

	SPECIFICATION	KUSILE POWER STATION PROJECT
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Functional Area: **Safety Health &
Environment**

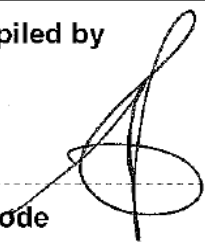
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Content

	Page
1. Introduction.....	5
2. Supporting Clauses	5
2.1 Scope.....	5
2.1.1 Purpose.....	5
2.1.2 Applicability	5
2.1.3 Effective date.....	5
2.2 Normative/Informative References	5
2.2.1 Informative.....	6
2.3 Definitions	6
2.4 Abbreviations	9
2.5 Roles and Responsibilities	11
2.5.1 Contractual and Legal Roles & Responsibilities.....	11
2.5.2 KET SHE Manager.....	12
2.5.3 KET Senior Contracts Manager.....	12
2.5.4 Package Contracts Manager	12
2.5.5 KET Package Safety Officer	12
2.5.6 Engineer.....	12
2.6 Process for Monitoring.....	12
2.7 Related/Supporting Documents.....	12
3. Document Content.....	13
3.1 Employer's Lifesaving Rules.....	13
3.2 General Requirements	14
3.3 Contractor's SHE Policy and Plan	15
3.4 SHE Plan Requirements.....	15
3.5 Appointments and Supervision	16
3.6 Induction and Training.....	21
3.7 Occupational Health, Rehabilitation and Hygiene	22
3.7.1 Compensation for Occupational Injuries and Diseases.....	22
3.7.2 Employee Health and Wellness Programme.....	22
3.7.3 Employee Assistance Programme.....	22
3.7.4 HIV / Aids Awareness Programme	23
3.7.5 Occupational Hygiene	23
3.7.6 Medical Surveillance Programme	23
3.7.7 Emergency Care	24
3.8 Emergency Preparedness and Response	24
3.8.1 Emergency Response Plan	24
3.8.2 Fire Safety.....	25
3.8.3 Fire Safety Plan.....	25
3.8.4 Fire Alarm Shut-down.....	25

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3.9	Work Stoppage.....	25
3.10	Hazard and Risk Management	26
3.10.1	The Kusile SHE Policy is “Zero Harm to People and the Environment”.....	26
3.10.2	Hazard Identification.....	26
3.10.3	Specific Health and Safety Hazards	27
3.11	Project General Health, Safety and Security Rules.....	27
3.12	Incident Investigations.....	28
3.13	Reporting and Meetings	29
3.13.1	Record Keeping.....	29
3.14	Employee Engagement and Behaviour Based Safety.....	29
3.15	Audits	30
3.15.1	Approval and Compliance of the Contractor SHE Plan	30
3.15.2	Subcontractor Approval and Compliance.....	30
3.15.3	Contractor SHE Performance Evaluation Compliance	30
3.15.4	Internal Audits	30
3.15.5	Third Party Legal Compliance Verification Audits	31
3.15.6	SHE Plan Audits.....	31
3.15.7	Site Inspections by Contractors’ Management.....	31
3.16	Permit to Work System (PTW).....	31
3.17	Work Co-ordination Process.....	31
3.18	Environmental Management.....	33
3.18.1	General Requirements	33
3.18.2	Site Establishment and Management	33
3.18.3	Fauna and Flora	33
3.18.4	Herbicides	33
3.18.5	Hazardous Materials / Chemicals Management.....	34
3.18.6	Storage of Hazardous Substances	34
3.18.7	Flammable and Combustible Materials.....	35
3.18.8	Explosives	35
3.18.9	Water Management.....	36
3.18.10	Fire Hazards.....	36
3.18.11	Waste Management.....	36
3.18.12	Air, Dust and Noise Management	36
3.18.13	Environmental Incidents	37
3.18.14	Basic Hazard Identification	37
3.18.15	Environmental Hazards	37
3.19	Construction Hazards	37
3.20	Kusile Safety, Health, Environmental Quality Statement of Commitment.....	38
3.20.1	FORUMS FOR SHE COMMUNICATION	38
3.20.2	Project Kusile Executive SHE Committee Meeting	38
3.20.3	Project SHE Review Meeting (BEE Safe)	38
3.20.4	General SHE Walk Down	38
3.20.5	SHE Representative Meeting	39

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3.20.6 Foreman & Supervisor forum.....	39
3.20.7 Crane Forum	39
3.20.8 Crane Coordination Meeting.....	39
3.20.9 Emergency Coordinators Meeting	39
3.21 Project General Safety and Health Rules	39

The following sections of this document were previously referred to as Section 4, part 9.1 of the Contract.....

3.22 Construction Vehicles & Mobile Plant	39
3.23 Housekeeping	42
3.24 Signage	43
3.25 Compressed Gas Cylinders.....	43
3.26 Personal Protective Equipment (PPE)	44
3.27 Machinery, Tools and Equipment	44
3.28 Hand Tools and Pneumatic Tools.....	45
3.29 Portable Electric Tools.....	46
3.30 Explosive Powered Tools	46
3.31 Lifting Machines and Lifting Tackle.....	46
3.32 Work at Elevated Positions.....	48
3.33 Scaffolding	50
3.34 Ladders (Portable).....	51
3.35 Barricading	52
3.36 Permit to Work.....	52
3.37 Radiography, Ultrasonic, Non-Destructive Testing (NDT).....	53
3.38 Trenching and Excavations	53
3.39 Working near Public Roads	54
3.40 Confined Space Entry Procedure	55
3.41 Steel Erection.....	56
3.42 Severe Weather	57
3.43 Contractors Site Facilities	58
4. Authorization	58
5. Revisions.....	58
6. Development team	60

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1. Introduction

The Kusile SHE specification is a Construction Regulation requirement. The construction regulations require the Client to issue a SHE specification to the contractor.

2. Supporting Clauses

2.1 Scope

This specification sets out the minimum legislative and organisational requirements for works at Kusile Power Station Project

2.1.1 Purpose

All contractors are required to execute their works in accordance with this specification as well as other legal document.

2.1.2 Applicability

This specification is applicable to all Principal Contractors, Contractors, Service Providers, Suppliers and all the activities and processes carried out for and on behalf of Kusile Power station Project. This document shall apply throughout Kusile Power station Project.

2.1.3 Effective date

This Specification shall be implemented from date of authorization.

2.2 Normative/Informative References

- | | |
|--------------------|---|
| [1] 32-727: | Safety, Health, Environment and Quality Policy |
| [2] 240-62196227: | Life-saving Rules Standard |
| [3] 240-126456962: | Waste Management Plan |
| [4] 240-62946386 | Vehicle & Driver Safety Management Procedure |
| [5] 32-37 | Substance Abuse |
| [6] 32-124 | Eskom Fire Risk Management |
| [7] 32-136 | Contractor Health and Safety Requirements |
| [8] 32-95 | Eskom Environmental, Occupational Health and Safety Incident Management procedure |
| [9] 32-93 | Eskom Vehicle and Driver Safety Management |
| [10] 240-43848327 | Employees' right of refusal to work in an unsafe situation |
| [11] 32-418: | Working from Heights Procedure |

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- [12]32-520: Procedure Manual for Performing Occupational Health and Safety Management and Environmental Management: Conducting EH&S Risk Assessment
- [13]32-123: Emergency Planning
- [14]32-407 Behaviour Safety Observation Procedure
- [15] 240-133087117 Environmental Incident Management Procedure
- [16]32-726: SHE Requirements for the Eskom Commercial Process
- [17]39-98: Safe use of Lifting Machines and Lifting Tackle
- [18]ISO 45001: Health and Safety Management systems-Requirements
- [19]ISO 9001: 2015 Quality Management Systems- Requirements
- [20]ISO 14001:2015 Environmental Management Systems Specification with guidance for use
- [21]All remaining sections of Section 4, Employees Policies and Procedures of the Contract
- [22]Relevant SANS codes
- [23]32-1134 Access Control at Eskom Premises
- [24]32-524 Developing a SHE Specification
- [25] Kusile SHEQ statement of commitment

2.2.1 Informative

- [26] National Environmental Management Act No 107 of 1998
- [27] National Environmental Management Waste Act 59 of 2008
- [28] All relevant South African legislation-provincial, municipal by-laws
- [29] Occupational Health and Safety Act and regulations. Act 85 of 1993

2.3 Definitions

Any capitalised word shall, as applicable, have the meaning (in the following order of precedence) as defined in:

2.3.1	Agent or Engineer	means a competent person who acts as a representative for a client
2.3.2	Baseline assessment: risk	(32-520) baseline operational risks refer to the health and safety risks associated with all standard processes and routine activities in the business.
2.3.3	Client:	Any person for whom construction work is being performed.
2.3.4	Competent Person:	Means any person having the knowledge, training, experience, and qualifications, specific to the work or task being performed, provided that, where appropriate,

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		qualifications and training are registered in terms of the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995), those qualifications and training must be regarded as the required qualifications and training and is familiar with the Act and with the applicable regulations made under the Act.
2.3.5	Contractor:	Means an employer as defined in section 1 of the Act who performs construction work and includes principal contractors. In relation to this document, where the word “contractor” is used, it will mean all or some of the following: principal contractors, appointed contractors, suppliers, vendors, service providers and consultants.
2.3.6	Construction Work:	Means any work in connection with: <ul style="list-style-type: none"> a) The construction, erection, alteration, renovation, repair, demolition or dismantling of, or addition to, Building or any similar structure; b) The construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runaway, sewer or water reticulation system, or the moving of earth, clearing of land, the making of excavation, piling or any similar civil engineering structure or type of work. c) The construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runaway, sewer or water reticulation system, or the moving of earth, clearing of land, the making of excavation, piling or any similar civil engineering structure or type of work.
2.3.7	Construction site	means a work place where construction work is being performed
2.3.9	Designer	means any of the following persons: A competent person who: <ul style="list-style-type: none"> a) Person who prepares a design b) Person who checks and approves a design c) Person who arranges for any person at work under his/her control to prepare a design, including an employee of that person where he or she is the employer, or designs temporary work, including its components, d) An architect or engineer contributing to, or having overall responsibility for, the design e) A Building service engineer designing details for fixed

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		<p>plant</p> <p>f) A Surveyor specifying articles or drawing up specifications</p> <p>g) A Contractor carrying out design works as part of a design and build project, or an interior designer, shop-fitter or landscape architect.</p>
2.3.10	Eskom Requirements:	Eskom requirements which evolves from directives, policies, standards, procedures, specifications, work instructions, guidelines or manuals.
2.3.11	Fall Protection Plan:	Means a documented plan which includes and provides for: <p>a) All risks relating to working from a fall risk position, considering the nature of work undertaken,</p> <p>b) The procedures and methods to be applied in order to eliminate the risk of falling, and</p> <p>c) A rescue plan and procedures</p>
2.3.12	Hazard	Means a source of, or exposure to danger
2.3.13	Hazard identification:	Means the identification and documenting of existing or expected hazards to the health and safety of persons, which are normally associated with the type of construction work being executed or to be executed
2.3.14	Medical surveillance: practitioner	means a planned programme or periodic examination (which may include clinical examinations, biological monitoring, or medical tests) of employees by an occupational health practitioner or, in prescribed cases, by an occupational medicine practitioner
2.3.15	Method Statement	is a written document detailing work procedures and sequences of operations.
2.3.16	Planned Observation Task	An independent observation made during the planned period in which the task is being executed.
2.3.17	Pre-Task Risk Assessment (DSTI)	Pre-Task Risk Assessment (DSTI): a meeting which is held prior to the commencement of the day's work with all relevant personnel associated with the work task in attendance.
2.3.18	Risk	The probability that injury or damage will occur.
2.4.19	Risk Assessment:	Means a programme to determine any risk associated with any hazard at a construction site in order to identify the steps needed to be taken to remove, reduce, or control such hazard.

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2.4.20	Safety Health and Environmental file	Means a file or other record in permanent form, containing the information on the SHE management system during construction including all information relating to construction phase after the handover to Client.
2.4.21	Safety, Health and Environmental plan:	Means a written plan that addresses hazards identified during the risk assessment process as well as the identified impacts in the SHE specification. This would typically include safe work procedures to mitigate, reduce or control the hazards identified and is specific to each construction project undertaken. This is usually compiled by the Principal Contractor or contractor and approved by the Client/Agent for which contracting work will be performed.
2.4.22	Safety, Health and Environmental (SHE) Specification:	Including the base line risk assessment: means a documented specification of significant residual SHE requirements for a construction site, which a competent and resourced Principal Contractor or sub-contractor would not have been aware of. This is to ensure the health and safety of employees and the direct and indirect communities, as well as duty of care for the environment. The Client/Agent compiles the SHE specification which shall be specific to each construction project.
2.4.23	Safe Work Procedures	Safe work procedures are a series of specific steps that guide a worker through a task from start to finish in a chronological order. Safe work procedures are designed to reduce the risk by minimizing potential exposure.

2.4 Abbreviations

Abbreviation	Explanation
COID Act	Compensation for Occupational Injuries and Diseases Act
CR	Construction Regulations 2014
CV	Curriculum Vitae
DMR	Driven Machinery Regulations
DOL	Department of Labour
EMP	Environmental Management Plan
EO	Environmental Officer

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Abbreviation	Explanation
DSTI	Daily Safety Task Instruction
GCD	Group Capital Division
GSR	General Safety Regulations
HCS	Hazardous Chemical Substances
HIRA	Hazard identification and risk assessment
HV	High Voltage
ISO	International Standard Organisation
KET	Kusile Execution Team
LTIR	Lost Time Incident Rate
LV	Low Voltage
NDT	Non – Destructive Testing
NEMA	National Environmental Management Act
NEMWA	National Environmental Management and Waste Act
NM	Near Miss
NWA	National Water Act (Act No. 36 of 1996), as amended
OHNP	Occupational Health Nursing Practitioner
OHS Act	Occupational Health and Safety Act No. 83 of 1993
OHS	Occupational Health and Safety
ORHVS	Operating Regulations for High Voltage Systems
PPE	Personal Protective Equipment
PTO	Planned Task Observations
RoD	Record of Decision
RPO	Radiation Protection Officer
SACPCMP	South African Council for the Project & Construction Management Professions

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Abbreviation	Explanation
SAMTRAC	Safety Management Training Course
SES	Standard Environment Specification
SHE	Safety, health, and environment
WUL	Water Use License

2.5 Roles and Responsibilities

2.5.1 Contractual and Legal Roles & Responsibilities

Although the provisions of this Specification typically only refer to the Contractor, compliance herewith is also required from Subcontractors. The Contractor remains responsible for compliance with the requirements of this Specification by Subcontractors and shall ensure that each Subcontractor complies with the requirements hereof at all times and as applicable. Without derogating from his obligations and responsibilities under the Contract, the Contractor shall ensure that the requirement to comply with the provisions of this Specification is included in all Subcontracts involving activities at the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) and / or activities otherwise covered by this Specification. Failure by the Employer or Engineer to enforce compliance with the requirements of this Specification shall not relieve the Contractor from any responsibility or obligation whether under the Contract or under applicable Law.

