drawn to the requirements related to hazardous substances, dust and noise control, site demarcation, site clearing and refuse and waste control. The contractor shall be responsible for obtaining the employer's approval prior to the siting and establishment of any batching plants.

No batching activities shall occur directly on unprotected ground. Batching plants shall be located on a smooth impermeable surface. No wastewater resulting from batching of concrete shall be discharged into the environment. To this end, either the batching area shall be bunded and sloped towards a sump or diversion berms shall be installed to direct all contaminated water to a temporary storage area or settling pond.

Empty cement bags shall be stored in weatherproof containers to prevent windblown cement dust and water contamination. Empty cement bags shall be disposed of on a regular basis via the solid general waste management system, and shall not be used for any other purpose. Unused cement bags shall be stored so as not to be affected by rain or runoff events. The contractor shall ensure that sand, aggregate, cement or additives used during the mixing process are contained and covered to prevent contamination of the surrounding environment.

The contractor shall take all reasonable measures to prevent the spillage of cement/ concrete during batching and construction operations. During pouring, the soil surface shall be protected using plastic and all visible remains of concrete shall be physically removed on completion of the cement/ concrete pour and appropriately disposed of. All spoiled and excess aggregate/ cement/ concrete shall be removed and disposed of via the **solid waste** management system.

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Where “ready-mix” concrete or cement is used, the contractor shall ensure that the delivery vehicles do not wash their chutes directly onto the ground, a designated wash area shall be sited with a bund and settling pond. The contaminated wastewater shall be disposed of at a licensed wastewater treatment facility.

## **6.24 PUMP MANAGEMENT**

Dewatering (removal of water found underground) of water resources are not permitted without a water use license. The Contractor shall notify the employer if this is required and develop a method statement for approval. Where dewatering is required, pumps shall be placed over a drip tray in order to contain fuel spills and leaks. The contractor shall take all reasonable precautions to prevent spillage during the refuelling of these pumps. The contractor shall ensure that none of the water pumped during any dewatering activities, is released into the environment without the employer’s approval.

## **6.25 AIR QUALITY**

No burning of waste material (vegetation, general waste) shall be permitted on site. Moderate vehicle speed shall be maintained on access roads to minimise or avoid dust pollution. Further adjustments to vehicle speed may be necessary to minimise dust pollution.

### **6.25.1 DUST CONTROL PROGRAMME**

A dust control programme shall be implemented by the contractor to maintain a safe working environment, minimise nuisance for surrounding residential areas, prevent damage to the natural vegetation of the area and protect topsoil. The contractor shall take all reasonable and appropriate measures to minimise the generation of dust because of his activities, and his dust control programme shall, as a minimum, address the following:

- i. Schedule of spraying water on dust prone portions of the working area, particularly gravel access roads, paying due attention to the control of runoff. High traffic sections shall either be paved or treated via the application of suitable dust suppressing agents;
- ii. Speed limits for vehicles on unpaved roads and minimisation of haul distances;
- iii. Measures to ensure that material loads are properly covered during transportation;
- iv. Schedule for wheel cleaning and measures to clean up public roads that may be soiled by construction vehicles;
- v. Minimisation of the area disturbed at any one time and protection of exposed soil against wind erosion, e.g. dampening with water, covering with straw or applying suitable dust suppressing agents;
- vi. Location and treatment of material stockpiles taking into consideration prevailing wind directions and location of sensitive receptors;
- vii. Reporting mechanism and action plan in case of excessive wind and dust conditions;

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viii. Access to non-potable water for dust suppression.

An appropriate number of water tankers shall be permanently available for the control of dust generation, and the contractor shall ensure that the sprays do not generate excess run off. There shall be sufficient water tankers of adequate capacity to enable the dampening of all working areas and access/ haul roads at least four times daily. During high wind conditions, the contractor shall comply with the EMP requirements, Air Quality Emission License, employer's instructions regarding additional dust management measures.

### **6.25.2 VEHICLE EMISSIONS**

All vehicles and equipment shall be kept in good working order and serviced regularly. Vehicles noticeably emitting excessive fumes will not be permitted to continue working on site.

### **6.26 NOISE CONTROL**

The Contractor's attention is drawn to the requirements of the following legal requirements (but not limited to):

- i. National Environmental Management Act, 1998 (Act 107 of 1998), and
- ii. Noise Control Regulations of the Environment Conservation Act (73 of 1989), gazetted on 10 January 1992 (GN. R.154).

Appropriate directional and intensity settings are to be maintained on all hooters and sirens, and the contractor shall provide and use suitable and effective silencing devices for pneumatic tools and other plant to reduce noise levels associated with his activities. The contractor shall restrict any of his operations that may result in undue noise disturbance to those communities and dwellings abutting the Site to the hours of 06h00 to 18h00 on weekdays and Saturdays or as otherwise agreed with the employer.

