



NEC3 Engineering & Construction Contract

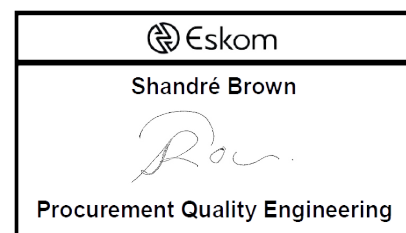
Between **ESKOM HOLDINGS SOC LTD**
(Reg No. 2002/015527/30)

and [Insert at award stage]
(Reg No. _____)

for Replacement of containment penetration I&C
terminals on Unit 1 and 2 at Koeberg operating unit.

Contents:	No of pages
Part C1 Agreements & Contract Data	[•]
Part C2 Pricing Data	[•]
Part C3 Scope of Work	[•]
Part C4 Site Information	[•]

CONTRACT No. [Insert at award stage]
ENQUIRY No. WCKBG2049KM



Q1/L2 Service
2022-08-26

Part C1: Agreements & Contract Data

Contents:	No of pages
C1.1 Form of Offer and Acceptance	[•]
C1.2a Contract Data provided by the <i>Employer</i>	[•]
C1.2b Contract Data provided by the <i>Contractor</i>	[•]

C1.1 Form of Offer & Acceptance

Offer

The *Employer*, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

Replacement of containment penetration I&C terminals on Unit 1 and 2 at Koeberg operating unit.

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

Option A	The offered total of the Prices exclusive of VAT is	As per Price List
	Sub total	As per Price List
	Value Added Tax @ 15% is	As per Price List
	The offered total of the amount due inclusive of VAT is ¹	As per Price List

This Offer may be accepted by the *Employer* by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Contractor* in the *conditions of contract* identified in the Contract Data.

For the tenderer:

For the Employer

Signature

Name

Capacity

On behalf
of

Name &
signature
of witness

Date

Eskom Holdings SOC Limited, Koeberg
Nuclear Power Station
R27 off West Coast Road, Melkbosstrand,
Republic of South Africa, 7441

¹ This total is required by the *Employer* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.

Acceptance

By signing this part of this Form of Offer and Acceptance, the *Employer* identified below accepts the tenderer's Offer. In consideration thereof, the *Employer* shall pay the *Contractor* the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the *Employer* and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
Part C2	Pricing Data
Part C3	Scope of Work: Works Information
Part C4	Site Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the *Employer* during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the *Employer's* agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any).

Signature(s)

Name(s)

Capacity

**for the
Employer**

Eskom Holdings SOC Limited, Koeberg Nuclear Power Station
R27 off West Coast Road, Melkbosstrand, Cape Town, 7441

(Insert name and address of organisation)

Name &
signature of
witness

Date

Note: If a tenderer wishes to submit alternative tenders, use another copy of this Form of Offer and Acceptance.

Schedule of Deviations to be completed by the *Employer* prior to contract award

Note:

1. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the *Employer* prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
1	Not applicable	

By the duly authorised representatives signing this Schedule of Deviations below, the *Employer* and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the *Employer* during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the tenderer:

For the Employer

Signature

Name

Capacity

On behalf
of

(Insert name and address of organisation)

(Insert name and address of organisation)

Eskom Holdings SOC Limited, Koeberg
Nuclear Power Station
R27 off West Coast Road, Melkbosstrand,
Cape Town, 7441

Name &
signature
of witness

Date

C1.2 ECC3 Contract Data

Part one - Data provided by the *Employer*

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option	
		A: Priced contract with activity schedule
	dispute resolution Option	W1: Dispute resolution procedure
	and secondary Options	X1: Price adjustment for inflation
		X2 Changes in the law
		X3: Multiple currencies
		X5: Sectional Completion
		X7: Delay damages
		X16: Retention
		X18: Limitation of liability
		Z: Additional conditions of contract
	of the NEC3 Engineering and Construction Contract, June 2005 (ECC3) (with amendments June 2006)	
10.1	The <i>Employer</i> is (Name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a juristic person incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
	Represented by:	Frikkie Ellis
	Tel No.	+27 21 550 5202
10.1	The <i>Project Manager</i> is: (Name)	Jaco Botma
	Address	Eskom Holdings SOC Limited, Koeberg Nuclear Power Station R27 off West Coast Road, Melkbosstrand, Cape Town, 7441

	Tel	071 012 1747		
10.1	The <i>Supervisor</i> is: (Name)	Carl Maarman		
	Address	Koeberg Nuclear Power Station R27 Trunk Road, Kernkrag Melkbosstrand 7441		
	Tel No.	+27 21 522 3093		
11.2(13)	The <i>works</i> are	Replacement of containment penetration I&C terminals on Unit 1 and 2 at Koeberg operating unit.		
11.2(14)	The following matters will be included in the Risk Register	<ul style="list-style-type: none"> • Issues that emerge from risk reduction meetings, • Items notified as early warnings. 		
11.2(15)	The <i>boundaries of the site</i> are	the Site areas associated with the <i>works</i> , within the boundaries of Access Control Point 2 (ACP 2) at Koeberg Operating Unit 1 & 2		
11.2(16)	The Site Information is in	Part 4: Site Information		
11.2(19)	The Works Information is in	Part 3: Scope of Work and all documents and drawings to which it makes reference.		
12.2	The <i>law of the contract</i> is the law of	the Republic of South Africa		
13.1	The <i>language of this contract</i> is	English		
13.3	The <i>period for reply</i> is	<ul style="list-style-type: none"> • 2 (two) weeks during non-outage periods; • 24 (twenty four) hours during outage; and • Periods for review as stated in the Works Information. 		
2	The Contractor's main responsibilities	Data required by this section of the core clauses is provided by the <i>Contractor</i> in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data.		
3	Time			
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is	2025/10/31		
11.2(9)	The <i>key dates</i> and the <i>conditions</i> to be met are:	Condition to be met	key date	
		1	Submission of an acceptable scheme design.	In terms of the first Accepted Programme.
		2	Submission of an acceptable installation detailed design and detailed design document according to 331-86 populated in the latest detailed design template available from Design Engineering	In terms of the first Accepted Programme.

		3	Submission of an acceptable site implementation package including Work plan, Permit to work plan, FFD status, authorisation certificates, SHE file, Quality plan, appointment letters, and all other applicable documents	In terms of the first Accepted Programme.
		4	Supply and delivery of all plant material to Koeberg Nuclear Power Station, Receipt inspection after delivery.	2024/02/28
		5	Qualification documentation (environmental qualification test reports and seismic qualification test reports)	2024/02/28
		6	Implementation, Testing and commissioning of the modified system	As per rev 73 production schedule. Unit 1 :Unit outage 127 Unit 2 :Unit outage 227
		7	Submissions of acceptable waste plan in accordance with KAE-012 rev 8 requirements.	In terms of the first Accepted Programme.
		8	Disposal of removed material.	In terms of the first Accepted Programme.
		9	Submission of acceptable complete Quality Assurance Document Package (QADP)	In terms of the first Accepted Programme.
30.1	The <i>access dates</i> are:	Part of the Site		Date
		1	Koeberg Operating Unit	The <i>starting date</i>
		2	The Site areas associated with the <i>works</i>	In terms of the Accepted Programme.
31.1	The <i>Contractor</i> is to submit a first programme for acceptance within	Four (4) weeks of the Contract Date.		
31.2	The <i>starting date</i> is	One (1) week after contract placement		
32.2	The <i>Contractor</i> submits revised			

	programmes at intervals no longer than	4 weeks, but before the end of the <i>assessment interval</i>	
35.1	The <i>Employer</i> is not willing to take over the <i>works</i> before the Completion Date		
4	Testing and Defects		
42.2	The <i>defects date</i> is	<p>The <i>defects date</i> is the end of Completion of 1 (one) operating cycle, from synchronisation to the grid until synchronisation following the next one (1) outage, with a maximum period of thirty six (38) months whichever occurs first.</p> <p>The <i>works</i> or particular parts thereof which are repaired or replaced shall be re-warranted against Defects for a further operating cycle from the date such repaired <i>works</i> or replaced parts are installed whichever is the earlier.</p>	
43.2	The <i>defect correction period</i> is	One (1) week of date of notification.	
	except that the <i>defect correction period</i> for	the period during the installation outage after Completion of the particular Section of the <i>works</i> , where the <i>Contractor</i> is still on Site is two (2) days	
5	Payment		
50.1	The <i>assessment interval</i> is	Monthly, between the 24 th and 25 th day of each successive month.	
50.2	The <i>expenses</i> stated by the <i>Employer</i> for Compensation Events are	Item	Amount
		Accommodation	Domestic hotel accommodation may not exceed R1 400 (one thousand four hundred rand) inclusive of VAT, per night per person (including dinner, breakfast and parking).
		Flights	at cost with the following stipulations: <ul style="list-style-type: none">• Local flights –travel on economy class• International flights –travel on economy class No business or first class travel is allowed
		Car Hire	at cost with the following stipulations: Group B or an equivalent class. Group B vehicles contain the following specifications: <ul style="list-style-type: none">• 5 Doors, Manual• Air Conditioning• Radio/CD

			<ul style="list-style-type: none"> • Power Steering • Airbags, Central Locking ABS
		Airport parking charges, toll fees and taxis	At cost
			<p>The above is in terms of:</p> <ul style="list-style-type: none"> • Government Gazette No.37042 dated 15 November 2013, • Treasury Regulations (published under Government Notice R225 of 15 March 2005, as amended) • Eskom's Directive for the Implementation of the National Treasury Cost Containment Instruction and Government Gazette (Ref: 240-78635659.
<ul style="list-style-type: none"> • All expenses claimed by the <i>Contractor</i> must be supported by a corresponding documentation (for example: receipt / invoice / statement). • No fee percentage may be added to accommodation and travel costs. 			
51.1	The <i>currency of this contract</i> is the	South African Rand.	
51.2	The period within which payments are made is	4 weeks after receipt of a valid tax invoice.	
51.4	The <i>interest rate</i> is	<p>(i) zero percent above the publicly quoted prime rate of interest (calculated on a 365 day year) charged from time to time by the Standard Bank of South Africa (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands and</p> <p>(ii) the LIBOR rate applicable at the time for amounts due in other currencies. LIBOR is the 6 month London Interbank Offered Rate quoted under the caption "Money Rates" in The Wall Street Journal for the applicable currency or if no rate is quoted for the currency in question then the rate for United States Dollars, and if no such rate appears in The Wall Street Journal then the rate as quoted by the Reuters Monitor Money Rates Service (or such service as may replace the Reuters Monitor Money Rates Service) on the due date for the payment in question, adjusted <i>mutatis mutandis</i> every 6 months thereafter and as certified, in the event of any dispute, by any manager employed in the foreign exchange department of The Standard Bank of South Africa Limited, whose appointment it shall not be necessary to prove.</p>	
6	Compensation events		
60.1(13)	<p>The place where weather is to be recorded is:</p> <p>The <i>weather measurements</i> to be</p>	<p>Koeberg Operating Unit Meteorological Station.</p> <ul style="list-style-type: none"> • the number of days with rainfall more than 10 mm 	

	<p>recorded for each calendar month are,</p> <p>The <i>weather measurements</i> are supplied by</p> <p>The <i>weather data</i> are the records of past <i>weather measurements</i> for each calendar month which were recorded at:</p> <p>and which are available from:</p>	<ul style="list-style-type: none"> the number of days with minimum air temperature less than 0 degrees Celsius the number of days with snow lying at 09:00 hours South African Time <p>and these measurements: Koeberg Operating Unit Meteorological Station.</p> <p>Koeberg Operating Unit Meteorological Station.</p> <p>the South African Weather Bureau and included in Annexure A to this Contract Data provided by the <i>Employer</i></p>
60.1(13)	Assumed values for the ten (10) year return <i>weather data</i> for each <i>weather measurement</i> for each calendar month are:	As stated in Annexure A to this Contract Data provided by the <i>Employer</i> .
7	Title	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
8	Risks and insurance	Refer to Z13
80.1	These are additional <i>Employer's</i> risks	None
9	Termination	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
10	Data for main Option clause	
A	Priced contract with activity schedule	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.
11	Data for Option W1	
W1.1	The <i>Adjudicator</i> is (Name)	The referring Party selects 2 (two) persons from the panel of NEC Adjudicators set up by the ICE-SA Division (or its successor body) of the South African Institution (see www.ice-sa.org.za) and whose availability he has confirmed to act as the Adjudicator. The other Party selects 1 (one) of the 2 (two) nominees to be the Adjudicator within 4 (four) days, failing which the person chosen by the first party will be the Adjudicator. The parties appoint the selected Adjudicator under the NEC3 Adjudicator's Contract. If the Parties do not agree on an Adjudicator, the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).
W1.2(3)	The <i>Adjudicator nominating body</i> is:	The Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body.

W1.4(2)	The <i>tribunal</i> is:	Arbitration.		
W1.4(5)	<p>The <i>arbitration procedure</i> is</p> <p>The place where arbitration is to be held is</p> <p>The person or organisation who will choose an arbitrator</p> <ul style="list-style-type: none"> - if the Parties cannot agree a choice or - if the arbitration procedure does not state who selects an arbitrator, is 	<p>the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.</p> <p>Cape Town, South Africa</p> <p>The Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.</p>		
12	Data for secondary Option clauses			
X1	Price adjustment for inflation	Price adjustment will only be applicable after the first 12 months of the Contract Date		
X1.1(a)	The <i>base date</i> for indices is	One month prior to the tender closing date		
X1.1(c)	The proportions used to calculate the Price Adjustment Factor are:	proportion	linked to index for	Index prepared by
		Project Management and Fixed Costs		
		0.25	People	“Consumer Price Index and percentage change according to area” for the Witwatersrand as published in the Statistical News Release, P0141 Table 7.1 of Statistics South Africa
		0.05	Equipment	“Producer Price Index for selected materials” for construction machinery (excluding trucks) as published in the Statistical News Release P0142.1, Table 12 of Statistics South Africa
		0.45	Plant and materials	“Producer Price Index for materials used in certain industries” for Building and Construction: Building industries as published in the Statistical News Release P0142.1, Table 11 of Statistics South Africa
		0.03	Fuel (Diesel)	“Producer Price Index for

				selected materials” for diesel at wholesale level: Witwatersrand as published in the Statistical News Release P0142.1, Table 12 of Statistics South Africa
		0.15	Non-adjustable -	
	Total	1.00	The Price Adjustment Factor is not applied to the special materials identified by the <i>Contractor</i> in Part 2 of the Contract Data which are increased or decreased by the net amount of any documented variation incurred after the base date on the basis set out in such data.	
X1.4	Price adjustment	Price adjustment for inflation is not applicable to a change in the Price for Work Done to Date since the last assessment, for a change in the Price for Work Done to Date since the last assessment after the Completion Date for which delay damages in terms of Option X7 are applicable.		
X2	Changes in the law	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.		
X3	Multiple currencies			
X3.1	The <i>Employer</i> will pay for these items or activities in the currencies stated	Items & activities	Other currency	Maximum payment in other currency
<p>The items & activities will be paid in the other currency</p> <ul style="list-style-type: none">- to a foreign Bank account nominated by the <i>Contractor</i>- to a valid SARB approved CFC account in South Africa- in accordance with an alternative payment method agreed with the <i>Employer</i> before the Contract Date. <p>(select one of the three methods as agreed with successful tenderer and delete the others and this note)</p> <p>The direct cost of modification of forward cover due to a change in the following is paid by the Party causing the change:</p> <ul style="list-style-type: none">• the date of payment;• the date of invoicing; and• the currency to be paid				
X5	Sectional Completion			
X5.1	The <i>completion date</i> for each			

	<i>section of the works is:</i>	Section	Description	Completion date
		1	Unit 1 completion	Outage 127, in terms of rev 73 production schedule.
		2	Unit 2 completion	Outage 227, in terms of rev 73 production schedule.
X5 & X7	Sectional Completion and delay damages used together			
X7.1 X5.1	Delay damages for late Completion of the <i>sections</i> of the <i>works</i> are:	Section	Description	Amount per day
		1	Unit 1 completion	R35 000.00
		2	Unit 2 completion	R35 000.00
		Remainder of the works		R35 000.00
	The total delay damages payable by the <i>Contractor</i> does not exceed:	20% of the Prices at the Contract Date		
X16	Retention			
X16.1	The <i>retention free amount</i> is	20% of the prices at the Contract Data		
	The <i>retention percentage</i> is	10%		
X18	Limitation of liability			

X18.1	The <i>Contractor's</i> liability to the <i>Employer</i> for indirect or consequential loss is limited to:	R0.0 (zero Rand)
X18.2	For any one event, the <i>Contractor's</i> liability to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property is limited to:	the amount of the deductibles relevant to the event
X18.3	The <i>Contractor's</i> liability for Defects due to his design which are not listed on the Defects Certificate is limited to	The greater of <ul style="list-style-type: none"> the total of the Prices at the Contract Date and the amounts excluded and unrecoverable from the <i>Employer's</i> assets policy for correcting the Defect (other than the resulting physical damage which is not excluded) plus the applicable deductible as at contract date.
X18.4	The <i>Contractor's</i> total liability to the <i>Employer</i> for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	the total of the Prices other than for the additional excluded matters. The <i>Contractor's</i> total liability for the additional excluded matters is not limited.

		<p>The additional excluded matters are amounts for which the Contractor is liable under this contract for</p> <ul style="list-style-type: none"> • Defects due to his design which arise before the Defects Certificate is issued, • Defects due to manufacture and fabrication outside the Site, • loss of or damage to property (other than the works, Plant and Materials), • death of or injury to a person and • infringement of an intellectual property right.
X18.5	The end of liability date is	<p>(i) 7 years after the defects date for latent Defects and</p> <p>(ii) the date on which the liability in question prescribes in accordance with the Prescription Act No. 68 of 1969 (as amended or in terms of any replacement legislation) for any other matter.</p> <p>A latent Defect is a Defect which would not have been discovered on reasonable inspection by the Employer or the Supervisor before the defects date, without requiring any inspection not ordinarily carried out by the Employer or the Supervisor during that period. If the Employer or the Supervisor do undertake any inspection over and above the reasonable inspection, this does not place a greater responsibility on the Employer or the Supervisor to have discovered the Defect.</p>
Z	The Additional conditions of contract are	Z1 to Z15 always apply.

Z1 Cession delegation and assignment

- Z1.1 The **Contractor** does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the **Employer**.
- Z1.2 Notwithstanding the above, the **Employer** may on written notice to the **Contractor** cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.

Z2 Joint ventures

- Z2.1 If the **Contractor** constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the **Employer** for the performance of this contract.
- Z2.2 Unless already notified to the **Employer**, the persons or organisations notify the **Project Manager** within two weeks of the Contract Date of the key person who has the authority to bind the **Contractor** on their behalf.
- Z2.3 The **Contractor** does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the **Employer** having been given to the **Contractor** in writing.

Z3 Change of Broad Based Black Economic Empowerment (B-BBEE) status

- Z3.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor's* B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.
- Z3.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Project Manager* within thirty days of the notification or as otherwise instructed by the *Project Manager*.
- Z3.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor's* obligation to Provide the Works.
- Z3.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are P1, P2 and P3 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.

Z4 Confidentiality

- Z4.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.
- Z4.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Project Manager*.
- Z4.3 In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.
- Z4.4 The taking of images (whether photographs, video footage or otherwise) of the *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Project Manager*. All rights in and to all such images vests exclusively in the *Employer*.
- Z4.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z5 Waiver and estoppel: Add to core clause 12.3:

- Z5.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Project Manager*, the *Supervisor*, or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z6 Health, safety and the environment: Add to core clause 27.4

- Z6.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *works*. Without limitation the *Contractor*:
- accepts that the *Employer* may appoint him as the "Principal *Contractor*" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Site;
 - warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of *works*; and
 - undertakes, in and about the execution of the *works*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.
- Z6.2 The *Contractor*, in and about the execution of the *works*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z7 Provision of a Tax Invoice and interest. Add to core clause 51

- Z7.1 Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer's* procedures stated in the Works Information, showing the amount due for payment equal to that stated in the payment certificate.
- Z7.2 If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms of core clause 51.2 is then calculated from the delayed date by when payment is to be made.
- Z7.3 The *Contractor* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer's* VAT number 4740101508 on each invoice he submits for payment.

Z8 Notifying compensation events

- Z8.1 Delete from the last sentence in core clause 61.3, "unless the *Project Manager* should have notified the event to the *Contractor* but did not".
- Z8.2 Add to core clause 62.3, "The *Project Manager's* reply which is an acceptance of a quotation for a compensation event may require the due authority of the *Employer*."
- Z8.3 Add to core clause 62.5, "The *Project Manager* notifies the *Contractor* if the *Employer's* authority is required and includes in his notification any extension to the period within which he is required to reply to the *Contractor's* quotation.

Z9 *Employer's* limitation of liability

- Z9.1 The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand)
- Z9.2 The *Contractor's* entitlement under the indemnity in 83.1 is provided for in 60.1(14) and the *Employer's* liability under the indemnity is limited.

Z10 Termination: Add to core clause 91.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":

Z10.1 or had a business rescue order granted against it.

Z11 Addition to secondary Option X7 Delay damages (if applicable in this contract)

Z11.1 If the amount due for the *Contractor's* payment of delay damages reaches the limits stated in this Contract Data for Option X7 or Options X5 and X7 used together, the *Employer* may terminate the *Contractor's* obligation to Provide the Works using the same procedures and payment on termination as those applied for reasons R1 to R15 or R18 stated in the Termination Table.

Z12 Ethics

For the purposes of this Z-clause, the following definitions apply:

Affected Party	means, as the context requires, any party, irrespective of whether it is the <i>Contractor</i> or a third party, such party's employees, agents, or Subcontractors or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,
Coercive Action	means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,
Collusive Action	means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,
Committing Party	means, as the context requires, the <i>Contractor</i> , or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractor or the Subcontractor's employees,
Corrupt Action	means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,
Fraudulent Action	means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
Obstructive Action	means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and
Prohibited Action	means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

Z12.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.

Z12.2 The *Employer* may terminate the *Contractor's* obligation to Provide the Services if a Committing Party has taken such Prohibited Action and the *Contractor* did not take timely and appropriate action to prevent or remedy the situation, without limiting any other rights or remedies the *Employer* has. It is not required that the Committing Party had to have been found guilty, in court or in any other similar process, of such Prohibited Action before the *Employer* can terminate the *Contractor's* obligation to Provide the Services for this reason.

Z12.3 If the *Employer* terminates the *Contractor's* obligation to Provide the Services for this reason, the amounts due on termination are those intended in core clauses 92.1 and 92.2.

Z12.4 A Committing Party co-operates fully with any investigation pursuant to alleged Prohibited Action.

Where the *Employer* does not have a contractual bond with the Committing Party, the *Contractor* ensures that the Committing Party co-operates fully with an investigation.

Z13 Insurance

Z 13.1 Replace core clause 84 with the following:

Insurance cover 84

- 84.1** When requested by a Party, the other Party provides certificates from his insurer or broker stating that the insurances required by this contract are in force.
- 84.2** The *Contractor* provides the insurances stated in the Insurance Table A.
- 84.3** The insurances provide cover for events which are at the *Contractor's* risk from the *starting date* until the earlier of Completion and the date of the termination certificate.

INSURANCE TABLE A

Insurance against	Minimum amount of cover or minimum limit of indemnity
Loss of or damage to the works, Plant and Materials	The replacement cost where not covered by the <i>Employer's</i> insurance The <i>Employer's</i> policy deductible, as Contract Date, where covered by the <i>Employer's</i> insurance
Loss of or damage to Equipment	The replacement cost
Liability for loss of or damage to property (except the works, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the <i>Contractor</i>) caused by activity in connection with this contract	<u>Loss of or damage to property</u> <u>Employer's property</u> The replacement cost where not covered by the <i>Employer's</i> insurance The <i>Employer's</i> policy deductible, as Contract Date, where covered by the <i>Employer's</i> insurance <u>Other property</u> The replacement cost <u>Bodily injury to or death of a person</u> The amount required by applicable law
Liability for death of or bodily injury to employees of the <i>Contractor</i> arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law

Z 13.2

Replace core clause 87 with the following:

The *Employer* provides the insurances stated in the Insurance Table B.

INSURANCE TABLE B

Insurance against or name of policy	Minimum amount of cover or minimum of indemnity
Assets All Risk	Per the insurance policy document
Contract Works insurance	Per the insurance policy document
Environmental Liability	Per the insurance policy document
General and Public Liability	Per the insurance policy document
Transportation (Marine)	Per the insurance policy document
Motor Fleet and Mobile Plant	Per the insurance policy document
Terrorism	Per the insurance policy document
Cyber Liability	Per the insurance policy document
Nuclear Material Damage and Business Interruption	Per the insurance policy document
Nuclear Material Damage Terrorism	Per the insurance policy document

Z14 Nuclear Liability

- Z14.1 The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.
- Z14.2 The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or resulting from nuclear damage, as defined in Act 47 of 1999, save to the extent that any liabilities are incurred due to the unlawful intent of the *Contractor* or any other person or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z14.3 Subject to clause Z14.4 below, the *Employer* waives all rights of recourse, arising from the aforesaid, save to the extent that any claims arise or liability is incurred due or attributable to the unlawful intent of the *Contractor* or any other person, or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z14.4 The *Employer* does not waive its rights provided for in section 30 (7) of Act 47 of 1999, or any replacement section dealing with the same subject matter.
- Z14.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

Z15 Asbestos

For the purposes of this Z-clause, the following definitions apply:

AAIA means approved asbestos inspection authority.