The Employer requires that the management of safety, health and environmental issues shall be to a standard of excellence aligned with world class best practices. The Contractor carries prime accountability and responsibility for the health, safety and welfare of the Contractor's Personnel and for any works that may expose any other person other than their personnel. No health, safety and welfare requirements specified by or imposed on the Employer (whether under the Contract or under applicable Law) shall be construed or operate, as between the Employer and the Contractor, to reduce the Contractor's accountability and responsibility for the health, safety and welfare of the Contractor's Personnel.

The Contractor is responsible for adequately informing the Contractor's Personnel of all relevant information of this SHE Specification and the Contractor's SHE Plan.

The Contractor shall take prime responsibility for all aspects of environmental management associated with the Works and activities he is responsible for under the Contract.

The requirements of this Specification should not be considered to be exhaustive and the Employer reserves the right to add, delete or modify conditions where it is considered to be appropriate in this Specification.

Where additions, deletions or modifications are made to this Specification, the Engineer shall advise the Contractor of the change. The Contractor shall be solely responsible for informing the Contractor's Personnel and its subcontractor of these changes. The Employer or the Engineer shall not be

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responsible for any failure caused by a Subcontractor not receiving a notification or failing to act upon such notification.

2.5.2 KET SHE Manager

- Compiler of document and reviewer of information. The KET SHE manager is responsible for the onward distribution through the contractual chain to the appropriate Contracts Manager.

2.5.3 KET Senior Contracts Manager

- Responsible for publishing the document through package contracts managers.

2.5.4 Package Contracts Manager

- Responsible for distributing formally to the Principal Contractor.

2.5.5 KET Package Safety Officer

- Responsible for monitoring compliance by the contractors of this document and reporting both non-compliance and positive messages to the KET Construction Manager.

2.5.6 Engineer

- Responsible ensuring the contractor complies with the content of this document.

2.6 Process for Monitoring

This document is subject to document control processes and shall be updated when it is due for revision or when conditions dictate.

Conformance to this document shall be through regular safety inspections and by Monthly Audits

2.7 Related/Supporting Documents

Flash report form (Generated by SAP_EHS)

203-32064	Audit Action plan
240-147872715	Monthly Statistic Template
240-70044602	Baseline Risk Assessment

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3. Document Content

The SHE specifications are Eskom's minimum requirements. The contractor is expected to develop a SHE plan which meets these requirements as well as all the relevant applicable legislation. Eskom in no way assumes the Contractors legal responsibilities. The Contractor is and remains accountable for the quality and the execution of his health and safety program for his employees and contractor employees. This SHE specification reflects minimum requirements and should not be construed as all encompassing.

3.1 Employer's Lifesaving Rules

Without derogating from any other requirements under the Contract, the Employer has identified 6 Lifesaving Rules which require special attention and management over and above what is required under this Specification. These rules are:

Rule	Description
1	Open, isolate, test, earth, bond, and/or insulate before touch
2	Hook up at height
3	Buckle up
4	Be sober
5	Ensure you have a permit to work
6	No reversing without a flagman / spotter

Any matter dealt with in this Specification is also dealt with under applicable Laws, the two are intended to be mutually explanatory and supplementary, the one to the other. In case of conflict or difference between this Specification and the applicable Laws, the more onerous provision shall prevail unless otherwise instructed by the Engineer.

There shall be zero tolerance for failure to comply with the Project Health and Safety Requirements at the Project Site (and at other places, if any, as may be specified under the Contract as forming part of the Site). Any person who is, or appears to the Engineer, to transgress the Project Health and Safety Requirements may be required to leave and/or be refused access to the Project Site (and at other places, if any, as may be specified under the Contract as forming part of the Site). If such person is a Contractor's Personnel, the Contractor shall take necessary steps against such person (including disciplinary action, where appropriate, and the removal of the person from the Project Site (or from other places, if any, as may be specified under the Contract as forming part of the Site).

Without limiting or derogating from the Engineer's rights above or under Sub-Clause 6.7 [Health and Safety] of the Contract, the Engineer may, where he considers appropriate, issue a personal transgression notice ("Personal Transgression Notice") to any Contractor's Personnel who transgress or fail to comply with the Project Health and Safety Requirements. The Personal Transgression Notice procedure encompasses a three-stage warning process.

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3.2 General Requirements

The Contractor shall follow the applicable disciplinary procedure in instances of all disciplinary measures.

In the event of a major safety or health transgression whilst conducting work witnessed by a member of the Engineer's staff or the Contractors' own supervision, the Contractor shall ensure that the individual, or individuals, transgressing (including supervisors) stop the operation as soon as it is safe to do so and ensure that the situation is safe. A breach of lifesaving rules would constitute a transgression of this magnitude. Other transgressions of this type would include failure to exclude those not involved in the work activity from dangerous areas such as below personnel working at height or other serious hazards.

The Contractor is expected to deem a serious transgression of the nature described above as a lack of competence to conduct the task safely. Therefore, it is necessary to immediately eliminate further risks to their workers and other site personnel. The Contractor shall adhere to the following steps:

1. Start preliminary investigations.
2. Investigate the acts or omissions of the supervisor.
3. Conclude the investigation.
4. Submit the investigation for the approval of the Engineer.
5. Await the outcome of the disciplinary process of those individuals.
6. Conduct retraining if required.
7. Restart activities.
8. Engineer has the right to communicate lessons learnt to other Contractors on site

The Contractor may in the time taken to follow the above steps use a different group or workers if they are suitably trained and competent.

In the case of a serious transgression that is evidently a result of an individual's act or omission, for example not sober or driving without a seatbelt, the disciplinary process may apply to the individual alone and works may continue without the individual.

The Contractor shall comply with the Occupational Health and Safety Act 85 of 1993 ("OH&S Act") and all applicable regulations promulgated under the OH&S Act and in particular the Construction Regulations 2003 ("Construction Regulations"), all as amended from time to time. The Contractor shall furthermore comply with applicable South African National Standards or International Standards and with Employers Policies and Procedures.

It is the duty of the Contractor and his Subcontractors to ensure that they are familiar with all applicable Law, SANS standards and these requirements.

The Contractor shall compile and maintain an up to date SHE file and include updated legal register listing all applicable Law and SANS standards.

Contractor will be expected to form part of the SHE management system that the Employer/Engineer is conform to.

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3.3 Contractor's SHE Policy and Plan

The Contractor and each Subcontractor shall each have a SHE Policy that shall be duly signed by an authorised signatory concerning the protection of the health and safety of Contractor's Personnel and others in and about the execution of the Works, including a description of his organisation and the arrangements for carrying out and reviewing such policy.

A copy of the SHE Policy shall be provided as a tender returnable. Tenderers shall furthermore supply method statements containing sufficient detailed information to demonstrate compliance to this Specification.

Copies of the Subcontractors SHE Policies shall be provided as and when Subcontractors are appointed.

The Contractor shall prominently display a copy of the policy in the workplace where the Contractor's Personnel normally report for service.

The Contractor shall develop a suitable and sufficient SHE Plan for the execution of the Works. This shall be submitted to the Engineer for approval within 56 days of the Commencement Date, but in any event not less than 28 days before mobilisation of the first Contractor's Personnel at the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site).

Upon approval by the Engineer, the SHE Plan shall be implemented by the Contractor. The Contractor shall not be allowed to commence any Construction Work until the SHE Plan has been approved. The Engineer's approval of the SHE Plan shall not, however, relieve the Contractor of any responsibility under the Contract.

3.4 SHE Plan Requirements

The Contractor's SHE Plan shall demonstrate the management process and procedures that shall be adopted to ensure compliance to requirements listed in this Specification and other contract documents requirements. The approval criteria for health and safety plans are available from the Engineer and will be done as per Construction Regulation 5.1. (I).

These management processes shall identify each construction activity, the foreseeable internal and external hazards, the specific precautions and controls that shall be necessary to ensure that the Works commence and continue safely and without risks to health or to adjacent operations

The SHE Plan shall further demonstrate the Contractor's commitment to safety, health and environmental requirements and shall, as a minimum include the following elements:

1. Compliance to this Specification
2. The Contractor SHE Policy. (OH&S Act section 7)
3. Indication of Competent Supervision (CV's to be included). (Construction Regulation 8(7))
4. Documented proof of assessment of competencies of appointed persons (e.g.: scaffold erectors, riggers etc.)
5. Duties and safety responsibilities of all appointed persons.
6. Selection, placement and training procedures, including induction and ongoing training in 'Basic Safe Work' and Occupational Health & Safety training for newly hired or promoted supervisors. (OH&S Act section 8(2)(i))
7. Occupational Health & Safety communications and meetings, including daily safe task instructions and project SHE meetings.
8. Assessment and management procedure for their Subcontractors, including audit requirements for SHE Plans.

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9. Safety awareness promotions.
10. Occupational Health and Safety Workplace Environment controls, including provision for monitoring employee exposures to noise, dust, etc. (Hazardous Chemical Substances Regulation 4)
11. Personal Protective Equipment procedure and rules. (OH&S Act section 8, General Safety Regulation 2)
12. Control of dangerous and hazardous substances. (Hazardous Chemical Substances Regulations, Section 43 of OH&S Act, 1993)
13. System of hazard identification and risk control, such as Risk Assessments, Daily Safe Task Instructions and Communications. (OH&S Act section 8, Construction Regulation 9)
14. Inspection and maintenance of plant, tools and equipment prior to introduction to the Project Site (and to other places, if any, as may be specified under the Contract as forming part of the Site) and regularly thereafter. (Construction Regulation 23)
15. Accident and incident reporting, recording, investigation and analysis, which ensure that corrective action, are taken and this action is communicated to report initiators. (General Administrative Regulations 8 & 9)
16. Medical and first aid arrangements. (General Safety Regulation 3) □ Evacuation and emergency planning arrangements; (Construction Regulation 29) Environmental Regulations for Workplaces 9)
17. Substance abuse policy and procedure and programme. (General Safety Regulation 2A)
18. Workers welfare facilities. (Construction Regulation (30)
19. Daily site safety inspections and audits processes.
20. Letter of good standing with a compensation insurer
21. Identification of Environmental Aspects, their associated impacts, mitigation measures and management thereof.

Note: Contractors performing non construction support services shall provide a scope specific plan agreed with the Engineer prior to submission.

The Contractors SHE Plan shall be reviewed from time to time (and in any event as and when required by the Engineer) to ensure that it fully addresses all the issues and complies with these requirements to the satisfaction of the Engineer. The Contractor may request the approval criteria from the Engineer.

3.5 Appointments and Supervision

The Contractor shall in writing appoint as per the OHS Act requirements and shall ensure that all his appointees are made aware of their accountabilities and responsibilities in terms of their appointment and that they advise and assist these appointees in the execution of their duties.

The Contractor shall provide and keep up to date an outline organogram and a list of names and contact telephone numbers of all appointments as required from the table below.

The Contractor shall keep a record of all Contractors' Personnel, indicating their date of induction, relevant skills and licenses, and be able to produce this list at the request of the Engineer.

The Contractor shall ensure that the performance of all specified work is supervised throughout the duration of the Contract by a sufficient number of competent appointed representatives of the Contractor, who have experience in the type of work specified.

No work shall commence and / or continue without the presence of an appointed Construction Manager, Construction Health & Safety Manager or Officer, Construction Supervisor or appointed Construction Supervisor Assistants as per Construction Regulation requirements during execution of

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the work. These supervisors shall be fluent in the language for communications as defined under the Contract.

In determining the number of appointed competent supervisors, the nature and scope of work being performed shall be taken into consideration and consented to in writing by the Engineer. The required appointed Construction Supervisor (Construction Regulation 8(7)) shall not leave the Project Site during working hours unless there is a sufficient number of appointed competent Assistant Construction Supervisor/s (Construction Regulation 8(8)) to assist with supervision.

Appointment letters and competency certificates of the persons appointed as Construction Supervisors or Assistant Construction Supervisors in terms of Construction Regulation 8(7) or 8(8) shall be signed by persons who are suitably qualified and duly authorised to the satisfaction of the Engineer. Relevant training certificates and proof of experience of assignees shall be submitted with the SHE Plan.

In determining the number of appointed competent Construction Health and Safety Officers to the number of employees, the nature and scope of work being performed shall be taken into consideration. Unless otherwise approved by the Engineer a minimum average ratio of 1 Construction Health and Safety Officer to 50 employees shall be applied. Similarly, unless otherwise approved by the Engineer all Construction Health & Safety Officers must be available for health and safety meetings and shall participate fully in all activities outlined in this Specification and in the Contractors SHE Plan.

Furthermore, only full-time Health & Safety Officers will be appointed in writing and shall have no other duties, unless otherwise approved in writing by Engineer. All full time safety officers and managers will be required to hold SACPCMP safety professional registration by August 2015 legal implementation date. Safety practitioners joining the Kusile project after the August 2015 implementation date shall be required to register immediately with the SACPCMP and attain the relevant registration most timeously subject to the Engineers approval on a case by case basis.

The Contractor shall ensure that where there are two or more appointed safety officers that there is a sufficient safety management structure to manage safety professionals and the responsibilities required to execute the works appropriately. This safety organisation shall be led by a suitably qualified and experienced individual who will be appointed in writing as the Contractor Health & Safety Manager. The Health & Safety Managers full CV will be submitted to the Engineer for approval.