No amplified music shall be allowed on Site. The use of radios, tape recorders, compact disc players, television sets etc. shall not be permitted unless the volume is kept sufficiently low as to avoid any intrusion on members of the public or the landowner within range. The contractor shall not use sound amplification equipment on site other than in emergencies.

The Contractor shall ensure that environmental awareness and training for all employees includes the need to minimise noise. The contractor shall provide suitable ear protectors to all of his staff and others entering areas with high noise levels. Zones of risk shall be clearly identified with warning signs.

### **6.27 LIGHTING**

The contractor shall ensure that any lighting installed on the site for his activities does not interfere with road traffic or cause a reasonably avoidable disturbance to indigenous fauna, insects, surrounding communities or other users of the area. The following precautions should be considered:

- Motion infrared lighting;

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- Warm colour LED bulbs or yellow bulbs marketed specifically for reducing insect attraction.

## **6.28 EROSION AND SEDIMENTATION CONTROL**

The contractor shall conduct yearly **Rain Readiness** prior to the rainy season and undertake all reasonable measures to limit erosion and sedimentation due to the construction activities and shall include in the design of the site works measures to prevent such occurrences.

The Works shall be phased, and development staged so that stripped areas are kept to a minimum. The contractor shall ensure that the stabilisation of cleared areas is actively managed in order to prevent and control erosion during the course of construction.

Surface storm water shall not be allowed to be concentrated and to flow down cut or fill slopes, access roads or other areas prone to erosion without erosion protection measures being in place. Accordingly, the necessary temporary and permanent drainage works shall be installed as soon as possible.

## **6.29 ALIEN INVASIVE VEGETATION**

The contractor shall remove all alien invasive vegetation from the working area for the duration of the construction. On-going, annual alien plant management must be undertaken in the high and medium sensitivity sections of the servitudes. Key elements include: alien clearing must be undertaken by well-trained teams using the right equipment; all stems must be cut by hand (not heavy machinery); all cut stumps must immediately (within 5 minutes) be painted with a suitable herbicide that contains a visible dye (in order to prevent re-sprouting, and to ensure that all stems are painted); no spraying of herbicide; cut stems must be neatly stacked at the outside edges of the servitudes, or preferably removed from the servitudes/construction site to an approved organic waste dump site.

## **6.30 TEMPORARY SERVICES AND FACILITIES**

### **6.30.1 SITE STRUCTURES**

where possible site structures shall be of a temporary nature and shall be removed at the end of the contract. All site establishment components (as well as equipment) shall be located within previously disturbed areas where possible, and shall be positioned to limit visual intrusion on neighbours and to limit the extent of the area disturbed. The type and colour of roofing and cladding materials of the contractor's temporary structures shall be selected to reduce reflection and blend into the surrounding environs.

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### **6.30.2 SERVICES**

Temporary services, including power lines, shall be located in a manner which will cause the least disturbance to the environment. In particular, care shall be taken to ensure that the route alignment for temporary services avoids identified sensitive areas. Where possible, the contractor shall ensure that service infrastructure is accommodated within the same trench. All temporary services shall be subject to the employer's approval.

### **6.30.3 STOCKPILING AND STOCKPILE AREAS**

Plant and materials shall be stored within the demarcated construction camp or batching areas. Stockpiled materials shall be stored off the ground and care shall be taken to minimise disturbance to the vegetation and topsoil.

Stockpiles shall be so placed as to occupy the minimum width compatible with the natural angle of repose of the material, and measures shall be taken to prevent the material from being spread over too wide a surface. The contractor shall ensure that all stockpiles do not cause the damming of water or run off, or are themselves washed away.

The contractor shall ensure that material is not stockpiled within 100m of any watercourse. Stockpiles shall be placed so that watercourses are not polluted and shall not obstruct any storm water or drainage paths.

### **6.30.4 ACCESS ROADS**

Only designated access roads shall be used to access the working areas. If required, the employer shall, together with the contractor, negotiate access to the construction camp and working area with the affected landowner/s. The access agreement will be reduced to writing. Damage to the existing access roads because of construction activities shall be repaired by the contractor to the satisfaction of the employer, using material similar to that used in the original construction of the infrastructure where possible.

Where new access roads are required, these shall be subject to prior approval by the employer.

All temporary access roads shall be rehabilitated to their original (i.e. pre-construction) condition at the end of the contract, including ripping the disturbed area parallel with the contours.

All vehicle turning-areas shall be located within the working areas and shall be subject to the prior approval of the employer. The contractor shall ensure that horse and trailer vehicles transporting plant and materials only turn within the designated turning-areas, and not within cultivated lands or areas of natural vegetation.