ACM	means asbestos containing materials.
AL	means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
Ambient Air	means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means occupational exposure limit.
Parallel Measurements	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
Safe Levels	means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
Standard	means the <i>Employer's Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles.</i>
SANAS	means the South African National Accreditation System.
TWA	means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4 hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA.

Z15.1 The *Employer* ensures that the Ambient Air in the area where the *Contractor* will Provide the Services conforms to the acceptable prescribed South African standard for asbestos, as per the regulations published in GNR 155 of 10 February 2002, under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) ("Asbestos Regulations"). The OEL for asbestos is 0.2 regulated asbestos fibres per millilitre of air as a 4-hour TWA, averaged over any continuous period of four hours, and the short term exposure limit of 0.6 regulated asbestos fibres per millilitre of air as a 10-minute TWA, averaged over any 10 minutes, measured in accordance with HSG248 and monitored according to HSG173 and OESSM.

Z15.2 Upon written request by the *Contractor*, the *Employer* certifies that these conditions prevail. All measurements and reporting are effected by an independent, competent, and certified occupational hygiene inspection body, i.e. a SANAS accredited and Department of Employment and Labour approved AAIA. The *Contractor* may perform Parallel Measurements and related control measures at the *Contractor's* expense. For the purposes of compliance the results generated from Parallel Measurements are evaluated only against South African statutory limits as detailed in clause Z15.1. Control measures conform to the requirements stipulated in the AAIA-approved asbestos work plan.

Z15.3 The *Employer* manages asbestos and ACM according to the Standard.

Z15.4 In the event that any asbestos is identified while Providing the Services, a risk assessment is conducted and if so required, with reference to possible exposure to an airborne concentration of above the AL for asbestos, immediate control measures are implemented and relevant air monitoring conducted in order to declare the area safe.

Z15.5 The *Contractor's* personnel are entitled to stop working and leave the contaminated area forthwith until such time that the area of concern is declared safe by either Compliance

Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.

- Z15.6 The *Contractor* continues to Provide the Services, without additional control measures presented, on presentation of Safe Levels. The contractually agreed dates to Provide the Services, including the Completion Date, are adjusted accordingly. The contractually agreed dates are extended by the notification periods required by regulations 3 and 21 of the Asbestos Regulations, 2001.
- Z15.7 Any removal and disposal of asbestos, asbestos containing materials and waste, is done by a registered asbestos contractor, instructed by the *Employer* at the *Employer's* expense, and conducted in line with South African legislation.

Annexure A: One-in-ten-year-return *weather data* obtained from SA Weather Bureau for [weather station]

If any one of these *weather measurements* recorded within a calendar month, before the Completion Date for the whole of the *works* and at the place stated in this Contract Data is shown to be more adverse than the amount stated below then the *Contractor* may notify a compensation event.

	Average Minimum Temperatures in Cape Town, South Africa (°C)	Average Maximum Temperature in Cape Town, South Africa (°C)	Cape Town Average Temperature (°C)	Average Sea Temp (°C)	Average Precipitation/ Rainfall (mm)	Wet Days (>0.1 mm)	Average Sunlight Hours/ Day	Relative Humidity (%)	Average Wind Speed in Cape Town (Beaufort)	Average Number of Days with Frost	
Weather in Cape Town in January	16	26	21	19	16	4	10.9	71	4	0	Average Temperature in Cape Town in January
Weather in Cape Town in February	16	26	21	18	15	4	10.4	73	4	0	Average Temperature in Cape Town in February
Weather in Cape Town in March	14	25	20	17	22	5	9.1	77.0	3	0	Average Temperature in Cape Town in March
Weather in Cape Town in April	12	22	17	17	51	8	6.9	80	3	0	Average Temperature in Cape Town in April
Weather in Cape Town in May	10	20	15	16	97	12	5.9	83	3	0	Average Temperature in Cape Town in May
Weather in Cape Town in June	8	18	13	16	108	13	6.0	83	3	0	Average Temperature in Cape Town in June
Weather in Cape Town in July	7	17	12	15	94	13	5.7	83	3	0	Average Temperature in Cape Town in July
Weather in Cape Town in August	8	18	13	15	85	12	6.4	82	3	0	Average Temperature in Cape Town in August
Weather in Cape Town in September	9	19	14	15	57	10	7.2	79	3	0	Average Temperature in Cape Town in September
Weather in Cape Town in October	11	21	16	16	40	9	8.9	76	4	0	Average Temperature in Cape Town in October
Weather in Cape Town in November	13	23	18	17	25	6	9.9	74	4	0	Average Temperature in Cape Town in November
Weather in Cape Town in December	14	25	19.5	18	19	5	11.1	71	4	0	Average Temperature in Cape Town in December

Only the difference between the more adverse recorded weather and the equivalent measurement given above is taken into account in assessing a compensation event.

Specific consideration shall be given during the transportation of the steam generators to:

- Average hourly wind speeds greater than or equal to Force eight (8), and
- Total rainfall of more than twenty five (25) mm in a twenty four (24) hour period.

C1.2 Contract Data

Part two - Data provided by the *Contractor*

Clause	Statement	Data
10.1	<p>The <i>Contractor</i> is (Name):</p> <p>Address</p> <p>Tel No.</p> <p>Fax No.</p>	
11.2(8)	<p>The <i>direct fee percentage</i> is</p> <p>Note: <i>direct fee percentage</i> is applied to the Defined Cost of other work</p> <p>Please insert percentage</p> <p>The <i>subcontracted fee percentage</i> is</p> <p>Note: <i>subcontracted fee percentage</i> is applied to the Defined Cost of subcontracted work</p> <p>Please insert percentage</p>	<p>%</p> <p>%</p>
11.2(18)	<p>The <i>working areas</i> are the Site and</p> <p>Note: It is important that the <i>Contractor</i> fully describes the Working Areas to include not just the Site (the boundaries of which are defined by the Employer in Contract Data Part 1) but all areas where work connected with the contract is to be performed.</p> <p>With the exception of manufacture, fabrication and design work, which may be performed outside the working areas and paid as such, only the cost of resources working within the Working Areas qualify as Defined Cost for payment purposes. Hence the importance of fully describing the Working Areas.</p> <p>Please insert areas</p>	
24.1	<p>The <i>Contractor's</i> key persons are:</p> <p>Please insert the name, job, responsibilities, qualifications and experience of its key people. Provide for additional key persons if necessary</p> <p>Note: Ensure that the key people listed have direct involvement with the contract (not CEO, MD, ED's of company or parent company unless the individual has an active role in the contract)</p> <p>1 Name:</p> <p>Job:</p> <p>Responsibilities:</p> <p>Qualifications:</p>	

	<p>Experience:</p> <p>2 Name:</p> <p>Job</p> <p>Responsibilities:</p> <p>Qualifications:</p> <p>Experience:</p>	<p>CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .</p>
11.2(3)	The <i>completion date</i> for the whole of the works is	
11.2(14)	<p>The following matters will be included in the Risk Register</p> <p>Note: The listing of risks on the Risk Register does not have the effect of fixing either of the parties with any particular risk.</p>	
11.2(19)	The Works Information for the Contractor's design is in:	
31.1	The programme identified in the Contract Data is	
A	Priced contract with activity schedule	
11.2(20)	<p>The <i>activity schedule</i> is in</p> <p>Note: The Activity Schedule is used for payment purposes</p> <p>Please insert a reference to the list of activities prepared by the Tenderer which he expects to carry out in Providing the Works indicating a lump sum for each activity</p>	
11.2(30)	The tendered total of the Prices is	<p>ZAR</p> <p>EUR</p> <p>GBP</p> <p>(in figures)</p> <p>(in words), excluding VAT</p>
	Data for Schedules of Cost Components	<p><i>Note "SCC" means Schedule of Cost Components starting on page 56 of ECC3, and "SSCC" means Shorter Schedule of Cost Components starting on page 59 of ECC3.</i></p>
A	Priced contract with activity schedule	Data for the Shorter Schedule of Cost Components

41 in SSCC	<p>The percentage for people overheads is:</p> <ul style="list-style-type: none"> Relevant People costs (such costs being those paid by the <i>Contractor</i>, including legally required and pension payments, for those people directly employed or paid by the <i>Contractor</i> according to the time worked and whose place of work is within the Working Areas) are determined by reference to the "Shorter Schedule of Cost Components". The Tenderer then applies to those costs as a percentage for people overheads. This has the same purpose as the percentage for Working Area overheads but is for use only when the Shorter Schedule of Cost Components is used. The Shorter Schedule is used with Options A for the purposes of assessing compensation events. <p>Please insert percentage</p>	%		
21 in SSCC	<p>The published list of Equipment is the last edition of the list published by</p> <p>The percentage for adjustment for Equipment in the published list is</p>	Minus	%	
22 in SSCC	<p>The rates of other Equipment are:</p> <p>Note: For use with the Shorter Schedule of Cost Components</p>	Equipment	Size or capacity	Rate
61 in SSCC	<p>The hourly rates for Defined Cost of design outside the Working Areas are</p> <p>Note: Hourly rates are estimated 'cost to company of the employee' and not selling rates. Applicable costs only that are incurred outside the Working Areas</p> <p>Please insert another schedule if foreign resources may also be used</p> <p>For use with the e Shorter Schedule of Cost Components</p>	Category of employee		Hourly rate
62 in SSCC	<p>The percentage for design overheads is</p> <p>Note: a percentage to cover the overhead costs in relation to Design outside the Working Areas.</p> <p>Note: For use with the e Shorter Schedule of Cost Components</p>			

63 in SSCC	The categories of design employees whose travelling expenses to and from the Working Areas are included in Defined Cost are:	
CONTRACT	PAGE 27	ECC3 COVER PAGES

PART 2: PRICING DATA

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option A	
C2.2	The <i>activity schedule</i>	

C2.1 Pricing assumptions: Option A

The *conditions of contract*

How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract, June 2005 (ECC3) Option A states:

Identified and defined terms	11	
	11.2	(20) The Activity Schedule is the <i>activity schedule</i> unless later changed in accordance with this contract.

(27) The Price for Work Done to Date is the total of the Prices for

- each group of completed activities and
- each completed activity which is not in a group.

A completed activity is one which is without Defects which would either delay or be covered by immediately following work.

(30) The Prices are the lump sum prices for each of the activities on the Activity Schedule unless later changed in accordance with this contract.

This confirms that Option A is a lump sum form of contract where the work is broken down into activities, each of which is priced by the tendering contractor as a lump sum. Only completed activities are assessed for payment at each assessment date; no part payment is made if the activity is not completed by the assessment date.

Function of the Activity Schedule

Clause 54.1 in Option A states: "Information in the Activity Schedule is not Works Information or Site Information". This confirms that instructions to do work or how it is to be done are not included in the Activity Schedule but in the Works Information. This is further confirmed by Clause 20.1 which states, "The *Contractor* Provides the Works in accordance with the Works Information". Hence the *Contractor* does **not** Provide the Works in accordance with the Activity Schedule. The Activity Schedule is only a pricing document.

Link to the programme

Clause 31.4 states that "The *Contractor* provides information which shows how each activity on the Activity Schedule relates to the operations on each programme which he submits for acceptance". Hence when compiling the *activity schedule*, the tendering contractor needs to show each activity on the programme he submits with his tender.

Preparing the *activity schedule*

The tendering contractor prepares the *activity schedule* and should study the ECC3 Guidance Notes pages 19 and 20 before doing so. The *Employer* may have instructed the tendering contractor to include particular activities which he has specified and requires the *Contractor* to identify them in his *activity schedule*.

1 Generally it is the *Contractor* who prepares the Activity Schedule as part of his tender by breaking down the work described within the Works Information into suitable activities which can be well defined, priced as a lump sum and shown on the programme. The *Employer*, in his Conditions of Tender or in a

Tender Schedule, may have listed some items that he requires the *Contractor* to include in his activity schedule and be priced accordingly.

2 The Prices are defined in clause 11.2(20) as the lump sum for each activity in the activity schedule and the Price for Work Done to Date (PWDD) (the amount due to the contractor) is defined in clause 11.2(24) as the total of the Prices for each activity that has been completed. Hence activities in the activity schedule should be structured so as to provide an acceptable monthly cash flow as they are only assessed for payment on the assessment date if they have been completed.

3 As the *Contractor* has an obligation to correct Defects (core clause 43.1) and there is no compensation event for this unless the Defect was due to an *Employer's* risk, the lump sum Prices must also include for the correction of Defects.

4 If the *Contractor* has decided not to identify a particular activity, the cost to the *Contractor* of doing the work must be included in, or spread across, the other Prices in order to fulfil the obligation to complete the works for the tendered total of the Prices.

5 There is no adjustment to the lump sum activity schedule price if the amount, or quantity, of work within that activity later turns out to be different to that which the contractor estimated at time of tender. The only basis for a change to the Prices is as a result of a compensation event. See Clause 60.1.

6 Hence the Prices tendered by the *Contractor* in the *activity schedule* are inclusive of everything necessary and incidental to Providing the Works in accordance with the Works Information, as it was at the time of tender, as well as correct any Defects not caused by an *Employer's* risk.

7 However, the *Contractor* does not have to allow in his Prices for matters that may arise as a result of a compensation event. It should be noted that the list of compensation events includes those arising as a result of an *Employer's* risk event listed in core clause 80.1.

-

- An activity schedule could have the following format:

Item No.	Programme Reference	Activity description	Price

C2.2 the *activity schedule*

Use this page as a cover page to the *Contractor's activity schedule*.

Activity Schedule

Activity No.	Programme Reference	Activity description	Price(excl VAT)
		Scheme design	
		Installation (detail) design	
		Implementation package	
		Providing support for regulatory approval per section (resolution of regulator review comments)	
		Supply and delivery of all plant material including qualification test reports to Koeberg Nuclear Power Station	
		Unit 1 implementation and commissioning	
		Unit 2 implementation and commissioning	
		Total	

PART 3: SCOPE OF WORK

Document reference	Title	No of pages
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C3.2	<i>Contractor's</i> Works Information	
	Total number of pages	

C3.1: EMPLOYER'S WORKS INFORMATION

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1 Description of the works

The *works* are the design, procurement, manufacture, transportation, delivery, removal of old system, installation of new system and testing and commissioning on Unit 1 and 2 at Koeberg Operating Unit.

1.1 Background

Electrical penetrations provide for transmission of electrical signals into and out of the containment building while maintaining containment integrity. Both Koeberg and Électricité de France (EdF) use penetrations manufactured by Auxitrol, although some component differences exist. These penetrations are classified Class 1E (EdF - K1) and are designed and qualified to withstand accident and post-accident conditions inside the containment building.

There are differences between the EdF and Koeberg penetrations. Koeberg has Kapton insulated feedthroughs in all containment penetrations, with AIR-LB terminal blocks ('quick connect' style terminals) only used on the inside containment parts of non-Class 1E penetrations. Weidmuller terminal blocks with screw style terminals are used on the inside containment parts of Class 1E penetrations. No penetration feedthroughs have been upgraded to PEEK insulated types. The Electrical Penetration Assemblies (EPAs) have feedthroughs which are sealed to pressurised canisters, thus creating a mechanical containment seal. The canister pressure, indicated on a gauge, is used to indicate leak tightness. Each feedthrough comprises a bundle of conductors suitable to the application, Voltage and Current requirements. Each conductor wire is insulated with a coating of Kapton.

The conductor ends are terminated on terminal block arrangements on the inside and outside of containment. These terminal block arrangements are housed in sealed terminal boxes. All the electrical penetrations are Class 1E classified and are used for both 1E and non-1E signals.

Outside containment: All the terminal blocks are AIR-LB. They are "quick connect" style terminal blocks and the wire ends have insulated crimped lugs, which are pushed onto a male spade on the terminal block. This style of connection is also referred to as 'FASTON' and is extensively used at Koeberg, in numerous Class 1E applications.

Inside containment: Weidmuller (SAK 4) terminal blocks are installed for class 1E instrumentation signals. These are "screw clamp" style terminal blocks and the wire ends are secured by means of screws. These SAK 4 terminal blocks are qualified in accordance with IEEE-323-1974.

Simulated loss-of-coolant accident (LOCA) and Steam Line Break (SLB) tests on the SAK 4 terminals revealed high leakage current values (reduced insulation resistance) at typical Instrumentation and Control (I&C) voltages, i.e., transmitter circuits, Resistance Temperature Detectors (RTDs) and control circuits. The original qualification testing of these terminal blocks did not adequately quantify the additional leakage current under accident conditions. Consequently, penetration terminals, specifically in penetrations 513, 515, 529 and 533 that carry accident-qualified I&C signals, are not adequately qualified for accident conditions.

1.2 Executive overview

The *Employer's* Technical Requirement Specification (TRS 240-161645104 rev 1 in Appendix 9.1) defines the *Employer's* requirements for the design, supply of Material, manufacturing, delivery, removal, and disposal* of existing plant and material, installation (in accordance with *Employer's* KAA-501 procedure Rev. 11), testing and commissioning of the *works* (in accordance with *Employer's* KFA-006 procedure).

1.3 **Employer's objectives and purpose of the works**

Success of this project is determined by the following:

- Restoration of the intended accident-qualification of specific Instrumentation and Control (I&C) signals passing through the Electrical Containment Penetrations (ECP) penetrations;
- Assurance of the containment function ,after replacement of the nine feedthroughs of each unit; and
- Requalification of all signals disconnected and reconnected.

The purpose of the project is to replace the existing Weidmuller terminal connections and Kapton feedthroughs with qualified crimped connections, insulated with qualified Raychem tubing in I&C penetrations. This is being done on Unit 1 and Unit2 to ensure the insulation of the specified conductors under accident and post-accident conditions, while maintaining the pressure boundary.

1.4 **Interpretation and terminology**

1.4.1 **Abbreviations**

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
ACP	Access Control Point
ASME	American Society Of Mechanical Engineers
CQMP	Contract Quality Management Plan
CSC	Construction Status Certificate
DCIF	Documentation Change Identification Form
RPC	Radiation Protection Certificate
DDR	Documentation drawing request
ECC	Engineering and Construction Contract
EdF	Électricité de France
HP	Human Performance
HPR	Human Performance Representative
IAEA	International Atomic Energy Agency
I&C	Instrumentation and control
ISO	International Standard Organisation
LOCA	Loss of Coolant Accident
NKP	National Key Point
NNR	National Nuclear Regulator
KOU	Koeberg Operating Units
KORC	Employers Operating Review Committee
KOSC	Employers Operating Safety Committee
OTS	Operating Technical Specification
SFT	Sanction for Test
pdf	Portable Document Format (Adobe Acrobat)
PIT	Plant Induction Training
PTW	Permit to Work

Abbreviation	Meaning given to the abbreviation
QA	Quality Assurance.
QCP	Quality Control Plans
RSA	Republic of South Africa
RTD	Resistance Temperature Detector
SANS	South African National Standards
SCBA	Self Contained Breathing Apparatus
SACPCMP	South African Council for Project and Construction Management Professions
EZP	System Trigramme for the containment electrical penetrations system
QADP	Quality Assurance Data Package
TRS	Technical Requirement Specification

1.4.2 Terminology

Term	Description
Shall	Denotes a requirement.
Should	Denotes a recommendation.
May	Denotes permission.
Construction Health and Safety Agent	A competent person who acts as a representative for the <i>Contractor</i> in managing health and safety on a construction project for the <i>Contractor</i> and who has satisfied the registration criteria of the SACPCMP to perform the required functions.
Action of the <i>Project Manager</i> or <i>Supervisor</i>	The actions the <i>Project Manager</i> or <i>Supervisor</i> has to perform in fulfilling their express duties, under the ECC.
Non-Outage	When the power station unit is operational
Outage	When the power station unit is shut down for maintenance and refuelling
Technical Lead	The provision of technical guidance, technical coordination, and technical leadership to the project, to ensure the <i>works</i> is suited for its designated purpose as stated in the Works Information.
Design	The process of devising a system, component, or process to meet the <i>Employer's</i> requirements, as specified in the Works Information. It is a decision-making process, in which the basic science, mathematics and engineering sciences are applied to meet the objective for the <i>works</i> .
Designer	<ul style="list-style-type: none"> competent person who: <ul style="list-style-type: none"> prepares a design; checks and approves a design; arranges for any person at work under his or her control to prepare a design; an employee of that person where he/she is the employer; or designs temporary work, including its components.

Term	Description
	<ul style="list-style-type: none"> an architect or engineer contributing to, or having overall responsibility for a design; a building services engineer designing details for fixed plant; a surveyor specifying articles or drawing up specifications; a <i>Contractor</i> carrying out design work as part of a design and building project; or an interior designer, shop-fitter or landscape architect.
Others	<p>Others working on this project as required by the <i>Employer</i> are as follows:</p> <ul style="list-style-type: none"> NNR; <i>Employer's</i> Authorise Inspection Agency; <i>Employer's</i> consultants; Consultants; <p>The list is updated, by the <i>Project Manager</i>, each time a third parties contract is placed by the <i>Employer</i> or Others change.</p>
Physical conditions	Referred under Core Clause 60.1(12) means natural physical conditions and man-made and other physical obstructions and pollutants, which the <i>Contractor</i> encounters at the Site when executing the works, e.g. sub-surface, hydro-logical conditions, etc., but excluding weather conditions.
Level 1 Programme	Executive summary or a project master programme. This is a major milestone type of programme which highlights major project activities, milestones, and key deliverables for the whole project.
Level 2 Programme	Management summary or summary master programme . Maintained as a summarisation of the Level 3 programme. It depicts the overall project broken down into its major components by area.
Level 3 Programme	The project coordination programme or publication programme. The Level 3 programme is maintained as an integrated rollup or summary of the Level 4 programme activities. The programme consists of a set of integrated Level 4 programmes based on Critical Path Methodology (CPM).
Level 4 Programme	Execution programme or project working level programme. Level 4 is the detailed working level programme, and an expansion a Level 3 programme. This is the key working level CPM programme displaying the operations to be accomplished. The Level 4 programme may be for major sections of the work or for discrete processes such as a design, procurement and/or a commissioning etc.
Level 5 Programme	Detail programme. This is further breakdown of the activities of a Level 4 programme. This programme is used to map out the detailed tasks needed to coordinate day to day work in specific areas.
Include	If "include" is followed by other, specific, words it will not be construed as limiting the meaning of the general words preceding it, save where the word "similar" precedes the word "include".

Term	Description
Including	If “Including” is followed by other, specific, words will not be construed as limiting the meaning of the general words preceding it, save where the word “similar” precedes the word “including”.
Verification of Defined Cost	The substantiation of, and assessment of contractual entitlement to, reimbursement of the costs within the <i>Contractors’</i> applications for payment of Defined Cost.
Work Plan	A work plan is a project management plan by another name. It clearly articulates and outlines the steps needed to achieve a department-level or company-level end goal by setting milestones, deliverables, resources, budgetary requirements, and a timeline to weave it all together.
Site Work Package	A Site Work Package is a group of related tasks within a project. Because they look like projects themselves, they are often thought of as sub-projects within a larger project. Work packages are the smallest unit of work that a project can be broken down to when creating your Work Breakdown Structure (WBS).
Rules of Credit for progress measurement	AACE International Recommended Practice No. 38R-06 DOCUMENTING THE SCHEDULE BASIS TCM Framework: 7.2 – Schedule Planning and Development

1.4.3 Detailed description of the works

Deliverable		Contractor	Project Manager / Employer	In terms of
Scheme design	The Contractor’s scheme design is sufficiently detailed to addresses the elements identified in the Employer’s review report	Compilation	Review	KFU-026 rev 8, latest rev, TRS 240-161645104 rev1 section 5
Installation design	The Contractor’s installation design addresses the remaining requirements relating to Parts B, C and D of the Employer’s design template and ensures that all requirements of the scheme design are met.	Compilation	Review	KFU-126 rev 8, TRS 240-161645104 rev1 section 5
Implementation package	The Contractor’s implementation package addresses all requirements, Work	Compilation	Review	

	plan documentation as per KFA-002 latest rev, Permit to work plan, FFD, Authorisation certificates, SHE file, quality plan, appointment letters and all other applicable documents.			
Resolution of regulator review comments	Providing support for regulatory approval per section	Compilation, support	Review, respond to comments.	TRS 240-161645104 rev1 appendix A, KAA-501 rev 10.
Supply of material and qualification documents	The Contractor procures, manufactures, supplies, transports and deliveries of all plant and material ,including qualification test reports to Koeberg Nuclear Power Station	Compilation, the works	As described in Works Information	Appendix A of TRS 240-161645104 rev 1), ICOTERM DDP, KAA-733 rev 6, KAA-641 rev 6.
Waste plan and disposal of waste	The contractor creates a plan for waste removal and is responsible for disposal of waste.	Compilation, the works	As described in Works Information	KAE-012 rev 8
Unit 1 implementation and commissioning	Construction and Testing	Compilation, the works	As described in Works Information, coordinate, access, supervision, testing	Appendix A and section 7,8 TRS 240-161645104 rev1
Unit 2 implementation and commissioning (conditions of	Construction and Testing	Compilation, the works	As described in Works Information	Appendix A and section 7,8 TRS 240-161645104 rev1

2 Management and start up.

2.1 Process

All modifications performed at KOU are controlled in accordance with the *Employer's* procedure KAA-501 Revision 11. For the purposes of this contract, the following sections are applicable to providing the Works:

- Section F - Execution Detail Development
- Section G - Authorisation to Implement
- Section H - Schedule of Work
- Section I - Implementation
- Section J - Finalisation

2.2 Management meetings

Regular meetings of a general nature may be convened and chaired by the *Project Manager* as follows:

2.2.1 Project kick-off meeting

Interval		Location		Attendance by:		
Once		KOU		<i>Project Manager, Employer, Contractor, Supervisor, and Others as required</i>		
	Activity Description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Establishing the project team 	X		<ul style="list-style-type: none"> The <i>Project Manager</i> notifies the names of <i>Employer</i> key persons to support the <i>Contractor</i> with the Provision of the Works, in terms of the <i>Employer</i> functions. 	Within 1 week after the Contract Date.	At kick-off meeting with <i>Employer's</i> Org structure.
	<ul style="list-style-type: none"> Notification, venue, agenda and support documentation 	X		<ul style="list-style-type: none"> The <i>Project Manager</i> develops and notifies the agenda, venue and required support documentation for the meeting. 	Within 2 weeks after the Contract Date.	An <i>Employer</i> systems engineer, operations representative and maintenance representative is present at the meeting.
	<ul style="list-style-type: none"> Execution and Minutes 	X		<ul style="list-style-type: none"> The <i>Project Manager</i> assumes chairmanship of the meeting, records and distributes the minutes of meeting. 	Within 2 days of the meeting	
	<ul style="list-style-type: none"> Conclusion 	X	X	<ul style="list-style-type: none"> This activity is complete upon acceptance of the minutes of the kick-off meeting by both Parties. 	In accordance with the Accepted Programme	Deliverable: Minutes of the kick-off meeting.

