

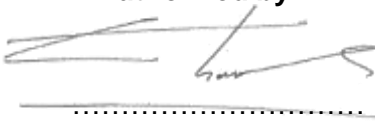


	<p align="center"><b>SHE SPECIFICATION HIGH RISK PROJECT</b></p>	<p align="center"><b>NAME OF DEPARTMENT</b> <i>Inspection and Test</i></p>
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<p>Title: High Pressure Cleaning of Tubes, Eddy Current and/or Laser Inspections on an as and when required basis at Koeberg Operating Unit</p>	<p>Unique Identifier: 240-73416879</p> <p>Purchase Requisition Number: <b>1075438647</b></p>
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<p><b>Compiled by</b></p>  <p>.....</p> <p><b>A. Manie</b> <b>PEA I&amp;T</b> <b>Systems Engineering</b></p> <p>Date: 2023-10-18.....</p>	<p><b>Reviewed by:</b></p>  <p>.....</p> <p><b>L. Tokwe</b> <b>SHE Officer</b> <b>OH&amp;S</b></p> <p>Date: 2023-10-18...</p>	<p><b>Authorized by</b></p>  <p>.....</p> <p><b>L. Thomas</b> <b>I&amp;T Manager</b> <b>Systems Engineering</b></p> <p>Date: 2024-01-04.....</p>
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**ESKOM RESPONSIBLE PROJECT MANAGER**  
**NAME: A. Manie**

**ESKOM HEALTH AND SAFETY OFFICER**  
**NAME: L. Tokwe**

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## 1. INTRODUCTION

Eskom's responsibility and commitment is to ensure a safe working environment is in line with its Safety, Health, Environmental and Quality Policy, along with legislative obligations.

This SHE specification is Eskom the minimum requirements which are required to be met for the specific contract and for the duration of the contract period by contractors and where required, the delivery organisation.

**The contractor is expected to develop a SHE plan which meets these requirements as well as all the relevant applicable legislation they conform to.**

**Eskom in no way assumes the contractor's legal responsibilities. The contractor is and remains accountable for the quality and the execution of his/her health and safety programme for his/her employees and appointed contractor employees.**

This SHE specification reflects minimum requirements and should not be construed as all encompassing.

**Note 1:** All the requirements listed hereunder are in relation to the contract and do not supersede or replace any organizational SHE requirements.

Where requirements listed are already in place, then the organisational requirements must be taken cognisance of and listed in the respective SHE plans. If there are any additional Eskom and or legislative requirements listed in the SHE specification, then these must be addressed.

## 2. SUPPORTING CLAUSES

### 2.1 SCOPE

This SHE specification lists the legislative and Eskom requirements and where applicable, any requirements pertaining to Local Authorities / Municipal by-laws / Environmental legislation that must be met by the contractor.

#### 2.1.1 Purpose

This document will provide a standardised approach to the compilation of SHE specifications throughout Eskom for contracts, standards and NEC 3 contracts.

#### 2.1.2 Applicability

This SHE specification is applicable to any contracting organisation who intends tendering for the contract.

## **2.2 NORMATIVE/INFORMATIVE REFERENCES**

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

### **2.2.1 Normative**

- [1] Basic Conditions of Employment Act No 75 of 1997.
- [2] Occupational Health and Safety Act and Regulations No 85 of 1993.
- [3] National Environmental Management Act 107 of 1998.
- [4] National Road Traffic Act 93 of 1996.
- [5] 32-37 Eskom Substance Abuse Procedure.
- [6] 240-62196227 Life- saving Rules
- [7] 32-95 Environmental, Occupational Health and Safety Incident Management Procedure
- [8] 32-727 SHEQ Policy
- [9] 32- 418 Working at Heights Procedure
- [10] 240-62946386 Vehicle and Driver Safety Management Procedure
- [11] 32-520 Risk Assessment procedure
- [12] Plant Safety Regulations

### **2.2.2 Informative**

- [1] Tobacco Products Control Act 83 of 1993 (Updated 2011.05.19)
- [2] SANS 1186 Symbolic Safety Signs
- [3] Constitution of the Republic of South Africa No 108 of 1996
- [4] DMN 34-110 Operating A Vehicle Mounted Crane
- [5] DMN 34-1981 Excavations

### 2.2.3 Definition

Definition	Explanation
<b>Appointed contractor</b>	Means a contractor appointed by the principal contractor
<b>Baseline risk assessment</b>	(32-520) baseline operational risks refer to the health and safety risks associated with all standard processes and routine activities in the business
<b>Business unit (BU)</b>	(32-296) means any defined unit within the Eskom environment, operating as a business under a particular cost-centre number. In the context of this document and in terms of health and safety, any reference to a BU includes a defined unit within any Eskom division and its subsidiaries
<b>Client</b>	(OHS Act) Eskom representative (Internal – Asset Owner), also referred to as the contract administrator/custodian or agent or project manager (as defined in the contract). He/she is the person responsible for ensuring that the works or services are executed in terms of the contract, as well as adherence to legislation pertaining to the contract.
<b>Competent person</b>	(OHS Act) means any person having the knowledge, training, experience, and qualifications, specific to the work or task being performed, provided that, where appropriate, qualifications and training are registered in terms of the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995)
<b>Contractor</b>	(OHS Act) means an employer as defined in section 1 of the Act who performs contracted work and includes principal contractors
<b>Construction work</b>	Any work in connection with a. the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure.  the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, 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.
<b>Consultant</b>	means a person providing professional advice
<b>Controlled disclosure</b>	controlled disclosure to external parties (either enforced by law or discretionary)
<b>Employee</b>	(OHS Act) means, subject to the provisions of subsection (2), any person who is employed by or works for an employer and who receives or is entitled to receive any remuneration or who works under the direction or supervision of an employer or any other person
<b>Employer</b>	(OHS Act) means, subject to the provisions of subsection (2), any person who employs or provides work for any person and remunerates that person or expressly or tacitly undertakes to remunerate him/her, but excludes a TES (ex labour broker) as defined in section 1(1) of the Labour Relations Act 1956 (Act No. 28 of 1956)
<b>Environment</b>	(32-94) means: a) the land, water, and atmosphere of the earth; b) micro-organisms and plant and animal life; and c) any part or combination of (a) and (b) and the interrelationships among and between them, and the physical, chemical, aesthetic, and cultural properties and conditions of the foregoing that influence human health and well-being

<b>Environmental Management plan</b>	A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life-cycle of a project. This Environmental Management Plan should preferably form part of Eskom's Environmental Management System
<b>Eskom requirements</b>	Eskom requirements flowing from directives, policies, standards, procedures, specifications, work instructions, guidelines, or manuals
<b>Fall protection plan</b>	(OHS Act) means a documented plan of all risks relating to working from an elevated position, considering the nature of work undertaken, and setting out the procedures and methods to be applied in order to eliminate the risk
<b>Hazard</b>	(OHS Act) means a source of, or exposure to, danger
<b>Hazard identification</b>	(OHS Act) 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
<b>Health and safety file</b>	(OHS Act) means a file or other record in permanent form, containing the information required in relation to the contract.
<b>Health and safety plan</b>	(OHS Act) means a document plan that addresses hazards identified and includes safe work procedures to mitigate, reduce, or control hazards identified
<b>Health and safety specification</b>	(OHS Act) means a document specification of all health and safety requirements pertaining to associated to a contract, so as to ensure the health and safety of persons.
<b>Health and safety requirements</b>	means comprehensive health and safety requirements for a contract, project, site, and scope of work. This specification is intended to ensure the health and safety of persons, both workers and the public, and the duty of care to the environment. The health and safety requirements must be specific to each contract, project, site, and scope of work
<b>Lifesaving Rules</b>	(240-62196227) a rule that, if not adhered to, has the potential to cause serious harm to people
<b>Medical Certificate of fitness</b>	(OHS Act) means a certificate valid for one year, issued by an occupational health practitioner, issued in terms of the regulations, whom shall be registered with the Health Professions Council of South Africa
<b>Medical surveillance</b>	(OHS Act) 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
<b>Method statement</b>	(OHS Act) means a written document detailing the key activities to be performed in order to reduce, as reasonably as practicable, the hazards identified in any risk assessment
<b>Organisation</b>	may be defined as a group of individuals (large or small) that is cooperating under the direction of executive leadership in accomplishment of certain common objects
<b>Pre-job meetings</b>	(34-227) means a meeting that is held prior to the commencement of the day's work and that is attended by all the relevant employees associated with the work task
<b>Principal contractor</b>	(In the text of this document) Means an employer, as defined in section 1 of the OHS Act, who intends to tender for or has signed a contract with Eskom for services rendered.
<b>Provincial director</b>	(OHS Act) means the provincial director as defined in Regulation 1 of the General Administrative Regulations under the Act

<b>Responsible Manager</b>	Is a Manager of a department, section or operating/business unit who has been appointed as part of the Eskom delegation of authority process with the aim to assist the applicable 16(2) assigned person in executing his/her duties in terms of the Occupational Health and Safety Act
<b>Risk assessment</b>	(OHS Act) 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.
<b>Site</b>	(34-228) means an Eskom department, unit, complex, building, specific project, work site, or the site where agents, clients, principal contractors, contractors, suppliers, vendors, and service providers provide a service to Eskom, directly or indirectly
<b>Service provider</b>	any private person or legal entity that provides any service(s) to Eskom for compensation
<b>Subsidiary</b>	(32-94) an enterprise controlled by another (called the parent) through the ownership of greater than 50% of its voting stock
<b>Supplier</b>	(32-1034) means a natural or legal person who renders a service and may include the following current or potential supplier vendor, contractor, consultant
<b>Task</b>	(34-227) a segment of work that requires a set of specific and distinct actions for its completion
<b>Toolbox talks</b>	(34-227) where the team leader, after conducting pre-task planning, shares all the tasks at hand and discusses task allocation, the identified risks, and the control measures with all his/her team members on site before commencing a specific task and documenting the agreed strategy. (This shall be done to ensure common understanding of the tasks, risks, and control measures required.)
<b>The Act</b>	(OHS Act) means the Occupational Health and Safety Act No. 85 of 1993, as amended, and the Regulations thereto
<b>Visitor</b>	any person visiting a workplace with the knowledge of, or under the supervision of, an employer.

#### 2.2.4 Classification

- a. **Controlled disclosure:** controlled disclosure to external parties (either enforced by law, or discretionary).