The Contractor shall ensure that the following appointments are made in writing, as applicable:

Reference	Description
16(1)	Chief Executive Officer
16(2)	Persons assigned functions to assist the Chief Executive Officer (if required)
17	Health and Safety Representative
19	Health and Safety Committee Member (if there are 2 or more H&S reps there will be a H&S committee)
19	Chairperson of Health and Safety Committee
GSR 3	First Aiders

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GSR 5(1)	Person that pronounces & certifies a confined space safe for the duration of work being conducted (applicable for confined spaces)
DMR 17(2)	Goods Hoist Inspector
GAR 9(2)	Incident / Accident Investigator
DMR18(11)	Lifting Machinery Operator (Appointment or Permit)
DMR18(5)	Lifting Machinery Inspector
DMR18(10)(e)	Lifting Tackle Inspector
EMR 9	Portable Electrical Equipment Inspector
VUP 10	Portable Gas Container Inspector
VUP 13(1)(b)	Pressure Vessels Inspector
Lifts, Escalators & passenger conveyor Regulations (6)(1)	Competent Person to examine and maintain lift, escalator or Passenger Conveyor
HCS 3(3)	Hazardous Chemical Substances Co-coordinator
Asbestos Regulation 21	Person registered as an Asbestos Contractor (Asbestos AIA) by the Department of Labour
CR 5(1)(k)	Appointment of the Contractor by the Employer
CR 7(1)(c)(v)	Subcontractors Appointment by the Contractor
CR 8(7)	Construction Supervisor appointed by the Contractor's OH&S Act Section 16(2) assignee
CR 8(8)	Assistant Construction Supervisor appointed by the Contractor's OH&S Act Section 16(2) assignee
CR 8(5)	Construction Health and Safety Officer
CR 9(1)	Person to Compile Risk Assessments
CR 10(1)(a)	Competent Person to compile Fall Protection Plan
CR 12(1)	Person to supervise temporary works

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CR 13(1)	Person to supervise Excavation Work
CR 14(1)	Demolition Work Supervisor
CR 21	Competent Person in the use of Explosives & Development of the Method Statements
CR 17(1)	Competent Person as Suspended Platform Supervisor
CR 17(8)(b)	Competent Person to Conduct Performance Test of Suspended Platforms
CR 16(1)	Competent Person as Scaffolding Supervisor
CR 19(8)(a)	Material Hoist Inspector
CR 20(1)	Competent Person as Bulk Mixing Plant Supervisor
CR 21(2)(b)	Competent Person as Explosive Powered Tool Inspector
CR 21(2)(g)(i)	Appointed Person responsible for issuing & collection of Explosive Powered Tools cartridges & nails or studs
CR 23(1)(k)	Construction Vehicle and Mobile Plant Inspector
CR 24(e)	Competent Person for Temporary Electrical Installation Inspections
CR 28(a)	Competent Person for Stacking and Storage Supervisor
CR 29(h)	Competent Person as Fire Fighting Equipment Inspector
CR 5 (1) (b)	Emergency Planning Co-coordinator
CR 5 (1) (b)	Fire Official
CR 5 (1) (b)	Environmental Officer
CR 18(1)(a)	Rope Access Supervisor (new appointment)
CR 8(1)	Construction manager (new appointment)
SANS 12480-1&3	Crane coordinator – Tower crane operations /Appointed Person Mobile Crane operations
CR 8 (2)	Assistant Construction Manager (new)

Notes to the appointments listed above:

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Section 16(1) creates a legal presumption, and therefore no appointment is required. The Contractor shall provide the full names, contact telephone number and business address of the Chief Executive Officer.

Health & Safety Representative Required Competencies:

- General Health and Safety Training
- Health and Safety Representative Training
- Hazard Identification and Risk Assessment Training
- Incident Investigation and Root Cause Analysis Technique Training

Construction Supervisor Required Competency:

- Three years applicable experience in construction management
- General Health and Safety course
- OH&S Act and Regulations or Mine Health and Safety Act and Regulations course, as applicable (latest version of the Act and Regulations)
- Incident Investigation and Root Cause Analysis Technique Training
- Hazard Identification and Risk Assessment Training
- Job Observations Training
- Attended an accredited supervisor's safety course

If the Commencement date precedes the date of issue of this Specification (rev 5), the Contractor shall have a period of three months to comply with the above competency requirements; except to the extent required by applicable Law in which case immediate compliance is required.

Safety Officer Appointment

Typical Qualifications:

- National Diploma in Safety Management or Environmental Health;
- A recognised safety certification (minimum: of 2 weeks training) (e.g. SAMTRAC / Modern SHEQ Management course) and registration and accreditation from a recognised Health and Safety Professional Body

All safety practitioners shall be registered with Statutory Body- SACPCMP from August 2015

Typical Competencies:

- OH&S Act and Regulations (latest version of the Act and regulations);
- COID Act (latest version of the Act);
- Incident Investigation and Root Cause Analysis Technique;
- Hazard Identification and Risk Assessment Training;
- Health & Safety Auditing;
- Environmental Compliance Recognised Course;
- Emergency Preparedness Coordination Training

The Contractor shall appoint and provide a full time, suitably qualified and competent Environmental Officer (EO) for the duration of the Contract, with a minimum average ratio of 1 Environmental Officer per 500 employees.

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Tenderers must provide examples of Contractor's Personnel considered appropriate for the required appointments and, where possible, details of intended appointees, with the Tender.

The actual appointments shall be communicated to the Engineer for approval at least 28 days before mobilisation of the first Contractor's Personnel at the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) and shall include a copy of the appointment letter, a Curriculum Vitae and relevant certificates of competency for the proposed role.

Where the Works are carried out on areas governed by the Mine Health and Safety Act 29 of 1996 or other Law applicable to mining activities, the appropriate equivalent appointments and assignments shall be made as required.

3.6 Induction and Training

All Contractor's Personnel shall undergo induction as provided for and required under section 4 part 6, Personnel, Accommodation and Industrial Relations before commencement of work on the Project Site (or on other places, if any, as may be specified under the Contract as forming part of the Site), and shall be renewed annually. Appropriate time must be set aside for training (induction and other) of all Contractors' Personnel including the annual Re-Induction Training.

Additionally, all Contractors' Personnel shall undergo Eskom's Health, Safety and Environmental Induction Training before commencement of work on the Project Site (or on other places, if any, as may be specified under the Contract as forming part of the Site). This training shall be arranged by the Contractor, with the Employer.

Visitors to the site shall be required to undergo and comply with the Project Visitor Health, Safety and Environmental Induction requirement prior to being allowed access to site. This training shall be conducted by a person deemed competent to deliver the training.

All visitors shall remain in the care and custody of a person (host) who has received a full induction. Acknowledgement of receiving and understanding the induction shall be signed by all persons receiving this induction. A copy of this signed understanding of induction shall be maintained by each person for the duration of their site visit per Construction Regulation 7(8).

Prior to induction all Contractors Personnel shall undergo a pre-employment medical examination and be confirmed fit for duty, in accordance with paragraph 8.6 Medical Surveillance Programme. This examination shall be arranged by the Contractor at the Contractor's cost. A copy of the certificate of fitness shall be presented for permanent record at the induction centre and kept at the Contractor's Project Site office as a permanent record.

Personnel are responsible for their own health and safety and that of their co-workers within their work area. They shall be made aware of their responsibilities during induction and awareness sessions which include:

- Familiarising themselves with their workplaces and health and safety procedures.
- Working in a manner that does not endanger them or cause harm to others.
- Keeping their work area neat and orderly; free from excessive materials which could pose hazards.
- Reporting all incidents / accidents / occupational ill-health and near misses.
- Protecting fellow workers from injury.
- Reporting unsafe acts and unsafe conditions.
- Reporting any situation that may become dangerous.
- Carrying out lawful orders and obeying health, safety and environmental rules.

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The Contractor shall ensure that all Contractors' Personnel undergo general work induction with regard to the approved SHE Plan, general hazards prevalent on the Project Site (and prevalent at other places, if any, as may be specified under the Contract as forming part of the Site), Construction Risk Assessment, (Kusile Site Health and Safety rules Section 4, Part 9.1 of the Contract and other related aspects.

The Contractor shall ensure that all Contractor's Personnel undergo their specific work induction with regard to the approved SHE Plan. The Contractor shall ensure that Contractor's Personnel are informed of and understand of the work to be performed, the specific hazards prevalent to the work performed and the control measures required to mitigate such risks.

Evidence of training skills and competencies shall form part of the Contractor's submission as required under the Work Co-ordination Process (refer section 4 Part 4 of the Contract). Proof of job specific induction signed by inductor and trainee shall be submitted as part of the Work Coordination Application.

The Contractor shall ensure that all Contractor's Personnel working on the Project Site (or on other places, if any, as may be specified under the Contract as forming part of the Site) are adequately trained in the type of work / tasks to be performed. This training shall extend to include relevant procedures, hazard identification and risk assessment. Contractor's Personnel shall have the appropriate qualifications, certificates and tickets, and shall work under competent supervision. Copies of records of appropriate training and qualifications for all Contractors' Personnel shall be kept and maintained on site.

When there is an amendment to an Act, Regulation, Kusile Site Health, Safety and Security Manual, Contractor's SHE Requirements Specification and/or SHE plan, all affected staff shall undergo the relevant re-training.

3.7 Occupational Health, Rehabilitation and Hygiene

3.7.1 Compensation for Occupational Injuries and Diseases

The Contractor shall submit, and shall ensure that each Subcontractor submits evidence of current registration and a Letter of Good Standing with the Compensation Fund or, with a licensed compensation insurer. This shall be renewed as and when required so as to remain valid for the duration of the Contract.

3.7.2 Employee Health and Wellness Programme

The Contractor shall submit details of his Employee Health and Wellness Programme as part of his SHE Plan which shall include a Medical Surveillance Program and an Employee Assistance Program as detailed below:

3.7.3 Employee Assistance Programme

Where Contractors or Subcontractors do not have Employee Assistance Programme (EAP) service providers, the Employer's EAP service provider, will be available to provide assistance. All arrangements shall be made by the Contractor. All costs in this respect shall be borne by the Contractor.

Contact details are: ICAS – Tel. No.: 0800 611 059.

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3.7.4 HIV / Aids Awareness Programme

An HIV/AIDS Awareness programme will be implemented by the Employer. This will include voluntary counselling and testing (VCT) of individuals, HIV/AIDS awareness training and access to ongoing support for affected individuals. The Contractor shall ensure that the Contractor's Personnel are aware of this programme.

3.7.5 Occupational Hygiene

Identification: The Contractor shall identify the occupational stressors which could include exposure to chemical and biological hazards, noise, dust, vibration, heat, etc., to which any person may be exposed as a result of his work activities.

Risk assessment: Once the occupational stressors have been identified the risk shall be assessed in accordance with statutory requirements including manual handling, including the nature of the stressor, the work process, the exposure severity and duration, possible adverse effects etc.

Control measures: The Contractor shall provide details of all control measures that shall be implemented to eliminate or reduce exposure to occupational stressors. Where mechanical means are employed he shall provide details of how these shall be maintained to ensure that they operated at maximum efficiency.

Monitoring: The Contractor shall provide and adhere to effective monitoring procedures. These procedures shall include the planning, carrying out and recording of the results of the measurement programme. This is to confirm the effectiveness of the implemented control measures and the results shall be made available to the Engineer on request.

3.7.6 Medical Surveillance Programme

The Contractor shall ensure that all Contractors' Personnel are registered on a medical surveillance programme appropriate to their occupational exposures and in possession of a valid medical health certificate. The certificate of fitness shall also be required that is relevant to the type of work (risk based) that the employee will be performing. The Engineer will only accept medical surveillances conducted by Registered Occupational Health Practitioners who hold valid qualifications in occupational health.

The Contractor shall ensure that all Contractor's Personnel have undergone pre-entry medical examination before starting work on Project Site (or on other places, if any, as may be specified under the Contract as forming part of the Site). An exit medical examination shall be done by all Contractors' Personnel before leaving the Project Site (or other places, if any, as may be specified under the Contract as forming part of the Site). The pre-entry and exit medicals shall, as a minimum, be to the standard of what is referred to as 'Red Ticket' medical fitness certification, similar to that which is used at South African mines.

The certificate shall be issued before the employee commences work and shall be presented at induction. If the Contractor does not provide proof of valid certificates of fitness for a Contractor's Personnel, then such Contractor's Personnel shall not be permitted access to the Project Site (or such other places, if any, as may be specified under the Contract as forming part of the Site).

The certificate shall be renewed annually (for personnel who are not office bound including drivers) and once every 3 years (for personnel who are office bound). Exit medicals shall be conducted immediately prior to the termination of the employee's engagement at the Project Site (or at such other places, if

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any, as may be specified under the Contract as forming part of the Site) unless otherwise advised by the Engineer.

All Contractor's Personnel shall be issued with the required medical records to prove medical status at the time of exiting the Project Site (or such other places, if any, as may be specified under the Contract as forming part of the Site).

The Contractor shall provide a documented process for managing those Contractor's Personnel who are issued with a conditional certificate of fitness.

In instances where sick leave is taken for a period of one week or more, the Contractor shall submit a declaration signed by the Contractor's Personnel in question indicating that she or he did not suffer any illness or injuries which occurred in the period of absence, which may affect his ability to work on the Project Site (or at such other places, if any, as may be specified under the Contract as forming part of the Site).

3.7.7 Emergency Care

A list of site emergency numbers shall be posted adjacent to all telephones and in every office.

The Contractor shall ensure that Contractors' Personnel are familiar with the emergency numbers and also are provided with stickers, with the emergency numbers printed on, to place inside their hard hats.

The Contractor shall have one first aid box to cover the first 5 persons on the Project Site (and at other places, if any, as may be specified under the Contract as forming part of the Site) and thereafter one for every 50 or team of workers, or part thereof.

Additional first aid boxes shall be provided if the risks and / or distance between work teams or workplace requirements require it (it shall be available, compliant and accessible for the treatment of injured persons at that workplace).

Prominent notices or symbolic signs compliant with SABS 1186 shall be displayed in prominent places in the workplace, indicating where the first aid box or boxes are kept as well as the name and contact details of the First Aiders.

3.8 Emergency Preparedness and Response

3.8.1 Emergency Response Plan

The Contractor shall develop his own emergency response plan for both work areas and office areas and submit this plan to the Engineer for approval. The plan shall be amended as required by the Engineer. The Contractor shall ensure that all Contractors' Personnel are aware of and trained in the execution of the emergency plan.

Periodic emergency drills will be undertaken by the Employer or Engineer. The Contractor shall also initiate his own emergency drills, with the co-operation, and subject to the approval of the Engineer. Details of such drills shall be recorded and such records shall be made available on request.

The Contractor shall be responsible for ensuring that his emergency plan is reviewed annually, and after every incident which caused the emergency plan to be activated. Any changes made shall be briefed to all persons affected and the information provided to the Engineer.

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3.8.2 Fire Safety

Refer also to section 4 part 5 of the Contract, Site Facilities and Services the Contractor shall develop fire safety and evacuation procedures for any area under his control prior to the commencement of any work thereon. The procedure shall take into consideration the size of the area, types of work being done (e.g. cutting, welding, grinding, etc.), amount of combustible materials present etc. It shall take account of any hot work permit arrangements and all other applicable fire and evacuation procedures. All Contractor's Personnel entering and working on the Project Site, and other places, if any, as may be specified under the Contract as forming part of the Site, shall be trained in fire safety and emergency evacuation and any other duties they are required to perform e.g. Fire Warden.

Existing fire management systems in buildings shall be maintained during construction whenever possible. Any changes shall be approved by the Engineer before implementation.

The contractor shall be at all-times available for any meetings and interventions that are arranged by the Engineer in the sake of fire and emergency safety.