2.2.2 Risk reduction meetings

Interval	Location	Attendance by:
Adhoc	KOU	<i>Project Manager, Employer, Contractor, Supervisor, and Others as required</i>
At the risk reduction meetings items as prescribed in ECC Core Clauses 16.2 and 16.3 are discussed. The Risk Register is updated, by the <i>Project Manager</i> , and distributed within five days		

of the meeting.

2.2.3 Operational meetings

Interval	Location	Attendance by:
Monthly	KOU or Tele/Video Conference	<i>Project Manager, Contractor, Supervisor</i>
<p>An operational meeting is held, by tele- or video conference if necessary, between the <i>Project Manager</i> and the <i>Contractor's</i> project manager to monitor and control the design, manufacturing and planning processes. Typical topics for discussion at this meeting will include <i>Contractor's</i> reporting on the following:</p> <ul style="list-style-type: none"> • Review of Project Progress (Programme) with specific focus on Key Dates and interim milestones; • Key Risks (threats) and Issues and, where applicable, identify and agree on associated preventive/contingent and recovery actions; • Review of Actions List; • Review of Communications. 		

2.2.4 Implementation meeting for specific progress and feedback

Interval	Location	Attendance by:
Daily during implementation	KOU	<i>Contractor and Supervisor</i>
<p>The implementation meeting is held between the <i>Contractor</i> and <i>Supervisor's</i> implementation support team, to report on implementation progress and review any risks, issues and <i>Employer</i> actions that need to be resolved in order to ensure smooth implementation of the <i>works</i>.</p>		

2.2.5 QC Meetings during implementation

Interval	Location	Attendance by:
Daily during implementation	KOU	<i>Contractor QC representative and Employer QC representatives</i>
<p>The <i>Contractor's</i> QC representatives provide reports from each meeting to the <i>Employer's</i> project QC Group. This report will cover:</p> <ul style="list-style-type: none"> • Scheduled QC inspections for the period identified in the meeting. • Any new QC related issues identified since the last report, its status and action plan for resolution. • Status and progress on previously reported quality issues. 		

2.2.6 Meetings of a specialist nature

Interval	Location	Attendance by:
Adhoc	Any	<i>Employer's personnel, the Project Manager, the Contractor, the Supervisor, and Others as required</i>
Meetings of a specialist nature may be convened by persons and at times and locations to suit the Parties, the nature and the progress of the works.		

2.2.7 "Table Top" meetings

Interval	Location	Attendance by:
Adhoc	Any	<i>Employer's personnel, the Project Manager, the Contractor, the Supervisor, and Others as required</i>
To manage the occupancy of the Working Areas during implementation, the <i>Contractor</i> attends the "Table Top" meetings with the <i>Employer's</i> Outage representative in order to discuss area work load and to integrate and schedule the <i>Contractor's</i> activities as such as to allow sufficient space for implementation.		

2.2.8 Post implementation meeting for project feedback and review

Interval	Location	Attendance by:
Post unit implementation	KOU	<i>Project Manager, Contractor Senior Manager (not the Contractor's Project Manager), Contractor's Project Manager, Supervisor, Employer's personnel, Others as required</i>
The post implementation meeting is held between the <i>Project Manager, Contractor</i> senior management, <i>Supervisor</i> , Outage control centre management and other line groups, to report on implementation issues and reviews. Share lessons learnt in order to ensure smooth implementation on the next implementation phase.		

All meetings are recorded using minutes or a register prepared and circulated by the person who convened the meeting. Records of these meetings shall be submitted to the *Project Manager* by the person convening the meeting within five days of the meeting.

Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions. Confirmation of contract communications during operational meetings will, however, be considered as formal acknowledgement of receipt of a contract communication.

2.3 Documentation Control

Requirements in TRS 240-161645104 rev 1 Section 9.1 in Appendix 9.1 supplements the items stated below, such as code, test Equipment parameters files etc.

2.3.1 Documentation and record management

- All documentation produced by the *Contractor* complies with the latest *Employer's* guide for technical writing - GGG-1299 Rev 0 - with date formats in accordance with ISO-8601 extended date format and measurements in metric units.
- All documentation, including drawings and operating and maintenance instruction manuals, are uniquely identified and cross-referenced with all related documents. Document deliverables are provided in electronic, searchable format (PDF) and includes all signatures obtained internally.
- Once the document deliverable has been accepted by the *Employer*, the *Contractor* provides, in addition to the electronic submission, one hardcopy version of the document.
- Where required, the *Contractor* may be requested to supply a document in its originally compiled format i.e. "Word", "Excel", "Visio" to facilitate the *Employer's* review or documentation updates. The *Contractor* provides, upon request, the documents in its originally compiled format.
- All new drawings submitted by the *Contractor* conforms to the *Employer's* drawing standard, KBA 0000 G00 1000 Revision Z2.
- The *Contractor* requests sequential drawing and document numbers from the *Employer* (where applicable).
- All new drawings are handed to the *Employer* in the electronic media (e.g. .dgn format) which is compatible to Microstation Version 7 (or higher) software program.
- All new drawings are sized to metric paper size standards (A4, A3 etc.).
- The *Contractor* identifies and provides the update requests for affected drawings, documents and procedures.
- The *Contractor* corrects all identified documentation / configuration anomalies required to implement the *works* and notify the *Project Manager* of any other.
- Programmes, prepared by the *Contractor*, for the *works* and accepted by the *Project Manager* are considered as records.
- Records are kept, by the *Contractor*, identifying generally the activities on the Site, labour on the Site, Equipment on the Site, Subcontractor work on the Site, delivery of material to the Site, list of any instructions given, weather conditions encountered, and any delays encountered on the Site.

2.3.2 Documentation to be provided by the *Employer*

- The *Employer*, on request from the *Contractor*, provides copies of all applicable *Employer* standards, procedures, guides and forms.
- The *Employer* provides access to all available Site documentation required for Providing the Works.
- Original component related design base information does not all reside with the *Employer*. In cases where such information is required and not available, the *Contractor* reverse engineers the basis as part of the *works*.
- The *Contractor* provides a list of persons that require authorisation, by the *Project Manager*, for requesting copies of Site documentation.
- The *Project Manager* only authorises the relevant personnel once the *Contractor* has signed the Confidentiality and Non-Disclosure Agreement.
- Copy requests are made in writing, to the *Project Manager*, and details the exact documentation identification numbers.
- Documentation is provided in accordance with the latest Accepted Programme.

2.3.3 Communication

All communication is addressed to the *Project Manager* or the *Supervisor*, as applicable to the ECC. All communication makes reference to:

- the contract number that is issued by the *Employer* (normally a 46000xxxxx number),
- the title of the contract,
- any previous references relating to the specific communiqué (i.e. a response to a *Project Manager's* communication),
- the specific ECC clause under which the communication is issued,
- whether a reply is required; and
- a unique letter reference number.

The unique reference number to be used for written correspondence between the *Project Manager* and *Contractor* and vice versa is as follows:

- From the *Project Manager* to the *Contractor*: 46000..... Z/E/C 0xxx
- From the *Contractor* to the *Project Manager*: 46000..... Z/C/E 0xxx

with Z referring to the following categories:

- Z = C for letters associated with ECC clause 5, 6 or 9
- Z = R for letters not associated with ECC clause 5, 6 or 9

and xxx referring to the next sequential letter number.

All document deliverables transmitted to the *Project Manager* for review / acceptance / record / information are transmitted under formal communication with an associated document transmittal cover document. Related CDs or hardcopy documents are delivered with a hardcopy copy of the formal communication and/or document transmittal to the *Employer's* nominated information controller – situated on Site.

The title of each letter clearly summarise the purpose of the letter. In accordance with ECC Core Clause 13.7, each notification deals with only one specific issue at a time.

Where written and/or signed communication is required in terms of this Contract, the terms "writing" and "signed" or their analogous forms, will be construed as excluding sections 12 and 13 of the Electronic Communication and Transaction Act 25 of 2002, save that such a communication may be scanned after manual signature and then sent electronically.

In the case where letters are submitted electronically by means of email, the title of the letter is reflected in the subject line and only one letter is submitted per email.

2.4 Health and Safety Risk Management

2.4.1 Contractor's responsibility under the OHSACT, 85 of 1993

The *Contractor*:

- Complies with legislation in providing the *works*;
- Ensures the Site and work processes under their control do not endanger health and safety;
- Ensures Plant and Material and Equipment comply with legislation;
- Ensures Plant and Material and Equipment supplied are safe when used according to manufacturer specifications (includes leased Equipment);
- Maintains Equipment in safe condition;
- Provides notice when Plant and Material or Equipment does not comply with legislation;
- Cooperates with any person exercising duty under legislation;
- Ensures assistance is provided to a person, exercising duty under legislation, to meet an obligation under legislation achieves that objective;
- Ensures the *works* is provided by a competent supervision and workers; and
- Ensure the *works* does not create a hazard to the *Employer* and Others on the Site;

2.4.2 Nuclear Safety

The *Contractor* promotes a culture that is dedicated to continuously striving to enhance nuclear safety.

The *Employer* defines appropriate safety objectives for the KOU, and the *Contractor* is also responsible for meeting those objectives, instilling a philosophy of personal excellence, and timely identification and resolution of safety problems.

The *Contractor* is responsible for continuously pursuing enhancements to safety-not just complying with a minimal set of legal requirements.

2.4.3 SHE Specification

The *Contractor* complies with the *Employer's* Level 2 Construction Safety, Health and Environment Procedure, number 32-136. SHE specification guidelines to which *Contractor* complies with are supplied by the *Employer*.

A project specific SHE file is to be created by the *Contractor* and submitted together with a completed copy of the Construction Regulations Checklist to the *Supervisor* for acceptance within 2 months of the *starting date* following which the *Contractor* maintains and updates the file.

It is to be noted that before any work can commence on Site, the *Contractor* must have performed a detailed risk assessment of the work to be performed and/or the work area where work is to be performed. The risk assessment is documented and discussed with the parties involved with the work and is to be submitted to the *Supervisor* for acceptance.

Personnel protective clothing as specified in the Act for all work, except work in the radiological controlled zone, is provided and is kept in good order by the *Contractor*. A hard hat (with chin strap), safety boots, ear plugs and safety glasses are mandatory safety equipment at the Site. Where work is to be performed on the 7,5m level Electrical Building, the *Contractor* provides arc-flash suits. Protective clothing for work in the controlled zone is prescribed and is supplied by the *Employer*.

2.4.4 Incident Management

The *Employer's* procedure 32-95 - Environmental, Occupational Health and Safety Incident Management Procedure, states the requirements for the effective management of incidents that may occur or could result in, occupational diseases/illnesses, fatalities, injuries, near misses, and/or environmental damage.

2.4.4.1 Reporting of SHE incidents:

All incidents occurring on site while Providing the Works shall be reported, to *Supervisor*, as soon as practicable but not later than the end of that shift (in terms of KAA-688) and in the event of an incident as defined in terms of Section 24 of the OHSACT, 85 of 1993 where someone dies, becomes unconscious, suffers the loss of a limb or part of a limb is also reported immediately to the Department of Labour by the *Contractor*.

The following are requirement for the *Contractor*, in terms of KAA – 688 -The Corrective Action Process):

- In the event of any incident or accident, a flash report is completed by the *Contractor* and submitted before end of shift or within 24hrs to the *Employer* and the *Supervisor*.
- The *Employer's* template for the flash report is included in the *Contractor's* health and safety plan.

- The *Supervisor* raises a Problem Notification (PN) and capture the details on the Electronic Problem Management System (EPMS).
- Where applicable, the *Supervisor* will mobilises an incident investigation team who will investigate the incident within 7 days, complete the *Employer's* corporate documentation, indicating the root causes, corrective actions and recommendations for submission to the *Employer's* OH&S Department.
- The *Contractor* must submit proof of corrective action within pre-determined due dates to the *Employer's* OH&S Department, who will then close-out the Problem Notification (PN) on the Electronic Problem Management System (EPMS). Dependant on the incident. it may also be required that the *Contractor* presents the corrective action to the *Employer's* operating safety committee (KOSC).

2.4.4.2 Investigation and recording of incidents:

All incidents are investigated by the *Contractor* with the assistance of the *Supervisor*, to establish the direct, indirect and root cause of such incident as well as any reactive/preventative measures required and implemented to prevent a re-occurrence of such future incidents. Any such incident is recorded by the *Contractor* as required by General Administrative Regulation 9(1) of the OHSACT, 1993. The *Contractor* complies with the timeframes of investigating incidents as required in terms of General Administrative Regulation 9(2)

2.4.4.3 Environmental incidents

Environmental incidents could include but is not limited to:

- Release of effluent to the environment
- Non-compliance to station water permit conditions
- Non-compliance to station sewage permit
- Non-compliance to waste site permits
- Illegal dumping of waste
- Environmental Impact Assessments (EIA) not undertaken for projects
- Non-compliance to EIA Record of Decision (ROD)
- Cutting down of protected plant species
- Harming of protected animal species

The *Supervisor* will inquire into all incidents including near-misses during contractor audits.

2.4.5 Health and safety plan

The *Contractor's* health and safety plan is the *Contractor's* proposal of how the work will be carried out considering the hazards expected and procedures.

The *Project Manager* reviews and accepts the health and safety plan according to EPC 32-136. The construction regulation checklist with the required information must be included in the health and safety plan.

The *Contractor* ensures that contents of the health and safety plan for the project shall include at least:

- A copy of the principal contractor appointment letter.
- The scope of works /description of the work for which the *Contractor* was appointed.
- The *Contractor's* risk assessment including control/mitigation measures to address all the risks identified.

- The risk based legislative appointments made, by the *Contractor*, as required by the construction regulations.
- The risk based legislative checklists and registers to be completed, by the *Contractor*, as required by the construction regulations.
- Certified copies and proof of competencies of all *Contractor* appointees i.e. training certificates, permits, medical certificate of fitness and curriculum vitae where required.
- Copies of identity documents for *Contractor's* employees / workers appointed for the *works*.
- Accident/incident registers to be kept, by the *Contractor*, in the event of any incidents, including near misses. A copy of the *Employer's* flash report template is included in the *Contractor's* health and safety plan, should it be required in the event of an incident.
- Any waste management and pollution prevention by the *Contractor* – where required permits for dumping/incineration at authorised facilities. The *Contractor* must consult and comply with the *Employer's* applicable waste procedure KAE 012.
- Proof of the *Contractor's* registration and letter of good standing with COID or other registered insurer, Construction Industry Development Board (CIDB) and/ or Electrical Contractors Board.
- A SHE Programme, compiled by the *Contractor*, using the template provided in KAA-768 rev 4
- The *Supervisor's* letter of acceptance of the health and safety plan is added as soon as it is obtained.

The *Contractor* submits the health and safety plan, 30 days prior to commencement of any part of the *works* on Site, to the *Supervisor*, who verifies whether contents for acceptance. The *Contractor's* health and safety plan will be returned to the *Contractor*, should it not contain the required information or where the necessary permits have expired.

The accepted *Contractor's* health and safety plan must be on the Site. Periodic audits are conducted to ensure that the *Contractor's* health and safety plan is implemented and maintained as the project progresses. Refer Construction Regulation 4(1)(d).

When the *Contractor* is required to review and update documentation on the *Contractor's* health and safety plan, the plan must be re-submitted to the *Supervisor* for acceptance.

2.4.6 Health and safety file

The *Contractor's* health and safety file is separate from the *Contractor's* health and safety plan. The *Contractor's* health and safety file is progressively populated with checks and inspections, as indicated in the *Contractor's* health and safety plan. Any drawings, designs, materials used, structural integrity testing and any other similar information applicable to the project will be placed on the *Contractor's* health and safety file.

The *Contractor's* health and safety file must be available on request and should be handed over to the *Supervisor*, prior to the Completion Date (Refer Construction Regulations 5(7) and 5(8)).

Depending on the nature of the *works* and detail of the information on the *Contractor's* health and safety file, e.g. asbestos work where there is a requirement for medical surveillance of workers who will be exposed to asbestos, it is recommended that the *Contractor* keeps these records for forty years, in terms of Asbestos Regulations 16(f).

Where the *Contractor's* employees / workers are exposed to hazardous chemical substances and where a medical surveillance was required, it is recommended that the *Contractor* keeps these records for thirty years, as stipulated under the Hazardous Chemical Substances Regulations 9(f).

The *Contractor* ensures that all other medical surveillance requirements in terms of the OHS ACT, where applicable, is complied with for the *Contractor* and Sub-contractor organisations.

The *Contractor's* health and safety file is audited by the *Supervisor* or his delegate, to ensure that work is being carried out and the necessary checks and inspections are conducted in accordance with the *Contractor's* plan.

The minimum contents of a SHE File are indicated in EPC 32-136.

2.4.7 Risk assessments

The *Contractor* appoints a competent risk assessor, in writing, to perform risk assessments (Construction Regulation 7(1)). The *Contractor* is however required to use the *Employer's* methodology and provide a project specific risk assessment with the *Contractor's* health and safety plan, submitted for review and acceptance by the *Supervisor*. The *Contractor's* risk assessment includes a monitoring and review plan as required by Construction Regulation 7(1). No work may commence on Site, until the *Contractor's* risk assessment has been accepted by the *Supervisor*.

The *Contractor* ensures that ergonomic hazards have been identified evaluated and addressed, as required by Construction Regulation 7(6). Hazards the *Contractor* must consider include:

- improper lifting techniques,
- continuous repetitive movements with body parts in extreme postures; and
- poor grips on tools or carrying containers with no handles.

Whenever changes to methods of working / manufacture or materials are introduced, the *Contractor's* risk assessment is reviewed, including controls and mitigation measures and submitted to the Supervisor for review and acceptance. Following acceptance the *Contractor's* risk assessment must be placed in the health and safety plan, for implementation.

The *Employer's* risk assessment chart is completed, by the *Contractor*, during the *Contractor's* pre-job briefs and displayed at the entrances to those areas of the Site. The template is available from the *Supervisor*.

The *Contractor* ensures that all *Contractor's* employees are informed, instructed and trained by a competent person regarding the hazards, risks and related work procedures. These employees must carry proof of such training, for the duration of the project. (Construction Regulation 7(9)).

With regard to environmental considerations, the *Contractor* ensures that any aspect from a product or activity that might have an impact on the air, water, marine and soil or which may have the potential to cause harm to the environment is addressed in the *Contractor's* risk assessment, in order to avoid any environmental incidents while Providing the Works. Where such impact cannot be avoided, the *Contractor* ensures that the necessary steps are taken to minimise and remediate such impact. (Refer to Section 28 of National Environmental Management Act, 1998).

Lists of expected hazards and risks at the KOU have been referenced in EPC 32-136, as well as the Occupational Health Services Job Specification (reference KfV-SR-004), outlining the required physical attributes and personal protective safety equipment. Some known hazards include:

- **Safety:** live electrical equipment, working at heights, moving vehicles, floor openings, slippery floors, unguarded machinery, sharp tools, exposed blades, suspended loads, overhead pipelines, floor level

pipelines, faulty portable electric tools, strong winds, poorly maintained high pressure vessels, untrained staff doing hot work.

- **Health:** radiation exposure, dust, noise, snake/spider bites, bee stings, chemical fumes and splashes, asbestos lagging, prolonged awkward postures.
- **Environmental:** air emissions, marine spill, ionising radiation being released into environment, chemicals leaching into ground/soil, diesel/petrol spill, clearing of vegetation, disturbance of habitat

2.4.8 Accident - Incident Reporting Protocol

The reporting of accidents/incidents is a legal requirement as outlined in the OHSAct, section14 (e)

The *Employer's* corporate procedure 32-95 (Rev 6) addresses the process that have to be followed by all Parties. The following table indicates the actions required and the timeframes in which to act.

Incident	Action	Timing
Near Miss	<ul style="list-style-type: none"> • Condition Report (Devonway). • Near Miss Card • Flash Report. <p>No investigation required unless a trend develops or priority rating is high or extreme as per Procedure: 32-95, Rev 6.</p>	Report incident before end of shift.
Property Damage	<ul style="list-style-type: none"> • Condition Report (Devonway). • Flash Report. • 240-62989893 - Vehicle Accident Reporting form <p>No investigation required unless a trend develops or rating is high or extreme as per 32-95, Rev 6.</p>	Report incident before end of shift.
First Aid	<ul style="list-style-type: none"> • Condition Report (Devonway) • Flash Report. • Minor Injury form. • 240-77046688-Employers Investigation Report (Complete sections: 1, 2, 6, 7, and 10). <p>Accident/Incident investigation required as per 32-95, Rev 6.</p>	<ul style="list-style-type: none"> • Report incident before end of shift. • Investigation completed within 7 days • Investigation report to be completed within 30 days.
Medical Injury	<ul style="list-style-type: none"> • Condition Report (Devonway). • Flash Report. • 240-77046688-<i>Employer's</i> Investigation Report (complete sections: 1, 2, 6, 7, and 10). • Employers Report (WCL II). • Resumption Report. • Annexure 1 <p>Note: 1st medical, progress and final medical reports to be issued by medical practitioner</p>	<ul style="list-style-type: none"> • Report incident before end of shift. • Investigation completed within 7 days. • Investigation report to be completed within 30 days.

Incident	Action	Timing
LTI's	<ul style="list-style-type: none"> Condition Report (Devonway). Flash Report. 240-77046688-Employers Investigation Report (full document). Employers Report (WCL II). Resumption Report. Annexure 1 <p>Note: 1st medical, progress and final medical reports to be issued by medical practitioner</p>	<ul style="list-style-type: none"> Report incident before end of shift. Investigation completed within 7 days. Investigation report to be completed within 30 days.
Fatality or Occupational Diseases	<ul style="list-style-type: none"> Condition Report (Devonway). Flash Report. 240-77046688-Employers Investigation Report (full document). Employers Report (WCL II). Resumption Report. Annexure 1 <p>Note: 1st medical, progress and final medical reports to be issued by medical practitioner.</p>	<ul style="list-style-type: none"> Report incident before end of shift. Investigation completed within 7 days. Investigation report to be completed within 30 days.

2.4.9 Work Stoppages

The *Employer* may from time to time issue stop work / use instructions to address OHS incidents, danger to health and safety or concerns. This would normally include a mass briefing or information that has to be shared with the *Contractor's* workers. The *Contractor* caters for such interruptions as part of the *Contractor's* risk and includes for it under the Prices.

These instructions do not include the total clearance of the Site, which will be accompanied with an instruction from the *Project Manager* under ECC Core Clause 34.1.

2.4.10 Employer's lifesaving rules

The *Contractor* complies with the *Employer's* five rules as stipulated in the *Employer's* Management Directive 32-421. The *Employer* takes a ZERO TOLERANCE stance to violation of these rules:

- Rule 1: Open, isolate, test, earth, bond, and/or insulate before touch.
- Rule 2: Hook up at heights.
- Rule 3: Buckle up.
- Rule 4: Be sober.
- Rule 5: Permit to work.

2.5 Environmental constraints and management

2.5.1 Environmental impact

Environmental impact filtering is performed by the *Contractor* in accordance with the following. This filtering record is included as part of the Scheme Design.