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### **6.30.5 ABLUTION FACILITIES**

The Contractor shall provide adequate ablution facilities for his staff in the construction camp as per agreement with the employer. Mobile chemical toilets shall be provided at strategic locations within the working area, as directed by the employer. Acts of excretion and urination are strictly prohibited other than at the facilities provided. The ratio of the available toilets to the site staff at any particular location should not exceed 1: 15 and toilet papers shall be provided in all toilets at all times.

The contractor shall not install pit latrines or septic tanks at the construction site. Where mobile chemical toilets are utilised, the contractor shall ensure the following:

- i. Toilets shall be located within 100 m from any point of work but no closer than 100 m to any watercourse or water body;
- ii. Toilets shall be secured to the ground to prevent them from toppling due to wind or any other cause;
- iii. Toilets situated close to the site boundaries or within sight of residential areas shall be hidden behind screens or other cover as approved by the employer;
- iv. No spillage shall occur when the toilets are cleaned or emptied and the contents shall be properly stored and removed from Site to a licensed water treatment facility;
- v. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited;
- vi. Toilets shall be provided with an external closing mechanism to prevent toilet paper from being blown out;
- vii. Toilets shall be serviced on a regular basis (and as agreed with the employer) and emptied before long weekends and builders' holidays, and shall be locked after working hours; and
- viii. Proof of disposal is kept on site and available at all times.

### **6.30.6 EATING AREAS**

The contractor shall designate eating areas for his staff at all location within the working area where work is taking place. These eating areas shall be clearly demarcated and shall be provided with bins with lids. The contractor shall have an understanding of animal nuisances and management thereof e.g. baboons, rodent and other potential nuisance that large volumes of food can attract. The contractor shall ensure his employees do not consume meals anywhere other than at these eating areas and that noise is limited. The contractor shall ensure that the management and handling of food from purchasing to waste management is considered from an environmental, health, hygiene and nuisance perspective. All eating areas shall include provision for a smoking area.

### **6.31 WATER USE FOR CONSTRUCTION**

Water is a scarce resource in South Africa and water shall be conserved wherever possible. The contractor shall minimise the use of water and shall immediately attend to any wastage.

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Subject to the prior approval by the department and the employer, water for construction purposes may not be abstracted from watercourses/water bodies or agricultural sources in the surrounding area. Abstraction of water from a watercourse or water body will require a permit from the Department of Water and Sanitation, and abstraction from an agricultural source will require the owner's permission. The contractor shall be responsible for obtaining the necessary authority and landowner approvals prior to undertaking such abstraction. The contractor shall absolve the employer of any and all legal obligation and risk in this regard.

## **6.32 WASTE MANAGEMENT**

The management of waste on site shall be strictly controlled and monitored. The quantities of waste generated on site shall be minimised. Littering shall be avoided and no electrical waste (bits of wire, cables, wood pole, etc.) may be discarded on site.

The contractor shall provide sufficient weatherproof and scavenger-proof bins on Site to store the waste produced on a daily basis. All waste, including hazardous waste, must be labelled and stored until disposal is possible. Waste of any form shall not be buried, dumped or burned. Bins shall not be allowed to become overfull and shall be emptied regularly. The waste may be temporarily stored in line with relevant regulations

Waste storage areas shall be included in the Waste Management Plan and to be approved by the employer prior to commencement of works. Sorting, shredding, grinding, crushing, screening or baling general waste is not permitted.

Waste generators must ensure that the waste they generate is classified in accordance with SANS 10234 within one hundred and eighty (180) days, and that their waste is re-used, recycled, recovered, treated and/or disposed of within eighteen (18) months of generation.

Chemical toilets shall be serviced as and when required to prevent the overflow of sewage. All waste shall be disposed of at a registered waste disposal facility and waste receipts and documentation (including safe disposal certificates) shall be submitted to Eskom and records kept.

Deviation from any of the above requirements constitutes the need to obtain approval from the Department of Environmental Affairs.

### **6.32.1 WASTE MANAGEMENT PLAN**

The contractor will be expected to comply with the Eskom waste management standard and develop a waste plan.

The contractor must submit a plan that is related to the scope of works and the plan must include the following (but not limited to):

- i. The amount and type of waste that will be generated (Register);
- ii. The amount and type of waste that will be stored on site.
- iii. Measures to prevent pollution or ecological degradation (Procedure/ Method statement);
- iv. Measures or programmes to minimise the generation of waste and the final disposal of waste;

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- v. Targets for waste minimisation through waste reduction, re-use, recycling and recovery;
- vi. The period that is required to implement the waste management plan;
- vii. Methods for monitoring and reporting;
- viii. The waste class and rating in order to determinate correct disposal method for the waste and any other best practice that may be necessary to give effect to the requirements of the National Environmental Management: Waste Act and regulations passed thereunder;
- ix. Approved/ licensed waste disposal sites to be used;
- x. Identified compliance obligations.

### **6.33 ACCESS TO SITE**

The contractor shall ensure that access to the Site and associated infrastructure and equipment is off-limits to the public and unauthorised persons at all times during construction.