#### 2.3 ABBREVIATIONS

Abbreviation	Description
<b>CNC</b>	(Eskom) Customer Network Centre
<b>CR</b>	Construction Regulations of the OHS Act
<b>AIA</b>	Approved Inspection Authority
<b>BU</b>	Business Unit
<b>CE</b>	Chief Executive
<b>COID Act</b>	Compensation for Occupational Injuries and Diseases Act
<b>DMR</b>	Driven Machinery Regulations

Abbreviation	Description
DEL	Department of Employment and Labour ( Inspection and Enforcement services – Provincial office)
EP	Emergency Preparedness
EAP	Employee Assistance Program
ERfW	Environmental Regulations for Workplaces
GAR	General Administrative Regulations
GSR	General Safety Regulations
HCA	Hazardous Chemical Agent
LDV	Light Delivery Vehicle
SDS	Safety Data Sheets
NEMA	National Environmental Management Act
OHS Act	Occupational Health and Safety Act and Regulations, 85 of 1993
LoG	(COID) Letter of Good Standing
SACPCMP	South African Council for the Project & Construction Management Professions
SABS	South African Bureau Standard
SANS	South African National Standard

## 2.4 RELATED/SUPPORTING DOCUMENTS

Eskom OHS Act section 37 (2) agreement to be signed at procurement during the signing of the NEC contract, it is the responsibility of the project manager to ensure that the 37(2) agreement is signed and a copy be kept in the contractor file at procurement.

## 3. DOCUMENT CONTENT

### 3.1 SCOPE OF WORK

#### Description of the service

##### Executive overview

- The provision of eddy current and/or laser inspection services to the *Employer*, which include:
- The cleaning of the tubes
  - Details shall be provided on the proposed cleaning method.
  - All tube cleaning procedures shall be submitted to the *Employer* for review.
  - Detailed risk assessments shall be submitted to the *Employer* for review.
- Eddy Current inspection of tubes/ pipes
  - Details shall be provided on the proposed inspection method.
  - All inspection procedures shall be submitted to the *Employer* for review.
  - Detailed risk assessments shall be submitted to the *Employer* for review.
- Laser Inspection of tubes



- Details shall be provided on the proposed inspection method.
  - All inspection procedures shall be submitted to the *Employer* for review.
  - Detailed risk assessments shall be submitted to the *Employer* for review.
- The *service* includes all support work, by the *Contractor*, to the *Employer*. These activities must include the following as a minimum:
    - Mobilisation, set-up, calibration and removal of equipment;
    - Mobilisation of qualified personnel;
    - Performance of the required operations; and
    - Inspection and analysis of data.

The scope of work includes, but is not limited to the following components:

ITEM	MATERIAL	TUBE LENGTH (M)	TUBE ID (MM)	TUBE OD (MM)	WALL THICK. (MM)
1/2ABP101RE	SS304L	6	13.6	16	1.2
1/2ABP201RE	SS304L	12	13.6	16	1.2
1/2ABP301RE	SS304L	10	13.6	16	1.2
1/2ABP401RE	SS304L	10	13.6	16	1.2
1/2ABP201RP	SS304L	12	13.6	16	1.2
1/2ABP102RE	SS304L	6	13.6	16	1.2
1/2ABP202RE	SS304L	12	13.6	16	1.2
1/2ABP302RE	SS304L	10	13.6	16	1.2
1/2ABP402RE	SS304L	10	13.6	16	1.2
1/2ABP202RP	SS304L	12	13.6	16	1.2
1/2AHP501RE	C/STEEL	15	17	21	2
1/2AHP601RE	C/STEEL	12	17	21	2
1/2AHP502RE	C/STEEL	15	17	21	2
1/2AHP602RE	C/STEEL	12	17	21	2
1/2CET001CS	ADM BRASS	3	14	16	1
1/2CRF001RF	TITANIUM (ASTM B-338 GR2)	2.5	14	16	1
1/2CRF002RF	TITANIUM (ASTM B-338 GR2)	2.5	14	16	1
1/2CRF003RF	TITANIUM (ASTM B-338 GR2)	2.5	14	16	1
1/2CRF004RF	TITANIUM (ASTM B-338 GR2)	2.5	14	16	1
1/2CRF005RF	TITANIUM (ASTM B-338 GR2)	2.5	14	16	1
1/2CRF006RF	TITANIUM (ASTM B-338 GR2)	2.5	14	16	1
1/2CRF001WX	TITANIUM	12	18.05	19.05	0.5
1/2CRF002WX	TITANIUM	12	18.05	19.05	0.5
1/2CRF003WX	TITANIUM	12	18.05	19.05	0.5
1/2CRF004WX	TITANIUM	12	18.05	19.05	0.5
1/2CRF005WX	TITANIUM	12	18.05	19.05	0.5

1/2CRF006WX	TITANIUM	12	18.05	19.05	0.5
1/2GGR001RF	CU LOW FINNED	3	22.2	25.4	1.6
1/2GGR002RF	CU LOW FINNED	3	22.2	25.4	1.6
1/2GRH001RF	BRASS COPPER FINNED	3	22	24	1
1/2GRH002RF	BRASS COPPER FINNED	3	22	24	1
1/2GRH003RF	BRASS COPPER FINNED	3	22	24	1
1/2GRH004RF	BRASS COPPER FINNED	3	22	24	1
1/2GRH005RF	BRASS COPPER FINNED	3	22	24	1
1/2GRH006RF	BRASS COPPER FINNED	3	22	24	1
1/2GRH007RF	BRASS COPPER FINNED	3	22	24	1
1/2GRH008RF	BRASS COPPER FINNED	1.5	14	16	1
1/2GRH SPARE	BRASS COPPER FINNED	3	22	24	1
1/2GSS100ZZ	C/STEEL	13	12.4	16.2	1.9
1/2GSS200ZZ	C/STEEL	13	12.4	16.2	1.9
1/2GSS300ZZ	C/STEEL	13	12.4	16.2	1.9
1/2GSS400ZZ	C/STEEL	13	12.4	16.2	1.9
1/2PTR006RS	SS304L	2100	60.0	66.0	3.0
1/2PTR007RS	SS304L	2100	60.0	66.0	3.0
1/2SRI001EX	TITANIUM (ASTM B-338 GR2)	8.196	20.4	22	0.8
1/2SRI002EX	TITANIUM (ASTM B-338 GR2)	8.196	20.4	22	0.8

**Table 1**  
**Detailed work scope for each outage:**

Component ID	INSPECTION PROGRAMMES		SAP FREQUENCY- currently specified (I&T uses)			LAST INSPECTION		ECT TO BE PERFORMED AS LISTED (ALIGNS WITH CURRENT RBI FREQUENCY OR MORE FREQUENT					
						Outages							
	RBI frequency	HX programme frequency	UNIT 1	UNIT 2	Basis	U1	U2	127	227	128	228	129	229
ABP 101 RE	6RO: Visual, General Corrosion (internal and external), waterbox only.	None recommended. Credit taken for existing controls	On Request	On Request	LOPP but RBI states 6RO	125	223					100%	100%
	Shell: No RBI required				Frequency based on RBI								
ABP 102 RE	6RO: Visual, General Corrosion (internal and external), waterbox only.	None recommended. Credit taken for existing controls	On Request	On Request	LOPP but RBI states 6RO	125	223					100%	100%
	Shell: No RBI required				Frequency based on RBI								
ABP 103 RE	6RO: Visual, General Corrosion (internal and external), waterbox only.	None recommended. Credit taken for existing controls	On Request	On Request	LOPP but RBI states 6RO	125	223					100%	100%
	Shell: No RBI required				Frequency based on RBI								
ABP 104 RE	6RO: Visual, General Corrosion (internal and external), waterbox only.	None recommended. Credit taken for existing controls	On Request	On Request	LOPP but RBI states 6RO	125	223					100%	100%
	Shell: No RBI required				Frequency based on RBI								
ABP 105 RE	6RO: Visual, General Corrosion (internal and external), waterbox only.	None recommended. Credit taken for existing controls	On Request	On Request	LOPP but RBI states 6RO	125	223					100%	100%
	Shell: No RBI required				Frequency based on RBI								
ABP 106 RE	6RO: Visual, General Corrosion (internal and external), waterbox only.	None recommended. Credit taken for existing controls	On Request	On Request	LOPP but RBI states 6RO	125	223					100%	100%
	Shell: No RBI required				Frequency based on RBI								

Note 1: The Unit 1 (1 ABP 101 to 106 RE) 6RO ECT above, was due in Outage 130, but this is a short duration outage and is therefore aligned with Outage 129.

Table 1 continued

Component ID	INSPECTION PROGRAMMES		SAP FREQUENCY- currently specified (I&T uses)			LAST INSPECTION		ECT TO BE PERFORMED AS LISTED (ALIGNS WITH CURRENT RBI FREQUENCY OR MORE FREQUENT					
						Outages							
	RBI frequency	HX programme frequency	UNIT 1	UNIT 2	Basis	U1	U2	127	227	128	228	129	229
ABP 201 RE	Shell side: 6RO VISUAL (external)	None recommended. Credit taken for existing controls	4RO	4RO	LOPP but RBI states 4RO	125	223		100%			100%	
	Tube side:6RO Visual (internal and external)				Frequency based on RBI								
	Level Bottle: 8RO visual; 8RO UT-wall thickness (previous areas)												
ABP 201 RP	Shell: 4RO UT WALL THICKNESS	None recommended. Credit taken for existing controls	On Request	On Request	LOPP and no frequency specified in RBI	125	225						
	Tube side: 4RO Visual (internal and external)												
ABP 202 RE	Shell side: 6RO VISUAL (external)	None recommended. Credit taken for existing controls	4RO	4RO	LOPP but RBI states 4RO	125	223					100%	
	Tube side:6RO Visual (internal and external)				Frequency based on RBI								
	Level Bottle: 8RO visual; 8RO UT-wall thickness (previous areas)												
ABP 202 RP	Shell: 4RO UT WALL THICKNESS	None recommended. Credit taken for existing controls	On Request	On Request	LOPP and no frequency specified in RBI	125	225						
	Tube side: 4RO Visual (internal and external)												