	Activity Description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Environmental Impact Assessment Filtering Phase. 		X	<ul style="list-style-type: none"> The <i>Contractor</i> completes the Environmental Impact Assessment Filtering in accordance with National Environmental Management Act 107 of 1998 The EIA filtering is performed as part of the Scheme Design and submitted as an attachment to the Scheme Design. 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Acceptance by the <i>Project Manager</i> 	X		<ul style="list-style-type: none"> The <i>Project Manager</i> obtains acceptance from the <i>Employer's</i> Environmental Officer, with support from the <i>Contractor</i>. 	Within 2 weeks of submittal.	Acceptance by the <i>Project Manager</i> is subject to acceptance by the <i>Employer's</i> Environmental Officer. This acceptance is obtained as part of the Scheme Design acceptance process.
	<ul style="list-style-type: none"> Environmental Impact Assessment Studies (where required) 		X	<ul style="list-style-type: none"> The <i>Contractor</i> provides the necessary input data to complete any additional EIA studies required for the relevant modification. 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Conclusion 	X	X	<ul style="list-style-type: none"> This activity is complete upon acceptance by the <i>Project Manager</i> of the EIA filtering. 	In accordance with Accepted Programme	Deliverable: Environmental Impact Assessment Filtering form/report.

The Technical Requirement Specification 240-161645104 Rev 1 Section 5 specifies environmental requirements to be considered in the *Contractor's* design. The following environmental constraints are to be noted relating to potential *working areas*:

- Normal Environmental Conditions

Working pressure : approximately atmospheric [DSE]
Working temperature : 45°C (max) [EVR]
Radiation : 25 - 1000 µSv/h (Yellow) [KBA0901G001004]
Humidity : 60% - 80%

- Accident Environmental Conditions

Working pressure : 500 KPa (abs) [SAR II 4.2.2]
Working temperature : 140°C [SAR II-1.9.2.4.8]
Radiation : > 10000 µSv/h
Humidity : 100%

2.5.2 Plant and Materials

The *Contractor* ensures that all Plant and Materials, services and work supplied in terms of this contract conform to all applicable environmental legislation and in the *Contractor's* residing country and to the *Employer's* environmental specifications. The *Contractor* ensures that the *Employer's* chemical restrictions and controls at Koeberg (CRACK) programme (KAA-751) are adhered to.

2.6 General Constraints

2.6.1 Laws and regulations to be complied with

Specific laws to be complied with include:

The *Contractor*, at its own expense, complies with:

- the Nuclear Energy Act 92 of 1982,
- the National Key Points Act 102 of 1980,
- the Protection of Information Act 84 of 1982,
- the Occupational Health and Safety Act 85 of 1993 and its regulations,
- the Basic Conditions of Employment Act 75 of 1997. The *Contractor* indemnifies the *Employer* against any claims, proceedings, compensation and cost arising from the *Contractor's* transgression of the Act,
- the Labour Relations Act 66 of 1995,
- the Medicine and Related Substance Control Act 101 of 1965,
- the National Health Act 61 of 2003,
- the Compensation for Occupational Injuries and Diseases Act 130 of 1993, and
- all laws, regulations, bye-laws and requirements of local and other authorities which may be applicable to the *works* and as amended or replaced.

Where applicable, the *Contractor* complies with the *Employer's* Radiological Safety Regulations Programme, and in general, the whole framework of plant rules and regulations, which may be in force at the *Employer's* facilities from time to time.

While on the Site, the *Contractor* is at all times under the authority of the *Employer's* Power Station Manager for the purpose of giving effect to the provisions of the above. However, this does not in any way relieve the *Contractor* of his obligation to comply with the relevant legislation. Failure of the *Employer's* Power Station Manager to act in any specific manner does not make him or the *Employer* liable to the *Contractor* in any manner for any matter which may arise as a consequence of such failure to act.

2.6.2 Nuclear safety culture

Achieving continuous improvement in nuclear safety requires a culture that encourages setting and maintaining high standards; identifying and resolving problems and deficiencies; openness to criticism and recommendations for improvement; and mutual respect and effective communication and independent oversight.

This culture can only be established if the *Contractor* is fully committed to its nuclear safety responsibilities. It is the *Employer's* requirement that the *Contractor* establishes and maintains such a culture.

2.6.3 Confidentiality and publicity

The exchange between the Parties or the disclosure to third parties of information is subject to the provisions of the Nuclear Energy Act 92 of 1982, the National Key Points Act 102 of 1980, and the Protection of

Information Act 84 of 1982. The *Contractor* agrees that neither the *Contractor* nor its employees, agents or sub-contractors make any public statements or release to any third party (including the *Adjudicator*) any information concerning the performance of any work without first obtaining the written approval of the *Project Manager*. Requests to release information are co-ordinated by the *Project Manager* through the designated *Employer's Commercial Manager* or the *Employer's Power Station Manager*. The *Contractor* ensures adherence of its employees, agents and sub-contractors to this restriction.

2.6.3.1 Reporting culture

The *Contractor* is required to have a process or means by which the workers (all organisational levels) can report issues and incidences that negatively (or have the potential to) affect performance, without fear of retaliation or punitive action.

The *Contractor's* process must be such that the information is captured, analysed and the resulting corrective actions taken as a result of the reports are identified and tracked, for implementation and improvement. All such reported issues are shared with the KOU, for purposes of capturing in the KOU Corrective Action Programme (CAP).

2.6.3.2 Observation programme

It is desired (not expected) that the *Contractor* is capable of performing initial investigations into human performance events to determine the contributing factors (error precursors and organisational weaknesses). The *Contractor* must however support and co-operate with any such investigation by KOU.

The *Contractor* is required to have a process whereby workers' at-work behaviours in the field are observed and coached against a set of formalised best practice criteria. This is to reinforce the desired standards and behaviours expected on the job site and to provide assurance that the *Contractor's* workers and supervisors are adhering to standards. The *Contractor's* workers must be coached where deviations from standards and expected behaviours are detected.

This information is captured, by the *Contractor*, in a means that allows review of previous observations performed for the identification of potential trends in worker behaviours that could potentially lead to an event. Actions are to be developed and implemented to address such trends. The *Contractor's* process must have an auditable trail.

2.6.4 Employer's Site access control

2.6.4.1 Fitness for duty management

The *Contractor* adheres to the *Employer's* procedure fitness for duty requirements for vendors and contractors who are required to perform work inside the owner controlled areas of KNPS (335-68). This document is not applicable to visitors. Accesses for visitors are dealt with in KAA-777.

The objective of the *Employer's* FFD programme is to provide reasonable assurance that the *Contractor's* plant workers will perform their tasks in a reliable and trustworthy manner and are not under the influence of any substance or suffer from any health impairment which in any way adversely affects their ability to safely and competently perform their duties. The FFD programme also gives reasonable assurance that the workforce has been trained and their technical competence has been assessed.

The *Employer's* FFD process is designed to only allow the *Contractor's* employees to perform work if they:

- Have valid identification documents;

- Have been declared free of drugs and alcohol;
- Have been declared healthy, physically able and free of any medical condition that could impair their ability to perform the work they have been appointed for;
- Have valid work permits ;
- Have completed the security background verification process;
- Have the qualifications required for the task;
- Have the minimum plant access training required to work on site;
- Have been declared competent and authorised to perform the work they have been appointed for;
- Have received specific training required for the work they will be required to perform; and
- Have signed a non-disclosure agreement to protect the *Employer's* information, they come in contact with.

2.6.4.2 FFD requirements before registration takes place

Information the *Contractor's* employee must supply

- Identification document;
- Work permit (non SA citizens);
- Qualifications;
- Curriculum Vitae (CV);
- Criminal record history; and
- Proof of residential address.

Forms that the *Contractor's* employee must sign

- Pre-placement medical examination;
- Baseline questionnaire for audiometry;
- Medical declaration;
- Security permit application;
- Consent to disclose criminal information (if the *Employer* is performing the criminal check);
- SAPS enquiry; and
- Non-disclosure agreement (protection of information)

Activities to be performed before the *Contractor's* arrival at the Site

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
•	Recruitment & Selection		X	•	<i>Contractor's</i> own planning	
•	ID Document		X	Proof of identification is required before that the <i>Contractor's</i> employee is allowed to register on the FFD system.	<i>Contractor's</i> own planning	The following identification documents are the only documents that shall be accepted as proof of identification. <ul style="list-style-type: none"> • South African Identification Book issued by the Department of Home Affairs. (Green ID) or • Valid Official Passport or • Valid Temporary Identification Document issued by the Department of Home Affairs.
•	Proof of Residential Address		X	Proof of residential address is required before that the <i>Contractor's</i> employee is allowed to register	<i>Contractor's</i> own planning	The proof may not be older than 3 months when the <i>Contractor's</i> employee is enrolled on the FFD system.

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
				on the FFD system.		
	<ul style="list-style-type: none"> CV and Qualifications 		X	Authenticated qualifications to be presented before registration takes place	Contractor's own planning	<ul style="list-style-type: none"> CVs of <i>Contractor</i> employees are included in the documents where this is required by the procedure. The <i>Contractor's</i> employees must be in possession of his/her CV when he/she arrives on site to start the FFD process. The <i>Contractor</i> is required to verify the authenticity of the qualifications that is required for the work that is to be performed on Site. The <i>Employer</i> retains the right to verify any tertiary qualification that an applicant is required to have to work in a specific discipline. The <i>Contractor</i> ensures that his employee has the original (or certified copy) of the qualifications when he/she is registered on the FFD system. Persons not in possession of the qualifications required by the <i>Employer</i> are not considered for employment by the <i>Contractor</i> (in that particular discipline).
	<ul style="list-style-type: none"> Criminal History 		X	Assessment of criminal history	Contractor's own planning	<ul style="list-style-type: none"> Terminate Process Hold Point The criminal history of an applicant shall be assessed before access to the Site is considered. SA citizens obtain their criminal history reports from the South African Police (SAPS). The report may not be older than 3 months when the <i>Contractor's</i> employee is enrolled on the FFD system. This service is also available from the <i>Employer's</i> Security section. South African applicants are required to give their consent to the <i>Employer</i> to obtain the relevant information from the SAPS. Non South African citizens are required to provide proof of their criminal history. The criminal history report from their country's law enforcement agency or INPO (USA citizens only) is dated within three months of their required access date. Persons with a criminal background that is deemed to be a security risk to the Site are not to be considered for employment by the <i>Contractor</i>. The <i>Contractor's</i> employee

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
						will be in possession of the proof of criminal history when he/she arrives on site to start the FFD process.
	<ul style="list-style-type: none"> Complete Man Job Spec Form 	X	X	Contractor to complete with Project Manager	Contractor's own planning	<ul style="list-style-type: none"> The <i>Contractor</i> ensures that an occupational health services job specification form is completed, in conjunction with the <i>Project Manager</i>, for each of his employees and all signatures are obtained before the health assessment is arranged. These forms are obtainable from the <i>Employer</i> at Koeberg. The form identifies the work scope, the occupational hazards that the <i>Contractor's</i> employee will be exposed to and the physical attributes that are required for the execution of the tasks. The <i>Contractor's</i> employee will be in possession of the completed and signed occupational health services job specification form when he/she arrives on site to start the FFD process.
	<ul style="list-style-type: none"> Drug Test 		X	Negative drug test to be presented before registration takes place	Contractor's own planning	<ul style="list-style-type: none"> Terminate Process Hold Point <i>Contractor</i> ensures that their employees have been tested for drugs before they arrive on site to start the FFD process. Persons with a positive drug test result are not considered for employment by the <i>Contractor</i>. Persons with positive drug tests will not be allowed to register for the FFD process. The <i>Contractor's</i> employees must be in possession of the drug test results when he/she arrives on site to start the FFD process.
	<ul style="list-style-type: none"> Health Assessment 		X	Medical examination to be presented before registration takes place	Contractor's own planning	<ul style="list-style-type: none"> Terminate Process Hold Point The <i>Contractor</i> ensures that all his employees complete a health assessment before they arrive on site to start the FFD process. The occupational health services job specification form is required by the occupational health practitioner for the health assessment. Applicants that are not declared fit to do the work specified in the occupational health services job specification form are not allowed to register on the FFD system. Health assessment are only performed by <i>Employer</i>

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
						<p>registered Occupational Health Practitioners.</p> <ul style="list-style-type: none"> The health assessment report is not older than 3 months when the <i>Contractor's</i> employee is enrolled on the FFD system. Persons that are not declared fit to perform the work specified in the occupational health services job specification form are not be considered for employment by the <i>Contractor</i>. The <i>Contractor's</i> employee must be in possession of the medical assessment results and other relevant documentation when he/she arrives on site to start the FFD process.
	<ul style="list-style-type: none"> Work Permit 		X	Work permits to be obtained before registration takes place	<i>Contractor's</i> own planning	<ul style="list-style-type: none"> Terminate Process Hold Point Non South African Citizens are required to be in possession of the relevant Work Permit as required by the Immigration Act before access is considered. Persons not in possession of a valid work permit is not be considered for employment by the <i>Contractor</i>. The <i>Contractor's</i> employee must be in possession of the original work permit when he/she arrives on site to start the FFD process.
	<ul style="list-style-type: none"> Registration on FFD System 	X	X		<i>Contractor's</i> own planning	<ul style="list-style-type: none"> <i>Contractor's</i> employees are registered on the <i>Employer's</i> FFD system by a person appointed by the <i>Employer</i>. This could be a <i>Contractor</i> employee, if appointed by the <i>Employer</i>. The <i>Project Manager</i> is responsible to arrange this activity. Registration is only performed if the <i>Contractor's</i> employee is in possession of all the documentation required for registration If the <i>Contractor's</i> employee is in possession of all the required documents, the individual will be registered and issued with a bar coded form.
	<ul style="list-style-type: none"> Training Requirements Form 	X	X	<i>Project Manager</i> and <i>Contractor</i> to supply	<i>Contractor's</i> own planning	<ul style="list-style-type: none"> The scope of each <i>Contractor</i> employee's work requirements are to be assessed to identify the training and/or technical assessments that are required before work may commence. All <i>Employer</i> training sessions includes an assessment at the

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
						<p>end of each session. Persons that do not pass any training assessments and/or technical assessments as identified for the scope of work are not allowed to continue with the FFD process and shall be required to leave the Site.</p> <ul style="list-style-type: none"> The <i>Project Manager</i> identifies any specific training needs of each individual or group of individuals (based on the planned work scope) and ensures compliance to the training requirements identified for the specific duties before access to Site is considered. The <i>Contractor's</i> employee must be in possession of the training requirements form when he/she arrives on site to start the FFD process.
	<ul style="list-style-type: none"> FFD Bookings 	X	X		Contractor's own planning	<ul style="list-style-type: none"> Contractor's employees are booked on the <i>Employer's</i> FFD system by a person appointed by the <i>Employer</i>. This could be a <i>Contractor</i> employee, if appointed by the <i>Employer</i>.
	<ul style="list-style-type: none"> Asbestos Training 		X	Training that the <i>Contractor's</i> employee must complete (only if required)	Contractor's own planning	Only if required
	<ul style="list-style-type: none"> Confined Space Training 		X	Training that the <i>Contractor's</i> employee must complete (only if required)	Contractor's own planning	Only if required
	<ul style="list-style-type: none"> Basic Rigging Training 		X	Training that the <i>Contractor's</i> employee must complete (only if required)	Contractor's own planning	Only if required. The <i>Contractor</i> verifies the validity of prior learning
	<ul style="list-style-type: none"> Non-Disclosure Agreement 		X	All <i>Contractor</i> employees are required to sign a non-disclosure agreement	Contractor's own planning	<ul style="list-style-type: none"> The <i>Contractor</i> ensures that a non-disclosure agreement is signed form is signed by each employee before the person is registered to start the FFD process. These forms are obtainable from the <i>Employer</i> at Koeberg.
	<ul style="list-style-type: none"> Security Permit Application 	X	X	<i>Project Manager</i> and <i>Contractor</i> to supply	Contractor's own planning	<ul style="list-style-type: none"> The <i>Contractor</i> ensures that a security permit application form is completed for each employee, before the person is registered to start the FFD process. These forms are obtainable from the <i>Employer</i> at Koeberg. It is important that the form is completed by the <i>Contractor</i> in conjunction with the <i>Project</i>

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
						<p><i>Manager.</i> The form identifies the security areas that the <i>Contractor's</i> employee is required to enter for the execution of the tasks.</p> <ul style="list-style-type: none"> The <i>Contractor's</i> employees must be in possession of the security permit application when he/she arrives on site to start the FFD process.

2.6.4.3 Fraudulent Documents

The *Contractor's* employees that have presented fraudulent documentation are permanently denied access to the *Employer's* Koeberg site.

2.6.4.4 False Declarations

The *Contractor's* employees that have made false declarations are permanently denied access to the *Employer's* Koeberg site.

2.6.4.5 FFD requirements after registration takes place

Activities to be performed after the *Contractor's* arrival at the Site

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
	<ul style="list-style-type: none"> Enrolment on FFD System 	X	X	<i>Contractor's</i> employees shall be enrolled on the <i>Employer's</i> FFD system by the Security Group when they arrive on site.	10 min	<ul style="list-style-type: none"> A <i>Contractor's</i> employee will not be allowed to attend any further FFD activities if he/she is not enrolled on the FFD system and issued with a bar coded form.
	<ul style="list-style-type: none"> Drug Test 	X	X	All the <i>Contractor's</i> employees are required to perform a drug test administered by the <i>Employer</i> . This test will be done notwithstanding the test done by the <i>Contractor</i> .	30 min	<ul style="list-style-type: none"> The <i>Contractor's</i> employees that fail the drug test are not allowed to continue further on the FFD process and will be required to leave the Site and will be denied access for at least 12 months.
	<ul style="list-style-type: none"> Criminal History Verification 	X	X	All <i>Contractor</i> employees that apply for a security permit to access the Site are required to give consent to the <i>Employer</i> to verify their criminal background. This	30 min	<ul style="list-style-type: none"> South African citizens who have obtained their criminal records direct from the South African Police are only required to provide the <i>Employer's</i> Security staff with a set of fingerprints, for record purposes. <i>Contractor</i> employees with a

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
				activity is performed on site by the <i>Employer's</i> Security staff for South African citizens by the taking of a set of finger prints and forwarding same to the SAPS for verification.		criminal background that is deemed to be a security risk to Koeberg are denied access to the Site
	<ul style="list-style-type: none"> Health Verification 	X	X	<i>Contractor</i> employees are required to report to the <i>Employer's</i> Health Services section where the medical examination performed off-site will be verified to ensure that all requirements have been met.	30 min	The duration of this activity is approximately 30 minutes
	<ul style="list-style-type: none"> Induction Training including: <ul style="list-style-type: none"> SAT PIT FME (Generic) Human Performance 	X	X	<ul style="list-style-type: none"> Site Access Training (SAT) <i>Contractor</i> employees that are required to work outside the protected area of KNPS are required to complete the SAT course before work may commence. Plant Induction Training (PIT) <i>Contractor</i> employees who are required to work inside the protected area of KNPS are required to complete the Plant Access Training (PAT) course before work may commence. Foreign Material Exclusion Training (FME) <i>Contractor</i> employees coming to site that require access to FME zones or will 	8 hours	<ul style="list-style-type: none"> Site Access Training (SAT) The SAT course is designed for persons working only in the OCA. Their security permits will not allow them access to the protected area of KNPS. <i>Contractor</i> employees that do not successfully complete the SAT course shall not be allowed access to the Site. Plant Induction Training (PIT) <i>Contractor</i> employees that do not successfully complete the PIT course are not allowed access to the Site. <i>Contractor</i> employees required to perform work in the intake basin are required to pass the PIT Foreign Material Exclusion Training (FME) <i>Contractor</i> employees that do not successfully complete the FME course are not allowed access to FME zones. Personnel required to perform hands-on work on the plant and for which FME was identified as part of the training requirements that do not complete the FME course successfully are not allowed access to the plant Human Performance

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
				<p>perform any hands-on work on the plant are required to complete this training.</p> <ul style="list-style-type: none"> • Human Performance Training (HPT) <i>Contractor</i> employees that are required to work inside the protected area of KNPS shall complete the Human Performance Training (HPT) before work may commence. 		<p>Training (HPT) <i>Contractor</i> employees that do not successfully complete the HPT course are not allowed access to Site. <i>Contractor</i> employees required to perform work in the intake basin are required to pass the HPT course.</p>
	<ul style="list-style-type: none"> • Induction to Working at Heights / Material Handling 	X	X	<ul style="list-style-type: none"> • <i>Contractor</i> employees are required to successfully complete the required Working at Heights/ Material Handling training before working at heights or handling material is considered. 	8 hours	<ul style="list-style-type: none"> • Only if required • Failure to successfully complete the Working at Heights / Material Handling training will result in restriction to work at heights or handling material being prohibited
	<ul style="list-style-type: none"> • Radiation workers Training 	X	X	<ul style="list-style-type: none"> • <i>Contractor</i> employees are required to successfully complete the required radiation worker training before access to radiation zones is considered. 	3 days	<ul style="list-style-type: none"> • Only if required • Failure to successfully complete the radiation training shall result in access to radiation zones being restricted
	<ul style="list-style-type: none"> • Induction to Confined Space 	X	X	<ul style="list-style-type: none"> • <i>Contractor</i> employees are required to successfully complete the required confined space training before access to confined space is considered. 	2 hours	<ul style="list-style-type: none"> • Only if required • Failure to successfully complete the confined space training will result in access to confined space being restricted
	<ul style="list-style-type: none"> • Induction to Asbestos Training 	X	X	<ul style="list-style-type: none"> • <i>Contractor</i> employees are required to 	1 hour	<ul style="list-style-type: none"> • Only if required • Failure to successfully complete the Asbestos

	Activity Description	Project Manager / Employer	Contractor	Requirements	Planning	Additional Notes
				successfully complete the required Asbestos training before access to Asbestos zones is considered.		training will result in access to Asbestos zones being restricted
	<ul style="list-style-type: none"> Induction to Basic Rigging 	X	X	<ul style="list-style-type: none"> Contractor employees are required to successfully complete the required Rigging training before rigging work is considered. 	8 hours	<ul style="list-style-type: none"> Only if required Failure to successfully complete the Rigging training will result in rigging work being prohibited
	<ul style="list-style-type: none"> Supervisor Training 	X	X	<ul style="list-style-type: none"> Contractor employees are required to work as supervisors must successfully complete the required supervisor training before work is considered. 	2.5 days	<ul style="list-style-type: none"> Only if required Failure to successfully complete the supervisor training will result individual being prohibited to do supervision
	<ul style="list-style-type: none"> Technical assessment <ul style="list-style-type: none"> Mechanical Machining MC&I Electrical Welding Pipe Fitting Civil TA 4 I&T MSS 	X	X	<ul style="list-style-type: none"> Contractor employees who are required to perform work of a technical nature inside the protected area of Koeberg are required to perform technical assessments and be authorised to perform the work that they have been assessed for. 	4hrs - 16p 12hrs - 3p 16hrs - 16p 8hrs - 4p 4hrs - 6p 6hrs - 4p 6hrs - 4p 8hrs - 4p	<ul style="list-style-type: none"> Only if required The <i>Project Manager</i> is responsible to indicate the work that the <i>Contractor's</i> employee will be performing on the Site. Contractor employees that do not successfully complete the technical assessment shall not be allowed to perform work on the Site. The duration of this activity depends on the type of work discipline and scope and is between 4 hours and two days.
	<ul style="list-style-type: none"> Final acceptance and Issuing permit 	X	X	<ul style="list-style-type: none"> All required FFD requirements are completed successfully before final acceptance is processed and a security permit is issued by the Security Group. 	30min	

2.6.4.6 Medical examinations

Medical examinations are done by *Employer* approved external medical practitioners. These are:

Occupational Health Practice	Contact Person	Telephone	e-mail address
Life Occupational Health	Magda van Zyl	0215917050	Magda.VanZyl@lifehealthcare.co.za
Incon	Benita Du Preez	021 975 2694 ext. 2001	benita@incon.co.za
OCSA	Sibusiso Ngubane	0219810141	sibusison@ocsa.co.za
EOH	Pam Kinnock	0212527750	Pam.Pinnock@eoh.co.za
Fair Care Health	Colleen Paul	021 552 1377 I	hmalaka@msn.com

The *Contractor* is responsible for the cost and completion of the medical examination by his personnel prior to them coming to Site.

The *Contractor* is liable for payment of medical examinations and COVID -19 screening of staff.

2.6.4.7 Criminal record check verification service provider

For all background screenings and qualification verifications.

4 Denne Ave, Panorama, Cape Town, 7506
Office Number 021 911 5011 / 021 911 5338
Fax: 086 750 2734
Cell: 084 8500 432, e-mail: call@nevetec.co.za
www.nevetec.co.za

2.6.4.8 Covid-19 controls

- Mask shall be provided by the *Contractor* and employees will wear it at all times while at the Affected Property
- Temperature screening must be done outside of FFD centre in the allocated location, before proceeding to the Medical Centre reception desk.
- Hand sanitisers are in place and the practicing of social distancing will be strictly adhered to.

2.6.4.9 Exit procedure

The *Contractor* ensures that permit holders that no longer require access to the Site follow the *Employer's* FFD exit procedure. Failure to do so may result in the *Contractor's* or his Subcontractor's employee being denied access to the Site in future.

The duration of the exit activity is approximately 90 minutes and includes an exit medical examination.

2.6.4.10 Security check points

Prior to access to Site, the *Contractor* passes through various security check points, via entrance at the R27 access gate, entrance at the Duynfontein entrance and at Access Control Point 1 (ACP-1). All temporary worker/visitors permits are issued at ACP-1.

2.6.4.11 Access to Radiological Areas “Controlled Zones” and Reactor Building (where applicable)

Where work is to be performed in a radiological area (Controlled Zone), the *Contractor* needs to pass through a dosimetry-issue check point.