3.8.3 Fire Safety Plan

The Contractor shall prepare a Fire Safety Plan which shall include:

1. The designation and organisation of Contractors' Personnel to carry out fire safety duties, including fire watch service, if applicable.
2. Emergency procedures to be used in the case of fire, including:
 - method of sounding the fire alarm;
 - notifying the fire department;
 - instructions to Contractor's Personnel;
 - firefighting procedures;
 - evacuation routes;
 - location of assembly points, and
 - Integration with existing emergency procedures.
3. The control of fire hazards in and around buildings.
4. Maintenance of firefighting facilities.
5. Display in strategic places a site plan that will illustrate the assembly points, locations of means of raising the alarm and extinguisher media. A plan shall be drawn up for each area under the Contractors control and shall, where appropriate, include office and welfare facilities.

3.8.4 Fire Alarm Shut-down

The Contractor shall inform the Engineer of all fire alarm shut-down requests in writing 7 days prior to any part of a fire alarm system being shut down. When this is required the Contractors shall develop alternative procedures, as approved by the Engineer, to follow during a fire alarm shutdown.

3.9 Work Stoppage

The Engineer is entitled to stop the execution of the Works and issue non-conformance notices for health, safety or environmental violations. Any non-conformances / findings / observations found during audits / inspections shall, where practicable, be raised, discussed and resolved with the Contractor.

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The conditions that can lead to work stoppages include but shall not be limited to:

- Management of change: This is when there are changes to the work environment (e.g. management / supervisory changes) and / or construction work (e.g. modifications to the design) at any phase of the construction period, and / or amendments with regards to the Employers rules and regulations and / or legislative amendments;
- Unsafe acts / behaviours by Contractor's Personnel;
- Unsafe conditions resulting from unforeseen hazards, changes in working procedures, unexpected weather conditions and malicious acts of vandalism.

In the event of unsafe conditions being identified by any person, the process to be followed shall be:

- The Engineer shall be informed immediately.
- The work activity shall be stopped immediately and conditions made as safe as possible as an interim measure.
- The affected workforce shall be removed from the work area and the Contractor shall correct the health and safety deficiencies by allowing only the people in the area that are competent to make the area safe.
- The Contractor shall ensure that no other work is being performed in the area during this time. The area shall be barricaded and a sign placed with the wording "Unsafe Area – Authorized Access Only". Where necessary, guards shall be posted to prevent entry.
- The Engineer shall review the affected parts / sections of the SHE Plan with the purpose of providing additional SHE information to the Contractor to enable the establishment of a safe working environment.
- The Contractor shall revise the relevant sections in the SHE Plan to accommodate the changes.
- The Engineer shall review the revised provisions in the SHE Plan to ensure they are adequate and approve it before the work activity is commenced. The work activity / work area shall be subject to additional monitoring in the initial stages to ensure that safe conditions remain.
- Before the workforce is allowed back in the area, the Contractor shall ensure:
- The area is re-inspected by the Contractor's Health and Safety Officer and Construction Supervisor who shall note corrective actions taken;
- Declare the area safe for work by signing off on the "work stoppage" notice issued by the Engineer.

3.10 Hazard and Risk Management

3.10.1 The Kusile SHE Policy is "Zero Harm to People and the Environment"

Refer also to section 4 part 4, Project Site Regulations of the Contract

3.10.2 Hazard Identification

The Contractor shall identify hazardous and potentially hazardous work operations. He shall demonstrate that work hazards, work activity risks and the mitigating measures have been considered in his risk assessments. Activity based risk assessments shall be carried out by competent persons.

The Contractor shall provide work task risk assessments and examples of work methodologies to the Engineer, at least 56 days prior to site establishment to allow for the Engineer to review them.

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The Contractor shall provide work task method statements and / or written safe work procedures to the Engineer, at least 56 days prior to mobilisation of the first Contractor's Personnel at the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site).

3.10.3 Specific Health and Safety Hazards

In complying with the requirements of Construction Regulation 5(1)(a), the specific known health and safety hazards pertaining to the environment and physical conditions that the Contractor may be exposed to in performing his work on the Project Site (or on other places, if any, as may be specified under the Contract as forming part of the Site) are listed under paragraph 20.

The Employer and the Engineer will make all reasonable efforts to ensure that the information provided is complete and correct. However, the Contractor shall make his own assessment of the hazards and risks associated with the work under the Contract or which he is responsible. Without derogating from any other requirements under the Contract, the work shall not be executed at the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) until the Engineer has reviewed the Contractor's Risk Assessment and Method Statements as required under the Work Co-ordination Process.

The Contractor shall on a daily basis and for every task to be performed, conduct a pre-task risk assessment with all Contractors' Personnel involved with the task(s). The pre-task risk assessment shall form the basis of the daily pre-job briefings / tool box talks prior to the start of work. Proof of communication as well as confirmation that it was received and understood by all will be noted on a standard form, which shall be kept at the job site during the job execution. The completed signed pre-task risk assessment form shall be filed in the Contractor's Health and Safety File.

The Contractor shall Conduct his undertaking in such a manner as to ensure, as far as reasonable practicable, that persons other than those in his employment who may be directly affected by his activities are not thereby exposed to hazards to their health and safety

Any person who design, manufacture, import, or supplies any article for use at work shall ensure, as far as reasonable practicable, that the article is safe and without risk to health when properly used and that it complies with all prescribed requirements

A section 37(2) agreement must be signed between Eskom and the principal contractor at the time of awarding the contract. Note: this She specification will be deeming as the procedural agreement of compliance as contemplated in section 37.2 of the Occupational health and safety act 85 of 1993

The principal contractor must ensure that a section 37(2) agreement is compiled between the principal contractor and all their appointed contractors for the contract.

3.11 Project General Health, Safety and Security Rules

The Contractor and each Subcontractor shall be bound by and shall comply with the requirements of the Kusile Site Health &, Safety Rules (refer section 4, part 9.1) and shall comply with all such rules and regulations (in addition to those detailed in this Specification and the Kusile Site Health, Safety and Security Manual) as may be prescribed by the Engineer from time to time in connection with the Safety, Health and Environmental requirements. The Contractor shall ensure that each Sub-contractor and all Contractors' Personnel comply with all such rules and regulations.

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3.12 Incident Investigations

The Contractor shall report all incidents and accidents including near miss incidents, first aid, medical treatment, lost time incidents (disabling injuries & fatalities); OH&S Act Section 24 and 25 incidents; electrical contact; major equipment damage; chemical spillage and other Environmental Incidents to the Engineer within 24 hours of them occurring or, before the end of the work shift. The contractor shall ensure that all incident reporting classifications and investigation requirements are aligned with the Employers Incident Management Procedure, currently referred to as 32-95. This may include investigation format or documentation requirements.

For any incident (near miss, first aid, medical) that has contravened any of the Statutory Requirements, Employer's Lifesaving rules as well as Lost Time incidents, the Contractor's Representative (including the Subcontractor's Representative, if applicable) may be required to present to the Johannesburg or even onsite, the incident and the mitigation measures that would be implemented to prevent a recurrence and the implementation of a deadline for all corrective actions to be implemented.

The Contractor shall ensure that immediate post incident drug and alcohol samples are taken for all parties who are involved in the accident. This may include machine operators, riggers, flagmen and supervisors as well as any witness and the injured. Testing may take place even if there is no property damage or injury, as in the event of a near miss. The Contractor shall ensure that these facilities are available outside regular site hours if the Contractor is conducting any activities outside of normal working hours.

If it is found that the Contractor or their Subcontractors are not reporting incidents, steps (which may include disciplinary action) shall be taken against the line management of the Contractor and /or Subcontractors.

A comprehensive and detailed investigation report, including supporting documents, proof of actions taken and proof of communication to other affected employees, shall be completed within 14 days of the incident and submitted to the Engineer formally for review, comment and trending. Should the contractor require a greater period of time to conduct the investigation then permission should be sought from the Engineer or the Engineers assigned SHE professional. Medical reports received by the contractor after the investigation submission should be forwarded immediately to the Engineers SHE personnel.

Low and moderate near miss investigations should be completed on the day of the incident as they are contained in the near miss flash report form. For incidents where the cause is obvious and the remedial action is limited to trending, incident recall / lessons learnt or similar actions, the contractor should submit the completed investigation within seven days.

The Contractor shall ensure that all accidents / incidents are investigated by a competent person and are discussed at the relevant SHE committee meeting. The Employer reserves the right to participate in any accident / incident investigation if the accident / incident is directly linked to any activity related to the Works.

Case studies shall be compiled for all [high & extreme priority] near misses, lost time incidents and fatalities and cascaded as lessons to be learnt across the Project.

The Contractor shall keep at his Project Site Office a record of all accidents and incidents reported in the form of the OH&S Act Annexure 1 investigation form as referenced in the OH&S Act. (Incident Investigation Report).

The Employer reserves the right to conduct an independent investigation of any accident and / or incident reported by the Contractor or Subcontractors over and above their own investigations. The

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Contractor and Subcontractors shall co-operate fully with the investigation and implement any additional improvement measures.

Investigations shall begin as soon as practicable after the incident / accident has occurred. Where applicable and with appropriate authorisation (when required), photographs shall be taken of the scene of the incident as well as any equipment involved. Interviews with witnesses shall be conducted as soon as possible after the incident occurred whilst it is still fresh in their memory and if necessary followed up later to determine if further information was recalled.

The Contractor shall investigate all incidents immediately and supply to the Engineer a written report within three days, unless otherwise specified by Engineer, which shall include:

- Date, time and place of incident;
- Description of incident;
- Root causes of incident/accident;
- Type of injury and/or (if any);
- Medical treatment provided (if any);
- Persons involved;
- Loss or damage sustained (if any);
- Names and contact details of witness/s;
- Description of corrective action to prevent a recurrence (with clear deadlines and persons identified for taking remedial action).
- All corrective actions shall be closed out within 14 days of the date of the incident, unless otherwise agreed by the Engineer.

3.13 Reporting and Meetings

Refer to section 4 part 2, Programme, Progress Reporting and Meeting Requirements

3.13.1 Record Keeping

Refer to section 4 part 2, Programme, Progress Reporting and Meeting Requirements The Contractor shall keep and maintain a SHE File at his Project Site Office in which records of this Specification and the SHE Plan shall be kept in accordance with the requirements of the OH&S Act.

All information required in this Specification and SHE Plan shall be recorded in the SHE file for the duration of the Contract.

The Contractor shall also record in the SHE File:

- Information about removal or dismantling of installed plant and equipment;
- SHE information about equipment cleaning and maintenance programmes;
- Nature, location and markings of services;
- List of as-built drawings.

The SHE File shall be handed over to the Engineer on completion of the last of the Defects Notification Periods and prior to the issue of the Performance Certificate.

3.14 Employee Engagement and Behaviour Based Safety

The Contractor shall ensure that all personnel are participating in a suitable Employee Engagement Programme. The Contractor shall ensure the employee engagement programme includes for adequate training for supervisors to conduct wholesome observations and feedback to employees conducting

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work on the Kusile site. This training shall focus primarily on unsafe behaviours of employees as opposed to unsafe conditions on the Project Site. It is also important for the Contractor to recognize those individuals who are performing their work in an exemplary safe manner.

The Contractor shall retain suitable anonymous data from the programme and use these leading indicators to support their safety programme.

The Contractor shall establish a system that fully encompasses their subcontractors and applicable service providers and shall ensure that the engagement programme prioritises high risk activities.

The contractor will make sure that this data is available to the Engineer/ Employer if requested.

3.15 Audits

3.15.1 Approval and Compliance of the Contractor SHE Plan

SHE Audits may be carried out un-announced by the Engineer or the Employer. The Contractor's SHE Plan may be audited against a compliance checklist by the Engineer or other Employer's Personnel to confirm compliance with the requirements of the Contract

Implementation of the SHE Plan may be assessed by the Engineer or other Employer's Personnel by conducting a systems and physical conditions evaluation of the SHE Plan delivery.

3.15.2 Subcontractor Approval and Compliance

The Contractor shall require his Subcontractors to provide information for approval by the Engineer covering their proposed activities as part of the overall SHE Plan. These shall include as a minimum:

- Risk Assessments;
- Method Statements;
- Permits-to Work;
- Safe working procedures.

The Contractor shall review the Subcontractors submission and how it fits within the Contractor's SHE Plan. The documentation shall be submitted to the Engineer for approval.

3.15.3 Contractor SHE Performance Evaluation Compliance

The Engineer shall audit Contractor SHE performance on an ongoing basis.

3.15.4 Internal Audits

The Contractor shall conduct his own internal audits on Contractor's Personnel for the implementation of their SHE Plan on a monthly basis or when the scope of work changes.

A summary of the findings and the corrective actions shall be submitted to the Engineer on completion of the audit. The final report shall be submitted within seven days after completion of the audit.

The Contractor shall provide an audit non-conformance tracking matrix identifying responsibilities for close out of non-conformances. This shall be reviewed with the Engineer on at least a weekly basis to ensure close out of audit non-conformances.

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3.15.5 Third Party Legal Compliance Verification Audits

If the Contractor has a third party legal compliance verification audit that is conducted on their activities at the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site), a copy of the findings and corrective actions must be provided to the Engineer. The report shall be provided within seven days after the completion of the audit.

3.15.6 SHE Plan Audits

Audits shall be conducted by the Engineer or other Employer's Personnel on the Contractor's implementation of his SHE Plan. These audits shall be attended by the Contractor's Representative.

3.15.7 Site Inspections by Contractors' Management

The Contractor should conduct regular site inspections monitoring for SHE compliance on a weekly basis. The Contractor should make arrangements to accommodate the Engineer or his representative on this inspection.

3.16 Permit to Work System (PTW)

The Eskom Permit to Work System (PTW) specify and provide requirements for the application of compulsory health and safety standards and procedures for the safeguarding of Plant and persons. This system forms an integral part of the approval process for work under the Work Co-ordination Process. The following Eskom Regulations shall be complied with:

- Eskom Plant Safety Regulations, GGR 0992;
- Eskom Operating Regulations for High Voltage Systems, ESKPVAEY6

The contractor shall ensure that adequately experienced personnel with the required levels of education are nominated by the contractor to attend all relevant training specific to the appointments required by the roles. Training shall be provided free of charge by Eskom, however, the candidates time shall be for the contractors own account.

3.17 Work Co-ordination Process

The Work Co-ordination Process is the Employer's mechanism designed for monitoring and managing individual Works and Project Works activities. The application of the Work Co-ordination Process prevents any conflict occurring between individual Works activities, inter-contractor activities and / or intra-contractor activity.

The Contractor should ensure that all relevant personnel attend both formal and informal meetings as necessary to ensure coordination between Contractors. Safety officers shall not be authorised to represent the Contractor in coordination issues unless approved by the Engineer.