Table 1 continued

Component ID	INSPECTION PROGRAMMES		SAP FREQUENCY- currently specified (I&T uses)			LAST INSPECTION		ECT TO BE PERFORMED AS LISTED (ALIGNS WITH CURRENT RBI FREQUENCY OR MORE FREQUENT					
								Outages					
	RBI frequency	HX programme frequency	UNIT 1	UNIT 2	Basis	U1	U2	127	227	128	228	129	229
ABP 301 RE	Shell side: 4RO UT wall thickness	None recommended. Credit taken for existing controls	4RO	4RO	OHS RBI inspection	125	223	100%				100%	
	Tube side: 4RO ECT & Visual (internal and external)												
ABP 302 RE	Shell side: 4RO UT wall thickness	None recommended. Credit taken for existing controls	4RO	4RO	OHS RBI inspection	125	223	100%				100%	
	Tube side: 4RO ECT & Visual (internal and external)												
ABP 401 RE	Shell side: 2RO internal inspection and UT wall thickness	None recommended. Credit taken for existing controls	2RO	2RO	LOPP is more frequent at 2RO than RBI	125	225	100%	100%			100%	100%
	Tube side: 6RO ECT & Visual (internal and external)												
ABP 402 RE	Shell side: 2RO internal inspection and UT wall thickness	None recommended. Credit taken for existing controls	2RO	2RO	LOPP is more frequent at 2RO than RBI	125	225	100%	100%			100%	100%
	Tube side: 6RO ECT & Visual (internal and external)												

Table 1 continued

Component ID	INSPECTION PROGRAMMES		SAP FREQUENCY- currently specified (I&T uses)			LAST INSPECTION							
	RBI frequency	HX programme frequency	UNIT 1	UNIT 2	Basis	U1	U2	127	227	128	228	129	229
AHP 501 RE	Shell side: 4RO internal inspection and UT wall thickness	None recommended Credit taken for existing controls	2RO	2RO	LOPP is more frequent at 2RO than RBI	125	225	100%	100%			100%	100%
	Tube side:												
	4RO ECT & Visual (internal and external)												
AHP 502 RE	Shell side: 4RO internal inspection and UT wall thickness	None recommended Credit taken for existing controls	2RO	2RO	LOPP is more frequent at 2RO than RBI	125	225	100%	100%			100%	100%
	Tube side:												
	4RO ECT & Visual (internal and external)												
AHP 601 RE	Shell side: 4RO internal inspection and UT wall thickness	None recommended Credit taken for existing controls	2RO	2RO	LOPP is more frequent at 2RO than RBI	125	225	100%	100%			100%	100%
	Tube side:												
	4RO ECT & Visual (internal and external)												
AHP 602 RE	Shell side: 4RO internal inspection and UT wall thickness	None recommended Credit taken for existing controls	2RO	2RO	LOPP is more frequent at 2RO than RBI	125	225	100%	100%			100%	100%
	Tube side:												
	4RO ECT & Visual (internal and external)												

Table 1 continued

Component ID	INSPECTION PROGRAMMES		SAP FREQUENCY- currently specified (I&T uses)			LAST INSPECTION		ECT TO BE PERFORMED AS LISTED (ALIGNS WITH CURRENT RBI FREQUENCY OR MORE FREQUENT					
	RBI frequency	HX programme frequency	UNIT 1	UNIT 2	Basis	U1	U2	Outages					
								127	227	128	228	129	229
GRH 001 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	123	225	100%					100%
GRH 002 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	123	225	100%					100%
GRH 003 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	123	225	100%					100%
GRH 004 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	123	225	100%					100%
GRH 005 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	123	225	100%					100%
GRH 006 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	123	225	100%					100%
GRH 007 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	123	225	100%					100%
GRH 008 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	123	225	100%					100%
GGR 001 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	117	216	100%	100%				
GGR 002 RF	No RBI listed	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	117	216	100%	100%				

Note 2: LOPP – Page 27: GRH/GGR - Internal inspection of the coolers was performed for the first time since commissioning in Outage 216 (CS08-044). Black zinc material was noted on the outer surface of the tube bundle. This was attributed to inadequate flushing during a change from zinc-based turbine oil to non-zinc-based oil. The coolers were subsequently given a 6RO laser inspection task. This has recently been upgraded to a 4RO eddy current inspection, the next implementation of which is in Outage x27.

**Table 1 continued**



Component ID	INSPECTION PROGRAMMES		SAP FREQUENCY- currently specified (I&T uses)			LAST INSPECTION		ECT TO BE PERFORMED AS LISTED (ALIGNS WITH CURRENT RBI FREQUENCY OR MORE FREQUENT)					
								Outages					
	RBI frequency	HX programme frequency	UNIT 1	UNIT 2	Basis	U1	U2	127	227	128	228	129	229
GSS 100 ZZ	1RO to change to original 2RO after bundle replacement	None recommended. Credit taken for existing controls	2RO	2RO	LOPP	125	225 (new)	100%	100%			100%	100%
GSS 200 ZZ	1RO to change to original 2RO after bundle replacement	None recommended. Credit taken for existing controls	2RO	2RO	LOPP	125	225 (new)	100%	100%			100%	100%
GSS 300 ZZ	1RO to change to original 2RO after bundle replacement	None recommended. Credit taken for existing controls	2RO	2RO	LOPP	125	225 (new)	100%	100%			100%	100%
GSS 400 ZZ	1RO to change to original 2RO after bundle replacement	None recommended. Credit taken for existing controls	2RO	2RO	LOPP	125	225 (new)	100%	100%			100%	100%
CET 001 CS	No RBI listed	None recommended. Credit taken for existing controls	2RO	2RO	LOPP	125	225	100%	100%			100%	100%
GSY 001 RF	No RBI listed. A new heat exchanger is being installed during X26. There is a 4RO visual inspection in OUTAGES X29.	None recommended. Credit taken for existing controls	N/A	N/A	LOPP	123	223	0%	0%	0%	0%	100%	100%
					Perform 100% ECT as a baseline to determine the future strategy.								
APG 001 RF	Tube side: 6RO ECT & Visual (internal and external)	None recommended. Credit taken for existing controls	4RO	4RO	LOPP	124	223	100%	100%				
SRI 001 EX	No RBI listed	None recommended. Credit taken for existing controls	6RO	6RO	LOPP	118	219	100%	100%				
SRI 002 EX	No RBI listed	None recommended. Credit taken for existing controls	6RO	6RO	LOPP	118	219	100%	100%				

Table 1 continued

Component ID	INSPECTION PROGRAMMES		SAP FREQUENCY- currently specified (I&T uses)			LAST INSPECTION		ECT TO BE PERFORMED AS LISTED (ALIGNS WITH CURRENT RBI FREQUENCY OR MORE FREQUENT)					
	RBI frequency	HX programme frequency	UNIT 1	UNIT 2	Basis	U1	U2	Outages					
								127	227	128	228	129	229
CRF 001 RF	No RBI listed	None recom mended. Credit taken for existing controls	6RO	6RO	LOPP	120	220	100%	100%				
CRF 002 RF	No RBI listed	None recom mended. Credit taken for existing controls	6RO	6RO	LOPP	120	220	100%	100%				
CRF 003 RF	No RBI listed	None recom mended. Credit taken for existing controls	6RO	6RO	LOPP	120	220	100%	100%				
CRF 004 RF	No RBI listed	None recom mended. Credit taken for existing controls	6RO	6RO	LOPP	120	220	100%	100%				
CRF 005 RF	No RBI listed	None recom mended. Credit taken for existing controls	6RO	6RO	LOPP	120	220	100%	100%				
CRF 006 RF	No RBI listed	None recom mended. Credit taken for existing controls	6RO	6RO	LOPP	120	220	100%	100%				
CRF 001 WX	No RBI listed	None recom mended. Credit taken for existing controls	4RO	4RO	LOPP	124	225	Sco ped tubes					Sco ped tubes
CRF 002 WX	No RBI listed	None recom mended. Credit taken for existing controls	4RO	4RO	LOPP	125	224		Sco ped tubes			Sco ped tubes	
CRF003 WX	No RBI listed	None recom mended. Credit taken for existing controls	4RO	4RO	LOPP	124	225						Sco ped tubes
CRF 004 WX	No RBI listed	None recom mended. Credit taken for existing controls	4RO	4RO	LOPP	125	224	Sco ped tubes	Sco ped tubes			Sco ped tubes	
CRF005 WX	No RBI listed	None recom mended.	4RO	4RO	LOPP	124	225	Sco ped tubes					Sco ped tubes
CRF 006 WX	No RBI listed	None recom mended.	4RO	4RO	LOPP	125	224		Sco ped tubes			Sco ped tubes	
CVI 001 EX	No RBI listed	None recom mended	6RO	6RO	LOPP	N/A	N/A	100%	100%				
CVI 002 EX	No RBI listed	None recom mended	6RO	6RO	LOPP	N/A	N/A	100%	100%				
STR 001 TX	No RBI listed	None recom mended	ONCE-OFF	ONCE-OFF	LOPP	125	224	100%	100%				

**Note:** 3: CRF WX - The peripheral tubes, high risk tubes, and other identified tubes will be verified but not 100% of the tubes will require inspection.

The following are a list of relevant indications to be detected:

- Inadequate bundle Venting resulting in Corrosion problems and Thermal losses,
- Tube Damage and erosion resulting from Inadequate Impingement Plates,
- High Velocity Wet Steam Causing Erosion of Shells and Support Plates,
- Erosion of Tubes and/or Baffle Plates Resulting from insufficient Water Level
- Erosion and Tube Damage Resulting from Inadequate Support Plate thickness
- Erosion and Steam Flow from Tube/Plate Leakage
- Pitting
- Inlet End Erosion
- Erosion / Corrosion
- Corro Tip Erosion

#### Deliverables

- Inspection reports are provided to the *Employer* within 36 hours after the completion of an inspection.
- 
- This summary report contains:
  - The results of the inspection.
  - The detailed description of the noted indications including drawings that clearly show the positions and orientations.
  - Tube maps detailing locations of indications.
  - The description and results of the calibration.
  - The description of the possible non conformities with the justification of their acceptability.

### 3.1 LEGAL COMPLIANCE

#### 3.1.1 Section 37(2) (Legal) Agreement

A section 37(2) agreement must be signed between Eskom and the principal contractor at the time of awarding the contract. 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.

The original copy of the section 37(2) agreement must be retained by the contractor and a copy retained by the responsible project manager.

A copy of all the agreements must form part of the respective contractor's SHE file.