General access for inspections and measurements in the reactor buildings are not allowed during the

operation of the plant and are limited during the refuelling outages with access limitations in accordance with KSA-062.

Access to radiological areas is subject to all training and verifications being completed as stated in this Works Information.

2.6.4.12 Prohibited/unauthorised items on site

In terms of the National Key Point Act 102 of 1980, Koeberg Operating Unit is a declared National Key Point (NKP). The National Key Point Act requires and empowers the owner of the National Key Point (Power Station Manager), to implement measures that will ensure the security of the National Key Point. The National Key Point area at the power station is the area within the protected area barrier (ACP 2 inwards).

One such security measure is procedure KAA-777 Revision 4 (Process for access to Koeberg Nuclear Power Station). The procedure stipulates that the following items are prohibited from being brought onto site, unless specifically authorised:

- explosives or components thereof,
- habit forming drugs,
- alcohol,
- mercury,
- acids,
- cellular phones,
- firearms, ammunition or any part thereof, and
- cameras

Contractor personnel violating the procedure will be investigated and may result in action being instituted against such individuals and possible removal from site.

To keep the *Contractor* informed, pictograms of the items are placed at all ACP 2 access points and it is also addressed in the Plant Induction Training (PIT). It is the responsibility of each of the *Contractor's* employees to ensure compliance and to refrain from bringing prohibited/unauthorised items onto site.

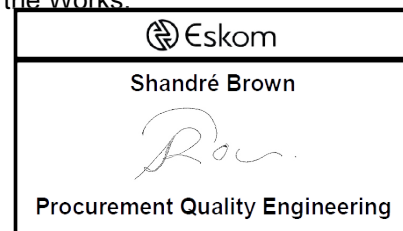
2.6.4.13 Vehicles and tools/Equipment

All Equipment and tools are subject to a security screening before they are allowed on the Site. All Equipment and tools must be listed and specified before they are brought on Site. This list will serve as evidence for removal permits upon Completion of the *works*. Vehicles are only allowed on Site if justification is provided to the *Project Manager* that such a vehicle is essential to Provide the *Works*.

2.7 Quality Assurance and Control

2.7.1 Quality Assurance requirements

The engineering classification assigned to the works is Q1/L2. The *Contractor* implements and maintains a Quality and Safety Management System that complies with the requirements of Eskom's Quality Specification 238-102 Rev2 and meets the requirements of ASME NQA-1 (Quality Requirements for Nuclear Facilities) or equivalent. The *Contractor's* Quality Management System (QMS) shall be certified to ISO9001:2015. The *Contractor's* QMS is subject to review and acceptance by the *Employer*.



Within 30 days after contract award, the contractor submits a Contract Quality Management Plan (CQMP) for the *Employer's* review and acceptance, which meets the requirements of 238-102, Technical Requirements Specification TRS 240-161645104 rev 1 section 6 in Appendix 9.1 and PP-0012 for the Manufacturing of Components for Nuclear Installations. The *Contractor* shall notify Eskom of any deviations or discrepancies regarding the Contract Quality Management Plan implementation.

A Quality Plan, specific to each manufacturing and installation activity, is to be established and submitted to the *Project Manager* for acceptance before commencement of any work.

The *Contractor* ensures that any subcontractor employed by him has and implements a Quality Management Programme to meet the requirements of the *Employer*.

The *Contractor* controls and supervises his subcontractor's quality plans (including manufacturing quality plans). The *Contractor* reviews and accepts all plans, prior to submission to the *Project Manager*, for his acceptance. All subcontractor components are verified by the *Contractor's* technical representative(s) before use or installation.

If the subcontractor has to perform work in terms of the *Contractor* compiled quality plans, the subcontractor also reviews and accepts the use thereof.

The *Employer* reserves the right to, at any time, audit and/or monitor the control between the *Contractor* and subcontractor, as well as the performance of the *Contractor's* subcontractor. Such audits are done by prior notification and in liaison with the *Contractor*.

The duly authorised representative of the *Employer* and *Employer's* Appointed Inspection Authority (AIA) or the regulatory body is offered access to the *Contractor* and its subcontractor's premises at reasonable times to monitor compliance with quality management requirements and to participate in final inspections.

The *Contractor* ensures that his staff and subcontractors are conversant with the content of the works as defined by the Works Information, quality control plans/work plans and work instructions.

Contractor's authorisation of personnel (including subcontractor personnel), applied for Providing the Works, is made available to the *Project Manager* prior to the start of the work for which the authorisation is done.

The *Contractor* retains records of internal reviews performed by its personnel. The records provide objective evidence of who performed the review and the level of detail of the review. This requirement is also applicable to review of subcontractor deliverables. Where considered necessary, the *Project Manager* may request such review records and the *Contractor* provides such information without limitation.

Where considered necessary, the *Project Manager* may request the root cause analysis and associated corrective action plan that the *Contractor* has established to deal with non-conformances / issues and / or Defects related to providing the Works. The *Contractor* provides such information without limitation.

For mechanical projects, the *Contractor* demonstrates compliance to ASME III 2001 (for works affecting safety class piping and components), ASME B31.1 (for non-safety class piping) and ASME VIII (for pressure vessels).

2.7.2 Quality Control Requirements

The *Contractor's* and subcontractor's quality control programmes are subject to the acceptance by the *Employer*.

The *Contractor* ensures that all specifications and requirements are communicated to the relevant parties in his organisation and does not deviate from it.

All *Contractor's* Quality Control Plans (QCP)s are accepted by the *Project Manager*, the *Contractor* and the *Employer's* Appointed Inspection Authority/QA representative (as applicable) prior to the commencement of work. Only after acceptance of these documents by the *Project Manager* and the *Employer's* QA representative / AIA as applicable, may the work proceed.

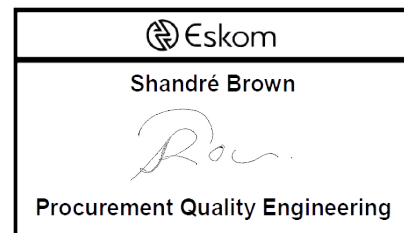
The *Contractor* ensures that all work (*Contractor* and subcontractor work) is carried out in accordance with the QCPs or any other specifications through written instructions from the *Project Manager*. All documentation has a clearly stated revision number and previous similar documentation is revoked.

All quality related problems/issues are reported and resolved as Defects in terms of Core Clause 42.2. All completed work is signed off in the QCPs as the work progress and all the relevant signatures are made on the documentation. The *Contractor* and his subcontractor employs quality control representatives, with appropriate proven experience.

2.7.3 Contractor's Quality Control Plans (QCPs)

The QCP typically consist of the following as a minimum:

- A cover page that includes and makes provision for the following:
 - Document unique number
 - Revision number
 - Page number
 - Provision to incorporate all inspection report numbers
 - Plant/system worked on
 - High level description of work execution
 - Provision for review and acceptance signatures by the *Contractor*, the *Employer* and the *Employer's* AIA/QA representative (where applicable).
 - Provision for final release signatures by the *Contractor*, the *Employer* and the *Employer's* AIA/ QA representative (where applicable).
- A page which includes a high level logical sequence of work execution
- A page which includes:
 - Drawing numbers
 - Abbreviations
 - Records numbers
 - Procedures numbers
 - Reference document numbers
 - Certificate numbers and references
- The work execution logic and sequence.
- Hold and witness points
- A Materials summary that includes:
 - Material quantities and dimensions



- Material certificate numbers or receipt inspection reference numbers with adequate traceability to material/other certificates.
- A thickness test report where thickness tests are carried out on components. The thickness test results are recorded and the positions of the measurements are traceable to the specific area of testing against the records.

If the subcontractor has to perform work in terms of the *Contractor* compiled quality plans, the subcontractor also reviews and accepts the use thereof.

The *Employer* reserves the right to, at any time, audit and/or monitor the control between the *Contractor* and subcontractor, as well as the performance of the *Contractor's* subcontractor. Such audits are done by prior notification and in liaison with the *Contractor*.

The duly authorised representative of the *Employer* and *Employer's* Appointed Inspection Authority (AIA) or the regulatory body is offered access to the *Contractor* and its subcontractor's premises at reasonable times to monitor compliance with quality management requirements and to participate in final inspections.

The *Contractor* ensures that his staff and subcontractors are conversant with the content of the *works* as defined by the Works Information, quality control plans/work plans and work instructions.

Contractor's authorisation of personnel (including subcontractor personnel), applied for Providing the Works, is made available to the *Project Manager* prior to the start of the work for which the authorisation is done.

The *Contractor* retains records of internal reviews performed by its personnel. The records provide objective evidence of who performed the review and the level of detail of the review. This requirement is also applicable to review of subcontractor deliverables. Where considered necessary, the *Project Manager* may request such review records and the *Contractor* provides such information without limitation.

Where considered necessary, the *Project Manager* may request the root cause analysis and associated corrective action plan that the *Contractor* has established to deal with non-conformances / issues and / or Defects related to providing the Works. The *Contractor* provides such information without limitation.

For mechanical projects, the *Contractor* demonstrates compliance to ASME III 2001 (for *works* affecting safety class piping and components), ASME B31.1 (for non-safety class piping) and ASME VIII (for pressure vessels).

2.8 Programming constraints

2.8.1 Programme constraints and requirements

The *Contractor* prepares and submits at the stated intervals, all programming documentation described in this section, the layout of which is subject to the *Project Manager's* acceptance.

All work performed at KOU are planned and scheduled in accordance with the requirements stated in:

- KLA-023 for outage related *works*
- KAA-721 (for non-outage related *works* – including pre-outage installation *works*).

Note that the above makes specific reference to the timelines to be adhered to for scheduling the work. As a general guide, outage work must be finalised and detailed SAP notifications, orders and operations raised on

the *Employer's* SAP system at 6 months prior to the start of the outage; and for non-outage work, the SAP notifications, orders and operations must be raised 12 weeks prior start of work. "Finalised" means that the work plans and test procedures are completed, which include any related risks assessments associated with the work to be performed.

2.8.1.1 The programme

The programme shows all the information required by Clause 31.2 of the ECC3.

In addition, the programme shows:

- the services and work (programmes) of the subcontractors,
- interfaces between subcontractors as well as the interfaces between subcontractors and the *Contractor*,
- all activities defined in the *activity schedule*,
- dates for placement of orders for critical / major Plant, Material and Equipment,
- on Site delivery dates for Plant, Materials and Equipment,
- the programme's revision number.

.The contractor complies with AACE RP on CPM schedule.

Manually applied constraints such as "must start" or "must finish" fixed dates, "zero float" and other programming techniques, that can have the effect of inhibiting the programme from reacting dynamically to change, is not acceptable.

A separate programme (Outage Implementation Programme) detailing pre-outage implementation and outage implementation may be compiled for each refuelling outage, as an extract from the Accepted Programme. This will facilitate integration of the *Contractor's* outage programme into the *Employer's* overall outage plan. The *Contractor* ensures that the start and finish dates of the "Outage Implementation Programme" corresponds to the Outage Implementation dates of the Accepted Programme.

The Minister of Public Enterprises and Presidential Infrastructure Coordinating Committee (PICC) requested that all government entities and SOCs use Primavera computerised planning software. For the sake of compatibility, the *Contractor* therefore prepares his programme on Primavera version 6.7 (.xer file format) computerised planning software and utilises it for all planning, progress monitoring and reporting.

2.8.1.1.1 Reporting on progress and remaining duration

Rules of Credit for progress measurement to be based on recommended practice for the specific work package. Methodology to be detailed in the Schedule basis document.

2.8.1.1.2 Actual dates

When Completion of any activity is confirmed by quoting document numbers, these numbers are given in the notes and are appended, e.g. letters of acceptance, suborders, drawings, inspection certificates, delivery notes, etc. The actual start and finish of all activities are reported and included in the programme.

2.8.1.1.3 Time Now Date

The 'Time Now Date', unless otherwise agreed between the *Project Manager* and the *Contractor*, is the assessment date of each month.

2.8.1.1.4 Stress Test

The *Contractor* performs the following stress test prior to submission to the *Project Manager* for acceptance :

Stress Test	Name	Description
1	Logic links	<p>Every activity must have a predecessor and successor:</p> <ul style="list-style-type: none"> Each Activity should have at least one predecessor (connected to its Start) and one successor (connected to its Finish). This includes checking for 'dangling Activities' that have only a 'start predecessor' relationship or only a 'finish predecessor' relationship but not both. Incorrect and missing logic will result in the Critical Path and likely completion date being inaccurately calculated in light of the progress achieved.
2	Negative Lag	<p>There must be no logic links carrying Negative Lag:</p> <ul style="list-style-type: none"> Predecessor/successor relationships in the Programme need to be checked to see that there is no Negative Lag (i.e. overlap by way of a Duration of less than zero) present against the Logic Links. The Critical Path analysis is made more difficult or distorted through use of Negative Lag as it hides detail in the Programme.
3	Lead	<p>There must be no Finish-Start Logic Links carrying Lead between Activities:</p> <ul style="list-style-type: none"> Predecessor/successor relationships in the Programme need to be checked to ensure that there is no Lead (i.e. overlap by way of a Duration of greater than zero) present against Logic Links. Lead makes it is hard to plan for or measure progress against. This distorts and complicates the Critical Path.
4	Logic type	<p>There must be no Start-Start and Finish-Finish Logic Links</p> <ul style="list-style-type: none"> Predecessor/successor relationships in the Programme need to be checked to ensure that no use of Start-Start and Finish-Finish Logic Links and that Finish-Start logic is employed. These links hide detail in the Programme and their use also create issues when Activities are subsequently progressed out of sequence with the remaining planned sequence and Critical Path distorted and complicated.
5	Hard Constraints	<p>There must be no hard Constraints:</p> <ul style="list-style-type: none"> Each Activity should be driven by Programme logic. A hard Constraint is an artificial date applied to an Activity that blocks the logic within the Programme, manipulates the Critical Path and introduces Negative Lag. It also prevents delays from properly impacting subsequent (successor) Activities within the Programme.
6	Float	<p>The (total) Float present should be less than twice the reporting period or 44 working days:</p> <ul style="list-style-type: none"> There must be no Activities or Milestones with total Float greater than twice the reporting period or 44 working days (two working months) within the Programme. High Float values indicate that the Programme has not been broken down to a sufficient level of detail, sequencing has not been properly defined or that the Programme has not been properly logic-linked. Programme logic and any resultant Float generated need to be considered properly since understanding the relative criticality of Activities and Milestones is essential to ensure timely delivery, and it affects any Critical Path analysis.
7	Negative Float	<p>All Float present in the Programme has to be zero or above:</p> <ul style="list-style-type: none"> There should be no Activities or Milestones with negative Float (i.e. less than zero total Float) within the Programme. Negative Float within the Programme highlights that dates defined against Activities or Milestones cannot be achieved as currently planned and that the sequence, as defined, is unable to be achieved in line with the Completion Date(s). Negative Float may also indicate that a delay is present against a hard Constraint which has been applied to the Programme.

8	Long Durations	Activity Durations present must be less than twice the reporting period or 44 working days: <ul style="list-style-type: none"> • There must be no Activities with Duration longer than 44 working days. • High-Duration Activities are to be broken into several shorter Activities. • Excessive Durations can make it difficult to accurately record progress and it distorts the Critical Path
9	Invalid dates	Progress and remaining <i>works</i> must be accurately set out with no invalid dates present: <ul style="list-style-type: none"> • There must not be any invalid dates in the Programme where, based on the data/ progress/status date, planned <i>works</i> are shown to be in the past or actual <i>works</i> as having been completed in the future. • This can result in the Programme being inaccurate and if progress is not accurately or correctly recorded, it can also be in delay. • This criteria relates both to an initial Baseline Programme and also to project performance tracking to ensure that the Programme is deliverable and the as-built dates are accurate.
10	Missed detail	Detail set out in the Programme must be reflective of the full scope of <i>works</i> : <ul style="list-style-type: none"> • The <i>works</i> breakdown structure and detail set out in the Programme should be reflective of the full scope of the project and any sections where applicable. • The applicable scope needs to be identified from contract documents and suitably incorporated into the Programme. • A failure to correctly include the relevant <i>works</i> or detail / interfaces within the Calendars can result in a planned sequence being incorrect, an intrinsic delay being present or the forecast completion dates being unachievable.
11	Key dates	Key Dates and Completion Dates forecast in the Programme must be reflective of obligations set out in the Contract Data: <ul style="list-style-type: none"> • Key Dates and Completion Dates detailed and forecast in the Programme must be reflective of the Sections of <i>works</i> and any commencement, access, intermediate or completion dates as and when applicable. • Failure to properly include Key Dates and Completion Dates for each section of the project will affect the accuracy of the Critical Path shown, the planned sequence being incorrect and the forecast dates being unachievable.
12	Calendars	Detail set out in the Programme must be reflective of any Calendars and/or restrictions: <ul style="list-style-type: none"> • Activities and Milestones set out in the Programme must be reflective and planned to be delivered utilising the relevant Calendars and working restrictions where applicable. • Any applicable Calendars or working restrictions need to be identified from contract documents and suitably incorporated into the Programme. • Failure to correctly allocate Activities and Milestones within the Programme to the correct Calendars or take into account any working restrictions can result in an intrinsic delay being present and the forecast completion dates being unachievable.
13	Unique identifiers	There must be no duplication in the assigned Activity Names and Activity IDs: <ul style="list-style-type: none"> • The description and ID of each Activity and Milestone in the Programme must be different so as to ensure ease of identification. • Duplication and repetition of Activity Names make it harder to differentiate between <i>works</i> when analysing the Programme and undertaking logic and Critical Path traces as well as application of filters.

14	Rescheduling	<p>Programme can be rescheduled without any of the planned dates moving:</p> <ul style="list-style-type: none"> • Rescheduling (or straight-lining/time analysing) the Programme results in the planning software calculating, based on the Logic, Durations and progress present, planned dates and Critical Path. • Programme must be able to be rescheduled without any dates moving as a means of demonstrating that it is properly logic-linked and dynamic. • This criteria relates both to an initial Baseline Programme and also to project performance tracking to ensure that the Programme is deliverable and as-built dates are accurate. • Only when planned dates previously shown in the baseline prior to Rescheduling are maintained, with zero variance to each of the start and finish dates for each Activity/Milestone, is this Test deemed to have been successfully achieved.
15	Critical path	<p>There should be a Critical Path to each relevant Completion Date:</p> <ul style="list-style-type: none"> • The Critical Path is the path with the least amount of total float to the Completion Date(s) through the Programme. • Programme must be demonstrated to have a Critical Path to each relevant Completion Date. • Lack of a Critical Path (or Critical Paths) through the Programme indicates that inadequate logic is present, resulting in the Programme not being dynamic in nature.

The results of the test is submitted with each Programme submitted for acceptance.

2.8.1.2 Planning constraints

The *Contractor* makes allowance for incorporation of *Employer* acceptance review comments for documents delivered to the *Project Manager* for his acceptance.

The *Contractor* does not plan for any *Employer* activities during the period of week 51, week 52 and week 1 of each year unless such a period falls within the implementation window of the *works*. Should any reviews be planned during this period, then the review periods need to be agreed, upfront, with the *Project Manager*.

During refuelling outages, the *Employer's* resources may be limited to perform acceptance reviews, and should any reviews be planned over outage periods, then the review periods need to be agreed, upfront, with the *Project Manager*.

2.8.1.2.1 Outage planning and integration

Outage work is limited to the *works* which can only be performed during the outage and *works* considered of too high risk (based on its accepted risk assessment) to be performed on-line (prior to outage).

On-line work is performed prior to the outage and the *Contractor* includes the activities on the Programme as well as makes the necessary planning allowances for it. On-line work will only be approved subject to a *Supervisor* (and where applicable, *Employer*) accepted risk assessment.

To manage the occupancy of the Working Areas during implementation, the *Contractor* attends the "Table Top" meetings with the *Employer's* Outage representative in order to discuss area work load and to integrate and schedule the *Contractor's* activities as such as to allow sufficient space for implementation.

2.8.1.2.2 Outage dates

The *Employer* may change the proposed outage implementation dates due to any reason with no impact on the Prices within the framework described below:

- For *Employer* proposed delays to outage start dates in excess of 30 days, the *Employer* give 120 days notice;
- For *Employer* proposed delays to outage start dates in excess of 15 days, the *Employer* give 60 days notice;
- For *Employer* proposed delays to outage start dates between 7 and 15 days, the *Employer* give 45 days notice;
- For *Employer* proposed delays to outage start dates between 1 and 7 days, the *Employer* give 30 days notice; and
- For *Employer* proposed expediting (bringing forward) an outage start date, the *Employer* give 30 days notice for each week (7 days) from the start date on the accepted programme.

The *Employer* may also change the proposed outage implementation dates, with no impact on the Prices, if the *Contractor* is late and is the cause of the change or if not ready in terms of KLA-023..

2.8.1.2.3 Outage readiness review

At 2 months prior to the allocated implementation Outage, the *Employer* performs a readiness review and if the *Contractor* is proven to not be ready in terms of KLA-023, the *Employer* has the right to allocate the work to another outage, with no cost impact to the *Employer*.

The *Project Manager*, in conjunction with the *Employer* holds a readiness review to assess the *Contractor's* overall readiness to implement the *works*.

Specific items that forms part of this review includes (but are not limited to):

- Documentation (design, site implementation file acceptance)
- Planning (detailed planning including resources and working times)
- Resources (qualification, training plan and mobilisation progress)
- Plant and Materials (delivered to Site and accepted/receipt inspected)
- Safety (risk assessments, mitigation and prevention, construction regulations)

Should the review conclude that the *Contractor* has substantially failed to meet the required Key Dates or have failed to take subsequent corrective action to demonstrate a high level of confidence in terms of its readiness to implement the *works*, the *Employer* retains the right to reschedule the implementation of the *works* to the next opportune outage with no additional compensation due, by the *Employer*. It is hence critical that the *Contractor* ensures that Key Dates as stated in the Contract Data are adhered to and where deviations exist, that effective corrective action is taken to resolve any issue/delay.

2.8.1.3 Planner requirements

The *Contractor's* planner is a key person and his name is included in the Contract Data – Part Two, data provided by the *Contractor*. This key person must have intimate knowledge of ECC Core Clause 3 and specifically the requirements as set out in ECC Core Clause 31.2.

2.8.1.4 Monthly progress reporting

The *Contractor* submits to the *Project Manager* a monthly report following the *assessment date*, but by no later than the last day of each month. The report contains the following information as a minimum

requirement:

- Executive summary. (Narrative identifying major movement within the reporting period.)
- Revised programme in paper and software copy (.pdf and .xer file format) for *Project Manager's* acceptance indicating, actual progress of work against last Accepted Programme.
- Updated "List of Applicable Documents" which is a list (table) indicating the "current accepted" revision as well as the status of any later revisions of documents considered key in the control of Providing the Works and include the following as a minimum:
 - Contract Quality Management Plan
 - Scheme Design
 - Installation Design
 - Work Plan
 - Test Procedures
 - Safety Evaluation (Screening/Evaluation/Justification)
 - Safety Case
- List of Activities which:
 - were completed during current reporting period per discipline, (including the activities of the *Employer* and Others);
 - are in progress
 - activities of the *Employer* and Others;
 - are to be undertaken during the next reporting period per discipline, including the activities of the *Employer* and Others;
 - are behind schedule together with an action plan on how the delays are to be rectified.
- A schedule of all material procurement activities, including time for fabrication and delivery of manufactured products. The interdependence of procurement and construction activities is included in the schedule.
- Proposed monthly assessment information which is based on the list of activities that were completed during the current reporting period.
- Revised activity schedule which indicates projected future cashflow
- Key issues / Items of concern and corrective actions.
- Progress curves
- Early warning log
- Compensation event log
- Critical activities

2.8.1.5 Outage control / work control interface

	Activity Description	<i>Project Manager</i>	<i>Contractor</i>	Requirements	Planning	Additional Notes
•	Provision of <i>Employer</i> outage schedule	X		<ul style="list-style-type: none"> The <i>Employer's</i> outage schedule indicates sufficient detail for the <i>Contractor</i> to effectively determine installation windows for various modifications and/or phases of modifications. 	In accordance with Accepted Programme	Provision of <i>Employer</i> outage schedule

	Activity Description	Project Manager	Contractor	Requirements	Planning	Additional Notes
	<ul style="list-style-type: none"> Modification isolation plan / requirements and determination of relevant implementation window(s). 		X	<ul style="list-style-type: none"> The <i>Contractor</i> provides the required information and supports the <i>Supervisor</i> with interfaces to OCC / work control and operations. 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Modification implementation schedule (including testing). 		X	<ul style="list-style-type: none"> For high priority work, the planning requirements for implementation are agreed outside the requirements of KLA-023, KAA-501 and KAA-721 	In accordance with KLA-023 and KAA-721.	KLA-023: Outage works. KAA-721: Non-outage works – including pre-outage works.
	<ul style="list-style-type: none"> Inclusion of implementation schedule in overall outage schedule / weekly plan. 	X		<ul style="list-style-type: none"> Physical linking and inclusion into overall outage schedule / production plan. 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Verification of implementation schedule in overall outage schedule / weekly plan. 		X	<ul style="list-style-type: none"> The <i>Contractor</i> verifies and confirms that the outage schedule / weekly plan is correct. 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Modification documentation release plan 		X	<ul style="list-style-type: none"> The <i>Contractor</i> compiles the document release plan. For a single modification, this is the document in the DCIF indicating when the documents are to be released during the modification implementation. In exceptional cases it may be required to create temporary operating instructions (TOIs), etc. until all other modifications on the system are completed and the system procedure is released. The document release plan will indicate and reference all TOIs and other strategies implemented to ensure that the operators at all time have correctly updated information in the control room. For TOIs, this service is supplied by the <i>Employer's</i> OPG group. It is the <i>Contractor's</i> responsibility to provide inputs and assistance in assuring that the document release plan is realistic and up to date. 	In accordance with Accepted Programme	<i>Contractor</i> will identify TOIs. TOIs to be managed by the <i>Employer</i> .