The Work Co-ordination Process provides the management arrangements for reviewing, controlling and monitoring each Contractor and their individual work packages whilst they are present and working on the Project Site (or working at other places, if any, as may be specified under the Contract as forming part of the Site).

The Work Co-ordination Process identifies the complete SHE working requirements the Contractor will need to provide to the Engineer to enable assessment of their procedure and controls. It is designed to

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allow the work to proceed without risk to the health and safety of Contractors' Personnel, other contractors operating in the vicinity, visitors, delivery personnel and Employers' Personnel.

The Work Co-ordination Process is a data collection vehicle requiring specific information to be provided by the Contractor to the Engineer. All of the information provided will have an influence on the effective and safe delivery of a work package.

In the design of a work package, the Contractor has a responsibility through his SHE Plan to provide specific information.

This comprises:

- A safe system of work for the overall work package.
- Method Statements covering how individual work elements will be completed.
- Risk Assessments for each work element.

As part of the methodology for the delivery aspect, a Contractor has additional responsibility to provide work task data. This will include:

- Work package logistic details:
- Names forming the contractors work team/s
- Names of Subcontractors to be used and their work team/s;
- Work team competencies, skills and appointments;
- Proposed start day/time;
- Expected finish time for the day;
- Expected finish day / time for the overall work package (if not the same day);
- Location / zone of work package delivery.

Work Package delivery information:

- Permit requirements;
- Tools, plant and equipment to be used;
- Current certifications for the plant and equipment, where applicable;
- Non hazardous materials to be used including the material safety data sheet;
- Hazardous materials to be used including the current material safety data sheet.

Work Package management:

- Supervisory arrangements;
- SHE monitoring arrangements.

Work Package SHE requirements:

- Emergency Plan;
- First Aid arrangements;
- Firefighting arrangements.

The Work Co-ordination Process operated by the Employer provides an assessment of the work package information against the overall work programme being carried out. It ranks each of the Contractors' activities and hazards against their individual SHE risk.

The Contractor shall submit his Work Co-ordination Package to the Engineer at least seven days prior to the work activity, unless as otherwise consented to by the Engineer.

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3.18 Environmental Management

3.18.1 General Requirements

Refer also to the following:

- Section 4 part 4,
- Section 4 part 5, Project Site Facilities and Services
- Section 4 part 10, Water Use licences and general authorisations
- Section 4 part 11, Environmental authorisations, waste permits and main project EMP
-

The Contractor shall comply with all relevant Laws, environmental legislation, regulations, and Employers Policies and Procedures

3.18.2 Site Establishment and Management

The Contractor shall produce a Contractor Yard layout plan detailing the position and environmental specifications for all buildings, vehicle wash areas, fuel storage areas, hazardous materials storage areas, drainage systems, cement storage areas and any other necessary infrastructure for approval by the Engineer.

The Contractor shall ensure that there are adequate collection facilities for liquid run-off for any areas where there is a liquid pollution potential and that any vehicle maintenance is only carried out on surfaces that are easily cleaned and contained. Non-flammable, oil-resistant coverings shall be used to protect concrete surfaces from staining.

3.18.3 Fauna and Flora

All vegetation that requires removal from an area shall be determined and demarcated in conjunction with the Engineer. Cutting and chipping shall be the method of vegetation clearance as opposed to using bulldozers.

There shall be no disturbing, injuring or killing of any fauna for any purposes. All areas shall be kept clean and tidy of all waste materials but particularly waste food products that will attract rodents and scavengers.

3.18.4 Herbicides

A herbicide register shall be compiled and maintained by the Contractor. A copy shall be provided to the Engineer as part of the SHE File. The application of herbicides shall be in accordance with the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act No. 36 of 1947. Only Government approved and tested herbicides with a low environmental risk shall be used. Only registered pest control operators may apply herbicides on a commercial basis. All staff applying herbicides shall be trained in the application of herbicides.

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3.18.5 Hazardous Materials / Chemicals Management

Prior to any Hazardous Chemical Substance (HCS) being brought onto the Project Site (or onto any other places, if any, as may be specified under the Contract as forming part of the Site), the Contractor shall supply the Engineer with the following:

- Material Safety Data Sheets (MSDS) for materials in accordance with the requirements of the OH&S Act - Regulations for Hazardous Chemical Substances;
- Purpose for using the hazardous substance;
- Proposed arrangements for safe storage;
- Proposed methods for handling / usage;
- Proposed method of disposal;
- Hazard communication / training plan.
- A copy of the assessment that shall fulfil the requirements of the HCS regulations
- Details of maintenance of control measures to ensure optimum efficiency.

The information shall be provided for the Work Co-ordination Process at least seven (7) working days prior to the expected delivery. The Engineer will review and may approve or reject the use of any hazardous chemical substance after receiving the above information.

3.18.6 Storage of Hazardous Substances

A register of Hazardous Substances and Material Safety Data Sheets shall be developed, maintained and kept at the Contractor's Project Site Office and shall be made available to the Engineer. The associated assessments shall include all method statement submissions.

Without limiting the Contractor's responsibilities under applicable Legislation, work shall be conducted in such a manner as to ensure that:

- No substance, which can harm or is likely to harm the environment, is to be allowed to leak, spill or escape from any container or storage area.
- No oil or other effluent is permitted to escape into the drainage system and / or local storm water system.
- No oil or other effluent is permitted to escape into the ground and cause soil contamination.
- All powdered pollutants generated during execution of the works are contained to prevent air pollution.
- No sediment generated is permitted to escape into the drainage system and / or local storm water system.
- No harmful solids or liquids are permitted to spill from containers whilst in transit on the premises.
- All storage in drums and intermediate bulk containers shall be in accordance with the Kusile Site Health, Safety and Security Manual.
- All oil-based waste material shall be kept segregated and placed in sealed 200 litre drums, in accordance with the Kusile Site Health, Safety and Security Manual. This material shall be disposed of through a recognised oil recycling company.
- All water-based waste material shall be kept apart. Small amounts shall be collected and stored in 200 litre containers. Large amounts shall be pumped into a bulk tanker for disposal. Prior to disposal, all water-based material shall be sampled to allow analyses to be carried out.
- All bulk fuel storage shall be in accordance with the Kusile Site Health, Safety and Security Manual. No below-ground storage tanks will be allowed.

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- All fixed facilities such as generators, compressors and transformers shall be situated within bunded facilities.
- All portable facilities such as portable generators shall be located on suitable portable bunds or drip trays.
- Spill kits shall be provided at all fixed facilities.
- All bunds and drip trays shall utilise oil absorbent booms.
- All bunds and drip trays shall be designed and operated such that no fauna can use the facility as a drinking trough.

3.18.7 Flammable and Combustible Materials

Proposals to store fuel and other flammable and combustible materials shall have written approval from the Engineer. The volumes allowed to be stored will be dependent on the Kusile Site Health, Safety and Security Manual and South African Statutory Regulations and EMP/ROD.

All fuels shall be stored in a secure bunded area. Any volume greater than 40 litres shall be stored in a secure flammable / combustible materials store. Suitable precautions shall be taken to contain any spillage and / or leakage. Environmental absorbent material shall be readily available for controlling accidental spillages.

A plan of the proposed bunded area shall be provided to the Engineer for approval prior to construction. This shall include details of containment and drainage.

Before a machine, plant and / or equipment is refuelled, the motor shall be stopped. Refuelling shall take place at designated safe areas and appropriate warning signs installed. Suitable drip trays shall be used to prevent spillage at the filling nozzle. Environmental absorbent material shall be readily available for controlling accidental spillages.

All fuel storage areas shall comply with the following minimum requirements:

- A risk assessment shall determine the health and safety measures and controls that shall apply.
- Storage shall be well clear of occupied buildings by a distance of at least 50 metres.
- Storage areas shall be kept free from all combustible materials.
- All danger signs shall be prominently displayed, i.e.:
 - Flammable Liquid;
 - No Smoking;
 - No Naked flames;
 - Appropriate Hazardous Chemical Identification.

3.18.8 Explosives

Explosives shall not be brought onto the Project Site (or onto any other places, if any, as may be specified under the Contract as forming part of the Site) or be used without the written permission of the Engineer.

The use of explosives shall only be permitted with an approved licence. The use of explosives shall only be permitted within the confines of a clearly defined and controlled Danger Area.

The use of explosives shall require a review of the Site Emergency Arrangements.

A specific method statement shall be provided for each blasting operation and as required under the Contract.

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Explosives or detonators shall not be stored on the Project Site (or on any other places, if any, as may be specified under the Contract as forming part of the Site).

Detonators and other explosives shall never be carried or stored in the same container.

3.18.9 Water Management

Refer also to section 4 part 5, Project Site Facilities and Services

The Contractor shall develop a water management plan giving due consideration to water conservation and pollution prevention.

It is the responsibility of each contractor to manage storm water issues within their allocated areas of operation including laydown areas. Fencing within laydown areas may not be used to demarcate the area of responsibility. Contractors are responsible for the entire area that they are allocated.

Contractors are expected to manage the channels located downstream of their respective fences to ensure that no silt is released resulting in a negative environmental impact to other contractors. Any sanitary and welfare facilities utilised by the Contractor shall be regularly maintained such that there is no leakage or wastage of water.

Water recycling systems shall be used by the Contractor. This can include the introduction of grey water systems or recirculation water systems.

Any vehicle washing facilities shall be in accordance with the Kusile Site Health, Safety and Security Manual.

An adequate supply of drinking water shall be made available for Contractor Personnel. Additionally, sanitary means for consumption (e.g. water fountains or individual drinking cups) shall be provided by Contractor for Contractors' Personnel.

3.18.10 Fire Hazards

Refer also to 84LPS012A, "Fire Protection for Contractor's Yards"

The Contractor shall ensure that staff are educated in fire prevention and will be held responsible to avoid the risk of fire. No fires shall be allowed on the Project Site (or on any other places, if any, as may be specified under the Contract as forming part of the Site) at any time without the expressed authorisation of the Engineer.

3.18.11 Waste Management

Refer to section 4 part 5, Project Site Facilities and Services

3.18.12 Air, Dust and Noise Management

Refer also to section 4 part 4, Project Site Regulations and section 4 part 10, Environmental Management Plan

The Contractor shall monitor air quality, dust and noise caused by Contractor's Equipment, generators and other equipment during construction. Factors shall be considered such as wind which can often affect the intensity to which these impacts are experienced.

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To ensure that noise does not constitute a disturbance during construction activities, all construction works shall occur between specific working hours, all in accordance with the Contract. Mitigation measures shall be implemented as required and agreed with the Engineer.

Dust suppression measures shall be in place to reduce the dust caused by the movement of heavy vehicles and other sources.

Air quality control measures shall be in place to reduce the amount of air pollution caused by such things as silica in dust, vehicle emissions and other sources.

3.18.13 Environmental Incidents

Refer also to section 4 part 10, Environmental Management Plan

All environmental incidents such as pollution (air, water, land, noise, etc.), birds killed, and animals killed, and plants destroyed, public complaints etc. shall be reported to the Engineer within 24 hours of such occurrence.

All environmental incidents occurring on the Project Site (or on any other places, if any, as may be specified under the Contract as forming part of the Site) shall be recorded, detailing how each incident was dealt with in an Environmental Incident register in accordance with the Kusile Site Health, Safety and Security Manual.

3.18.14 Basic Hazard Identification

The specific known health and safety hazards pertaining to the environment and physical conditions that the Contractor may be exposed to in performing his work on the Project Site (or on other places, if any, as may be specified under the Contract as forming part of the Site) are listed below.

The Contractor shall however make his own assessment of, and satisfy themselves with the hazards and risks associated with the Works.

3.18.15 Environmental Hazards

- Heat exhaustion
- Sunburn
- Insect bites and stings
- Snake bites
- Rodents
- Thunderstorms
- Wind

3.19 Construction Hazards

- Construction vehicles and equipment
- Noise
- Dust
- Smoke
- Vibration
- Slippery conditions
- Fire hazards
- Falling objects

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- Open foundations, drains, trenches, sumps and manholes, etc.
- Hazardous chemicals, materials and gasses
- High pressure vessels and piping
- High temperature machinery and equipment
- Live electrical equipment and power supplies
- Rotating machinery and equipment
- Oil and chemical spillages
- Working at heights
- Confined spaces
- Sharp tools and objects
- Welding, grinding and cutting operations
- Blasting operations
- Overhead cranes
- Radiation
- Laser equipment

3.20 Kusile Safety, Health, Environmental Quality Statement of Commitment

The KET SHEQ statement of commitment is available upon request from the Engineer.

3.20.1 FORUMS FOR SHE COMMUNICATION

This section provides an outline of the different forums, where Project Site Management shall engage with the Contractor(s) on SHE issues. This also includes the frequency of the different forums as well as the mediums to be employed.

3.20.2 Project Kusile Executive SHE Committee Meeting

The Executive SHE Committee shall meet to discuss health, safety and environment issues on a monthly basis and shall be attended by Contractor Senior Project Management and Project Site Management.

3.20.3 Project SHE Review Meeting (BEE Safe)

The Project SHE Review Meeting will commence on a daily basis and shall be attended by Contractor Safety and Health Management.

3.20.4 General SHE Walk Down

The Project General SHE Walk Down will commence on a weekly basis and shall be attended by Contractor Management, Safety Practitioners and Safety & Health Representatives.

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3.20.5 SHE Representative Meeting

The Project Site Management will host on a monthly basis a meeting in which all Contractor SHE Representatives will be invited to attend. The meeting will consist of rotating topics on Safety, Health, and Environmental issues currently applicable to the Job Site.

3.20.6 Foreman & Supervisor forum

The Project Site Management will host on a quarterly basis a meeting in which all Contractor Foremen and Supervisors will be invited to attend. The meeting will consist of rotating topics on Safety, Health, and Environmental issues currently applicable to the Job Site.

3.20.7 Crane Forum

The Project Site Management will from time to time on an Ad Hoc basis call together a convening of the Contractor(s) to discuss crane coordination and safety issues that are currently applicable to the site. The Contractor will be expected to make available those responsible for Crane Coordination, Rigging, and Safety with due notice for these periodic meetings.

3.20.8 Crane Coordination Meeting

The Project Site Management will conduct on a bi-weekly basis a Crane Coordination Meeting. This meeting will serve as a forum for the Contractor to co-ordinate the movements and planned lifting activities of their cranes with their respective counter-parts and other Contractor(s) on the Job Site.

3.20.9 Emergency Coordinators Meeting

The Project Emergency coordinators meet 3 monthly to discuss emergency activities, changes on the acts and bylaws and any other feedback from activities conducted by the Employer on various Contractors as well as lessons learnt.

3.21 Project General Safety and Health Rules

The following sections of this document were previously referred to as Section 4, part 9.1 of the Contract.