### **6.34 ACCOMMODATION OF TRAFFIC**

The contractor shall control the movement of all his vehicles and equipment including that of his suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic, are routed and operated in a manner that minimises disruption to other users and that all relevant laws are complied with. Unless otherwise stated, the speed limit on gravel or earth roads on the site and within 500 m of the Site shall not exceed a speed of 40 km/hr.

### **6.35 SURFACE EXCAVATIONS**

#### **6.35.1 SITE PREPARATION**

The contractor shall ensure that the measures specified for site clearing specifically as they relate to the identification and management of sensitive vegetation, clearing of vegetation and the stripping and stockpiling of topsoil, are implemented prior to the onset of earthworks.

#### **6.35.2 DUST AND NOISE**

The contractor shall ensure that the dust and noise control measures specified in this specification are implemented during excavation and blasting operations.

#### **6.35.3 EXTENT OF DISTURBANCE**

All earthworks shall be undertaken in such a manner so as to minimise the extent of any impacts caused by such activities, particularly with regards to loss of natural vegetation, erosion and dust/ noise generation. No equipment associated with earthworks shall be allowed outside of the working area and defined access routes unless expressly permitted by the employer. Cuts into sloping terrain shall be minimised to eliminate the potential erosion risks associated with such operations.

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#### **6.35.4 STABILISATION**

The contractor shall ensure that the slopes of all excavations are stable. The most effective stabilisation mechanism is the retention of existing vegetation, where possible. Accordingly, clearing of any area shall be programmed to occur immediately prior to the onset of construction activities within the subject area. Moreover, disturbed areas shall be revegetated,

Excavation at all the sites shall be carried out in such a way that slopes are not made dangerously steep. No materials, equipment or other load shall be placed so close to any excavation that the stability of the sides of the excavation is endangered.

#### **6.35.5 TRENCHING**

Trenching shall be undertaken in accordance with the employer specifications with the following environmental considerations, where applicable:

- i) Soil shall be excavated and immediately used for refilling trenches i.e. soil from the first trench section shall be excavated and stockpiled, thereafter soil from the second excavated trench length shall be used to backfill the trench behind it once the infrastructure has been laid. The last trench shall be filled using the soil stockpiled from the first trench.
- ii) Trench lengths shall be kept as short as practically possible before backfilling and compacting. No trench shall exceed 1000m in length without the prior approval of the employer.
- iii) Trenches shall be re-filled to the same level as (or slightly higher to allow for settlement) the surrounding land surface to minimise erosion.

#### **6.35.6 TREATMENT OF SPOIL**

Surplus or unsuitable material obtained from any excavations as well as rubble not required elsewhere shall be disposed at a designated spoil sites. In operating the spoil sites, the contractor shall ensure that the spoil material is disposed correctly. Depending on the capacity of the area National Environmental Management Waste Act requirements may be triggered.

#### **6.36 BORROW MATERIALS**

##### **6.36.1 USE OF ALTERNATIVE BORROW AREAS**

The contractor shall source borrow materials from licensed borrow areas as approved in terms of the Minerals and Petroleum Resources Development Act (No 28 of 2002), NEMA and have respective Water Use Licenses if applicable.

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Should the contractor wish to utilise alternative material sources e.g. from a quarry or mine, the employer shall be provided with the relevant mining permit from the source (mine or quarry) as issued by the Department of Mineral Resources. The contractor shall, at his own expense, institute the requisite negotiations with the Supplier. The contractor shall absolve the employer of any and all legal obligation and risk in this regard.

Where the contractor proposes the use of an alternative material source/s, they shall take due cognisance of the time required to obtain the required licences and permission from the relevant authorities and owners of the land for such use.

### **6.37 FINISHING AND REHABILITATION**

During the course of borrow operations, the contractor shall plan his operations in such a way that the amount of work that will be necessary for the finishing off of borrow areas is reduced as far as possible. Indiscriminate excavation without due regard for the desired final shape of the borrow pit will not be permitted, and shall be rectified at the contractor's expense.

Prior to the onset of rehabilitation activities, the contractor shall ensure that the remains of site infrastructure (if any) are demolished, removed from site and appropriately disposed of where directed by PM.

On completion of construction, the contractor shall reinstate the entire area, including access routes, so that it blends with the surrounding area and is suitable for the re-establishment of vegetation. For this purpose the area shall be shaped to even contours with no slopes steeper than 1: 3, except where agreed to by the PM.

The shaping and finishing off of the areas shall be done in such a manner that they drain properly. All material in and around the area, whether spoil, excess stockpiled material, oversize material left resulting from clearing and grubbing activities or excess overburden shall be used or disposed of as directed by the PM.

Material not capable of supporting vegetation shall be used in shaping the construction areas and be subsequently covered with at least 500 mm soft material.