	Activity Description	Project Manager	Contractor	Requirements	Planning	Additional Notes
	<ul style="list-style-type: none"> Permit to work (PTW's) and sanction for test (SFT) and test applications (TA). 		X	<ul style="list-style-type: none"> The request is completed by a responsible person (RP), supplied by the <i>Contractor</i> in accordance with <i>Employer's</i> plant safety regulation (PSR) procedures. Permit to Work and Sanction for Test requests needs to be raised on the <i>Employer's</i> PTW system. Isolation plans are referenced in the PTW request. PTW are raised in accordance with <i>Employer</i> procedure KAA-667 	In accordance with Accepted Programme	A responsible person in terms of the OH&S Act is authorised to take out PTW's and SFT's to perform/supervise work and tests on the <i>Employer's</i> plant.
	<ul style="list-style-type: none"> Management and scheduling of interfaces between outage control centre (OCC) / work control (WC) and the <i>Contractor</i>. 	X		<ul style="list-style-type: none"> The <i>Contractor</i> provides the implementation planning. The <i>Employer</i> integrates the planning in the overall outage schedule. The <i>Contractor</i> supports the <i>Employer</i>. Interface in liaison with the <i>Project Manager</i>. 	As required	Planning as per KLA-023 and KAA-721 are regarded as fixed (ruling time-line).
	<ul style="list-style-type: none"> Notification to <i>Contractor</i> of any changes to schedule. 	X		<ul style="list-style-type: none"> The <i>Employer</i> notifies the <i>Contractor</i> of any changes to the implementation schedule due to the <i>Employer</i> activities. 	As required	
	<ul style="list-style-type: none"> Outage meeting / production meeting progress feedback. 	X		<ul style="list-style-type: none"> During planning stage of project the <i>Contractor</i> must be available to support the <i>Project Manager</i> during feedback at these meetings. Where required the <i>Contractor</i> attends the meetings. 	As required	The meetings are held weekly.
	<ul style="list-style-type: none"> Daily outage / production feedback during implementation and problem resolution. 	X		<ul style="list-style-type: none"> During installation and testing the <i>Contractor</i> is available to support the <i>Project Manager</i> during feedback at daily outage and production feedback meetings. Where required the <i>Contractor</i> attends the meetings. 	As required	
	<ul style="list-style-type: none"> Conclusion 			<ul style="list-style-type: none"> This activity group is part of the management function provided by the <i>Contractor</i> and extends over the duration of the project until Completion of the whole of the <i>works</i>. 	In accordance with Accepted Programme	Deliverable: <ul style="list-style-type: none"> Detailed modification implementation schedules (integrated with OCC plans) Documentation Release Plan Permit to Work and Sanction for Test Applications.

2.8.1.6 General

	Activity Description	Project Manager	Contractor	Requirements	Planning	Additional Notes
	<ul style="list-style-type: none"> Site organisation chart and roster (<i>Contractor</i>) 		X	<ul style="list-style-type: none"> Names, Main Responsibilities, Telephone numbers / Pagers / Mobile 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Support activities chart and roster 		X	<ul style="list-style-type: none"> Names, Main Responsibilities, Telephone numbers / Pagers / Mobile 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Site representatives chart and roster (<i>Employer</i>) 	X		<ul style="list-style-type: none"> Names, Main Responsibilities, Telephone numbers / Pagers / Mobile 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Kick-off meeting Implementation (Outage / non-outage) 	X		<ul style="list-style-type: none"> The <i>Project Manager</i> arranges the meeting; the <i>Contractor</i> ensures that relevant personnel of the Site implementation team as well as project management team are present at the meeting. The venue for the meeting is on Site. 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> List of <i>Contractor's</i> Sub-Contractors 		X	<ul style="list-style-type: none"> To be supplied to <i>Project Manager</i> for <i>Employer's</i> PQA representative approval. 	Minimum 8wks prior to start.	
	<ul style="list-style-type: none"> List of Applicable Documents for Outage Implementation 		X	<ul style="list-style-type: none"> The List of Applicable Documents summarises the documentation to be used as reference during the implementation and testing phase of the modification. 	In accordance with Accepted Programme	
	<ul style="list-style-type: none"> Acceptance of vehicle access to Site 	X		<ul style="list-style-type: none"> Permission for access of a vehicle on the Site must be obtained from the <i>Project Manager</i> Vehicles are not allowed on Site unless specific approval is obtained from the <i>Employer</i> and will only be considered for exceptional cases. 	As required	
	<ul style="list-style-type: none"> Site access permit applications 		X	<ul style="list-style-type: none"> <i>Contractor</i> to complete forms himself. 	As required	
	<ul style="list-style-type: none"> Site access authorisation 	X		<ul style="list-style-type: none"> At completion of all required access training. 	5 days duration	
	<ul style="list-style-type: none"> Arranging training and related competency tests / assessments. 		X	<ul style="list-style-type: none"> Booking by <i>Contractor</i> - to fit in with normal routine course or <i>Contractor</i> to arrange a separate course for large number of people. <i>Employer</i> requirements relating to training of personnel are detailed in KSA-119 (As required	
	<ul style="list-style-type: none"> Provide training and related competency tests/assessments. 	X			As required.	

	Activity Description	Project Manager	Contractor	Requirements	Planning	Additional Notes
	<ul style="list-style-type: none"> Qualification and authorisation verification of all personnel to perform construction work for the <i>Contractor</i> for the works. 		X	<ul style="list-style-type: none"> In accordance with the <i>Contractor's</i> quality procedures and: <ul style="list-style-type: none"> for performing welding activities, the <i>Contractor</i> ensures that all its welders comply with the requirements of KNM-001 (for performing non-destructive testing, the <i>Contractor</i> ensures that all its personnel are qualified in compliance with the requirements of KSA-037 for performing scaffolding works, the <i>Contractor</i> ensures that all its personnel are qualified in compliance with the requirements of KSM-031 for performing rigging works, the <i>Contractor</i> ensures that all its personnel are qualified in compliance with the requirements of KSA-132; and for performing lagging works, the <i>Contractor</i> ensures that all its personnel are qualified in compliance with the requirements of KSM-032 	As required	
	<ul style="list-style-type: none"> Checks for Sub-Contractors agreement 		X		As required	
	<ul style="list-style-type: none"> Calibration of equipment 	X		<ul style="list-style-type: none"> Where the <i>Employer</i> is required to calibrate equipment, the <i>Contractor</i> ensures that: <ul style="list-style-type: none"> SAP orders are raised for the <i>Employer</i> to perform the calibrations. These SAP orders specifies in detail all the relevant calibration requirements Equipment for calibration are supplied to the <i>Project Manager</i> at 3 months prior to start of the refuelling outage / implementation (for non-outage modifications) 	To-3 months	To = Start of refuelling outage / implementation window.

	Activity Description	Project Manager	Contractor	Requirements	Planning	Additional Notes
	<ul style="list-style-type: none"> Conclusion 	X	X	<ul style="list-style-type: none"> This activity group is part of the management function provided by the <i>Contractor</i> and extends over the duration of the project until completion of the whole of the works. 	In accordance with Accepted Programme	Deliverable: <ul style="list-style-type: none"> Site Organisational Chart [Implementation] List of Sub Contractors List of applicable documents Office requirements Records of authorised personnel involved with construction.

2.9 Contractor's Management, Supervision and Key People

2.9.1 People restrictions on Site; hours of work, conduct and records

2.9.1.1 People

The *Employer's* standard for management and control of supplemental workers at KOU is document in KSA-119 Rev 2.

The *Contractor* employs in and about the Provision of the Works only such persons that are careful, competent and efficient in their several trades and callings, to achieve nuclear safety, and the *Employer* reserves the right to object to and require the *Contractor* to remove from the *works*, forthwith, any person employed by the *Contractor* in or about the Provision of the Works who, in the opinion of the *Project Manager*, misconduct's himself or is incompetent or negligent in the proper performance of his duties and such person is not again employed for the *works* without the written permission of the *Project Manager*.

The *Contractor*, in and about the Provision of the Works, provides evidence of skills assessment (including qualifications) for all its staff. *Contractor* project manager, QC and supervisors are required to present SAQA approved certificates (or equivalent), for the position that they fulfil. The *Contractor's* project manager is trained on the NEC ECC3 prior the *access date*. Any personnel that do not meet the panel requirements will have their access to site revoked.

The *Contractor* ensures that the *Contractor's* employees are reasonably fluent in the language of the contract.

The *Contractor* always maintains a harmonious relationship with and co-operates with the *Employer* and all its suppliers and sub-suppliers or their employees who may be involved.

All radiation workers comply with such radiation protection standards as is required by the *Employer*.

2.9.1.2 Supervision

The South African Construction Regulations require the *Contractor* to appoint a full-time competent employee to supervise the performance of construction work. The *Contractor* (as principal contractor in terms of the OHS Act Construction Regulations) therefore appoints, in writing, a competent full time construction supervisor and where required an assistant supervisor, clearly stipulating all duties relating to the supervision of the particular project.

The *Contractor's* construction supervisor must be registered as a professional construction manager in terms of the Project and Construction Management Act, 48 of 2000

The *Contractor* may appoint additional people (assistant construction supervisor) to assist the construction supervisor to perform certain of his functions, but this does not relieve the construction supervisor of his or her responsibilities under the regulations. If the *Contractor* has not appointed additional people to assist the construction supervisor, and an inspector determines that the construction supervisor needs assistance, he can instruct the *Contractor* to do so, at no additional cost to the *Employer*.

No work may be performed, by the *Contractor*, unless in the presence of the *Contractor's* construction supervisor or assistant construction supervisor.

The *Contractor's* construction supervisor and assistant construction supervisor shall be fully conversant with the contents of the *Contractor's* health and safety plan including the following and shall stop any or all work which is not in line with these provisions:

- Risk assessments,
- Method statements, and
- Fall protection plan.

2.9.1.3 Construction health and safety practitioners

The *Contractor's* construction health and safety agent (as a specified category in terms of section 18 (1) (c) of the Project and Construction Management Professions Act No. 48 of 2000) is appointed to ensure that the *Contractor* complies with its statutory duties under the Occupational Health and Safety Act (Act No. 85 of 1993) and applicable regulations such as the Construction Regulation, etc.

2.9.1.4 The *Contractor's* designer

All engineering work is performed by suitably qualified and experienced individuals. The *Contractor's* design engineer, the seismic analyst as well as the independent reviewer(s) must be registered as professional engineers (in terms of Engineering Profession Act No.46 of 2000) with the Engineering Council of South Africa (or equivalent international body).

The *Contractor's* designer :

- (a) must take steps to ensure that the applicable requirements of the Works Information and the National Regulations are complied with in the design;
- (b) must perform all actions, including site visits, to ensure dangers or hazards and as found conditions and installation constraints, relating to the *works*, are identified. Where sections of the site are inaccessible for inspection, this must be stated in his design, with the resultant assumptions / constraints;
- (c) must take into consideration the health and safety specification submitted by the *Employer*, as well as the applicable legislation and regulations related to the *works*;
- (d) must make available to the *Employer* all relevant health and safety information about the design;

- (e) must inform the *Supervisor* and the *Contractor's* personnel, in writing, of any known or anticipated dangers or hazards relating to the *works*, and make available all relevant information required for the safe execution of the *works* upon being designed or when the design is subsequently altered;
- (f) must follow the requirements of the nuclear design standard for Koeberg Nuclear Power Station (Ref : KSU-008), applicable to all on-site plant systems, structures and components and off-site plant systems, structures and components that affect the safe and reliable operation of Koeberg Nuclear Power Station;
- (g) must compile the design in accordance with 331-86 (Design to Plant, Plant Structures or Operating Parameters)
- (h) must, subject to the provisions of paragraphs (a) and (c), ensure that the following information is included in a report and made available to the *Supervisor* and the *Contractor's* personnel:
 - For civil works:
 - A geo-science technical report where appropriate;
 - the loading that the structure is designed to withstand; and
 - the methods and sequence of construction process;
 - For mechanical works:
 - Service or maintenance manual(s);
 - Finite element analysis
 - Stress analysis report indicating material strength and code/specifications; and
 - the methods and sequence of construction process;
 - For electrical / control and instrumentation works:
 - Service or maintenance manual(s);
 - PID drawings;
 - Wiring diagrams; and
 - the methods and sequence of construction process;
- (i) may not include anything in the design necessitating the use of dangerous procedures or materials hazardous to the health and safety of persons, which can be avoided by modifying the design or by substituting materials;
- (j) must take into account the hazards relating to any subsequent maintenance of the relevant *works* and must make provision in the design for that work to be performed to minimise the risk;
- (k) must, carry out the necessary inspections at appropriate stages to verify that the construction of the relevant design is carried out in accordance with his design;
- (l) must when mandated by the *Contractor* to stop the *Contractor* from executing any construction work which is not in accordance with the relevant design's technical, health and safety aspects;
- (m) must in his or her final inspection of the completed *works* in accordance with the National Regulations include the health and safety aspects of the *works* and declare the *works* safe for use, prior to the *Project Manager* issuing the Completion; and
- (n) must ensure that during design process, cognisance is taken of ergonomic design principles in order to minimise ergonomic related hazards in all phases of the life cycle of a *works*.

2.9.1.5 Key personnel

The *Contractor* ensures that all key personnel requiring access to Site meet the requirements of the *Employer's* security and medical qualifications as well as training and experience generally required by similar utilities elsewhere in respect of similar work. Where required, these staff members also meet such requirements as the National Nuclear Regulator may stipulate from time to time.

The *Contractor* provides orientation and technical training for all key personnel requiring access to Site in accordance with the requirements of the *Employer's* Radiological Safety Regulations, the *Employer's* Industrial Safety Programme, and, in general, the whole framework of plant rules (as applicable) and regulations which may be in force at the *Employer's* Site from time to time, which is available on request.

The following are considered key persons by the *Employer* and the *Contractor* submits a brief CV with associated records of qualification and related experience at the Contract Date:

- *Contractor's* project manager
- *Contractor's* planner
- Design engineer
- Construction and installation supervisor(s)
- Quality Management representative
- Quality control inspector(s)
- Health and safety representative

2.9.1.6 Emergency mustering, accountability, and evacuation

Due to the nature of the Site, the *Contractor* is required to always have full accountability of personnel. It is therefore required that the *Contractor* has and maintains a current status and accountability list of all his personnel on Site. The accountability list is handed to the *Project Manager* each time a change occurs.

The *Contractor* ensures that his site representative takes full responsibility for this requirement and that he and his personnel are fully conversant with the mustering requirements as detailed in the *Employer's* procedure KAA-611 Revision 5.

2.9.1.7 Site hours

2.9.1.7.1 Non shift staff

Employer working hours are 24 hours a day, 7 days a week during outage periods.

Normal working hours during non-outage periods are:

Mon-Thu: 07h30 – 16h35

Fri: 07h30 – 13h35

On the last Friday of each month however, working hours will be from 7h30 until 12h00.

2.9.1.7.2 Shift staff:

In accordance with official, approved shift rosters.

2.9.1.7.3 Flexitime

Employer's employees who have a written agreement entitling them to work flexitime, the "Core Time" during which time cannot be flexed is from 9h00 to 15h00, whilst no employee may flex prior to 6h00 (Monday to Friday) nor after 18h00 (Monday to Thursday).

The *Contractor* takes due cognisance of the *Employer's* working hours whilst Providing the Works and performs regular reporting of person hours worked on a monthly basis to the *Project Manager*.

2.10 Invoicing and Payment

Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Project Manager's* payment certificate.

The *Contractor* shall address the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:

- Name and address of the *Contractor* and the *Project Manager*;
- The contract number and title;
- *Contractor's* VAT registration number;
- The *Employer's* VAT registration number 4740101508;
- Description of service provided for each item invoiced based on the Price List;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- (add other as required)

Add procedures for invoice submission and payment (e. g. electronic payment instructions)

2.10.1 Assessments

The *Contractor* includes in the Monthly Planning Report the proposed assessment information. Failure to submit such information on the assessment date will result in the *Project Manager* making his own assessment, based on available information.

The *Contractor* submits, separately, all documentation and certification in support of the proposed assessment information.

2.10.2 Invoices and payment arrangements

The *Contractor* ensures that the requirement in terms of Section 20(4)(C) of the Value Added Tax Act 89 of 1991 as amended by the Revenue Laws Amendment Act 45 of 2003, that the VAT registration number of the recipient of the tax invoice, appears on the said tax invoice in order for the invoice to fully comply with the requirements of a valid invoice for VAT purposes as contained in the said Section 10(4)(C), is adhered to. No payment will be made on tax invoices not fully meeting this requirement.

The *Employer's* VAT Registration Number is **4740101508**

- **All invoices are marked for the attention of:**
The Accounts Payable Section
Koeberg Operating Unit
Private Bag X10
Kernkrag 7440
South Africa
- **Particulars to be included on the *Contractor's* Tax Invoice:**
 - The name and address of the *Contractor*
 - The date of the invoice
 - An invoice number
 - *Contractor's* VAT registration number (if applicable)
 - *Employer's* VAT registration number
 - Reference to Contract and/or SAP Task Order number
 - The amount paid to date
 - The price adjustment for inflation (where clause X1 is applicable)
 - The value of the invoice split into payments as per the *activity schedule*

- A descriptive title of the service covered by the Invoice and/or the Contract's assessment number

To enable payment against each applicable SAP generated Task Order the *Project Manager* and the *Contractor* must sign next to each line acceptance of the service, Plant and Materials or goods delivered on the applicable SAP generated Task Order. The signed copy of this SAP generated Task Order is promptly returned to the *Project Manager*.

Payment is made by means of electronic transfer. The *Contractor* therefore provides his banking details to the *Project Manager* within one week of the Contract Date.

2.10.2.1 Compensation events

2.10.2.2 Concurrent delay

If the *Contractor* incurs additional costs that are caused both by *Employer* delay and concurrent *Contractor* delay, then the *Contractor* may only recover compensation to the extent the *Contractor* is able to separately identify the additional costs caused by the *Employer* delay from those caused by the *Contractor* delay. If the *Contractor* would have incurred the additional costs in any event as a result of *Contractor* delays, the *Contractor* is not entitled to recover those additional costs

2.10.2.3 Mitigation of delay

The *Contractor* has a duty to mitigate the effect, of *Employer* risk events, on the *works* and the *Contractor* does all it reasonably can to avoid an impact on the Prices. The duty to mitigate does not extend to the *Contractor* to adding extra resources or to work outside its planned working hours.

2.10.2.4 Notification of Compensation Event

When a Compensation Event is notified, the *Contractor* must provide sufficient and sufficiently detailed information illustrating the exact or near to exact impact the Compensation Event has or will have on the *Contractor*, to enable the *Project Manager* to assess whether to call for a quotation or not. Adding to this the *Contractor* must state which Compensation event under NEC3 ECC Clause 60.1 he believes it to be.

2.10.2.5 Quotation

A quotation is an assessment of the cost entitlement of a valid Compensation Event claim and a consequence of the *Project Manager* having agreed that the event is a Compensation Event.

The *Contractor* provides quotations for compensation events detailing the following items as a minimum:

- Introduction
- Executive summary
- Contractual basis of compensation event (Refer to ECC Core Clause 60.1)
- Details of the compensation event
- Assessment of compensation event (ECC Core Clause 63)
- Conclusion
- Accepted programme showing impact of delay ((ECC Core Clause 62.2) – If the programme for remaining work is altered by the Compensation Event
- Appendices:
 - Early Warning (ECC Core Clause 16.1) - if applicable
 - Notification (ECC Core Clause 61.3)

- Instruction to submit quotation (ECC Core Clause 61.1 or 61.2)
- Instruction to submit alternative quotation (ECC Core Clause 62.1) or to submit a revised quotation (ECC Core Clause 62.4) - if applicable
- Any extension of time under (ECC Core Clause 62.5) - if applicable
- Any other document(s) the *Contractor* may consider applicable.

For compensation events to be implemented, the *Employer* requires the *Contractor* to sign a compensation event register form. For any payments required as a result of the compensation event, the *Contractor* is required to submit the signed compensation event register form, at latest, prior to the 15th of the month in which any associated amount should be assessed. This is to allow sufficient time for the *Employer* to load the associated costs onto its SAP system.

It is specifically stated that the *Employer* will not accept any forecasted payments relating to “compensation event acceptance”.

2.10.2.6 Verification

The contract is administered in a spirit of mutual trust and co-operation (see ECC Core Clause 10.1). To this end the *Contractor* should collaborate, with the *Project Manager*, through all stages of the assessment and verification of Defined Costs. This contract requires that the *Contractor* keep financial, project and other records and accounts. The *Contractor* also provides the *Employer*, the *Project Manager* and their delegates with the right to carry out audits and verify that the payments of Defined Cost are fully supported by those records and accounts to ensure that the *Contractor* fulfills its obligations under the contract. The requirement for access thereto is passed down to Subcontractors as appropriate and where relevant. This is one of the requirements for acceptance of Subcontractors.

2.11 Insurance provided by the *Employer*

Insurance will be applicable as per applicable insurance reference and clauses in the Contract Data.

2.12 Contract change management

The *Contractor* is responsible to document and resolve any required changes on his design/equipment. The approval process indicated in this Works Information is adhered to, by the *Contractor*.

2.13 Provision of bonds and guarantees

The form in which a bond or guarantee required by the *conditions of contract* (if any) is to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.

The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Project Manager* to receive and accept such bond or guarantee. Such withholding of payment due to the *Contractor* does not affect the *Employer's* right to termination stated in this contract.

2.14 Records of Defined Cost, payments & assessments of compensation events to be kept by the *Contractor*

The *Contractor* keeps all records, for presentation to the *Project Manager*, for compensation events.

2.15 Training workshops and technology transfer

Operational, Maintenance and Engineering training is to be provided in accordance with the requirements stated below:

2.15.1 Transfer of skills to the *Employer's* personnel

The *Contractor* assists the *Employer* in the skills development of the *Employer's* personnel by accommodating such personnel, as mutually agreed, in the offices of the *Contractor* for the purposes of gaining an understanding of the system/technology.

If in the opinion of the *Contractor* the existing skills of the *Employer's* personnel can be utilised to the benefit of the contract, this can be mutually arranged. Additional costs will be for acceptance by the *Project Manager* prior to it being incurred, as part of the ECC Compensation event procedure.

2.15.2 Training: operators, maintenance and engineering

	Activity Description	<i>Project Manager</i>	<i>Contractor</i>	Requirements	Planning	Additional Notes
•	Provision of specific system / component training material (i.e. should the <i>Contractor</i> provide training on the system, the training material is included in the scope of supply) and completion of the Training Change Request.		X	<ul style="list-style-type: none"> Training Change Requests (TCRs) are compiled in accordance with KAA-959. <i>Contractor's</i> training material is provided with the TCR. 	In accordance with Accepted Programme	Notification to be made by official communication. <i>Employer</i> to follow own process for TCRs.
•	Submittal of TCR to TMG	X		<ul style="list-style-type: none"> Operations and maintenance training initial impact assessment performed by the Training Management Group (TMG) 	In accordance with Accepted Programme	
•	Interface with operating and maintenance teams	X		<ul style="list-style-type: none"> The <i>Project Manager</i> arranges the training 	As required	

	Activity Description	Project Manager	Contractor	Requirements	Planning	Additional Notes
•	Training on nonstandard / new components / systems to KOU		X	<ul style="list-style-type: none"> Where training is required for nonstandard components, the <i>Contractor</i> provides a resource (on Site) to perform a once-off specialised training course to the Operations, Maintenance as well as Engineering personnel. The training is performed to a level where at least one <i>Employer's</i> team, consisting of 5 individuals, is capable to adequately maintain and operate the new component / system. Training of maintenance personnel is completed prior to completion of <i>works</i> installation. Training of operations personnel is completed prior to start of implementation. Training of engineering personnel is completed prior to start of implementation. 	6 weeks prior to the start of the outage unless otherwise agreed.	Normally, operator training is performed during the training weeks of each shift and therefore will take at least six weeks to complete (there are six shifts).
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity is complete once the <i>Employer's</i> Training Management Group issued a letter to the <i>Project Manager</i> confirming that training is completed. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Training Change Request (TCR) Training material for nonstandard / new components to KOU

3. Engineering and the *Contractor's* design

The *Contractor* complies with all the requirements of the TRS 240-161645104 rev 1 section 5 in Appendix 9.1. For all designs required by the *works*, the *Contractor* complies with the *Employer's* procedure 331-86, 'Design changes to plant, plant structures or operating parameters'. The *Contractor* also complies with the requirements of RD-0034 and the NNR position paper PP-0012.