3.22 Construction Vehicles & Mobile Plant

The Contractor shall adhere to the Project site traffic management plan.

All motor vehicles operated by the Contractor's Personnel within the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) shall, in all respects, comply with the South African Road Traffic Ordinance and Road Traffic Act.

Designated drivers shall be in possession of a current driver's licence, valid for the class of vehicle they are required to operate. The driver's license shall be kept on the person and shall be produced on request.

The maximum speed limit within the bounds of the Project Site is 40 km/h. Additionally, the maximum speed limit within the bounds of the Project Site construction office and parking areas is 8 km/h.

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No Contractor's drivers or operators may talk on cell phones or two way radios whilst driving under any circumstances. This includes the use of hands-free kits. All cell phones used by drivers shall be switched off before commencing a journey. Cell phone calls by drivers shall only be made when the vehicle is stationary, in a place of safety, and with the engine switched off.

It is the responsibility of the driver to ensure:

- They and their passengers wear seat belts whilst the vehicle is in motion. This applies to front and rear seat passengers.
- They comply with all safety, direction and speed signs.
- That vehicle loads are properly secured onto vehicles.
- Those vehicles are not overloaded and are within their safe working load limit.

Instructions for the transportation of tools/equipment/material & persons on the back of construction vehicles must be adhered to:

- No Contractor's Personnel are to be transported in the back of construction vehicles.
- Tools, equipment & material transported in vehicles shall be secured in order to prevent movement;
- Vehicles shall be provided with fixed & firmly secured seats and seat belts - adequate for the number of passengers being transported. Passengers in vehicles shall only be transported according to the number of seat belts present.
- The driver & all passengers shall be seated with seatbelts fastened whilst the vehicle is in motion
- Construction vehicles, such as bakkies, shall be fitted with roll over protection devices (e.g. roll bars) and approved by the Department of Road and Transport.

The Contractor shall ensure that the Contractor's Personnel do not:

- Ride on the back of elevators, cranes or other mobile plant equipment.
- Leave vehicles unattended with the engine running. Ignition keys shall be removed in all cases when the vehicle is left unattended.
- Park vehicles in unauthorised zones/areas or where parking will obscure other vehicle or pedestrian visibility.

Contractors must establish a formal key control or similar stringent authorisation for operators / drivers of all construction vehicles (plant and equipment). All construction vehicle keys must be secured overnight and prevent unauthorised use.

The Engineer reserves the right to search any vehicle on the premises or when entering or leaving the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site). The Contractor shall be solely responsible for the safety and security of any of his vehicles (including private vehicles) on the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site).

The Contractor shall attach unique identification markers on all of their vehicles that are permitted to enter the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site). A current maintenance logbook is required for all cranes and construction equipment which shall be made available for inspection at any time. The logbook shall be located in the cabin of the crane or construction equipment.

The Contractor shall ensure that visibility (e.g.: switching on of lights, reflectors, barricades equipped with lights, use of orange beacon lights, etc.) is installed on all construction vehicles and

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mobile plant in order to identify the location of the vehicles or plant at all times. All construction vehicles when travelling on the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) shall use headlights at all times.

All contractors using mule utility carts are required to implement an approved procedure. All mules require bakkie whip flags in addition to all other requirements.

Contractor must maintain vehicles in roadworthy condition and hold a valid vehicle license (DISC). Vehicles shall be subject to inspection by the Employer on random basis. Vehicles which are found to be in an un-roadworthy condition shall not be permitted onto the project site.

In the event where the Contractor does not own the Equipment, the Contractor is still responsible for ensuring all conditions are complied with by all of their Subcontractors. Drivers/operators shall be responsible for the travel-worthiness of all loads conveyed by them. Precautions shall be taken to lash all loads properly and securely. Loads projecting from vehicles shall be securely loaded. In daytime a red flag and during darkness a red light or red reflective material shall be attached to the extreme end of such projecting material.

Every mobile machine shall have a “banksman or spotter” when reversing and be fitted with a siren/hooter alarm which sounds when the machine is reversing.

All buses including minibus taxis used to transport contractors personnel shall be fitted with a siren/hooter alarm which sounds when the vehicle is reversing. This includes vehicles working both inside and outside of the construction area.

All buses of all sizes shall carry warning triangles, all seats be fitted with seat belts, appropriate number of emergency exits (1 per 12 passengers), fitted with yellow reflective tape and the driver's seat be partitioned with appropriate protection approved by the manufacture or constructed using materials that does not pose risk to the driver or passenger. Fold up / jockey seats are not permitted. All seps must have anti slip treads installed.

All spotters will be trained in the hazards associated with the machine and the operation that it is conducting. The Contractor shall ensure that all personnel and the subcontractors are trained at intervals of no more than 3 months in the Sap2move process. Programme details are available from the Engineer.

In the event of machinery working in a confined area with adjacent obstructions or plant, the Contractor shall establish a construction zone. The zone is established around a plant operation and all personnel are excluded. A trained spotter will be used to ensure personnel do not venture into the zone mistakenly.

Segregation of walkways must be provided where applicable and feasible on the Job Site in order to ensure that pedestrians on the job site are protected from the hazards of the actual “working” area. Walkways need to be clearly marked with the appropriate signage.

Drivers of all vehicles must allow appropriate travel distance between vehicles travelling in front of them and at no time shall “tailgating” be permitted.

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All personnel conducting construction works on public roads or live site roads such as the north, south and east peripheral road shall conform to South African Road Traffic Signs Manual.

All vehicles being used to escort large loads or other construction plant will be identified as an escort vehicle by a magnetic sign on sides and rear of vehicles. Escort vehicles shall not use hazard flashers as it is impossible for other road users to interpret their meaning or to determine the direction of travel.

All self-propelled lighting towers that are used on the project will be designed in a way that in the event of a mechanical failure when raising or lowering the mast, personnel will be standing in a place where they are not in danger from the falling mast. All personnel erecting and operating lighting towers will be trained in line with the manufacturer's requirements and the owner's risk assessment before use.

3.23 Housekeeping

The Contractor is responsible for clearing his work area to the satisfaction of the Engineer. A routine inspection of all work areas shall be undertaken daily to ensure that housekeeping standards are being maintained.

In cases where an inadequate standard of housekeeping has developed, compromising health, safety and cleanliness, all staff has the responsibility to bring it to the attention of the Engineer. The Engineer will have the authority to instruct the suspension of the relevant Works until the area has been tidied up and made safe. Neither additional costs nor extension of time to the Contract shall be allowed as a result of such work stoppage. Failure to comply will result in site cleaning by another cleaning contractor at the cost of the Contractor.

Leads, hoses, and extension cords shall be hung up (approximately 2.5m) with a non-conductive material, off all floors, stairways, and walkways. Leads, hoses, and cords are to be removed from the work area when the work is completed or when they are no longer intended to be used. Lead, hose, and cord "roll-ups" will be required if an excessive amount of equipment accumulates in a work area creating housekeeping or trip hazards. Electrical cords must not be hung by tie wire of any other material that can cut the cable. The Contractor shall add additional insulation to a hanging point if it is connected to a metal structure or scaffold.

Before storing any material, the Contractor must consult the Engineer for allocation of a stacking area. Nails and staples etc. protruding through timber and packaging shall be removed or bent over so as not to cause injury.

All packaging material including boxes, pallets, crates, etc. shall be removed from the work area immediately. Where such items as protruding rebar and anchor bolts create impediment or tripping hazard, they shall be properly protected and conspicuously marked.

The Contractor shall carry out regular safety / housekeeping inspections (daily) to ensure maintenance of satisfactory standards. The Contractor shall document the results of each inspection and shall maintain records for viewing.

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3.24 Signage

All symbolic safety signage that the Contractor is to use/display shall conform to the requirements of SANS 1186.

The display of the following signs is mandatory:

- For Site Establishment: The Contractor's Company Name Sign must be posted at their site offices to reflect the name and contact details of the: Construction Supervisor; Health and Safety Manager/Practitioner; First Aider(s); Health and Safety Representative and Evacuation arrangements.
- "Radio-Active Material" symbolic signs for radioactive material storage areas.
- The location of every First Aid Box; Fire Extinguisher and Emergency Exit is to be clearly indicated by means of appropriate signage.
- When in use, an explosive Power Tool shall have signage warning of its operation.
- Other specific signage for high risk activities shall be displayed e.g. Use of Explosives.
- Contractor(s) shall post Company Name Sign on all fuel storage containers.

The Contractor shall provide the signage where work is carried out, where unauthorised entry is prohibited and/or where alerting and cautioning passers-by to be aware of potential dangers.

3.25 Compressed Gas Cylinders

General Safety Regulation 9 and SABS 1548 shall apply. Storage areas should be a minimum of 30 meters from all buildings. Storage areas shall be securely fenced in an open mesh cage, in a shaded area, on stable and solid surfaces. For security and ventilation purposes, a wire mesh fence should surround the storage area. The enclosure shall be kept locked.

Hazard and danger warning signs must be prominently displayed at storage area; e.g.

- No Smoking
- No Naked Flames
- Contractor Identification and Emergency Contact information

Adequate ventilation must be provided. Cylinder cages shall be maintained in the open air. Storage areas must be kept free from all combustible materials; no other materials must be stored in cylinder enclosure.

Full cylinders must be kept apart from empty cylinders in a clearly designated area so that it will not be necessary to open valves to check whether cylinders are empty or full.

Cylinders must always be chained separately in an upright position in appropriate cylinder stands. Cylinders must be stored in rows with aisle in-between for ease of access and removal in the event of a fire or emergency. Adequate fire fighting equipment provided by the Contractor must be readily available. Cylinders for reactive gasses (e.g. oxygen and acetylene) shall be stored separately.

Flammable and oxidising gasses must not be stored together. Greases and oils must never be allowed to come in contact with Oxygen. Cylinders will only be allowed on site in an approved trolley, properly secured and with a chain.

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All gas cylinder torches to have flashback arrestors fitted on both sides (tank and torch).

3.26 Personal Protective Equipment (PPE)

All Contractor's Personnel on the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) and visitors shall use the following SANS or the relevant internationally recognised authority approved risk based PPE **at all times**, unless otherwise approved, **as a minimum**:

- Head Protection (Hard Hat);
- Protective Footwear with Ankle Support and Toe Protection;
- Eye Protection - Impact Safety Spectacles with Side Shields. Prescription glasses must comply with the same standard or cover impact safety spectacles must be worn over them;
- High Visibility Clothing or Vest;
- Long Pants are Necessary at All Times on the Job Site.
- Sleeves on Shirts Shall be Required to Cover the Bicep or be at least 10cm long, whichever suits the individual.

Additional PPE shall be identified from task risk assessments for specific areas and tasks. This may include long sleeves, flash resistant clothing (Level 2A or higher) for any type of live electrical work or verification of lockout/tagout, hearing protection i.e. ear plugs, muffs or helmet mounted ear defenders providing appropriate protection against the noise source.

Welders, brazers, cutters and aiders shall wear suitable eye protection, gloves and apron spats with secure and maintained screens provided to protect onlookers and passers-by.

Users of floor breakers and plate compactors shall be required to wear metatarsal guards.

Users of breakers breaking down concrete piles shall wear gloves with impact protection on the top side of the hand should a guard or other collective measures not be available to protect the users hands.

Suitable impact resistant eye and face protection shall always be worn for grinding, chipping and chasing, with secure and maintained screens provided to protect onlookers and passers-by.

Personnel using face shields and welding shields shall be required to wear a hard hat when working in active construction areas on site, unless the hard hat cannot be worn with the welding hood due to confinement or body positioning, the Contractor shall have an approved management process that allows for the identification and elimination of existing falling object or bump hazards.

When working with hazardous chemical substances, (e.g. acids or caustic material) eye protection, gloves and special overalls shall be worn.

3.27 Machinery, Tools and Equipment

The Contractor shall ensure that all machinery, tools and equipment are identified, safe to be used and maintained in a safe condition.

Concrete power float machines will be selected with the ergonomics of the operator taken into account. The machine will be fitted with an automatic stop device should the operator lose control.

All machines driven by means of belts, gear wheels, chains and couplings shall be adequately guarded. A machine is guarded when persons cannot gain access to the moving parts.

The Contractor shall maintain an inventory list for all machinery, tools and equipment on site.

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All machinery, tools and equipment shall be regularly inspected at least monthly or as required by legislation and risk assessments. A registers of tools shall be kept on the health and safety file. The equipment should be numbered or tagged and colour coded so that it can be properly monitored and inspected.

All machinery, tools and equipment must have the necessary approved test or calibration documentation where applicable prior to being brought onto the premises.

The Engineer reserves the right to inspect items of Plant or Equipment brought to the Project Site (and at other places, if any, as may be specified under the Contract as forming part of the Site) by the Contractor for use on the Project. Should any item be found to be inadequate, faulty, unsafe or in any other way unsuitable for the safe or satisfactory execution of the work for which it is intended, the Contractor may be advised in writing and shall remove the item from the site and replace it with a safe and adequate substitute. In such cases, the Contractor shall not be entitled to extra payments or extensions of time in respect of delay caused by these instructions.

All Contractors' Personnel shall be competent when operating or using machines and tools. This shall include:

- Appropriate certification for use;
- Evidence of task training, where required.

3.28 Hand Tools and Pneumatic Tools

All hand tools (hammers, chisels, spanners, etc.) must be inspected by the user prior to use. All pneumatic tools should be numbered, recorded and inspected at least monthly. The Equipment should be numbered or tagged and colour coded so that it can be properly monitored and inspected.

The Contractor shall ensure that any user of a pneumatic or electric breaker shall have their hands protected when operating near adjacent objects that could cause injury if the bit snags

Tools with sharp points in tool boxes must be protected with a cover. No make-shift tools on site.

All cold chisels used on site shall be fitted with a hand guard to prevent hand injuries in case of a miss with the hammer.

Contractors shall ensure that mull points (points from jack hammers) are not used for preparing a hole for a wooden peg. The Contractor shall ensure that a device is used to prevent a person's hand from being on a post that is being driven by a hammer at the time of the hammer swing.

When using the interlocking type of connection of an airline, connectors shall be secured with wire clips through holes provided to prevent accidental disconnection.

Compressed air shall never be used for any purpose other than that for which it is provided. Compressed air should never be used to remove dust from clothing. Hoses shall be orderly and safely routed in order to prevent tripping hazards.

All hoses exceeding ½ inch inside diameter shall have a safety device (excess flow check valve) at the source of supply or branch line to reduce pressure in case of hose failure or disengagement of a connection.

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All compressed air hoses used for powering construction tools shall be made from reinforced hoses and the connections must be crimped.