#### 3.1.2 Hazardous Work by Children (Child Labour)

The constitution of the Republic of South Africa, in the "Bill of Rights" is clear on the rights of children, especially when it comes to:

1. *being protected from exploitative labour practices;*

2. *not to be required or permitted to perform work or provide services that*
  - i. *are inappropriate for a person of that child's age; or*
  - ii. *place at risk the child's well-being, education, physical or mental health or spiritual, moral or social development* and the Basic Conditions of Employment Act, Chapter six Section 43 "Prohibition of employment of children".

Before resorting to the use of child labour, due consideration must be given to the rights of the child in terms of the constitution. Where work is being performed which is not prohibited in terms of the constitution, then such work must be conducted in terms of the OHS Act "Regulations on Hazardous Work by Children in South Africa" with emphasis on paragraph 2 Purpose and Interpretation. Eskom does not condone the use of child labour and therefore all effort must be exercised and child labour should not be used.

### **3.2 OHS ACT**

The principal contractor and appointed contractors shall have an up to date copy of the OHS Act and regulations which will be available to all employees.

### **3.3 LEGISLATIVE COMPLIANCE**

All contractors will comply with all the legislation pertaining to this contract being:

#### **3.3.1 Legislative Compliance**

The principal contractor and all appointed contractors will comply with all the legislation pertaining to this project being:

- The Constitution of the Republic of South Africa (particularly Section 24 of the Bill of Rights).
- Occupational Health and Safety Act 1993 (Act 85 of 1993) and its Regulations.
- National Environmental Management Act 1998 (Act 107 of 1998).
- Environment Conservation Act 1989 (Act 73 of 1989).
- National Water Act 1998 (Act 36 of 1998).
- Civil and Building Work Act.
- National Road Traffic Act 93 of 1996.
- Compensation for Occupational Injuries and Diseases Act.
- SANS Standards –Contractor shall use the relative standards applicable to the project.

### **3.4 ESKOM REQUIREMENTS**

All contractors shall, before commencement of the project ensure that all their employees are familiar with the relevant Eskom SHE documentation that is applicable to contract services.

### **3.5 SHE POLICY**

A SHE policy is a statement of intent and a commitment by the organisation's CE and senior management in relation to the relevant SHE roles and responsibilities, the achievement of their strategic objectives, values of integrity, customer satisfaction, excellence, and innovation.

The principal contractor and all appointed contractors, if already not in place, will be required to compile an organisational SHE policy in line with their SHE responsibilities. The policy must be signed by the organisation's CE or the appointed assistant to the CE OHS Act Section 16(2). The policy must be displayed in a prominent place within the workplace. A copy of the policy must be filed in the contractor SHE files and attached as an annexure in the SHE Plan.

### **3.5.1 Environmental Specifications**

The principal contractor shall comply with all applicable Environmental Laws and regulations as stipulated in the National Environmental Management Act (NEMA), 1998 (Act No 107 of 1998), and the National Environmental Management: Waste Act No. 59 of 2008. The attention of the principal contractor is drawn to Section 28 (1) of NEMA which imposes a duty of care to the environment and to ensure that remedial action is instituted to minimise environmental damage and mitigate environmental impacts. Also, any waste generated shall be properly handled and disposed of as per the Hazardous and Non-Hazards Waste and Scrap Disposal Procedure (KAE-01

### 3.6 COLD

**3.6.1 The principal contractor and all his/her appointed contractors shall be registered with an appropriate employment compensation commissioner and have available a valid letter of good standing (LoG) from such commissioner. The obligation lies with the contractors to ensure that the LoG remain valid throughout the contract period. A copy of the LoG must be filed in the contractor SHE files.**

### 3.7 COSTING FOR SHE WITHIN THE PROJECT

The costing for SHE must be itemised based on the overall scope of the project (i.e.) Training, provision of PPE, safety equipment purchases etc.

### STATUTORY APPOINTMENTS

For the duration of the contract, the principal contractor and all appointed contractors shall appoint competent employees who will meet the requirements of the OHS Act. Where appointments are made, contractors shall ensure that the appointees have been suitably trained and or informed of their responsibilities before getting them to accept such appointment. The relevant statutory appointments shall be made in accordance with the requirements of the OHS Act which includes the requirement of a competent person being appointed in the relevant roles. The statutory appointments should include but not limited to the following:

- OHS Act General Administrative Regulation 9(2) – Incident Investigator
- OHS Act Section 19 (3) - Health and Safety Committee Member
- OHS Act Section 19(6)(a) – Co-opted Health and Safety Committee member
- OHS Act Hazardous Chemical Substances Regulation 3(3) Hazardous Chemical Substances Co-coordinator
- OHS Act, Section 17 – Health and Safety Representative.
- OHS Act Construction Regulation 9(1) - Person to Compile Risk Assessments
- OHS Act Construction Regulation 10(1) - Competent Person to Compile Fall Protection Plan
- OHS Act: General Safety Regulations 8 Stacking and Storage Supervisor
- OHS Act: Construction Regulations 29(h) Firefighting Equipment Inspector
- OHS Act General Safety Regulations 3(4) – First Aider/s

#### 3.7.1.1 Non statutory appointments

- Eskom requirement – Emergency Planning Co-coordinator
- Eskom requirement - Chairperson of Health and Safety Committee

### 3.8 ESKOM LIFE-SAVING RULES

1. Eskom views health and safety in high esteem and encourages that any organisation who performs work for Eskom in Eskom adopt the same view.
2. Five Life-saving rules have been developed that will apply to all Eskom Employees, agents, consultants, and **contractors**. Failure to adhere to these rules by any Eskom employee or employee of a Principal Contractor or appointed contractor will be considered a serious transgression. These rules are being implemented to prevent serious injury or death of any employee, labour broker or contractor working in any area within Eskom.
3. If any contractual work will be performed on any Eskom premises (including delivery of any product), then the rules **shall be obeyed** by any contractor and their employees.

4. The rules are:

RULE	DESCRIPTION OF RULE
Rule 1	<b>OPEN, ISOLATE, TEST, EARTH, BOND, AND/OR INSULATE BEFORE TOUCH</b> ( That is plant, any plant operating above 1000 V)
Rule 2	<b>HOOK UP AT HEIGHTS</b> Working at height is defined as any work performed above a stable work surface or where a person puts himself/herself in a position where he/she exposes himself/herself to a fall from or into.
Rule 3	<b>BUCKLE UP</b> No person may drive any vehicle on Eskom business and/or on Eskom premises: Unless the driver and all passengers are wearing seat belts.
Rule 4	<b>BE SOBER</b> No person is allowed to be under the influence of intoxicating liquor or drugs while on duty
Rule 5	<b>PERMIT TO WORK</b> Where an authorisation limitation exists, no person shall work without the required permit to work.

5. Eskom will take a stance of zero tolerance on these rules.
6. Non-compliance to a Life Saving rule will be considered serious misconduct and will lead to serious disciplinary action, which may include dismissal.
7. This is to ensure that **every person** who works on or visits an Eskom **returns home safely to his or her family**.

### 3.9 SUBSTANCE ABUSE

1. Alcohol and substance abuse poses a significant threat to any business, more so in industrial incidents and the driving of vehicles. Eskom is therefore, entitled to take reasonable steps to ensure that intoxicated persons are identified and prevented from entering Eskom.
2. General Safety Regulation 2A is clear on the legal stance regarding intoxication.
3. The alcohol and drug permissible level is 0%.
4. All contractors shall comply with Eskom's procedure 32-37 ("Substance Abuse Procedure"), taking in to account that this is an Eskom Life-saving Rule number 4: BE SOBER", this means anyone entering the Eskom will be subjected to ad hoc alcohol testing.
5. Contractors are encouraged to compile their own manual and to carry out regular alcohol testing of their own employees. The legislative alcohol level is deemed to be zero.
6. Test records must be treated as "Confidential" and filed in the employees' personal file.

### 3.10 ROLES AND RESPONSIBILITIES

#### Commitment

Visible commitment is essential to providing a safe work environment. Managers, supervisors and employees at all levels must demonstrate their commitment by being proactively involved in the day to day operations, in particular

the Occupational Health and Safety aspects of any project / contract. Legislation requires that each employee must take reasonable care of themselves and their fellow workers, from management level down to the lowest employee level.

### 3.10.1 Employees

Must:

1. Be responsible for their own safety and health and that of their co-workers;
2. Co-operate with their employer to meet all of the employer's as well as legislative and Eskom requirements;
3. Familiarise themselves with their responsibilities during induction and awareness training sessions, some of which are:
  - a. familiarising themselves with their workplaces and safety and health procedures;
  - b. working in a manner that does not endanger them or cause harm to others;
  - c. ensuring that the work area is kept tidy;
  - d. reporting all incidents and near misses;
  - e. protecting fellow workers against injury by performing job observations;
  - f. reporting unsafe acts and unsafe conditions;
  - g. reporting any situation that may become dangerous; and
  - h. carrying out lawful orders and obeying safety and health rules;
4. Who become aware of any person disregarding a safety notice, instruction, or regulation, immediately report this to the person concerned. If the person persists, stop that person from working, and report the matter to contractor management and/or Eskom's project manager or supervisor immediately.
5. Not damage, alter, remove, render ineffective, or interfere with anything that has been provided for the protection of the site or for the health and safety of persons this includes any guarding of machinery or equipment.
6. Obey any safety signs and adhere to any site demarcation at all times.
7. When entering or leaving the site, do so via the official designated access/departure routes. Where reflective jackets/bibs are required to be worn, wear them.
8. Be subjected to any disciplinary action, if having transgressed any of the requirements of the health and safety site rules, Eskom requirements, company requirements, or legislative requirements.
9. Avoid any act that may endanger their own health and safety or that of fellow employees, members of the public, or visitors who may be affected by their acts and/or omissions at work.
10. Have the right to obtain proper information from their employer regarding health and safety risks and measures related to the work processes.
11. Use facilities placed at their disposal and not misuse anything provided for their own protection or that of others.
12. Have the right to remove themselves from danger when they have good reason to believe that there is an imminent and serious danger to their health and safety and have the duty to inform their supervisor immediately of such danger.
13. Report to their supervisor (in the first instance), the principal contractor (in the second instance), and/or the Eskom project manager, any substandard acts and/or conditions that have come to their attention and that have not been rectified or acted on by their contractor management timeously.
14. Have the right and the duty at any workplace to participate in ensuring healthy and safe working conditions, to the extent of their control, over the equipment and methods of work adopted.
15. Maintain the surrounding area of the work site in a neat and tidy condition.
16. Have meaningful participation in regular health and safety meetings.
17. Have the right to refuse to perform or continue to perform any task/job on the grounds of health, safety, and environmental concerns.
18. When given instructions, understand the instructions and be permitted to clarify those instructions.