3.1 *Employer's* design

The *Employer* will not be performing the design as this is included as part of the *Contractor's* scope for *works*, refer to TRS 240-161645104 rev 1 section 5 in Appendix 9.1 document.

3.2 Nuclear safety

Contractor adherence to appropriate national and international standards in the design, construction, operation, and decommissioning, as part of the *works*, is necessary for the successful implementation of the *Employer's* nuclear safety requirements.

The *Contractor* critically assesses the standards specified, by the *Employer*, to assure that they remain consistent with the latest information arising from operational experience and developments in science and engineering. Where specified standards do not suffice, an appropriate nuclear safety standard is proposed to the *Project Manager*, for acceptance.

3.3 Parts of the works which the *Contractor* is to design

The *Contractor* is responsible for the overall design of the *works* as detailed in the TRS 240-161645104 rev 1 section 5 in Appendix 9.1.

3.4 Procedure for submission and acceptance of *Contractor's* design

The *Employer's* process for designs which the *Contractor* has to comply with is detailed 331-86. The *Contractor* enters this process at step D.

The *Contractor's* design complies with all technical requirements as documented in the *Employer's* TRS 240-161645104 rev 1 section 5 in Appendix 9.1 as well as the requirements stated below;

The *Contractor's* design, as a minimum, addresses Parts A, B, C and D of the *Employer's* internal Design Template Revision 30. To allow a phased approach for the acceptance of the *Contractor's* design, the *Contractor's* design may be submitted in two parts:

3.4.1 Scheme Design document (*Contractor's* Design – 1st Phase)

The *Contractor's* Scheme Design addresses all requirements stated in Part A of the *Employer's* internal Design Template and includes the following additional items:

- Assessment of impact on security
- Assessment of impact on civil structures
- Failure Modes and Effects Analysis
- Environmental Impact Filtering
- Quality Assurance Requirements
- Project Team Concurrence Sheet (Part D attachment of the design template)

The *Contractor's* Scheme Design is sufficiently detailed to addresses the elements identified in the *Employer's* Review Report – KFU-026 Latest rev.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Authorisation of designers		X	<ul style="list-style-type: none"> The designers are authorised in accordance with the <i>Contractor's</i> quality system design procedures. 	In accordance with the Accepted Programme	The <i>Project Manager</i> may request proof of the authorisations which the <i>Contractor</i> then supplies.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Compilation of the Scheme Design and independent review 		X	<ul style="list-style-type: none"> The <i>Contractor</i> compiles the Scheme Design in accordance with his quality process. The <i>Contractor</i> submits the independent review report performed in accordance with the <i>Employer's</i> Detailed Design Review Report. 	In accordance with the Accepted Programme	<p>Any calculations included in the Scheme Design are those essential for the justification of the design.</p> <p>Detailed calculations that will not impact the design concept (i.e. pipe layout drawings and associated support calculations etc. can be provided as part of the Installation Design.)</p>
	<ul style="list-style-type: none"> Notification of recommended plant identifiers with proposed classifications 		X	<ul style="list-style-type: none"> The <i>Contractor's</i> request include, as a minimum, the following information in order for the <i>Employer</i> to verify the trigrammes and classification numbers: The unit number. (i.e. 0/1/2/6 or 9). (If it is 9, then the unit number where the parent trigramme is located is also provided). A detailed part functional description including the recommended bigramme. The location which specifies building and room number. The recommended classification for each trigramme allocation. The plant identifier's child/parent relationships (as per the hardware breakdown structure – to be developed as part of the Installation Design.) 	In accordance with the Accepted Programme	<p>Plant codification (trigramme numbers) and their associated classifications are recommended by the <i>Contractor</i> and accepted by the <i>Employer</i>.</p> <p>There may be iterations on this request i.e. one request for the Scheme Design and a second request when compiling the Installation Design.</p>
	<ul style="list-style-type: none"> <i>Contractor</i> Scheme Design approval and submittal for 1st <i>Employer</i> acceptance review. 		X	<ul style="list-style-type: none"> Any design document submitted for acceptance reviews are approved by the <i>Contractor</i> in accordance with the <i>Contractor's</i> quality system design control procedure. 	In accordance with the Accepted Programme	Submitted to the <i>Project Manager</i> .
	<ul style="list-style-type: none"> 1st Acceptance review from <i>Employer</i> 	X		<ul style="list-style-type: none"> For the Scheme Design, the concurrence and specialist concurrence reviews are performed in parallel with the <i>Employer's</i> review. The <i>Project Manager</i> may arrange a Scheme Design review meeting with the <i>Contractor</i>. The <i>Contractor</i> attends this meeting. 	Within 2 weeks of submittal.	The review meeting aims to ensure that the <i>Employer</i> review comments are well understood by the <i>Contractor</i> .

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Address <i>Employer</i> review comments and submit for 2 nd <i>Employer</i> acceptance review.		X	<ul style="list-style-type: none"> The <i>Contractor</i> addresses all the agreed and accepted review comments of the <i>Employer</i>. 	In accordance with the Accepted Programme	Submitted to the <i>Project Manager</i> .
•	2 nd Acceptance review from <i>Employer</i>	X		<ul style="list-style-type: none"> The <i>Employer</i> may raise additional review comments not identified during the first review. A Scheme Design review meeting may be requested, at the discretion of the <i>Project Manager</i>, depending on the number and nature of comments identified / resolved. 	Within 2 weeks of submittal.	
•	Finalisation of Scheme Design and submittal for <i>Project Manager</i> acceptance.		X	<ul style="list-style-type: none"> <i>Contractor</i> finalises the Scheme Design and submits to <i>Project Manager</i> for acceptance 	In accordance with the Accepted Programme	Submitted to the <i>Project Manager</i> .
•	Final acceptance review and acceptance	X		<ul style="list-style-type: none"> Acceptance of the Scheme Design is subject to all previous review comments of the <i>Employer</i> being adequately addressed. 	Within 1 week of submittal.	
•	Verification of plant identifiers and SAP linking.	X		<ul style="list-style-type: none"> Verification of plant identifiers and SAP linking are performed in terms of <i>Employer's</i> own requirements 	Within 2 weeks of notification	
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity group is complete upon the <i>Employer's</i> acceptance of the Scheme Design. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Scheme Design

3.4.2 Installation Design document (*Contractor's* Design – 2nd Phase)

The *Contractor's* Installation Design addresses the remaining requirements relating to Parts B, C and D of the *Employer's* internal Design Template and ensures that all requirements of the Scheme Design are met. The *Contractor's* Installation Design consists of, but is not necessarily limited to; the following:

- Detailed calculations (including seismic qualification calculations)
- Detailed layout drawings
- Installation specifications
- Design commissioning requirements;
- Configuration management file; and
- Procurement specifications consisting of classifications and the bills of material including the overall hardware breakdown structure (HBS).

The Configuration Management File consists of the *Employer's* DCIF form including all mark-ups of associated documents referenced there-in. The submission of the configuration information is performed in accordance with the table below:

Stage:	Configuration File Updates: DCIF plus:
Installation Design 1 st submission for acceptance	All DDRs and operating procedure mark-ups
Installation Design 2 nd submission for acceptance	As above plus SAR and OTS mark-ups
Installation Design final submission for acceptance	As above plus maintenance procedure mark-ups

The functional description of the modification is sufficiently detailed to describe the overall impact of the modification on the plant i.e. it should not be required to consult logic diagrams etc. to interpret and understand the overall change and how the plant will operate following the change.

The *Employer's* logo is added on all design reports. The *Contractor* may add his or his subcontractor's logo to the documents.

The design demonstrates that all OH&S Act requirements have been met.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Compilation of the Installation Design and independent review 		X	<ul style="list-style-type: none"> The Installation Design includes any detailed design calculations not covered in the Scheme Design. The Documentation Identification Change Form (DCIF) lists all drawings, documents and procedures (operational, maintenance etc) including the Safety Analysis Report (SAR) and Operational Technical Specifications (OTS) affected by the modification. The <i>Contractor's</i> designer discusses the potential OTS and SAR changes with the applicable <i>Employer</i> representative. All document change mark-up requests are to be registered for update (DDR No's, SAR & OTS Change No's) upon submittal of the Installation Design to the <i>Project Manager</i>. The <i>Employer</i> may, as part of its acceptance reviews, identify additional documents and drawings to be added to the DCIF following which the <i>Contractor</i> provides the mark-ups of those additional drawings and documents at the next submission for design acceptance review. 	In accordance with Accepted Programme	<p>The Installation Design includes (but is not limited to) the following:</p> <ul style="list-style-type: none"> Qualification of piping, plant (mechanical, electrical and instrumentation) for normal operating, accident and installation conditions, System flow drawings, General arrangement drawings, Equipment layout drawings, Piping isometric drawings Cable routes and wiring diagrams, Logic diagrams, Component maintenance manuals, Component assembly drawings, Component seismic calculations and

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
				<ul style="list-style-type: none"> The <i>Contractor</i> provides a comprehensive overview of the hardware breakdown structure for the overall modification with reference to associated part numbers and parent/child relationships and (where applicable) associated trigrammes. The lowest level of the hardware breakdown structure is that of the individual component that is commercially available as a spare from the recommended supplier. The <i>Contractor</i> provides a numbering methodology for numbering the components. The component numbering should be traceable to specific part numbers referenced in the Bills of Materials with all associated information required for the spares management. The hardware breakdown structure is included in the same report as the BOM. The BOM list all components identified in the hardware breakdown structure and show whether the component is a recommended or critical spare as well as the procurement lead time of each component. In addition to the <i>Employer's</i> template provided, the BOM also contains a "Receipt Inspection Reference Number" column where the <i>Contractor's</i> receipt inspection report as well as the <i>Employer's</i> surveillance report numbers are recorded during the receipt inspection process and which will be completed and submitted to the <i>Employer</i> as part of the "AS-BUILT" submission of the design. The relevant design report specifies commissioning, testing and in service periodic testing once the modification has been installed. Plant conditions for the tests and associated acceptance criteria are stated in the relevant design report. New performance/in-service tests and changes to existing <i>Employer's</i> performance/in-service test procedures are identified by 		<p>test reports.</p> <ul style="list-style-type: none"> Component supplier recommended spare parts listing. Component sectional drawings with identification. Comprehensive spare parts listing related to the component sectional drawings. Operations manual for the complete <i>works</i> and for individual Equipment, Plant and Material items. Spares lists including part numbers for each component in accordance with the hardware breakdown structure, Plant and Material, manufacturing and installation specifications and drawings. Software (including firmware and configuration) files and applicable revisions.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
				<p>the <i>Employer</i> and listed in the DCIF by the <i>Contractor</i>. The <i>Employer</i> will be responsible for the mark-ups. The <i>Contractor</i> provides any technical inputs as required by the <i>Employer</i>.</p> <ul style="list-style-type: none"> The <i>Contractor</i> submits the independent review report performed in accordance with the <i>Employer's</i> Detailed Design Review Report. 		
•	Contractor Installation Design approval		X	<ul style="list-style-type: none"> Any design reports submitted for acceptance reviews are approved by the <i>Contractor</i> in accordance with the <i>Contractor's</i> quality system design control procedure. 	In accordance with Accepted Programme	
•	Installation Design submittal for 1 st <i>Employer</i> acceptance review		X	<ul style="list-style-type: none"> The <i>Contractor</i> clearly states which design report is submitted for review. 		Submitted to <i>Project Manager</i> .
•	1 st Acceptance review from <i>Employer</i>	X		<ul style="list-style-type: none"> The <i>Project Manager</i> may arrange a design report review meeting with the <i>Contractor</i>. The <i>Contractor's</i> attends this meeting. 	Within 3 weeks of submittal.	The review meeting aims to ensure that the <i>Employer</i> review comments are well understood by the <i>Contractor</i> .
•	Address <i>Employer</i> review comments and submit for 2 nd <i>Employer's</i> acceptance review.		X	<ul style="list-style-type: none"> The <i>Contractor</i> addresses all the agreed and accepted review comments of the <i>Employer</i>. 	In accordance with Accepted Programme	Submitted to <i>Project Manager</i> .
•	2 nd Acceptance review from <i>Employer</i>	X		<ul style="list-style-type: none"> 2nd <i>Employer</i> review comments are limited to clarifications and corrections to 1st review comments. 	Within 2 weeks of submittal.	
•	Finalisation of Installation Design and submittal for <i>Project Manager</i> acceptance.		X	<ul style="list-style-type: none"> Installation Design is finalised by the <i>Contractor</i> and submitted for <i>Project Manager</i> acceptance. 	In accordance with Accepted Programme	Submitted to <i>Project Manager</i> .
•	Final acceptance review and acceptance	X		<ul style="list-style-type: none"> Acceptance of each design report is subject to all previous review comments of the <i>Employer</i> being adequately addressed. 	Within 1 week of submittal.	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity group is complete upon the <i>Project Manager's</i> acceptance of the relevant design reports that comprises the <i>Contractor's</i> design. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Installation Design Design Reports Configuration Updates Trigramme and Classification verification request OTS Update Request (Where applicable) SAR Change Notification Request (Where applicable) Procedure Change Request DDR's

3.4.3 Safety evaluation

Where there is a possible interface with / impact on safety related equipment, the *Contractor's* design complies with the applicable design codes as described in the KOU Safety Analysis Report (ASME, IEEE etc...).

The *Contractor's* design is such that it does not introduce any additional risk to the safety and/or operation of the plant and/or its people and/or the environment.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Authorisation of individuals in accordance with KTA-001.		X	<ul style="list-style-type: none"> All safety screenings, evaluations and justifications are performed by authorised individuals in accordance with KTA-001. 	N/A	
•	Compilation of an Scheme Design document / Installation Design document and independent reviews		X	<ul style="list-style-type: none"> Process in accordance with KAA-709. 	In accordance with Accepted Programme	Although not obligatory, it is encouraged that the compiler of the design may not be the compiler of the Safety Evaluation documentation.
•	Probabilistic Safety Assessments (PSA) evaluation.	X		<ul style="list-style-type: none"> The <i>Employer</i> performs the PSA. The <i>Contractor</i> to supply all relevant input information when requested to furnish information 		

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Incorporate PSA results into safety evaluation and confirm applicability of PSA to detailed design	X		<ul style="list-style-type: none"> The <i>Contractor</i> notifies the <i>Project Manager</i> of any discrepancies in the PSA study. The <i>Contractor</i> corrects any safety concerns highlighted by the Safety Evaluation / PSA in its design. 	In accordance with Accepted Programme	
•	Presentation of safety evaluations, justifications and cases to KORC for approval.	X		<ul style="list-style-type: none"> The <i>Project Manager</i> arranges with KORC for an opportunity to present information at KORC. Both the <i>Project Manager</i> and the <i>Contractor</i> attends the meeting. The <i>Project Manager</i> performs the presentation. 	In accordance with Accepted Programme	Regular meetings are scheduled every Monday but arrangement of special KORC meetings is possible for urgent issues.
•	Approval of safety evaluation documents.	X		<ul style="list-style-type: none"> <i>Project Manager</i> acceptance is subject to the requirements of the safety evaluation process being met. 	In accordance with Accepted Programme	<i>Employer's</i> KORC Chairman approves the documents.
•	Originals in Scheme Design and copies to TD & RM, copy to RRM, copy on LAN.	X		<ul style="list-style-type: none"> The <i>Project Manager</i> submits the approved Safety Evaluation documentation to the <i>Contractor</i>. 	In accordance with Accepted Programme	
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity group is 90% complete upon <i>Employer's</i> acceptance of the safety evaluation and 100% complete upon authorisation of the safety case for implementation by the NNR. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Safety screening document (where applicable), Safety evaluation (where applicable), Safety justification (where applicable) and Safety case for implementation (where applicable). KORC presentation

3.5 Other requirements of the *Contractor's* design

3.5.1 Design services activity matrix

3.5.1.1 Investigation phase

As defined in the TRS 240-161645104 rev 1 section 5 in Appendix 9.1

3.5.1.2 Design phase

3.5.1.2.1 *Employer* licensing support with National Nuclear Regulator (NNR)

The *Contractor* provides support and does all rework necessary on or in connection with the design change packages until the *Employer* has obtained approval from the National Nuclear Regulator (NNR) for the design change.

For clarification, NNR responses are categorised into four categories, namely:

- Subjective: These do not affect or impact on the safety case or the technical intent of the modification. Rework resulting from these requests is not included in the scope of work.
- Objective: These are changes due to a Defect in the safety case or the technical intent of the modification. Rework resulting from these requests is included in the scope of work.
- Configuration Control: Changes requested to any documents or procedures identified by the NNR for update. Rework resulting from these requests is included in the scope of work.
- Conceptual: These comments are applicable to the conceptual intent of the modification which is described in the Technical Requirement Specification (TRS). The *Employer* is responsible for the TRS and any rework required as a result of changes in the conceptual intent is not included in the *Contractor's* scope of work.

3.5.2 Supportability

The *Contractor* confirms that technical support of the installed system is available for the remaining life of the plant from the Completion of the *works*. The *Employer* is immediately informed, in writing, of obsolete components and their equivalent replacements.

3.6 Use of *Contractor's* design

The *Employer* owns the rights and uses all documents and data for the sole purpose of all its needs at KOU.

The *Employer* may submit, without restriction, all documentation to:

- The South African National Nuclear Regulator, or its nominated third party, for information and licensing purposes. The *Contractor* shall be informed in writing if the NNR makes use of a third party for review.
- Others employed or contracted by the *Employer* and who have duly signed a confidentiality and non-disclosure agreement with the *Employer*.

3.7 Design of Equipment

Requirements defined in section 7 TRS 240-161645104 rev 1

3.8 Equipment required to be included in the *works*

Requirements defined in Appendix A of TRS 240-161645104 rev 1

3.9 As-built drawings, operating manuals and maintenance schedules

3.9.1 Documentation to be supplied by the *Contractor*

Operating manuals and maintenance schedules are provided as part of the Configuration Management File of the Installation Design. The information is customised to the KOU. The *Contractor* provides any additional support information required by the *Employer's* Maintenance Basis and In Service Inspection and Testing groups, to assess related interventions during the life of the Plant.

As-built drawings are provided as part of the *Contractor's* as-built design submission as defined below:

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Compilation and submission of End of Implementation Report (Per Unit)		X	<ul style="list-style-type: none"> In accordance with <i>Contractor's</i> quality management system. The End of Implementation Report provides all the completed installation records and certification per KOU unit as required by the Work Plan and testing procedures and consists (as a minimum, but necessary limited to) of: <ul style="list-style-type: none"> all completed and signed off Work Plan documentation and test procedures, all associated NDE reports and (where required) staff qualification records, signed certificates (COCs, CSCs, SCCs), non-conformance reports referenced receipt inspection as well as <i>Employer</i> surveillance report numbers with associated material and component quality assurance data packages), signed off DRs as well as signed off Design Field Changes (including all associated configuration control update requests) Any other implementation records required by the specified Quality Assurance requirements i.e.: Updated system software and configuration files etc.) The <i>Contractor</i> provides objective evidence that an internal quality assurance review was performed on the completed package prior to submission to the <i>Employer</i>. 	Within 2 weeks from PTW clearance.	<p>Equipment and Component QADP typically includes the following documentation:</p> <ul style="list-style-type: none"> Manufacture Quality Plan Material Certificates. Non-Destructive Examination Records (if applicable). Test Records. Weld Specifications (if applicable). Non-Conformances. Authorised component drawings and specifications. Seismic report (if applicable). Conformance Certificates. Certificates of Compliance Disconnection / Re-connection sheets. Construction Status Certificates. Clearance Certificates.
•	Resolution of outstanding items		X	<ul style="list-style-type: none"> It is required that all outstanding items are resolved as to not prevent the <i>Employer's</i> use of the works 	As required	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Plant take-over		X	<ul style="list-style-type: none"> The plant will be taken over per unit only when the <i>Contractor</i> has completed all his obligations in terms of the contract. Take-over is co-ordinated by the <i>Contractor</i>. 	In accordance with Accepted Programme	
•	Signing of the Hand Over Certificates and Finalisation of overall modification QADPs	X			As required	
•	Conclusion	X	X	<ul style="list-style-type: none"> Completion is upon authorisation of the project hand-over certificate - KFU-PE-008 in accordance with KAA-501. 	Within 2 weeks from PTW clearance.	Deliverable: <ul style="list-style-type: none"> Modification QADPs Hand-over certificate - KFU-PE-008 duly signed by the <i>Employer</i>.

It is the responsibility of the *Contractor* to plan his supply of documentation according to requirements and to indicate dates on the Accepted Programme.

3.9.2 Maintenance manuals

Maintenance manuals must form part of the Configuration Management File submitted as part of the Installation Design. As-built changes affecting the maintenance manuals are submitted as part of the as-built design submission.

3.9.2.1 Number of manuals

Full and comprehensive maintenance manuals are supplied by the *Contractor*. Two (2) complete printed copies of all documentation are supplied. One copy is marked 'Master Copy' and one 'Reference Copy'. The aforementioned is also handed over in a searchable electronic format.

3.9.2.2 Modifications (during the period to the Defects Date)

The *Contractor* provides any additional and amended pages, sufficient for all copies of manuals, to ensure that they are complete with details of final settings and modifications made up to the Defects Date. Such information is forwarded to the *Project Manager* progressively and promptly following receipt of agreement to equipment or system design modifications. The materials used for updated pages are the same as that used for the original documentation.

3.9.3 "AS BUILT marked up" plant hand over documentation

Submission of the "As Built" documentation, which is subject to acceptance by the *Project Manager*, is a pre-requisite for Completion.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Compilation and submission of As-Built design documentation and drawings. 		X	<ul style="list-style-type: none"> The process for maintaining the design status will be as follows: <ul style="list-style-type: none"> After 1st Unit implementation, the <i>Contractor's</i> design is updated to take into account the first unit design changes – approved by means of DRs and DFCs – reference is made in the design with regards to which DRs and DFCs are incorporated into the design revision. Where required, the Work Plan and test procedures associated with the 2nd unit implementation are updated as well. After 2nd Unit implementation, the <i>Contractor</i> provides a final design revision update following implementation and testing. 	Within 2 weeks from PTW clearance.	Acceptance process for updated design, Work Plan and test procedures may be simplified for these submissions as it is assumed that all changes were already approved by means of the DR and DFC processes.

3.9.4 Final documentation

Submission of the "End of Implementation Report" documentation, which is subject to acceptance by the *Project Manager*, is a pre-requisite for Completion.

3.9.5 Document control

The *Contractor* implements a comprehensive document management system for control of all documents including but not limited to drawings, procedures and manuals. The document management system provides information on the document revision status and of document status in relation to the 'as built' and 'as designed' status on each plant group or sub-group. The system is part of the Quality Management programme identified in the Quality Management Manual, supplied by the *Contractor*.

3.9.6 Configuration control

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Provision of Completed Spares Assessment Input Sheet and supporting data		X	<ul style="list-style-type: none"> In compliance with KAA 614. The <i>Contractor</i> provides the required input data for every new component that is installed on the plant. Should the <i>Contractor</i> need support to clarify whether equipment is standard or not, he clarifies with the <i>Project Manager</i>. 	In accordance with Accepted Programme	<p>All input data to be provided by official communication.</p> <p>The <i>Employer</i> will complete the required spares registration process.</p>
•	Provision of Maintenance Basis programme requirements and supporting data.		X	<ul style="list-style-type: none"> In accordance with KAA 614 and KSU-006. 	In accordance with Accepted Programme	<p>All input data to be provided by official communication.</p> <p>The <i>Contractor</i> provides a detailed description of the required <i>Employer</i> tasks including their frequency , detailed description and objective of each task required to maintain the installed Plant and Material. This information is provided after the <i>Contractor's</i> design has been accepted and prior to installation.</p> <p>The <i>Employer</i> will complete the required maintenance bases updates.</p>
•	Identification, compilation and review of document change requests and submission to the <i>Employer</i> .		X	<ul style="list-style-type: none"> DDR, SAR and OTS Change notifications and proposed procedure (operations and maintenance) changes. 	In accordance with Accepted Programme	Submitted to the <i>Project Manager</i> .
•	Processing of document changes as per relevant process procedure.	X		<ul style="list-style-type: none"> As referenced in KAA-501. 	As required	
•	Process custodian interface and support	X		<ul style="list-style-type: none"> The <i>Contractor</i> provides all required information and supports the <i>Supervisor</i> with the interface. 	As required	
•	Presentation of SAR and OTS changes to relevant committees.	X	3.9.	<ul style="list-style-type: none"> <i>Contractor</i> to support. 	As required	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Document release for UPDATING (DDT)		X	<ul style="list-style-type: none"> For discrepancies: "As-built" changes are only submitted for update upon <i>Employer</i> acceptance of each Discrepancy Report. 	To - 3 months	This is the formal action given to the <i>Employer</i> to commence with updating of the Master documents.
•	Updating of Masters	X			3 months – pre-outage submittals 1 month - for as-builts	
•	Verification of Master Updates (Confirmed correct)		X	<ul style="list-style-type: none"> Verification is limited to the scope of the change as a result of the modification. Where discrepancies impact on DDR's and the DDR is to be changed, red-line mark-up will be provided. The updated DCIF forms part of the Design update (following 1st unit implementation) or Design Field Change (2nd unit implementation). 	As required	
•	Approval for RELEASE of documents		X	<ul style="list-style-type: none"> Operational documentation is released prior to PTW suspension for testing (i.e. prior to the plant being made live). Non-operational documentation, is released prior to Permit to Work clearance. 	As required	This is the formal request to release the updated documents to the various documentation centres and operations control room.
•	Distribution of documents to documentation centres	X			As required	For immediate availability, <i>Contractor</i> to co-ordinate and arrange. For within three days - <i>Employer</i> can provide the function.
•	Conclusion			<ul style="list-style-type: none"> This activity group is complete upon release of all affected documents to the Station (including "As-Builts". 	As per Accepted Programme	Deliverables: <ul style="list-style-type: none"> DDRs SAR Change Notification OTS Update Request Procedure Change Requests "As Built" drawings Updated DCIF form

4. Procurement

4.1. BBBEE and Preferential Procurement Policy Framework Act (PPPFA)

4.1.1 Minimum requirements

The *Contractor* must be in possession of valid BBBEE status level of contribution. Suppliers will be further evaluated in terms of their price and B-BBEE status level of contribution using the 80/20 preference point system for procurement greater than R1 million:

- 80% Price; and
- 20% B-BBEE Status Level of Contribution.