All contractors shall have a user policy for use of craft knives. Knives shall not be carried in clothing pockets with an open blade. The Contractor shall ensure that the appropriate cut resistant PPE is worn by the user. Cut resistant material coverage should include the forearm of the non-knife holding hand unless other safety measures are taken.

3.29 Portable Electric Tools

All powered tools shall be examined before use to ensure general serviceability and the presence of all applicable safety devices. The electric cord and electric components shall be given an especially thorough examination. All equipment shall be inspected and documented on a monthly basis, at a minimum, and colour coded to designate such inspection. Contractors are expected to follow the Project colour code programme unless approved by the Engineer (see appendix A).

The Contractor shall ensure that where there is a risk of user injury, the Contractor selects electric drills fitted with safety devices which disengage power should the drill bit snag.

Electrical tools shall be used only within their capability and shall be operated in accordance with the instructions of the manufacturer.

All tools shall be kept in good repair and shall be disconnected from the power source while repairs are being made.

Electrical tools shall not be used where there is a hazard of flammable vapours, gases, or dusts.

All electrical tools and cord sets shall be protected by earth leak protection devices. This includes sets powered by small portable generators.

Where reasonably practicable, the Contractor shall ensure that tools or processes that produce dust shall be fitted with dust extraction equipment. Contractors shall avoid dry sweeping of hard surfaces and use a light water spray to minimise dust generation.

3.30 Explosive Powered Tools

Written permission to use these tools on site must be obtained by the Engineer.

Only certified, competent, appointed personnel (CR. Reg.21) shall be allowed to operate explosive powered tools on site.

Safety signs and barriers must be erected before explosive power tools are used. Screening shall be provided around the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site).

Cartridges and explosive power tools shall be stored separately in a secured location where they are inaccessible to unauthorized persons.

3.31 Lifting Machines and Lifting Tackle

All lifting machine operators shall be qualified to operate a lifting machine. They must be in possession of a valid permit. This applies to Subcontractors (such as crane vendors) as well.

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The Principal Contractor is required to verify the authenticity of crane operator training certificates and to verify that the training provider has the necessary statutory accreditation specific to the size of crane and attachment if applicable before authorising an operator to commence lifting operations.

All mobile cranes shall be inspected by the Engineer before they are allowed onto the Project Site.

No person shall be permitted to ride the hook, sling, or load of any lifting equipment.

The Contractor shall verify if the lifting machines have been examined and a performance test carried out by an accredited third party company/person at intervals not exceeding 12 months.

Before using any lifting machines or tackle the operator shall inspect it and confirm it is suitable for use.

A lift plan shall be required prior to all critical lifts. Critical lifts are defined as

- (1) any lift that utilizes more than one crane or hoisting device,
- (2) any lift that is over 20 tons,
- (3) any lift involving a crane suspended work platform,
- (4) any lift over critical operating and/or process equipment,
- (5) any lift that exceeds 85 percent of the crane's load chart.

All lifting tackle shall be examined by a competent person prior to use and at intervals not exceeding 1 month. All lifting equipment and tackle shall be inspected and performance tested according to the requirements and to a frequency of the relevant SANS Standard by competent personnel. Should suitable competent personnel not be available, the Contractor shall engage a certified LMI to conduct these inspections at the required frequency.

All users of chain blocks and leaver hoists will have specific proof of competency and authorised by the contractor before utilising these items.

All hooks shall be fitted with a safety latch/catch.

All lifting tackle shall be conspicuously and clearly marked with identification particulars and the maximum mass load which it is designed for.

Lifting equipment shall not be loaded beyond its rated capacity

Chain hoists or cable hoist and other such devices shall always be rigged for a straight pull. The chain hoist or cable for hoists or other such devices shall not be wrapped around a load and used in place of a sling unless specifically designed for that purpose.

Contractors' Personnel shall keep out from under suspended loads. Guide ropes to be used to prevent loads from swinging are required on all loads. Banksman or spotters shall be used to keep individuals from walking underneath suspended loads.

Operators of cranes, derricks, hoists, and other hoisting equipment shall exercise extreme caution when close to energized lines or equipment. The operator shall keep the equipment at least 3

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meters away from all lines energized up to 50 kV and increase distance as required by the Electrical Machinery Regulations.

All spreader bars shall be tagged with the rated capacity.

All cranes shall be equipped with a functioning travel limiting, anti-two blocking device. Cranes fitted with aftermarket radius load indicators (computers) shall seek the Engineers acceptance prior to mobilising the crane to site. In the event of such acceptance been given, the Engineer will require the instrument parameters to be verified by the instruments manufacture or their agent on site.

Softeners will be used to prevent damage to lifting accessories during lifting operations. Foam shall not be used as a softener under any circumstance.

The Contractor is expected to perform all lifting activities in line with the requirements of all the relevant SANS codes, currently Sans 12480 series.

All man basket operations shall conform to SANS 12480-1 Annexure B and conform to the requirements of a critical lift.

The Contractor shall seek permission to position a tower crane on site from the Engineer. All tower crane concrete foundations shall be constructed as per design. All tower crane foundation formation levels shall have the compaction checked to ensure a minimum compaction level of 95% unless approved by the Contractor's geotechnical engineer. All concrete works shall be subject to the relevant Contractor's own QA checks. The tower crane rails or foundation shall be level checked and checked monthly throughout use to monitor for any movement.

In the event of a crane, lifting machine, or rigging failure the Contractor shall notify the Engineers staff immediately and an onsite preliminary investigation is to take place. The Contractor shall ensure that all relevant parts of the failure are investigated by a specialist with the agreement of the Engineer. The specialist shall produce a written report within 24 hours of completing all testing. The Contractor shall at his own cost enable the specialist to conduct non-destructive and destructive testing (if necessary) to allow all reasonable hypothesis to be investigated.

The Contractor shall comply with the requirements of Project procedures regarding crane management, crane coordination, and vehicle inspection.

Personnel travelling in a permanently installed passenger lifts with automatically closing doors, such as boiler our Auxbay lift shafts [not alimaks] are not permitted to travel in the lift with their harness worn on their body. They must be carried in hand only. Learning from a generation Incident

3.32 Work at Elevated Positions

The Contractor's Fall Protection Plan Developer shall be competent and hold unit 229994 Fall Protection Plan Developer Training. The fall protection plan shall comply with the requirements of SANS 229994, best practice, and be specific to the Project operations. The Contractor's fall protection

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Plan shall be submitted to the Engineer for acceptance prior to starting working at height activities. The Project's Fall Protection Plan approval criteria are available from the Engineer.

Fall protection is always required when Contractor's Personnel are exposed to a fall in excess of 2m or when required by additional rules. 100% fall protection is required whether the employee is climbing, traveling from Point A to Point B, connecting structural steel, or erecting scaffolds or other temporary platforms. No Contractor's Personnel or work operation is exempt from the 100% fall protection requirement.

When not protected by any other means of fall protection, such as safety nets or scaffold with proper guardrails, Contractor's Personnel shall use full body harnesses, shock absorbing lanyards with double locking snap hooks, and an adequate anchorage point (fall arrest equipment). To achieve 100% fall protection, Contractor's Personnel may need to use a double lanyard system and/or vertical or horizontal lifelines, retractable lifelines, or other such approved devices Note: Works such as slip form and steel erection will require the use of safety nets unless otherwise approved by the Project Site.

Working on elevated positions shall only be carried out under the supervision of a competent person.

Whenever persons are required to work in an elevated position, a fall protection plan (which includes fall prevention) will be compiled, implemented and reviewed and every possible and practicable means adopted to provide such persons with effective training and safeguards.

The Contractor shall stop all persons working in elevated positions during periods of inclement weather [e.g. high winds or if the possibility of lightning strikes is present] or prior to it beginning.

Safety belts are not allowed to be used as a means of fall arrest on the Project Site. Only full body safety harnesses with double shock absorbing lanyards are permitted and must be used when conducting work at elevated positions in excess of two meters. Contractors shall not allow users of fall protection to sit on the double lanyard. The Contractor shall ensure that where work positioning is required, work positioning devices shall be used.

Fall arrest equipment shall be rigged so that Contractor's Personnel can neither free fall more than two meters nor contact any lower object. Anchorage points for fall arrest equipment shall be capable of supporting 2,300 kg per employee and be located above the employee's body harness attachment point where practicable. Anchorage points shall be independent of any anchorage being used to support or suspend scaffolds or other platforms.

When vertical lifelines are used, each Contractor's Personnel shall be protected by a separate lifeline. The lifeline shall be properly weighted at the bottom and terminated to preclude a device such as a rope grab from falling off the line.

Before each use, the Contractor's Personnel shall visually inspect all fall arrest equipment for cuts, cracks, tears or abrasions, undue stretching, overall deterioration, mildew, operational defects, heat damage, or acid or other corrosion. Equipment showing any defect shall be withdrawn from service.

Proper guardrails shall be installed on open sides of all walkways, runways and floors where the fall distance exceeds 2m.

All floor openings or floor holes shall be protected by guardrails or hole covers. If hole covers are used, they shall be strong enough to support at least two times the maximum intended load, secured against displacement, and properly labelled (floor hole cover). In the case of concrete floors, the Contractor must ensure that cast-in form work [tin sheet] remains in place until the hole is required by future operations. This practice shall ensure that open holes are kept to a minimum.

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Contractor's Personnel operating aerial lifts shall wear a body harness and lanyard attached to the aerial lift. Contractor's Personnel shall not attach the lanyard to an independent structure.

When guardrails are used for fall protection, they shall consist of a top rail, intermediate rail, and toe-board. The top rail shall have a vertical height of 900 mm – 1,000 mm, the mid-rail shall be at 450mm - 500 mm, and the toe-board 102 mm. Guardrail systems shall be capable of supporting a force of at least 100 kilograms.

If wire rope is used for top rails, it shall be flagged at no more than two meter intervals with high visibility material and must remain taught at all times.

Wire ropes used as horizontal life lines must be designed by a competent person. Wire rope life lines will be fitted with a minimum of 3 clamps fitted as per the supplier's specification.

Provision must be made to prevent objects and or material from falling from elevated areas and for the protection of persons working below. Where possible, working below persons working at height shall not be permitted. Equipment in elevated positions must be tied back to the structure.

Loose items in elevated positions such as bolts and nuts shall be kept in bolt bags or similar robust containers and not in paper boxes. Where feasible, these bags or containers shall be secured to the structure to prevent them from falling to lower levels.

Contractors' Personnel are to ensure that all personnel are excluded from the area below personnel working at height. The Contractor shall follow the requirements of the Project barricade procedure.

When working at elevated heights, nets and/or other suitable material should be used catch falling debris and sparks directly below where the task is being performed. All fall protection equipment shall comply with SANS Standards and other recognised international standards.

All work undertaken when working at elevated positions shall be supported by a rescue plan. This shall be based on the provision services available on the site and not sole reliance on the emergency services.

The contractor shall ensure that training providers who provide working at height training are approved Eskom training providers. The Contractor can obtain a list of current providers when required through the Engineer. Contractors may sponsor none approved Training providers who seek approval from Eskom. With prior written approval from the engineer, personnel not trained by an approved training provider will be accepted under acceptable circumstances.

Note all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location. The contractor of the location / area fall protection plan will be adhered to. This include the client, principle contractor and the contractor

The Contractor shall verify that working at height training providers are providing an adequate standard of training to workers who are expected to work at height. This responsibility applies to the Contractor and their Subcontractors. The Contractor shall permit the Engineer to observe training providers upon request.

3.33 Scaffolding

All scaffolding used shall comply with the OHS Act and Construction Regulations as well as SANS 10085.

All scaffolding shall be inspected by a competent person on a daily basis as a minimum and also before use following weather conditions that could have made the scaffolding unsafe e.g. wind, rain which

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could make ground conditions unstable. Inspections shall be carried out on scaffolds that may be affected by adverse weather conditions.

Users of scaffolding shall carry out a visual inspection on a daily basis before use. If unsafe conditions are found or suspected, the scaffold shall be isolated until a thorough inspection has been made. A visual inspection shall be carried out at the end of the shift and if unsafe conditions are found or suspected the scaffold shall be isolated until a (d) above is applied.

An appropriate scaffolding tagging system shall be used to confirm the status of scaffolding for use or not to be used.

The footing or anchorage points for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.

Scaffolds that provide access to areas where personnel can fall into a hazard or from a height of greater than 2m shall install a gate at the access point of the hazard that is affixed with a warning sign stating that 100% tie off required past this point.

The Contractor must give preference to using scaffold stairs instead of ladders for all scaffolds. These scaffolds must be fitted with a kick plate at the bottom of each stair section. The kick plate shall be able to prevent a member of contractors' personnel slipping down the staircase and sliding between the floor and the mid-rail.

3.34 Ladders (Portable)

All ladders shall have an identification tag, logged in a ladder register, and inspected on a monthly basis by a competent person and by the user prior to use.

Damaged ladders shall be marked as "DAMAGED" and removed from the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) and replaced with ones in good condition.

All ladders used for access shall be secured.

Contractor's Personnel ascending or descending a ladder with a fall exposure greater than 8 meters shall be protected by an approved cage, ladder climbing device, or by the use of a body harness, lanyard, or lifeline system.

When ascending or descending ladders, Contractor's Personnel shall maintain three points of contact at all times and shall face the ladder.

Portable metal ladders shall not be used in the vicinity of energized electrical circuits. Portable straight ladders shall not be used without non-skid bases.

The ladder shall be placed so that the distance between the bottom of the ladder and the supporting point is approximately 1/4 of the ladder length between supports.

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When dismounting from a ladder at an elevated position (as at a roof), the employee shall ensure that the ladder side rails extend at least 1 meter above the dismount position, or that grab bars are present.

Contractor's Personnel shall wear a body harness and lanyard, and tie off to a secure anchor whenever both hands must be used for the job or whenever Contractor's Personnel are exposed to a fall in excess of 2 meters.

Step ladder legs shall be fully spread and the spreading bars locked in place.

Step ladders shall not be used as straight ladders.

3.35 Barricading

The Contractor shall adhere to the Project site barricading procedure.

Areas where a restriction or prevention of unauthorised persons accessing (e.g. trenches, excavations, wall and floor openings, etc.) is required will be provided with barricades and guards to prevent entry.

All barricading shall be of the rigid type, unless otherwise approved by the Engineer, and secure in assembly.

Contractors shall utilize warning signage that has been approved by the Engineer

When using barricade tape, Contractors shall comply with the requirements of the Project Barricade Tape Program.

All openings and edges must be barricaded with solid barricading to withstand an impact of at least 100kg.

Physical barriers and warning signage shall be provided to prevent persons falling into openings in floors, stairwells, staircases, open-sided buildings and any structure in the course of erection, where dangerous openings exist.

3.36 Permit to Work

The Contractor shall apply a suitable Permit to Work System to control identified high risk activities including, but not limited to: trench & excavation, hot work, confined space work, energized electrical work, etc.