### 3.11 RISK ASSESSMENT (REFER TO 32-520)

- It is a legal requirement in terms of Section 8 (2)(d) of the OHS Act for an employer to carry out risk assessments, to establish which risks and hazards are attached to the health and safety of persons due to any work which is performed, any article or substance which is, handled, stored, transported. A risk



assessment is defined as an identification of the hazards present in an organization and an estimate of the extent of the risks involved, taking into account whatever precautions are already being taken.

- It is essentially a three stage process:
- identification of all hazards;
- evaluation of the risks;
- Measures to control the risks.
- Risk assessments are required to be maintained. This means that significant changes to a process or activity, or any new process or activity should be subjected to a risk assessment and that if new hazards come to light during the work process, then these should also be subjected to risk assessments. Risk assessments for long term processes should be periodically reviewed and updated. Method statements or written safe work procedures are an effective method as information and record of the way jobs / tasks must be performed. Daily or issue based or task specific or on the job risk assessments must be conducted at the place where work is to be performed/ conducted to allow managers and employees to assess any inherent risks that could have been overlooked during the initial risk assessment or any changes that might have occurred in a period of absence. For example if a job / task is extended over a day or halted due to inclement weather.

Guidelines for actual steps involved in a job/task specific risk assessment are:

- Each activity is listed;
- Specific hazards are identified and listed against each activity;
- The magnitude of each risk is rated as Low. Medium or High;
- All known documentary and supervisory controls are listed. For instance: What safe work procedures exist for ladders;
- The relevance, effectiveness and sufficiency of these controls are assessed;
- In the event of insufficient or deficient controls for the particular activity, steps to be taken to rectify this shall be recorded, and safe working procedures drawn up;
- Persons responsible for implementing and supervising the task shall be identified, nominated and duly assigned;
- Persons responsible for monitoring the task and carrying out the planned job observation must be nominated;
- Completed risk assessment shall be handed to the Eskom project manager representative for comment and approval.
- The relevant section of the risk assessment shall be issued with a Transmittal Note to the Supervisor nominated as the responsible person; and the names of workmen who have received instruction on the work content and the sequence of the activities listed in the risk assessment shall be recorded, and their competence established. This instruction shall be done through an interpreter if required and recorded on the Pre-Job Brief (Daily Safe Task Instructions), with reference to applicable Risk Assessments.

### 3.12 SAFE WORK PROCEDURES / METHOD STATEMENTS

Method statements / written safe work procedure are control measures used to prevent an incident from occurring during the execution of the project. A written safe work procedure/ method statements provide guidance how to execute the task safely. A safe working procedure should be written when:-

- a. Designing a new job or task;
- b. Changing a job or task;
- c. Introducing new equipment or substances; and

The safe working procedure should identify:

- d. The supervisor for the task or job and the employees who will undertake the task;
- e. The tasks that are to be undertaken that pose risks;
- f. The equipment and substances that are used in these tasks;
- g. The control measures that have been built into these tasks;

- h. Any training or qualification needed to undertake the task;
- i. The personal protective equipment to be worn;
- J. Actions to be undertaken to address safety issues that may arise while undertaking the task.

### **3.13 WORKING AT HEIGHTS (REFER TO 32- 418)**

Wherever reasonably practicable, preference is given to the performance of work at ground level as opposed to the elevated position. Where work in an elevated position is necessary, preference is given to fall prevention measures such as, but not limited to, effective barricading and the use of work platforms. Persons may only work from a fall risk position if a site-specific fall protection plan is in place and correctly implemented and consists of the following:

1. All appointments for the fall protection plan developer and implementer are in place.
2. Baseline risk assessment, which is specific and incorporates the working at height risk assessment, as well as the site-specific risk assessment, has been completed for the work to be conducted.
3. Safe working procedure/task analysis and work instructions, approved by a competent person, are in place.
4. A fall rescue plan, along with necessary equipment and trained rescuers, is in place.
5. Appropriate training, as determined by the risk assessment, has been provided.
6. Appropriate height safety equipment and personal protective equipment have been issued to the individual.
7. There are equipment inspection procedures and up-to-date inspection records.
8. Individuals are medically fit to work at height, and records of this are kept.
9. A site-specific risk assessment is performed.

While work is in progress, adequate warning signs and/or barricades shall be used in all areas where there is a risk of persons being injured by materials or equipment falling from the work area. Barricades should be continuous and easily visible.

A drop zone shall be established with appropriate warning signs and barricading, warning personnel below of workers above and potential falling objects.

Where roof work is to be performed, a risk assessment must be carried out prior to climbing on to the roof to determine the hazards (stability, suitability strength etc.), consequences of climbing and control measures that are required.

### **3.14 FLAMMABLE AND COMBUSTIBLE LIQUIDS**

1. Flammable substances may not be stored on Koeberg's property without the prior consent of Koeberg's Fire Risk Management Group. They shall prescribe storage arrangements and safety requirements. Please note that highly volatile substances such as acetone may only be taken to the plant areas under transient combustible permits obtainable from Fire Risk Management.

### 3.15 FIRST AID AND EQUIPMENT

2. The requirements of the OHS Act GSR 3 must be observed.
3. First aid appointments must be made to meet the requirements, this includes construction sites. Appointees must be trained to level 2. It is good practice for all employees to be trained to at least level 1.
4. When appointing employees for work sites, cognisance must be taken into account the type of work performed, the distance teams are working apart and the terrain to be covered if an emergency should arise.
5. A list of emergency numbers must be displayed on the notice boards and made accessible for all employees.
6. Principal Contractor must ensure that his /her employees and appointed contractor employees are familiar with the emergency numbers.
7. Contractors shall have one first aid box for the first 5 persons and thereafter one for every 50 or team of workers on site or part thereof, taking into account the type of work performed and the distance between teams.
8. More first aid boxes shall be provided in accordance with the risk assessment. Boxes must be available and accessible for the immediate treatment of injured persons at the workplace.
9. For offices, signs indicating where the first aid box or boxes are kept as well as the name and contact details of the First Aider of such first aid box or boxes shall be erected.
10. The Principal Contractor and appointed contractor shall ensure that alternative arrangements be made for incidents occurring after working hours.

#### 3.15.1 Boxes and equipment

The following is a list of minimum contents of a first aid box:

- ▯ Item 1: Wound cleaner/antiseptic (100ml).
- ▯ Item 2: Swabs for cleaning wounds.
- ▯ Item 3: Cotton wool for padding (100 g).
- ▯ Item 4: Sterile gauze (minimum quantity 10).
- ▯ Item 5: 1 Pair of forceps (for splinters).
- ▯ Item 6: 1 Pair of scissors (minimum size 100 mm).
- ▯ Item 7: 1 Set of safety pins.
- ▯ Item 8: 4 Triangular bandages.
- ▯ Item 9: 4 Roller bandages (75 mm X 5 m).
- ▯ Item 10: 4 Roller bandages (100 mm X 5 m).
- ▯ Item 11: 1 Roll of elastic adhesive (25 mm X 3 m).
- ▯ Item 12: 1 Non-allergenic adhesive strip (25 mm X 3 m).
- ▯ Item 13: 1 Packet of adhesive dressing strips (minimum quantity, 10 assorted sizes).
- ▯ Item 14: 4 First aid dressings (75 mm X 100 mm).
- ▯ Item 15: 4 First aid dressings (150 mm x 200 mm).
- ▯ Item 16: 2 Straight splints.
- ▯ Item 17: 2 Pairs large and 2 pairs medium disposable latex gloves.
- ▯ Item 18: 2 CPR mouth pieces or similar devices.

A content check list must be available with all boxes and boxes shall be checked on a regular basis, kept clean and dust free.

### 3.16 SHE COMMUNICATION SYSTEMS

1. Principal Contractor/s and their appointed contractors must develop a communication strategy outlining how they intend to communicate SHE issues to their staff, the mediums they will employ and how they will measure the effectiveness of their SHE communication. Below is a brief on how communication should take place. Where project meetings are conducted on site, SHE shall be included as a standing agenda

point and minutes of these meetings shall be available on site at all times. Minutes of meeting must be compiled and filed in the relevant SHE files. All employees shall have access to these minutes. Attendance register shall be kept for all the health and safety meetings.

### **3.16.1 Statutory Health and Safety Committees**

1. The principal contractor shall establish statutory health and safety committee in terms of Section 19 of the OHS Act, Act. Similarly, appointed contractors shall establish their own statutory health and safety committee.
2. All appointed contractors shall be members of the principal contractor's safety committee.
3. The Committee shall meet to discuss SHE issues concerning the current work being performed, training, upcoming work and SHE requirements, incidents and lessons learned specific SHE problems, safety performance, action plans and other relevant SHE issues. Listed below is a preferred agenda.
4. SHE representatives for a workplace shall be members of the relevant workplace safety committees (Refer to Section 19 (2) (a) of the OHS Act).
5. The number of persons nominated by employer must not be more than the Health and Safety Representatives on that specific statutory health and safety committee. (Refer to Section 19(2)(c) of the OHS Act)
6. A statutory health and safety committee meeting shall be held at least 3 monthly (where medium to high risk work is involved, more frequent if required), and all appointed members of the committee shall attend the meeting.
7. Statutory health and safety committees may make recommendations to the principal contractor and the project manager and the Inspector at DoL.
8. All health and safety committees shall discuss all projects related OHS Act Section 24 and 25 incidents and other notified serious incidents.
9. Health and safety committees shall follow up on incident investigation recommendations and shall keep record of all recommendations made by the committee.
10. Statutory health and safety committees may make recommendations for the revision of current standards, procedures and practices.
11. The principal contractor and appointed contractors shall ensure that statutory and non-statutory health and safety committees carry out their duties.
12. The chairperson of the health and safety committees shall be selected and appointed by the contractor. The appointed chairperson must be competent to chair meetings and be able to make informed decisions.