All available soft material shall be spread evenly to the thickness directed and where sufficient material is not available for this purpose to cover the entire area, the remaining portions shall be scarified along the contours so that undue erosion is avoided.

The areas shall be topsoiled and revegetated for proper landscaping. All revegetated areas shall be considered "no go" areas and the contractor shall ensure that none of his staff or equipment enters these areas. No exocytic species material will be use as part of rehabilitation, only the indegenous species are allowed.

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## **6.38 COMPLIANCE**

### **6.38.1 ENVIRONMENTAL COMPLIANCE**

The Site Environmental Officer will have proof of Environmental Legal training. Environmental management is concerned not only with the final results of the contractor's operations to carry out the Works but also with the control of how those operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operations required to complete the Works.

It is thus required that the contractor shall comply with the environmental requirements of the EA, EMP, and this specification on an ongoing basis. Moreover, the contractor and his subcontractors shall not direct any person to undertake any activities which would place such a person in contravention of this specification and legal requirements.

The contractor EO shall undertake daily inspections on site as well as audit the works monthly for compliance against this specification and the legal requirements.

### **6.38.2 COST OF NON-COMPLIANCE**

Where environmental damage occurs as a result of the failure of the contractor to comply with the requirements of the EA, EMP or this specification, the requisite remediation shall be effected to the satisfaction of the employer and at the cost of the contractor.

Compliance with this specification will be assessed as part of the certification of each Payment Certificate. Payment for specific items related to environmental compliance will be withheld if it can be shown that the Contractor has failed to comply with his obligations for said items.

Should the contractor fail entirely to provide or fulfil for a period of time all or part of the continuing services, obligations and liabilities required of him in respect of this specification, the amount, or part of the amount for the item, which in the opinion of the employer fairly reflects such failure, will be omitted and the contract Price reduced accordingly.

### **6.38.3 PENALTIES**

Penalties will be issued for the various transgressions listed in Table 2 below. Penalties may be issued per incident at the discretion of the employer. Such penalties will be issued in addition to any remedial costs incurred as a result of non-compliance with this specifications. The employer will inform the contractor of the contravention and the amount of the penalty, and will deduct the amount from monies due under the Contract.

<b>Nature of transgression</b>	<b>Penalty</b>
Any employee, vehicle, plant or equipment related to the contractor's operations operating within the designated boundaries of a "no-go" area.	R 500 000
Any vehicle driving in excess of designated speed limits.	R 10 000

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Persistent and un-repaired oil leaks from machinery.	R 100 000
Persistent failure to monitor and empty drip trays timeously.	R 100 000
The use of inappropriate methods for refuelling.	R 100 000
Litter on site associated with construction activities.	R 5 000
Deliberate lighting of illegal fires on site.	R 100 000
Employees not making use of the site ablution facilities.	R 5 000
Failure to implement specified noise controls, particularly during blasting	R 100 000
Failure to empty waste bins on a regular basis.	R 50 000
Inadequate dust control.	R 50 000
A spillage, pollution, fire or any damage to the environment resulting from negligence on the part of the contractor.	R 500 000
Any damage or degradation to a designated "no go" area or area outside the approved Working area	R 500 000

**Table 1: Identified transgressions and associated penalties.**

For each subsequent similar offence the fine shall be doubled. All amounts mentioned exclude the cost of rehabilitation/ rectification. Rectification will be for the contractor's own account and the employer will not be held liable.

The employer shall be the responsible party as to what constitutes a transgression in terms of this clause. It is important to note that these fines are independent of NEMA fines that may be additionally levied on contractor Employees and Directors by the DEA or other Competent Authority (Government).

#### 6.38.3.1 SCHEDULED ITEMS General environmental obligations (Fixed Charge)

General environmental obligations:	Unit: lump sum (Sum)
All facilities and equipment not measured elsewhere, associated with complying with any requirement of this specification will be measured as a sum. The contractor to provide a cost breakdown per item as guideline.	
The tendered sum shall cover any fixed costs associated with complying with this specification not measured elsewhere.	

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**6.38.3.2 General environmental obligations (Time-Related Charge)**

General environmental obligations:	Unit: lump sum (Sum)
<p>All work not measured elsewhere, associated with complying with any requirement of this specification will be measured as a sum. The contractor to provide a cost breakdown per item as guideline.</p> <p>The tendered sum shall cover any time-related costs associated with complying with this specification not measured elsewhere. Payment will be effected only after payment of the Fixed Charge has been made.</p>	

**6.38.3.3 Environmental monitoring equipment and facilities (Fixed Charge)**

Environmental monitoring facilities and equipment:	Unit: lump sum (Sum)
<p>The provision of all equipment and facilities related to fulfilling the environmental monitoring requirements of this specification will be measured as a sum.</p> <p>The tendered sum shall cover the fixed costs associated with procuring, fitting, operating and maintaining all equipment and facilities associated with the noise, water quality, dust and general environmental monitoring requirements of this specification.</p>	