Permit to work systems shall as a minimum include:

- distinct time frames;
- have a start and finish time;
- be authorized by a competent person;
- identify the hazards and risks present and the control measures to be applied;
- provide the emergency arrangements to be applied;
- require that a new permit is issued for each individual shift;
- identify the task supervisor;
- detail any specific skills or competencies required e.g. confined space training.

Should working conditions change during the course of the operation of the permit to work, the work shall cease and the permit to work arrangements be reviewed to determine the appropriate course of action.

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3.37 Radiography, Ultrasonic, Non-Destructive Testing (NDT)

Contractors carrying out radiography, ultrasonic or other non-destructive testing (NDT) on the site shall comply with the requirements of the relevant legislations, Codes of Practice and any specific Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) procedures. In particular, they shall ensure that:

- No radio-active sources may be brought onto the Project Site (or at other places, if any, as may be specified under the Contract as forming part of the Site) without prior written consent of the Engineer
- Where a statutory appointment exists, they have appointed, in writing, a suitably qualified and experienced Radiation Protection Officer to provide advice on the observance of the legislation and other relevant health and safety matters.
- All radiography areas shall be clearly identified by the erection of suitable barriers, sirens, warning notices and / or flashing lights. This shall apply to permanent and temporary sites.
- Vehicles transporting radio-active sources shall be clearly identified and kept locked when unattended.
- Radiation operators must submit proof of certification before commencing work.
- Radio-active sources shall be suitably and securely stored according to legal requirements and removed from the Project Site (and at other places, if any, as may be specified under the Contract as forming part of the Site) after use.
- The Contractor must inform the Engineer in writing of radiological activities including NDT testing using radiation.
- Radiography work may only commence with a valid permit to work.

3.38 Trenching and Excavations

Prior to commencing work on any trench or excavation, the Contractor shall first submit a completed Trench and Excavation Notice to the Engineer. The notice shall be submitted far enough in advance to allow the Engineer to review the Contractor's submittal. After reviewing the information, the Engineer shall sign the notice indicating that it has been approved and return a copy of it to the Contractor. The Contractor may commence work after receiving the signed notice. For all trenches or excavations over 7 meters deep, the Subcontractor must have the sloping, shoring, or shielding method reviewed by a Licensed Professional Engineer of discipline. The design must be submitted to the Engineer as an attachment to the Trench and Excavation Notice.

The Contractor shall ensure that a full sketch is provided as part of the notice detailing the excavation and the location of underground services. It is unlikely that Engineer issued construction drawing(s) even annotated will constitute a detailed sketch for the purpose of recording underground services.

The Contractor shall ensure that the requirements of the Employer's trenching and excavation procedure is complied with during activities. This will include the marking of the excavation boundaries, the location of all known services, performing a scan with a cable locator by a trained individual, and also performing a physical evidence survey.

The Contractor shall appoint a competent person to fill out the permit and monitor all trench and excavation work. Daily excavation inspections are also required to be performed and documented.

Adequate precautions shall be taken to prevent the collapse of excavations, as well as to prevent rocks and loose material falling onto workers. Sloping, shoring or shielding shall be provided for all

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excavations over 1.5 meters in depth. Angle of repose for project site shall not exceed 1:1 unless otherwise approved by a Licensed Professional Engineer of discipline and approved by the Engineer.

All excavations shall be clearly demarcated and securely barricaded to prevent unauthorised access. Only solid barricading will be used at areas where a fall hazard is present. Solid barricading and / or hole covers shall be provided by the Contractor around all holes or openings to prevent any person being injured as a result of a fall. Danger tape may only be used as a pre-warning to make the solid barricading more visible and to prevent persons from coming too close to the danger area.

If an excavation or trench endangers the stability of buildings or walls, shoring, bracing, or underpinning will be provided by the Contractor with prior approval from the Engineer. Excavations and trenches that are adjacent to backfilled excavations or trenches, or which are subject to vibrations from railroad traffic, road traffic, blasting or the operation of machinery (e.g., shovels, cranes, trucks), must be secured by a support system, shield system or other protective systems (i.e., sheet pile shoring, bracing).

No backfill material shall be allowed to be within 1 meter of the excavation edges.

All excavations shall be on a register and inspected daily (documented) before work commences and after inclement weather (e.g. rainfall) by an appointed competent person. When declared safe work can recommence and the findings recorded in the register. If the excavation is not safe to use, remedial action shall be taken before the work site is re-opened.

Every six meters of an excavation shall have an escape ladder for access/egress and use in emergencies.

Ensure that all precautionary measures as stipulated for confined spaces are determined

No work shall commence in an excavation unless the excavation has been declared safe by the competent person.

The Contractor shall conduct a cable scan using a device that can detect cables and other services. The Contractor shall ensure that the operator of the scanner is adequately trained and competent to use the device to its full capabilities with and without the use of a signal generator.

3.39 Working near Public Roads

Contractor's Personnel required to work on or near public roadways shall wear clean high visibility vests as a minimum at all times. They shall be protected by red cones or flags during daylight and by red or amber flashing lamps at night. Work areas must be adequately barricaded so as to prevent unauthorized access.

Road works e.g. excavations, barricaded areas, shall be protected by red cones or flags during daylight and by red or amber flashing lamps at night.

Road traffic warning signs shall be placed well ahead of the work area alerting of road workers ahead.

All personnel conducting construction works on public roads or live site roads such as the north, south and east peripheral road shall conform to South African Road Traffic Signs Manual

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3.40 Confined Space Entry Procedure

Confined Space Definition: A confined space is a tank, vessel, silo, vault, pit, open topped space more than 1.2 m deep, pipeline, duct, sewer, or tunnel that meets the following criteria:

- Limited means of access or egress, and
- Not designed for continuous employee occupancy, and
- Having one or more of the following characteristics:
 - Less than 20.0 percent or more than 23.5 percent oxygen.
 - Flammable/combustible/explosive atmospheres present or capable of being generated or entering into an area.
 - Toxic atmospheres present or capable of being generated or entering into an area.
- Areas not protected against entry of water, gas, sand, gravel, ore, grain, coal, biologicals, radiation, corrosive chemicals, or any other substance which could possibly trap, suffocate, or harm a person.
- Poor ventilation.
- Restricted entry for rescue purposes.

All Contractors' shall develop their own confined space procedure for construction activities. The contractor shall ensure that the confined space procedure includes provision for training, atmosphere monitoring and execution of permits. Each contractor shall ensure that no personnel enter a confined space before a competent person has assessed the space and has developed a specific entry procedure and risk assessment.

Entry into a confined space with an unsafe atmosphere shall be avoided if at all possible.

Only Contractor's Personnel who have been properly trained on the hazards associated with confined space work shall be allowed to enter a confined space. All persons acting as attendant or confined space assessor shall also be fully trained.

Before entering a confined space, Contractor's Personnel shall obtain a Confined Space Entry Permit

Before entering a confined space, Contractor's Personnel shall test all levels of the confined space for the presence of flammable or toxic gases and vapours or an oxygen deficient atmosphere. This atmosphere check shall be conducted remotely where practicable for a suitable period of time.

If flammable or toxic gases or vapours are detected or if an oxygen deficiency is found, forced ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable or toxic gases and vapours.

Contractors shall ensure that an adequate number of suitable gas monitors are available to continuously monitor the confined space during entry. Before entering the confined space, all persons shall be given a briefing as to the precautions that must be taken.

Before Contractor's Personnel are allowed to enter a confined space, all electrical and mechanical energy sources that could affect the Contractor's Personnel working in the space shall be physically rendered inoperative, locked out, and tagged. If required, the space shall be drained, vented, and cleaned.

Contractor shall fill out the permit in full, post a copy of the form in a conspicuous location at the entrance to the confined space, and retain a copy for their records.

If there is more than one entrance to the confined space, all entrances shall be posted with a copy of the permit.

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When the work in the confined space is completed, the person authorizing entry into the confined space shall verify that all persons have exited the confined space and that it is safe to remove the permit. The authorizing person shall then sign, date, and write in the time the permit was removed.

Contractor shall retain all issued permits for their records.

While work is being performed in the confined space, a person with basic first aid training shall be immediately available to render emergency assistance if there is reason to believe that a hazard may exist in the space or if a hazard exists.

Contractor's Personnel required to enter a confined space with an unsafe atmosphere shall be equipped with a fresh air breathing apparatus, body harness, and attended lifeline.

Electric welding, gas welding, cutting, or any other hot work shall not be performed on the interior or exterior, or near the openings of any confined space which may contain flammable or explosive gases or vapours until the space has been properly cleared.

Compressed gas bottles shall not be taken into a confined space.

Safe access to the confined space shall be maintained at all times. If possible, all cords, hoses, leads, etc., shall be routed through an entrance other than the employee access into the confined space.

3.41 Steel Erection

This section applies to both permanent steel and contractor owned structures.

A site-specific steel erection plan shall be provided to Project Site (and at other places, if any, as may be specified under the Contract as forming part of the Site) before steel erection activities begin. This plan must be prepared by a qualified person and shall address the following, at a minimum:

- Working at Elevation procedures for the erection process.
- Training of workers involved with the steel erection process.
- Erection sequence.
- Crane selection and placement.
- Crane inspection program.
- Rigging inspection program.
- Site preparation requirements (e.g., adequate access roads, means and methods for pedestrian and vehicular control, site drainage, soil compaction and stability).
- Overhead protection/routing of lifts.
- Critical lift procedures.
- Procedures for steel erection activities (e.g., bracing/guying, connections, decking, roofing, siding, grating, etc.).
- Falling object protection procedures.
- Perimeter fall protection planning and turnover.

Contractor shall complete the Steel Erection Plan and submit it to Project Site before any steel erection activities begin. Steel erection activities may not start until Project Site formally notifies the steel erector in writing that steel erection activities may commence. Notification will be in the form of a letter with an attached verification that anchor bolt repairs and concrete curing requirements have been met.

Fall protection is required 100 percent of the time for all steel erection activities when Contractor's Personnel are exposed to a fall in excess of 2m or when required by additional rules.

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Cranes involved in steel erection activities shall be inspected prior to each shift by a competent person.

The crane operator shall have the authority to stop work operations that are unsafe.

All loads shall be rigged by a qualified rigger.

A qualified rigger shall inspect the rigging prior to each shift.

No employee shall work directly below a suspended load except for Contractor's

Personnel engaged in the initial connection of the steel or Contractor's Personnel necessary for the hooking and unhooking of the load.

Bundle packaging and strapping shall not be used for hoisting unless specifically designed for that purpose.

Uninstalled metal decking shall be secured against displacement.

Roof and floor hole openings shall be decked over or protected. Openings created within in-situ concrete suspended slabs formed with permanent soffit shutter such as q-decking, the q decking shall remain in place until the opening is required for machinery or similar installation, unless authorised by the Engineer.

All columns shall be anchored by a minimum of four anchor bolts.

Anchor bolts shall not be repaired, replaced, or field modified without the approval of the project engineer of record. If an employee notices damaged anchor rods, he/she shall immediately notify his/her supervisor.

No construction loads shall be placed on steel joists until all bridging is installed and all joist bearing ends are attached.

All steel members shall be secured by a minimum of two bolts per connection prior to un-hooking steel member from crane.

Purlins and girts shall not be used as anchorage points for fall arrest systems unless written approval is obtained from a qualified person.

3.42 Severe Weather

The Contractor shall conduct operations in a manner that do not put personnel at risk from weather and weather related injury.

The Contractor shall have plans in place that cover the following

1. Lightning
2. Heavy rain
3. Stability of sheeting during periods of high wind
4. The protection of cranes and other similar plant during high winds.

Should a contractor not have a lightning plan, the rule of 30:30 will be used by contractor's management in a time of a lightning storm.

All contractors should subscribe to a source of warning for inclement weather and have means to monitor the distance of a lightning storm

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3.43 Contractors Site Facilities

Contractor and their sub-contractors shall provide facilities that from a humane perspective have a sense of management care. Site facilities should include facilities that provide shelter in times of heavy rain and lightning storms and be conducive for extended toolbox talks.

Contractor's facilities should comply with relevant regulations and SANS standards; currently SANS 10400 standards A to XA.

4. Authorization

This document has been seen and accepted by:

Name	Designation
Binesh Singh	KET acting General manager
Gladstone Morake	EP Manager
Kenneth Hlungwane	Senior Occupational Hygienist
Anville Rhode	Manager SHE
Frans Durand	Middle Manager SHE – Head of Department
Mushayi Mudzielwana	Environmental Manager
Musiwa Luvhengo	Systems & Statistics Manager
Patrick Mdluli	Senior Safety Advisor
Siphiwe Mahlangu	Senior Environmental Advisor

5. Revisions

Date	Rev.	Compiler	Remarks
September 2008	0	M Moahlodi & D Landis	Legal requirement for Construction project
August 2011	1	M Moahlodi & D Landis	General update of various clauses
July 2014	2	M Cusack	Major changes including update in legislation and the addition of control measures and lessons learn from the projects incidents Full detail of changes available in uncontrolled comparison document published by the author
September 2014	3	M Cusack	Formatted to the management system format. Added need for Key control for vehicles.
September 2015	4	M Cusack	<ul style="list-style-type: none">Additions on the following;lighting towers,

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Date	Rev.	Compiler	Remarks
			<ul style="list-style-type: none"> escort vehicles, travelling in lifts wearing harnesses, Incident reporting time frame, including low and moderate priority near misses, Rewording in excavation section, Removal of the need for bakkie whips for LDV's 2.5m min bakkie whips are required still for mules. Reference to 12480-1 regarding man basket operations. Requirement to verify that crane operator training providers are correctly accredited for crane capacity and attachments
November 2019	5	F Durand	<ul style="list-style-type: none"> Change of old template format to new format. <ul style="list-style-type: none"> The Contractor shall Conduct his undertaking in such a manner as to ensure , as far as reasonable practicable, that persons other than those in his employment who may be directly affected by his activities are not thereby exposed to hazards to their health and safety Any person who design, manufacture, import, or supplies any article for use at work shall ensure, as far as reasonable practicable, that the article is safe and without risk to health when properly used and that it complies with all prescribed requirements A section 37(2) agreement must be signed between Eskom and the principal contractor at the time of awarding the contract. Note :this She specification will be deem as the procedural agreement of compliance as contemplated in section 37.2 of the Occupational health and safety act 85 of 1993 The principal contractor must ensure that a section 37(2) agreement is compiled between the principal contractor and all their appointed contractors for the contract Note all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location. The contractor of the location / area fall protection plan will be adhered to. This include

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Date	Rev.	Compiler	Remarks
			the client, principle contractor and the contractor

6. Development team

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

- Frans Durand
- Anville Rhode

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