### **3.16.2 Non-statutory health and safety committees**

1. Where there are large worksites, then non-statutory sub-committee must be established within that worksite to assist with the communication of health and safety related matters between the statutory health and safety committee and the workplace.
2. The duties and responsibilities of the non- statutory health and safety committees will be the same as the statutory safety committee

### **3.16.3 Agenda**

1. The following serves as the guideline for the SHE Committee meeting agenda.
  - List of agenda items:
  - Matters arising from previous minutes
  - Matters arising from Contractor's SHE meetings.
  - Audit results and feedback

- Review Health and Safety Representative Inspection Reports
- Review
  - Incident investigation reports
  - Non-Conformances
  - Announcements (near miss/injury/damage)
  - Follow up on recommendations made by the employer in incident investigation reports
- Accident Prevention – Safety Promotion
  - Planned Job Observations
  - SHE Training
  - Protective clothing and equipment
  - Incident Announcements / Recall
- Forthcoming High hazard activities.
- Non-conformances.
- Housekeeping.
- Work permits.
- Work procedures.
- Hazardous materials / substances.
- Fire Prevention
- Occupational Hygiene Assessments, Health Risks and Actions
- Security
- Construction vehicles and mobile equipment
- Rules, Instructions
- Public Safety
- Environmental Management
- Emergency Preparedness
- Statistics report
- Closure

#### **3.16.4 Minutes and action items for all health and safety committee meetings**

1. Minutes and record of action items shall be kept of all health and safety committee meetings.
2. Action column with target dates and responsible person shall be clearly visible on the minutes and shall be completed during the meeting.
3. Statutory health and safety committee meeting minutes and record of action items shall be kept for the duration of the project or a minimum period of three years.
4. Non–statutory health and safety committee meeting minutes shall be kept for the duration of the project or a minimum period of 12 months.
5. All other meeting minutes where SHE is on the agenda, shall be kept for a minimum period of 12 months.
6. The original copy of the minutes and record of the action items must be signed by the chairperson.
7. The relevant project manager and principal contractor shall endorse the relevant minutes with his/her recommendations and return the minutes to the relevant contractors chairperson within 14 calendar days of the meeting.

#### **3.16.5 Tool box talks / Daily team talks / pre job meetings**

1. A meeting must be held prior to the commencement of the day's work with all relevant personnel associated with the work task in attendance. The job, relevant procedures, associated hazards, safety

measures, i.e. the task risk assessments shall be discussed. Each employee who attends the briefing shall sign an attendance list of that pre-job brief form undertaking that they have an understanding of the tasks, risks and control measures required.

2. Where possible, tool box talks can be included in the pre-job brief meetings. If this does not occur, then weekly tool box talks must be conducted. The toolbox talk topics will be based on SHE issues pertaining to the construction site and or the project. The topic contents shall be in writing. Attendance registers with the topic listed shall be kept.

### **3.17 SHE TRAINING**

1. The principal contractor, when making a bid for this project shall provide a breakdown list of the SHE training requirements and the costing of such requirements. Similarly, appointed contractor must provide the same requirements when bidding with the principal contractor.
2. The scope of training includes but is not limited to the type of work being performed and the relevant procedures. Additional to the requirements, will be that the principal contractor and appointed contractors must have the appropriate qualifications, certificates and employees should always be under competent supervision.
3. Where legislative and Eskom recommended appointments are made, the relevant training shall be given to those appointees prior to the acceptance of those appointments.
4. When there is an amendment to the Acts and/or to the regulations, SHE specification and SHE plan, all affected staff shall undergo the applicable refresher training.
5. Appropriate time must be set aside for training (induction and other) of all employees.
6. Records of all training and qualifications of all contractor employees must be kept on the SHE file.

#### **3.17.1 Induction training**

1. The principal contractor shall ensure that all his / her employees, appointed contractors and their employees have undergone the Eskom Safety Contractor Management induction training prior to commencing work on site.
2. Attendance registers must be completed of any induction training given, which must indicate that they have received and understood the induction training.
3. Prior to attending the induction training, all employees must undergo a pre-employment medical examination and found fit for duty. A copy of the certificate of fitness must be kept in the SHE file on site for the duration of the project.
4. All employees and visitors on site shall carry the proof of induction training.

#### **3.17.2 Site specific induction training**

The principal contractor shall ensure that all his / her employees and appointed contractor employees undergo site specific work induction with regard to the approved project SHE plan, general hazards prevalent on the construction site, construction risk assessment, rules and regulations, and other related aspects. The induction training should also include identification of sensitive features such as wetlands/vlei areas, red data species, graves, etc.

#### **3.17.3 Visitors to site induction**

1. Visitors to the site shall be required to undergo and comply with the principal contractor's site-specific safety induction prior to being allowed access to site.
2. All visitors must remain in the care and custody of a person (host) who has been properly inducted. No visitors are permitted to undertake any work onsite, of any nature.
3. Visitors who have completed site induction must be provided with a record of proof of Induction training.

### **3.17.4 General training**

The principal contractor will be required to ensure that before an employee commences work on the project, the respective supervisor informs the employee of his scope of authority, the hazards associated with work as well as the control measures to be taken. This will include man-job specifications, the discussion of any task procedures or hazardous operational procedures to be performed by the employee. The Principal Contractor is to ensure that the supervisor has satisfied himself that the employee understands the hazards associated with any work to be performed by conducting task/job observations.

### **3.18 HOUSEKEEPING AND ORDER**

1. All contractors shall maintain a high standard of housekeeping within their sites and vehicles for the duration of the project.
2. Prompt disposal of waste materials, scrap and rubbish is essential.
3. Materials/objects shall not be left unsecured in elevated areas –falling objects may cause serious injuries/fatalities.
4. Nails protruding through timber shall be bent over or removed so as not to cause injury.
5. All packaging material including boxes, pallets, crates, etc. to be removed from the work area immediately.
6. On completion of his / her work, the contractor is responsible for clearing his / her work area of all materials, scrap, temporary buildings and building bases to the satisfaction of the client/agent.
7. In cases where an inadequate standard of housekeeping has developed, compromising safety and cleanliness, anyone has the responsibility to bring it to the attention of the principal contractor in the first instance and the Eskom project/site manager in the second instance.
8. The Eskom Project/Site Manager has the right to instruct the principal contractor and appointed contractors to cease work 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 a stoppage. Failure to comply with this requirement will result into site cleaning by another cleaning contractor company at the cost of the principal contractor.
9. The principal contractor shall carry out regular safety/housekeeping inspections (at least weekly) to ensure maintenance of satisfactory standards. The principal contractor shall document the results of each inspection and shall maintain records for viewing.

#### **3.18.1 Stacking**

1. Before stacking any material, the contractors or their employees must consult the contract manager for authorisation to use such an area for stacking purposes. This is to prevent haphazard arrangements.
2. Adequate care must be taken by the contractor to ensure that storage and stacking is carried out correctly and safely..
3. Correct shelf stacking must be carried out, heavy and bulky on the bottom, light and small on top.

### **3.19 WORKPLACE SIGNAGE AND COLOUR CODING**

1. Symbolic safety signage shall be displayed where it is required by legislation.
2. All symbolic safety signage shall conform to the requirements of SANS standard 1186.
3. Signs shall be positioned to be seen from most positions within the work sites / areas.
1. All signage must be clear at all times and be replaced timeously when worn out.

4. Contractors establishing sites must erect a company sign at their site offices to reflect the name and contact details of the: Construction Supervisor; Health and Safety Manager/Practitioner; First Aider; Health and Safety Representative and Evacuation warden.
5. The location of every first aid box; fire extinguisher and emergency exit is to be clearly indicated by means of a sign.
6. When using, an explosive power tool the appropriate signage shall be erected, warning people of its use.
7. Contractors shall provide signage where work is conducted and where unauthorised entry is prohibited and/or where alerting and cautioning passers-by to be aware of potential dangers.
8. The meanings of the appropriate symbolic signage must be discussed during induction training and toolbox talks.
9. Where possible, within workshops, work areas and established premises, the appropriate sign indicating the meaning of symbolic safety signs must be displayed.

### 3.20 TOOLS AND EQUIPMENT

1. Contractors shall ensure that all tools and equipment are identified, safe to be used and is maintained in a good condition.
2. Contractors shall ensure that all tools and equipment are listed on an inventory list, be regularly inspected at least monthly or as required by legislation and risk assessments. The equipment should be numbered or tagged so that it can be properly monitored and inspected.
3. Where applicable, tools and equipment must have the necessary approved test or calibration documentation prior to being brought onto the project and the records shall form part of the SHE plan. Maintenance calibration shall be undertaken in terms of the manufacturer's requirements.
4. All fuel driven equipment must be properly maintained in accordance with the manufacturer's recommendations and legal requirements.
5. Eskom reserves the right to inspect tools or items of equipment brought to site by contractors for use on this project.
6. Should Eskom personnel find any item that is inadequate, faulty, unsafe or in any other way unsuitable for the safe and satisfactory execution of the work for which it is intended, the Eskom personnel shall advise the contractor in writing and the contractor shall forthwith remove the item from site and replace it with a safe and adequate substitute.

**Note:** In such cases, the contractor shall not be entitled to extra payments or extensions of time in respect of delay caused by Eskom's instructions.

7. Where defective tools and equipment's are identified, such tools and equipment shall be removed out of site immediately, locked away to prevent further use until such time as the tool or piece of equipment has been repaired.
8. Contractors shall ensure that the appropriate records are kept for all tools and equipment used on the project. Such tools and equipment's shall be subjected to regular inspections.

#### 3.20.1 Hand tools

1. All hand tools (hammers, chisels, spanners, etc.) must be recorded on a register and inspected by the construction supervisor on a monthly basis as well as by users prior to use.
2. Tools with sharp points in tool boxes must be protected with a cover.
3. All files and similar tools must be fitted with handles.
4. No make shift tools are permissible on the project.