**6.38.3.4 Environmental monitoring functions (Time-Related Charge)**

Environmental monitoring functions:	Unit: lump sum (Sum)
<p>The work related to undertaking environmental monitoring requirements of this specification, including the provision of an Environmental Officer, will be measured as a sum.</p> <p>The tendered sum shall cover all time-related costs associated with the noise, water quality, dust and general environmental monitoring requirements of this specification, as well as the management of “no go” areas and the drafting and revision of the contractor’s Environmental Policy and documentation (If applicable) Supporting the ECO and Environmental Auditor by providing evidence for compliance purposes is included in this tendered sum. Payment will be affected only after payment of the Fixed Charge has been made for Environmental awareness training.</p>	

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**6.38.3.5 Environmental awareness training (Time-Related Charge)**

Environmental awareness training:	Unit: lump sum (Sum)
<p>The provision of environmental awareness training to the contractor's staff will be measured as a sum.</p> <p>The tendered sum shall cover all costs incurred by the contractor in providing the venue and facilities as detailed in the specification, in preparing and presenting the initial and refresher courses and in ensuring the attendance of his staff, including site management staff, at the courses.</p> <p>The contractor to provide a cost breakdown per item and quantity as guideline.</p>	

**6.38.3.6 Method statements (Fixed Charge)**

Method statements:	Unit: lump sum (Sum)
<p>Compilation and approval of the required Method Statements including changes, updates and additional method statements as required by the ECO or employer.</p> <p>A stated sum is provided in the Schedule of Quantities to cover payment for this work.</p>	

**6.38.3.7 Public complaints (Time-Related Charge)**

Management of public complaints:	Unit: lump sum (Sum)
<p>The monitoring and remediation of public complaints will be measured as a sum.</p>	

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The tendered sum shall cover the costs of all labour, materials, plant and equipment required to address public complaints, including maintaining a complaints register and implement the requisite measures to address public complaints, in accordance with the specification and the instructions of the employer, where relevant. The tendered sum will be divided by the number of months of the tendered project duration, and payment will be made against this sum for each month.

**6.38.3.8 Heritage resources (Time-Related Charge)**

Management of heritage resources:	Unit: provisional sum (PS)
<p>On an as-and-when required basis, the engagement of a heritage specialist may be required to identify heritage resources and guide the appropriate treatment of these resources. The provision of any assistance to the heritage specialist, will be measured in Day works and paid against this Provisional Sum.</p>	

**6.38.3.9 Water resources, water bodies and wetlands (Fixed Charge)**

Management of water resources, water bodies and wetlands:	Unit: lump sum (Sum)
<p>The provision of the conservation and protection measures, as required by this specification, when working within or adjacent to watercourses, water bodies and wetlands will be measured as a sum.</p> <p>The tendered sum shall cover the costs of all labour, materials, plant and equipment associated with providing the requisite conservation and protection measures, as well as their subsequent removal.</p>	

**6.38.3.10 Vegetation Management**

Protection of sensitive vegetation:	Unit: provisional sum (PS)
<p>Appointment of a suitably qualified Botanist (or a similarly qualified individual, to undertake a pre-construction walk down in order to identify sensitive vegetation and guide the appropriate treatment of this vegetation, including assisting with the requisite protection and conservation measures.</p> <p>The tendered sum will be measured in Day works and paid against this Provisional Sum.</p>	

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Maintenance of vegetation (Time-Related Charge):	Unit: lump sum (Sum)
<p>The on-going protection and maintenance of vegetation or vegetated areas, in terms of the requirements of this specification, will be measured as a sum.</p> <p>The tendered sum shall cover the costs of all labour, materials, plant and equipment required to protect and maintain the vegetated areas, including preventing erosion and sedimentation, watering, weeding, prevention of traffic on vegetated areas and any other procedure consistent with good horticultural practice. The tendered sum will be divided by the number of months of the tendered project duration, and payment will be made against this sum for each month.</p>	

Plant search and rescue:	Unit: provisional sum (PS)
<p>Plant search and rescue, as guided by the botanical specialist will be measured in Day works and paid against this Provisional Sum.</p>	

Maintenance of rescued plants (Time-Related Charge):	Unit: lump sum (Sum)
<p>The maintenance of rescued plants, whether it be the relocation or temporary protection in a nursery as per the requirements of this specification and botanical specialist recommendation, will be measured as a sum.</p> <p>The tendered sum shall cover the costs of all labour, materials, plant and equipment required to maintain the rescued plants until they are replanted, including establishment, maintenance and removal of the on-site nursery and watering, weeding and general maintenance of rescued plants. The tendered sum will be divided by the number of months of the tendered project duration, and payment will be made against this sum for each month.</p>	

Vegetation clearance (Fixed charge):	Unit: square metre (m)
<p>The area approved by the employer as per the EA shall be cleared and measured per square metre.</p>	

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The tendered rate shall cover the costs of all labour, materials, plant and equipment for all work necessary for the clearing of vegetation from the specified areas, including the trimming and cutting of shrubs and trees by hand, uprooting of tree stumps, the treatment of alien/ invasive species to prevent re-sprouting and the removal, transporting and disposal of all cleared vegetation.

Rehabilitation of working areas:	Unit: provisional sum (PS)
<p>Appointment of a suitably qualified rehabilitation/ botanical/ horticultural specialist to compile a rehabilitation plan and oversee the rehabilitation process during and after the construction phase.</p> <p>The tendered sum will be measured in Day works and paid against this Provisional Sum.</p>	

Revegetation and rehabilitation (Time-related charge):	Unit: lump sum (Sum)
<p>The replanting, reseeding, preparation and/ or rehabilitation of vegetation on areas disturbed during construction. This includes the use of nursing plants, seeds, watering, monitoring and full rehabilitation of disturbed areas as per the specification and botanical specialist requirements.</p> <p>The tendered sum will be divided by the number of months required for rehabilitation (as guided by the botanical specialist), and payment will be made against this sum for each month.</p>	

#### 6.38.3.11 Fire control (Fixed Charge)

Fire control:	Unit: lump sum (Sum)
<p>The compliance with fire control requirements will be measured as a sum.</p> <p>The tendered sum shall cover the cost of all labour, materials, equipment and any other operation or thing necessary to comply with the requirements of the specification related to the prevention and control of fires.</p>	

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**6.38.3.12 Pollution control measures (Fixed Charge)**

Pollution control measures:	Unit: lump sum (Sum)
<p>The provision of the requisite pollution control measures will be measured as a sum.</p> <p>The tendered sum shall cover the fixed costs of materials, plant and equipment required to implement the necessary pollution control measures required by the environmental management specification, including facilities for the storage of fuel, oils, curing compounds, herbicides and pesticides, bunding of the workshop, the provision of drip trays, the provision of absorbent materials, the provision and subsequent removal of the settlement ponds, the installation of erosion control structures and the removal and disposal of sediment, contaminated soil and contaminated water.</p>	

**6.38.3.13 Pollution management (Time-related charge)**

Management of Pollution:	Unit: lump sum (Sum)
<p>The implementation of the requisite pollution management requirements of the specifications will be measured as a sum.</p> <p>The tendered sum shall cover all time-related costs associated with the management of pollution to the environment (water, air, soil, etc.), including the monitoring, emptying and overall management of oil separators, sumps and drip trays, the identification and remediation of leaks and spillages, the repair or removal from site of leaking equipment, the maintenance and management of erosion control structures, the maintenance of all settlement ponds and other facilities and plant that may be required for the effective treatment of water returned to the environment and incident reporting, on-going management measures for dust, noise, effluent, erosion, etc. Payment will be effected only after payment of the Fixed Charge has been made.</p>	

**6.38.3.14 Dust control measures (Fixed Charge)**

Management of Dust:	Unit: lump sum (Sum)
<p>The implementation of the requisite dust control measures will be measured as a sum.</p>	

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The tendered sum shall cover the costs of all labour, materials, plant and equipment required to implement the necessary measures to control dust, including watering of dust prone areas, enforcement of speed limits, securing of material loads, wheel cleaning, minimisation of disturbed areas, management of stockpile etc.

#### 6.38.3.15 Noise control measures (Fixed Charge)

Noise control:	Unit: lump sum (Sum)
<p>The implementation of the requisite noise control measures will be measured as a sum.</p> <p>The tendered sum shall cover the costs of all labour, materials, plant and equipment required to implement the necessary measures to control noise.</p>	

#### 6.38.3.16 Fencing (Fixed Charge)

"No go" fencing:	Unit: lump sum (Sum)
<p>The erection of "no go" fencing will be measured as a sum. Where "no go" fences have been dismantled and re-erected at other locations full payment will only be due if the re-erected fence complies in all aspects with this specification. Payment for "no go" fencing shall be certified as follows:</p> <p>iii) 85% of the rate tendered when the fencing is erected</p> <p>iv) 15% of the rate tendered when the fencing is removed from site.</p> <p>The tendered rate shall cover the costs of all labour, materials, plant and equipment required for furnishing fencing materials, transporting it to the point of application, erecting the fence, and for any other work which may be necessary to establish and maintain the "no go" fencing as specified. The rate tendered shall also include full compensation for removing the "no go" fencing, either to be erected at some other location or removing it from site, on completion of the Works.</p>	

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**6.38.3.17 Topsoil Management**