### **3.21 LADDERS**

1. Ladders used shall conform to the requirements of GSR 13A and used in terms of GSR 6.
2. The appropriate head protection, with chin strap shall be worn by employees working from a ladder or with climbing irons.
3. The ladder wheels, brakes and platform must be in good condition.
4. All metal parts to be in good condition, no cracks.
5. Non-slip devices must be in good condition and no paint to be on wooden ladders
6. Climbing irons are permitted to be used in place of ladders on condition that the requirements of GSR 6 are not compromised and from an electrical point of view not damage any cabling. The working at heights risk assessment must indicate the use of climbing irons.
7. Employees using climbing irons shall be suitably trained in the use, care and maintenance of such climbing irons.
8. When using climbing irons, the appropriate rope grab fall prevention system shall be used.
9. The correct fall protection equipment shall be worn and used whilst climbing up, working from and climbing down ladders.
10. The appropriate head protection, with chin strap shall be worn by employees working from a ladder or with climbing irons.
11. A detailed inspection of all ladders shall be conducted monthly by a competent person and every time prior to climbing by employees using such ladders. The inspection check lists must be filed in the site SHE files

### **3.22 SCAFFOLDING**

1. Scaffolding use shall conform to the requirements of CR 14, Eskom procedure 32-418 and used in terms of GSR 6.
2. The requirements for using a scaffold platform shall be determined by the work at heights risk assessment.
3. All scaffolding that will be used shall conform to the SANS standard 10085 and the requirements of CR 16 shall be carried out.
4. Scaffolding shall be erected and inspected by the competent personnel.
5. The appropriate training for scaffold users shall be conducted prior to climbing on to the scaffold.
6. The correct fall protection equipment shall be worn and used whilst climbing up, working from and climbing down the scaffolds.
7. A detailed inspection of all scaffolding shall be conducted monthly by a competent person and every time prior to climbing by employees using such scaffolding. The inspection check lists must be filed in the site SHE files.

### **3.23 AUDITING**

#### **3.23.1 Approval and compliance of principal contractor SHE plan**

The Contractor's SHE Plan will be audited against compliance checklist so as to verify compliance to the requirements of the Eskom SHE specifications. Once there is compliance only then will the principal contractors SHE plan be approved by the project manager or an appointed Eskom contract custodian. The implementation of the SHE Plan shall be assessed / audited by Eskom personnel on a regular basis. This will include physical conditions evaluation.

### 3.23.2 Eskom SHE audits

Eskom shall evaluate all contractors' SHE performance on an ongoing basis against the legal, Eskom requirements, SHE specification and the contractors SHE plans.

**Note:** Eskom reserves the right to conduct unannounced audits on contractors

There will be monthly audits conducted by Eskom on the principal contractor/s and/or appointed contractors. These audits shall be attended by the contractor's site manager or his representative.

If there are any findings / non-compliance identified as serious in these audits, an activity will be stopped for that specific Principal Contractor and appointed contractor. Refer to section on "Work Stoppage" in this SHE Specification.

### 3.23.3 Contractor audits

Principal Contractors are required to conduct internal audits on both their employees and their appointed contractors on the implementation of their SHE Plan on a monthly basis or when the scope of work changes. A summary of the findings and the proposed corrective actions shall be submitted to Eskom project manager within one week after completion of the audit. Where appointed contractors are audited by the principal contractor a copy of the audit report shall be submitted to the appointed contractor within 7 days of the audit.

### 3.23.4 Smoking

The national smoking policy must be observed and smoking is permitted in designated areas only (Eskom Smoking Procedure 32-36).

### 3.23.5 Cellular phones

The national requirements regarding the use of cellular phones must be observed, in particular when driving and or operating mobile equipment and or machinery.

## 3.24 OCCUPATIONAL HEALTH, HYGIENE AND REHABILITATION

All contractors are required to develop an Occupational Health, Hygiene and Rehabilitation program. The program is intended to ensure that the risks to health are identified and controlled.

### 3.24.1 Medicals

**Note:** Eskom will only accept medical surveillances conducted by an Occupational Health Practitioner who holds a qualification in occupational health.

1. Principal contractors must ensure that their employees and their appointed contractor employees have a medical surveillance program whereby their employees under go entry, periodic and exit medical fitness examinations.
2. In order for the appropriate medical examinations to be conducted, each employee must have a man job specification, which must indicate the description of work, list of hazards and potential occupational exposure limits, physical hazards and required physical attributes.
3. Medical fitness certificates shall be renewed annually for employees who are working on site. This shall be maintained until completion of the contract.
4. The Principal Contractor must ensure that his / her employees and appointed contractor employees have undergone pre-entry medical examination before starting work on the contract.
5. The principal contractor shall provide a documented process for managing those employees who are issued with a conditional certificate of fitness.

### 3.25 ROLES AND RESPONSIBILITIES

All contractors are required to list employee's roles and responsibilities pertaining to the contract.

### 3.26 SAFE WORK PROCEDURES AND PRACTICES / SAFE OPERATING

There must be written safe work procedures for all activities, the safe work procedures must be aligned with the risk assessments.

### 3.27 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

The Principal contractor must provide a detailed programme that includes the issuing, maintenance and replacement of PPE for all his employees and appointed contractors on site.

All contractors shall comply with the requirements of GSR 2 of the OHS Act.

The risk based PPE matrix must be compiled detailing the types of PPE that is required to be issued to employees performing the respective tasks.

Where there are unusual instances where particular activities require additional type of PPE, then a risk assessment must be conducted where such PPE requirements will be identified and the issuing be carried out.

All contractors shall ensure that their visitors wear and use the correct PPE whilst on worksites.

Where PPE is required and visitors are not in possession of, then it is the individual contractor's responsibility to provide the PPE.

All PPE purchased and used by all contractor employees including visitors must comply with the relevant SANS standards.

Where deemed as a requirement, then high visibility vests shall be worn.

### 3.28 INCIDENT INVESTIGATION

All incidents shall be investigated in terms of OHS Act General Administrative Regulations 8 and 9, using Eskom Procedure 32-95 as a reference, and where injuries as contemplated in sections 24 and 25 have been sustained, be reported to the Department of Labour.

Contractors shall use the standard General Administrative Regulation Annexure 1 "Recording of an Incident" form for all incident investigation reports. The objective of incident investigation, should not only be a legal requirement, but should establish why and how the incident occurred and find out the real root cause of the incident and to decide on precautionary measures that are required to address the root cause to prevent any further recurrences of the same or similar incidents.

### 3.29 EMERGENCY MANAGEMENT

The art of emergency preparedness and response is to minimise the effects of any emergency and to restore normal activities as soon as practical. The contractor must familiarise themselves with the Eskom emergency response plan and procedure. Periodic emergency drills must be undertaken to test the effectiveness of the plan. This must be recorded and provided on request.

#### 3.29.1 Non Conformance and Compliance

1. Any non-compliance to any health and safety requirement in this SHE specification is subject to discipline in terms of the Eskom Procurement and Supply Management Procedure.

2. Principal contractors are required to implement a non-conformance procedure (if not already in place) for issuing to contractors for transgressions. The procedure can include “quality” related non-conformance issues. Similarly, appointed contractors must implement a non-conformance procedure.
3. The procedure for the issuing and closing off of non-conformance reports shall be strictly adhered to.
4. Contractor project management must monitor the close out non-conformances issued, in not doing so; any recommendations made may not be implemented.
5. Where non-conformances are issued by Eskom then one of the close-out steps of the procedure will be for the offender to be called by the responsible project manager to explain the non-conformance issued and what plan is in place to prevent a recurrence of the non-conformance.
6. Should the contractor fail to provide adequate PPE to their employees for the tasks being performed and/or to visitors; failure to enforce the wearing of such PPE will be viewed as a transgression of the legislative and Eskom requirements.

### **3.30 SHE FILES**

1. A SHE file means a file or other record in permanent form, containing the information about the safety and health management system during construction and all information relating to the post-construction phase after handover to the client, so that the client can maintain the works in a healthy and safe way.
2. All contractors are required to keep a SHE file on every project site. If there is more than one site per project, a file per site shall be kept at that site. Contractors may keep additional files at their head office as additional records. The SHE file shall be maintained by all the contractors on their construction sites and shall be available on request for audit and inspection purposes.
3. The SHE file shall consist of the requirements in terms of the project’s safety specification, the contractor’s safety and health plans.
4. The sequence of filing the documentation must be kept in the same sequence as listed in this SHE specification and the SHE plan.
5. Each record shall be separated by partitions to afford easy identification and access. Each partition must be labelled.
6. On completion of the construction work/project, the principal contractor must hand over a consolidated health and safety file to the project manager. The principal contractor must also hand over all drawings, designs, lists of materials used, and other applicable information about the completed structure, as well as the list of subcontractors, the agreement, and the type of work completed.
7. In case where the project is extended, should the documentation in the SHE files become cumbersome, the older documentation must be archived in boxes which shall be correctly labelled and be available for auditing purposes. The archived documentation must be handed over at the completion of the project.

### **3.31 WORK STOPPAGE**

1. Any person may stop any activity where an unsafe act or unsafe condition that poses or may pose an imminent threat to the safety and health of an individual or create a risk of degradation of the environment. This includes any unauthorised work or service performed by, or legally or contractually non-compliant acts or omissions by, any contractor contracted to work at that site.
2. Work stoppages that are initiated due to SHE concerns, non-compliance, or poor performance related to the contractor’s works or services shall not warrant any financial compensation claim lodged against Eskom where the contractor has not met the requirements defined legally or contractually.
3. Where stoppages are carried out, the required non-conformance report shall be raised.
4. All work stoppages ideally should be investigated and documented by contract custodians.

### **3.32 HOURS OF WORK**

The requirements of the Basic Conditions of Employment Act, Chapter Two “Regulation of Working Time” must be adhered to. All contractors are required to maintain an accurate record of time worked by each employee.

#### **3.32.1 Normal work**

All work conducted on site shall fall within the legal requirements in accordance with the Basic Conditions of Employment Act. Contractors will notify their Eskom Supervisor or project manager of any work that needs to be performed after hours according to the agreed arrangements. (The application needs to be submitted timeously). Where applicable, the notification should include proof of application, for overtime, to the Department of Labour and /or the letter of approval from the Department of Labour.

#### **3.32.2 Night work**

When night work is to be performed; contractors shall provide sufficient lighting to enable the entire work site to be illuminated to a degree that employees will not work in dark (un-illuminated) or dimly lit areas. Care must be exercised as not to use few lights with high light intensives as this will cause night blindness.

If work is continuing from day light into night, at dusk, a tool box talk must be held where all employees will be advised of the hazards of night work and the extra precautions which require to be taken, i.e. poor housekeeping, stepping on uneven ground, stepping into holes etc.

#### **3.32.3 Overtime**

When overtime is required to be performed, the appointed contractors shall inform the principal contractor of such action. The principal contractor shall inform the Eskom project manager of such function. Contractors shall be aware of the effects of human fatigue and regulate overtime accordingly. The baseline risk assessment must be reviewed to include the management of overtime work.

## **A.OMISSIONS FROM SAFETY AND HEALTH REQUIREMENTS SPECIFICATION**

By drawing up this SHE specification Eskom has endeavoured to address the most critical aspects relating to SHE issues in order to assist the contractor to adequately provide for the health and safety of employees on site.