Removal, stockpiling and re-spreading of topsoil:	Unit: lump sum (Sum)
<p>The removal, stockpiling and re-spreading of topsoil will be measured as a sum. Payment for removal, stockpiling, and re-spreading of topsoil shall be certified as follows:</p> <p>i) 50% of the sum tendered when the topsoil is removed</p> <p>ii) 50% of the sum tendered when the topsoil is replaced</p> <p>The tendered sum shall cover the costs of all labour, materials, plant and equipment required for removing, loading, transporting to stockpile, stockpiling, and subsequent replacement of topsoil as well as ripping of areas prior to replacing the topsoil.</p>	

Maintenance of topsoil stockpiles (Time-related charge):	Unit: lump sum (Sum)
<p>The maintenance of topsoil stockpiles, in terms of the requirements of this specification, will be measured as a sum.</p> <p>The tendered sum shall cover the costs of all labour, materials, plant and equipment required to maintain the topsoil stockpiles until the topsoil is loaded for re-spreading, including separation of topsoil stockpiles from those of other materials, ensuring topsoil stockpiles are appropriately located and meet the requirement of the specification with regard to height and ensuring that the requisite erosion measures have been installed. The tendered sum will be divided by the number of months of the tendered project duration, and payment will be made against this sum for each month.</p>	

**6.38.3.18 Waste management (Time-related charge)**

Waste management:	Unit: lump sum (Sum)
<p>The collection, management and disposal of all types of waste as per this specification will be measured as a sum.</p>	

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The tendered sum shall cover the costs of all labour, materials, plant and equipment required for the collection, management and disposal of all types of waste, including the provision of weatherproof and scavenger-proof bins, the collection of waste and its temporary storage and the removal of waste from site to an approved landfill. The tendered sum will be divided by the number of months of the tendered project duration, and payment will be made against this sum for each month.

#### 6.38.3.19 Blasting (if required; Geo tech still pending) (Fixed Charge)

Blasting:	Unit: lump sum (Sum)
<p>The implementation of the specified environmental requirements for blasting will be measured as a sum.</p> <p>The tendered sum shall cover the costs of all labour, materials, plant and equipment required for “cover blasting” or blast mats, as well as the removal of fly rock from areas beyond the Working Area. The tendered sum will be divided by the number of months of the tendered project duration, and payment will be made against this sum for each month.</p>	

#### 6.38.3.20 Treatment of Spoil (Fixed charge)

Treatment of spoil:	Unit: lump sum (Sum)
<p>The treatment of spoil as per the requirements of this specification will be measured as a sum.</p> <p>The tendered sum shall cover the costs of all labour, materials, plant and equipment required for loading, transporting and off-loading spoil, irrespective of haul distance, and for finishing and rehabilitating the spoil areas.</p>	

### 6.38.4 GENERAL REQUIREMENTS

The basic principles the contractor should adhere to are as follow:

- i. Ensuring adherence to all the environmental specifications;
- ii. Ensuring that Method Statements are submitted to the employer for approval before any work is undertaken. Any lack of adherence to this will be considered as non-compliance to the specifications.

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- iii. Ensuring that there must be communication tabled in the form of a report at each site meeting, which will document all incidents that have occurred during the period before the site meeting;
- iv. Ensuring that a register is kept at the site office, which lists all the transgressions issued by the ECO/EO
- v. Ensuring that a register of all public complaints is maintained;
- vi. Obtain presentation of Key information pertaining to License and permits from the project/Environmental Manager;
- vii. Availability of Budget for specialist studies/engineering changes for key risk areas and rehabilitation
- viii. Ensure that all the contractor employees receive training before the commencement of construction to ensure they can constructively contribute towards the successful implementation of the environmental requirements of the contract;
- ix. The most important actions by the contractor to ensure compliance with the environmental requirements, relates to the establishment of an adequate and appropriate organisational structure for ensuring the implementation and monitoring of the requisite environmental controls;
- x. Compile Environmental monitoring plans outlining all the construction activities, associated environmental impacts and how they will be mitigated;
- xi. Ensure that the project pricing makes provision for environmental costs and expenditure reporting;
- xii. The contractor shall develop and implement a site specific waste management plan including the typical waste inventory and templates used for keeping waste records;

The contractor shall implement and maintain an Environmental Management System documentation that is aligned to ISO 14001: 2015 where required.

## **7. ENVIRONMENTAL REQUIREMENTS**

**NOTE:** Tender returnables will be developed based on the nature of services required.

## **8. Acceptance**

This document has been seen and accepted by:

<b>Name</b>	<b>Designation</b>
M Singh	Middle Manager SHERQ

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Name	Designation
J Naidoo	Senior Manager SHEQ

## 9. Revisions

Date	Rev.	Compiler	Remarks
November 2023	1	L Mautjana	New document

## 10. Development Team

The following people were involved in the development of this document:

- Florence Dube -Jacobs
- Mulalo Gundula
- Mushayi Mudzielwana
- Lerato Mautjana
- Refilwe Mokobodi

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