Should Eskom not have addressed all SHEQ aspects pertaining to the work that is tendered for, the contractor needs to include it in the SHE plan and inform Eskom of such issues when signing the contract.

## **B.CONTRACT SIGN OFF**

On completion of the project, all appointed contractors shall close out their project documentation; SHE files and forward such to the principal contractor. The principal contractor shall likewise close out his/her project documentation and SHE files and forward such to the Eskom project manager.

### **3.33 APPLICABLE PROCEDURES**

The procedures listed below must be complied with when conducting work at Koeberg Operating Unit:

- 32-520 Rev. 2: **Occupational Health and Safety Risk Assessment Procedure**
- KGA-067 Rev. 5: **SHE Risk Assessment Guide**
- 32-95 Rev. 6: **Environmental, Occupational and Health Incident Management Procedure**
- 32-418 Rev. 1: **Working at Heights Procedure**
- KAA-866 Rev. 1: **The Management of Incidents, Occupational Injuries and Diseases at Koeberg Nuclear Power Station**
- KGA-073 Rev. 3: **SHE Specification Guideline**

- KAA-708 Rev. 8: **Processing a Safety Assurance Certificated and Work in Hazardous Areas**
- MANDIR009 Rev.21: **Personal Protective Equipment Code for the Koeberg Operating Unit**
- KSA-149 Rev. 0: **Plant Material Condition Standard**
- KSA-141 Rev. 0: **Occupational Hygiene process and programme**
- KAA-611 Rev. 6: **Emergency Mustering, Accountability and Evacuation**
- KSA-132 Rev. 0: **Lifting and Rigging Program**
- KSA-119 Rev. 2: **Management and Control of Supplemental Workers**

### **3.34 HOT WORK PERMITS**

Permits are issued by the Fire Risk Management Group to control any work requiring fire precautions.

### **3.35 SAFETY ASSURANCE CERTIFICATES**

This permit is issued by the SHE Group for work in hazardous environments, confined spaces and heat stress areas.

### **3.36 SPECIFIC HAZARDS**

#### **Hydrogen (H<sub>2</sub>)**

Hydrogen (H<sub>2</sub>) gas is used in many areas of the plant. H<sub>2</sub> gas is highly explosive when mixed with air and as the possibility of leaks can never be ruled out, all areas where H<sub>2</sub> is or may be present have been indicated by a "Danger of Explosion" pictogram.

In all these areas, smoking, naked flames, welding or anyspark-producing operation is forbidden unless a Hot Work Permit has been issued and the area/system monitored for explosive atmospheres by the SHE Group.

#### **Nitrogen (N<sub>2</sub>) and Carbon Dioxide (CO<sub>2</sub>)**

As in the case of hydrogen, the use of nitrogen (N<sub>2</sub>) gas and carbon dioxide gas (CO<sub>2</sub>) is prevalent on site.

N<sub>2</sub> and CO<sub>2</sub> are asphyxiating gases which replace oxygen in the atmosphere. Therefore, all areas where nitrogen or carbon dioxide may be present have been marked with an appropriate N<sub>2</sub> or CO<sub>2</sub> warning. Entering these areas without first determining the oxygen levels can be fatal. Workers entering such an area are required to wear oxygen monitors at all times. Staff using oxygen monitors are to ensure that the monitor within calibration and is in working order prior to entering a potentially oxygen deficient area.

#### **Heat Stress Areas**

- Heat stress areas are areas in which high temperature levels will be encountered. All heat stress areas are clearly sign-posted. Due to the hazards associated with temperature extremes, no person is permitted to enter a heat stress area unless he complies with stringent medical and safety requirements. Any person who enters such an area must be certified fit to perform heat stress work (a medical examination is required) and be in possession of a Safety Assurance Certificate and obey the two man rule requirements.

## Two Man Rule Areas

- Two man rule areas are sign-posted by pictograms indicating two persons joined by the arm. No person may enter a two-man rule area unless a second person accompanies him.

## Confined Space and Potential Oxygen Deficient Areas

- Confined space will be identified on the Permit to Work. Potential oxygen deficient areas are clearly sign-posted. Contractor staff may only enter a confined space or potential oxygen deficient area if all the Koeberg safety criteria are complied with. The following is a brief outline of definitions and basic requirements for work in a confined space or potential oxygen deficient area. If in doubt, consult with the SHE Group representative.

**NOTE:** *No persons can enter a confined space unless training has been given by the SHE Group or the Technical Training Group.*

### Requirements for working in confined space:

#### Requirements for Work in a “Hazardous to Health” Confined Space:

Hazardous to health confined spaces will be specified in the Permit to Work.

A Permit to Work and Safety Assurance Certificate must be in force before work commences in a hazardous to health confined space.

The person entering the hazardous to health confined space must wear a safety harness to which a rope is securely attached which reaches beyond the access to the confined space.

At least one other person trained in resuscitation and the use of breathing apparatus must remain in attendance immediately outside the hazardous to health confined space to assist or rescue any person from the confined space. The person in attendance must keep the person in the hazardous to health confined space under direct and continuous observation.

Breathing and resuscitation apparatus must be available immediately outside the confined space.

An officer from SHE Group will survey the hazardous to health confined space to evaluate hazards and issue a Safe to Work Permit, specifying additional safety requirements if necessary. The officer will remain in attendance when work is performed in the hazardous to health confined space. Generally, a worker is required to wear appropriate breathing apparatus when entering a hazardous to health confined space. Safety requirements specified in the Safe to Work Permit must be enforced at all times.

#### Requirements for Work in an Isolated Confined Space

A Permit to Work and Safety Assurance Certificate must be in force before work commences in an isolated confined space.

An officer from SHE Group must survey the isolated confined space and certify that it is safe to enter, taking into account the nature and duration of work to be performed therein. The person entering the isolated confined space is required to wear an oxygen monitor;

A person working in an isolated confined space must comply with all the safety requirements set out in the Safe to Work Permit;

The isolated confined space must immediately be evacuated if the oxygen monitor alarms. The control room and the SHE Group must be informed.

### **Requirements for Work in Potential Oxygen Deficient Areas**

The area may only be entered if the audible and visual alarm have not been activated. If the alarm is activated while a person is in the area, he/she must evacuate the area by the shortest practical route and notify the control room and the SHE Group. Persons entering a potentially oxygen deficient area must wear an oxygen monitor.

### **3.37 CHEMICAL CONTROL PROGRAMME**

A chemical control programme has been implemented at Koeberg to preserve the long term health of the plant and that of the employees.

The aim of the programme is to control: Access of chemical products onto site; Issuing of chemical products from Stores; Usage of chemical products on the plant; Removal of chemicals from site.

Requirements for Contractors are as follow:

No chemical products are brought onto site without prior approval from the Koeberg representative;

Must provide up front list of all chemical products that are to be used on site during the contract. (The Koeberg representative must determine if the chemical products are on the Approved Chemical Product List and if not, follow the approval process in accordance with KAA-751);

Must supply the Koeberg representative with a chemical analysis certificate if the chemical product is not listed on the Approved Chemical Product List;

Must ensure that all the chemical products are labelled before bringing them onto site i.e. standard hazard/precautions label and Koeberg specific label;

Must provide up front Material Safety Data Sheets relating to specific chemical products used

Must ensure that all flammable substances for duration of work on site is properly stored;

Obtain Transient Combustible Certificate from Fire Risk Management for substances used in accordance with KSA-025;

Must ensure that staff are provided with correct personal protective equipment e.g. respirators, safety spectacles, etc. prior to work commencement;

Must brief staff on hazards and risk when working with specific chemical products during work on site;

Before leaving site must remove all chemical products originally brought on site. This includes both empty containers and any remaining unused chemical products;

Any accidental exposure is to be reported to Medical Services and Occupational Hygiene & Safety department.

It is important that the Koeberg representative and Contractor liaise with SHE Group prior to commencing work on site in order to ensure that the hazards and risks are evaluated. However, more importantly, that the legal requirements are met in accordance with the OHS Act and NEMA.



### **3.38 LIFTING GEAR AND RECORDS**

All lifting gear must be of good construction, regularly inspected and maintained in a good state of repair. Trained appointed persons must operate this equipment. All lifting gear must be inspected in terms of the Driven Machinery Regulations of the Occupational Health and Safety Act. Such inspection schedules must be made available to the Koeberg representative upon request.

Utilisation of Koeberg Lifting Gear.

Where contractors (by agreement) are utilising Koeberg's lifting gear, the following rules apply:

Slings, drain pullers, tirlors, etc. may only be used up to its rated load;

Strictly no off-centre sling loading on crane hook;

Sling angle is not to exceed 90 degrees to the vertical when two or more slings are used. The preferred angle between the legs of the sling is from

60 degrees to 90 degrees as a lesser angle produces damage of to balance; a wider angle greatly increases tension in the sling legs;

Always protect slings from sharp corners by using rubber pads or blocks of wood;

Slings are not to be dragged from under loads. Use rubber when placing loads to prevent damage to slings;

It is expected from the contractor that the above practices be applied to all lifts, irrespective whether the lifting gear is his own or belongs to Koeberg. Further, non-rigging staff may handle lifts, but these lifts may not exceed 1 ton. Authorisations for such lifts are permitted ONLY on completion of the Koeberg Basic Rigging Course.

### **3.39 CRANES**

Overhead cranes may not be operated unless the overhead Crane Pendant Station course has been completed. Notwithstanding the provisions of the Driven Machinery Regulations promulgated by Government Notice No.R.533 of 16 March 1990, as amended, a contractor shall ensure that where tower cranes are used.

Account is taken of the effects of wind forces on the structure;

Account is taken of the bearing capacity of the ground on which the tower crane is to stand;

The bases for the tower cranes and tracks for rail -mounted tower cranes are firm and level;

The tower cranes are erected at a safe distance from excavations;

There is sufficient clear space available for erection, operation and dismantling;

The tower crane operators are competent to carry out the work safely; and;

The tower crane operators are physically and psychologically fit to work in such an environment by being in possession of a medical certificate of fitness.

### **3.40 EMERGENCY NUMBER**

Telephone numbers to be used for the reporting of any emergency:

CONTROL ROOM: PAX 4222.

• 3.42 Revisions Date	• Rev.	• Compiler	• Remarks
– March 2018	• 0	– A. Manie	– This provides the initial SHE specification requirements that must be met by the relevant contractors who have been awarded a contract for the work to be performed for Eskom.