An approach involving cross functional teams will be taken during the evaluation of tenders to ensure that the best interests of the *Employer* are assured.

4.2 Tenderer's Supplier Development, Localisation and Industrialisation (SDL&I) Undertaking

4.2.1 Skills Development

SDL&I role is to support government's objectives for socio-economic contribution, by ensuring alignment to national transformation imperatives that will unlock growth, drive Industrialisation and create employment and skills development. This will be achieved through a coordinated and strategic focus to support transformation, localisation and Industrialisation.

The SDL&I input will be regarding the application of Regulation 9 (where it is feasible to sub-contract to either an EME or QSE) and Regulation 4 (where the B-BBEE Level Contribution of sub-contractor must be minimum Level 4). This will form part of the mandatory prequalification criteria.

Skills development forms part of the contract's deliverables under the design requirement for this scope. The skills development requirement will be Experiential training of I&C technicians is indicated in the SDL&I Undertaking

Job retention and job creation will be requested from the contractors in the enquiry which will then form part of the contractual obligations.

4.2.2 Local Content and Production, Designated sectors (PPPFA 2017, regulation 8)

The Department of Trade and Industry (DTI) has designated certain sectors/products for local production and content. Where applicable stipulate which materials are identified as designated materials and what thresholds the tenderers must meet in order to be evaluated further.

The following designated sectors apply to this tender:

- Electrical and telecom cables - 90%

Tenderers need to complete and submit Annexure F1-F4 hereto as evidence of compliance with this requirement. The DTI has appointed SABS as the official verification agency for local content in terms of designated products.

A tender that fails to meet the minimum stipulated threshold for local production and content will be disqualified.

4.3 Subcontracting

4.3.1 Sub-contracting as a condition of tender (PPPFA 2017, Regulation 9)

As per the PPPFA regulations, if feasible to subcontract for a contract above R30 million, an organ of state shall apply subcontracting to advance designated groups.

The condition of contract is that the contractor must subcontract a minimum of 30% of the value of the contract to:

- (a) an EME or QSE;
- (b) an EME or QSE which is at least 51% owned by black people;
- (c) an EME or QSE which is at least 51% owned by black people who are youth;
- (d) an EME or QSE which is at least 51% owned by black people who are women;
- (e) an EME or QSE which is at least 51% owned by black people with disabilities;
- (f) an EME or QSE which is 51% owned by black people living in rural or underdeveloped areas or townships;
- (g) a cooperative which is at least 51% owned by black people;
- (h) an EME or QSE which is at least 51% owned by black people who are military veterans; or
- (i) more than one of the categories referred to in paragraphs (a) to (h).

4.3.2 Preferred subcontractors

Preference is given to South African companies as possible subcontractors and where possible, local resources are utilised. Where it is feasible to sub-contract to either an EME or QSE) and Regulation 4 (where the B-BBEE Level Contribution of sub-contractor must be minimum Level 4) and this will form part of the mandatory prequalification criteria.

The value attributed to such enterprises is monitored by the *Contractor* and submitted to the *Project Manager* by means of a 3-monthly statement of expenditure.

Preferred subcontractors for the externally owned sites are to be confirmed and coordinated by the *Contractor*.

4.3.3 Subcontract documentation, and assessment of subcontract tenders

All subcontractors are contracted on a back-to-back basis under appropriate NEC conditions of contract and are subject to acceptance by the *Project Manager*. Where NEC conditions of contract are not utilised, the proposed conditions of contract are submitted to the *Project Manager* for acceptance.

In terms of the Construction Regulations, the *Contractor* only appoints a subcontractor when the *Contractor* is satisfied that such a subcontractor has the necessary competencies and resources to perform the work falling within the scope of the subcontract safely.

The *Contractor* is required to:

- Stop any subcontractor from executing construction work which is not in accordance with the *Contractor's* or subcontractor's health and safety plan for the Site or which poses a threat to the health and safety of persons;
- Ensure that every subcontractor:
 - is registered and in good standing with the compensation fund or with a licensed compensation insurer prior to work commencing on the Site; and
 - have made provision for the cost of health and safety measures during the construction process.

4.3.4 Limitations on subcontracting

Subcontractors reporting relationships are such that quality outputs and independence is assured eg. a radiography subcontractor cannot report to the welding subcontractor. These relationships are such that the *Contractor* has full control of all subcontractor outputs. Subcontractors contracting to subcontractors are to be avoided as far as possible. Exceptions are only allowed with the explicit acceptance of the *Project Manager*.

4.3.5 Nuclear safety

The *Contractor* establishes and maintains vigorous oversight over its subcontractors to assure adherence to this Works Information and its requirements and thereby achieve nuclear safety. The *Contractor* complies with RD-0034 in the selection, qualification and management of his subcontractors.

4.4 Plant and Materials

4.4.1 Quality

Quality requirements relating to Plant and Materials will be developed and identified, by the *Contractor*, and accepted, by the *Project Manager*, as part of the Procurement Specification of the Installation Design – which will include the Bill of Material.

4.4.2 Counterfeiting

The *Contractor* warrants that all items provided to Provide the Works is genuine, new and unused. The *Contractor* further warrants that all items used to Provide the Works, include all genuine, original or are otherwise suitable for the intended purpose.

Types of material, parts, and components, known to the *Employer*, to have been misrepresented internationally include (but are not limited to):

- fasteners;
- hoisting, rigging, and lifting equipment;
- cranes;
- hoists;
- valves;
- pipe and fittings;
- electrical equipment and devices;
- plate, bar, shapes, channel members, and other heat treated materials and structural items;
- welding rod and electrodes; and
- computer memory modules.

The *Contractor's* warranty extends to labels and/or trademarks or logos affixed, or designed to be affixed, to items supplied or delivered to Provide the Works.

Falsification of information or documentation may constitute criminal conduct, the *Employer* may reject and retain such information or items, identify and segregate such information or activities, at no additional cost to the *Employer*.

The *Employer* will also report such information or activities to relevant South African governmental officials.

4.4.3 Plant & Materials provided “free issue” by the *Employer*

4.4.4 *Contractor’s* procurement of Plant and Materials

The *Employer* requires warranties from suppliers to be in favour of the *Employer* and not just to the *Contractor*. Where provided warranties from suppliers exceed the Defects Date, those warranties are passed on to the *Employer*. All *Contractor’s* supplier data which the *Employer* may need after Completion of the whole of the *works* is supplied to the *Employer* at delivery.

4.4.4.1 Procurement: Equipment, Plant and Materials and consumables

	Activity description	<i>Project Manager</i>	<i>Contractor</i>	Requirements	Planning	Additional notes
•	Compilation and submittal of manufacturing quality plans to the <i>Project Manager</i> for indication of hold and witness points and approval.		X	<ul style="list-style-type: none"> Manufacturing quality plans are in accordance with the <i>Employer</i> Quality Requirements. 	In accordance with Accepted Programme	Not applicable to third party "off the shelf" Equipment, Plant and Materials.
•	Manufacturing Quality plans to be submitted to the <i>Employer’s</i> PQE and QA/QC sections for indication of <i>Employer’s</i> hold and witness points.	X		<ul style="list-style-type: none"> Indication of <i>Employer’s</i> requisite “hold” and “witness” points and acceptance. 	Within 4 weeks of receipt of notification.	
•	Manufacturing and procurement of equipment, Plant and Materials.		X	<ul style="list-style-type: none"> In accordance with the requirements of the applicable codes, standards and quality requirements of the accepted design. For long lead items, which require to be purchased prior to acceptance of the Installation Design, the <i>Contractor</i> obtains <i>Employer’s</i> acceptance prior to placement of such orders and include such items in the Programme. 	In accordance with Accepted Programme	
•	Notification of <i>Employer’s</i> hold and witness points.		X	<ul style="list-style-type: none"> Notification to <i>Project Manager</i> 	Local – 1 week Foreign – 2 weeks	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Equipment, Plant and Materials packaging.		X	<ul style="list-style-type: none"> In accordance with the requirements of the applicable codes, standards and quality requirements of the accepted design. An itemised detailed packing list must be compiled for each shipment and sent to the <i>Employer</i> electronically in advance. The packing list must be made up using the following columns: <ul style="list-style-type: none"> Tracking devices & numbers for GPS Box number Item number Quantity Equipment Description SAP 45 Order No Storage Level 	In accordance with Accepted Programme	
•	Preparation of equipment, Plant and Materials for shipment (Packaging/Crating).		X	<ul style="list-style-type: none"> Any items brought onto Site must be packaged in such a manner as to prevent damage during transportation and degradation due to environmental effects. Each crate must be identified with a label stating: <ul style="list-style-type: none"> Project Title Koeberg Operating Unit Attention: The <i>Supervisor</i> [specify name and tel. number] <i>Employers</i> modification number SAP 45 Order No Storage requirements Inside the crate each box must be identified in accordance with the packing list. Items in the box to have all relevant documentation and certificates. 	In accordance with Accepted Programme	
•	Notification of shipment to be performed.		X	<ul style="list-style-type: none"> The <i>Contractor</i> formally sends the following information to the <i>Project Manager</i>: <ul style="list-style-type: none"> Shipping Agent Name Description of items to be shipped Value of shipment Weight of shipment Port of shipment The vessel/flight name The departure date The arrival date 	In accordance with Accepted Programme	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Transportation to storage facility at KOU and subsequent transportation to the point of implementation (including all related rigging and lifting equipment and activities).		X	<ul style="list-style-type: none"> Incoterms: Delivered Duties Paid (where applicable). 	In accordance with Accepted Programme	Allow 2 weeks for customs clearance in South Africa (where applicable).
•	Provision of equipment, Plant and Materials QADP's for customs clearance and receipt inspections.		X	<ul style="list-style-type: none"> The <i>Contractor</i> provides with each shipment a summary sheet which contains: <ul style="list-style-type: none"> the bill of material for the shipment, a description of the equipment and the total price for each item on the bill. The summary sheet also reflects the contract reference number and the name of the <i>Project Manager</i>. 	In accordance with Accepted Programme	Individual items are marked in accordance with the Contract and Works Information.
•	Unpacking on Site		X	<ul style="list-style-type: none"> The <i>Contractor</i> coordinates this activity. Crate opening to be witnessed by the <i>Supervisor</i> 	In accordance with Accepted Programme	
•	Verification of equipment, Plant and Materials to specification and preparation for marking by the <i>Supervisor</i> .		X	<ul style="list-style-type: none"> Upon delivery, the <i>Contractor</i> prepares such Plant, Materials and Equipment that are identified for payment in the <i>activity schedule</i>, for the <i>Supervisor</i> to mark. As part of preparation for marking (where applicable and as directed by the <i>Project Manager</i>) the <i>Contractor</i> shows title of such Plant, Materials and equipment to the <i>Supervisor</i>. Demonstration by the <i>Contractor</i> of such title is a prerequisite to marking and payment. Preparation for marking includes: <ul style="list-style-type: none"> Marking for the attention of the <i>Supervisor</i> Item Number – corresponding to that on the packing list Bill of Material number The contract number and title SAP 45 Order number Level of storage requirements Shelf life 	Notification 4 weeks prior to delivery to Site	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Receipt inspection / acceptance of equipment, Plant and Materials.	X		<ul style="list-style-type: none"> Surveillance report supplied by <i>Employer</i> PQA (Project Quality Assurance). The <i>Contractor</i> provides the <i>Employer's</i> PQE staff with the bill of material reference number(s) of the equipment, Plant and Materials inspected – these are to be included on the surveillance report. The <i>Contractor</i> ensures that the applicable surveillance report number is referenced in the "As-Built" BOM for traceability reasons. The surveillance report numbers are used as index for all QADPs submitted with equipment, Plant and Materials and are transmitted to the <i>Project Manager</i> as part of the End of Implementation Reports. 	1 day duration	The <i>Supervisor</i> marks the equipment, Plant and Materials after preparation for marking by the <i>Contractor</i> .
•	Procurement of all consumables <u>excluding</u> welding rods, filler wire and welding gas.		X	<ul style="list-style-type: none"> All consumables such as grinding discs, marking pens, dye penetrant, developer etc. used directly for the <i>works</i> are CRACK compliant in accordance with DSG-317-094 	In accordance with Accepted Programme	
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity group is complete upon issuing of the "Surveillance Report" by the <i>Employer</i>. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Manufacturing Quality Plans Packing Lists All equipment, Plant and Materials and consumables with applicable quality assurance data packages and associated surveillance reports.

4.4.4.2 Procurement: Storage of equipment, Plant and Materials

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Provision of plans for laydown areas and conservation requirements for storage.		X		Notification 6 months prior to delivery to Site	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Arrange storage space and notify <i>Contractor</i> of storage available.	X		<ul style="list-style-type: none"> <i>Supervisor</i> arranges. 	Within 6 weeks of receipt of notification	
•	Notify <i>Project Manager</i> if storage space not suitable.		X		Within 2 weeks from <i>Employer's</i> response	To allow sufficient time for the <i>Employer</i> to arrange alternative facility.
•	Provision of suitable Storage Area	X			In accordance with Accepted Programme	
•	Moving of equipment, Plant and Materials and related support services (i.e. rigging) to and from receipt inspection area, storage facility, laydown areas and Site.		X		In accordance with Accepted Programme	
•	Tracking and control of equipment, Plant and Materials.		X		In accordance with Accepted Programme	
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity group is complete upon agreement of a suitable storage area. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Laydown plans Allocated storage areas

4.4.5 Spares and consumables

4.4.5.1 Spares

The *Contractor* supplies any spares which may be required for and during commissioning of the *works*. These spares, if unused, are handed over to the *Employer* at Completion.

The *Contractor* provides a recommended list of spares with each unit priced and the relevant support information as required by KAA-614 Revision 7, for at least twenty years of operation.

For the recommended list of spares, the *Contractor* provides the basis for spares inventory with specific reference to critical spares.

When applicable, the *Contractor* delivers spares to the Site stores and in liaison with the *Project Manager* and supplies the data necessary for booking spares into stores.

4.4.5.2 Consumables

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Welding Consumables Verification and Reservation		X	<ul style="list-style-type: none"> The <i>Contractor</i> specify the requirements in terms of welding consumables, limited to: welding rods, filler wire and gas, and provide reservation request to the <i>Project Manager</i>. 	To-12 wks	To: implementation starting date
•	Welding consumables	X		<ul style="list-style-type: none"> Welding consumables are provided by the <i>Employer</i>. 	In accordance with Accepted Programme	
•	Consumables handling and control		X	<ul style="list-style-type: none"> Hazardous substances and materials are handled in accordance with the <i>Employer's</i> relevant process procedure and are ensured by the <i>Contractor's</i> Responsible Person. 	As required	

4.5 Tests and inspections before delivery

Specific hold and witness points will be assigned by the *Employer* as part of its acceptance review of the manufacturing and testing quality control plans prior to start of any tests and inspections.
Anything required by the TRS 240-161645104 rev 1 section 7.4 in Appendix 9.1

4.6 Marking Plant and Materials outside the Working Areas

Not applicable

4.7 Contractor's Equipment (including temporary works).

Anything required by the TRS 240-161645104 rev 1 section 7.1 and section 1.5 Appendix A in Appendix 9.1 of this contract document, supplements the items listed below.

- Equipment shall be qualified in accordance with IEEE 323 [8], IEEE 344 [9] and KBA1215H03102 [38].
- In any case where the OEM does not supply the replacement feedthroughs, the feedthroughs shall comply with IEEE 317 [7].
- The Equipment Qualification File Template, 331-496 [22] shall be completed, including Qualified Life, and any required inspections and maintenance to maintain such Qualified Life.

5. Construction

The following sections provide additional requirements and constraints relating to construction.

5.4 Notification of construction work

The Construction Regulations require that the *Contractor*, as the main contractor, inform the provincial director of the Department of Labour before carrying out any work on the Site where the work:

- Involves the demolition of a structure exceeding a height of three meters, the use of explosives or the dismantling of fixed plant at a height greater than three meters.

- Exceeds 30 days or will involve more than 300 person days of construction work and includes excavation work deeper than one meter; or working at a height greater than three meters above ground or a landing.

5.5 Work plan and test procedures

All construction activities will be governed by means of an accepted Work Plan in accordance with the requirements stated below.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Verification of all drawings and plant layout 		X	<ul style="list-style-type: none"> Applicable to accessible plant items, components and systems only. The <i>Contractor</i> performs walkdowns of all areas to identify all the risks. Photos are to be taken of the work areas and areas where the <i>Contractor</i> will be tying into existing plant. The inclusion of these photos into the Work Plan and/or SHE Risk Assessment is strongly recommended. 	In accordance with Accepted Programme	For instance the <i>Employer</i> requires a photo when drilling a hole on both sides of the wall to ensure that nothing on the other side is damaged.
	<ul style="list-style-type: none"> Raise SAP Requests for Notifications, Orders and Operations to be included in <i>Employer's</i> SAP planning system. 		X	<ul style="list-style-type: none"> SAP request notifications, orders and operations are raised in compliance with KGA-020. The SAP request forms are completed by a person with detailed knowledge of exactly what work is to be completed for the specific request – reference to QCPs will not suffice as the <i>Employer's</i> work controllers must understand the scope and nature of work to be performed. Where limited conditions of operation (LCOs) are entered into, these must be clearly stated on the SAP request. 	To-8 months	In order to integrate the <i>Contractor's</i> activities with the <i>Employer's</i> plans, it is required that SAP notifications, orders and operations be raised on the <i>Employer's</i> SAP system.
	<ul style="list-style-type: none"> Raise SAP Notifications, Orders and Operations 	X		<ul style="list-style-type: none"> In accordance with <i>Contractor's</i> SAP Requests. The <i>Contractor</i> provides the required updates and the <i>Employer</i> maintains and updates the SAP orders, notifications and operations. 	To-7 months	The SAP orders needs to be raised early enough in order to include the numbers in the Work Plan.
	<ul style="list-style-type: none"> Compilation, independent review and approval of the Work Plan together with <i>Contractor's</i> and Subcontractor's approved quality control plans (QCPs). 		X	<ul style="list-style-type: none"> The Work Plan addresses all requirements stated in the <i>Employer's</i> Work Plan template – KFA-002. The Work Plan is sufficiently detailed and clearly shows all the work required to Provide the Works. Due to the nature of this specific project, the <i>Contractor</i> includes in its Work Plan a unit-specific: <ul style="list-style-type: none"> Rigging Plan; Scaffolding Plan The <i>Contractor</i> completes the 	In accordance with Accepted Programme	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
				<p><i>Employer's</i> Work Plan template (KFA-002) and provides reference to the <i>Contractor's</i> and subcontractor's QCPs and installation plans.</p> <ul style="list-style-type: none"> • All static testing - testing that does not require energisation of the system or components i.e. liquid penetrant, radiography and wire-to-wire testing – is incorporated in the Work Plan. • The Work Plan is supplied with a detailed schedule to indicate main activities (in accordance with the Accepted Programme) with sufficient detail for integration into the <i>Employer's</i> outage plan. The detail required for integration within the <i>Employer's</i> outage plan are: <ul style="list-style-type: none"> • Plant state requirements and (any) system dependencies • Predecessors and successors • Physical duration of the main activity • Working times (calendar) and associated resources. • Risk and (where applicable) ALARA assessments, as required by the Work Plan is performed by authorised <i>Contractor</i> personnel only. • When working in relaying, switchboards, KRG, KIT the <i>Contractor</i> analyse the risk of tripping the whole board, as well as the cell above, below and on the sides of the areas where work is performed. • All SAP orders raised on the <i>Employer's</i> database for installation of the modification are included in the Work Plan. • All equipment, Plant and Materials listed for installation has a space for documenting the <i>Employer's</i> surveillance report numbers and/or the <i>Contractor's</i> receipt inspection number. This will allow traceability of all Plant and Materials installed with its associated QADPs. • Intrusive work is classified and controlled in compliance with the <i>Employer's</i> Foreign Material Exclusion Procedure KAA-069. • The <i>Contractor</i> provides a record of the independent review performed. It is an <i>Employer's</i> requirement that the Work Plan be reviewed by 		

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
				the <i>Contractor's</i> engineering representative (the designer or one of the design reviewers), involved in the compilation, review and/or approval of the Installation Design; to confirm compliance with the accepted Installation Design.		
	<ul style="list-style-type: none"> Compilation, independent review and approval of test procedure(s) with <i>Contractor</i> and subcontractor's accepted procedures. 		X	<ul style="list-style-type: none"> The test procedure(s) addresses all requirements stated in the <i>Employer's</i> test procedure template – KFA-006 (.). The <i>Contractor</i> completes the <i>Employer's</i> template (KFA-006) and provides reference to the <i>Contractor's</i> and subcontractor's testing and commissioning procedures. Testing and commissioning will verify component functional testing (e.g. motor directional tests, logic function tests, etc.) as well as overall system integrated commissioning test that will verify that: <ul style="list-style-type: none"> the installation meets the functional and performance requirements and environmental specification of the accepted design; the installation functions correctly with all interfacing plant systems. The test procedure(s) is/are sufficiently detailed and clearly shows all the work required to Provide the Works. Each test procedure is supplied with a detailed schedule to indicate main activities (in accordance with the Accepted Programme) with sufficient detail for integration into the <i>Employer's</i> outage plan. The detail required for integration within the <i>Employer's</i> outage plan are: <ul style="list-style-type: none"> Plant state requirements and (any) system dependencies Predecessors and successors Physical duration of the main activity Working times (calendar) and associated resources. All SAP orders raised for testing of the modification are referenced in the test procedure. The <i>Contractor</i> provides a record of the independent 	In accordance with Accepted Programme	It is permitted that accepted <i>Contractor's</i> and subcontractor's procedures are attached/referenced in the test procedure(s).

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
				review performed. It is an <i>Employer's</i> requirement that the test procedures be reviewed by a <i>Contractor's</i> engineering representative (the designer or one of the design reviewers), involved in the compilation, review and/or approval of the Installation Design; to confirm compliance with the accepted Installation Design.		
•	Submit the Work Plan and test procedures for <i>Employer</i> 1 st acceptance review.		X	<ul style="list-style-type: none"> All QCPs, installation plans and test procedures are to be submitted – including subcontractor documents. The <i>Project Manager</i> will not accept the Work Plan and test procedures for <i>Employer's</i> review without all the supporting documentation being approved and available and submitted together. 	In accordance with Accepted Programme	Submitted to <i>Project Manager</i> .
•	1 st Acceptance review from <i>Employer</i>	X		<ul style="list-style-type: none"> The <i>Contractor</i> attends a review meeting (where applicable) to discuss <i>Employer</i> review comments. 	Within 3 weeks of submittal.	This is to ensure that the <i>Employer</i> review comments are well understood by the <i>Contractor</i> .
•	Initiate KAM-038 impact assessment review.	X		<ul style="list-style-type: none"> Internal activity 	Internal activity	
•	Address <i>Employer's</i> review comments		X	<ul style="list-style-type: none"> The <i>Contractor</i> addresses all the agreed and accepted review comments of the <i>Employer</i>. 	In accordance with Accepted Programme	
•	2 nd Acceptance review submittal for review		X		In accordance with Accepted Programme	Submitted to <i>Project Manager</i> .
•	2 nd Acceptance review from <i>Employer</i>	X		<ul style="list-style-type: none"> The <i>Employer</i> may raise additional review comments not identified during the first review. A review meeting may be requested, at the discretion of the <i>Project Manager</i>, depending on the number and nature of comments identified / resolved. 	Within 2 weeks of submittal.	
•	Address <i>Employer's</i> comments and submit for final acceptance.		X		In accordance with Accepted Programme	Submitted to <i>Project Manager</i> .
•	<i>Employer</i> acceptance of Work Plan and test procedures.	X		<ul style="list-style-type: none"> Acceptance is subject to all the <i>Employer's</i> comments being adequately addressed. 	Within 1 week of submittal.	Cover sheet needs modification to allow for signatures.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity group is complete upon the <i>Employer's</i> acceptance of the installation plan and test procedure(s). 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Work Plan (reviewed and approved with signatures) ALARA assessment (where applicable) Risk Assessment Unit specific Rigging Plans Unit specific Scaffolding Plans Isolation Plan SAP notifications, orders Implementation and Testing Schedules (including pre-outage work – where applicable) Test procedure(s).

5.6 Implementation approval

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Verification and completion of "Design Change Package Implementation Approval" form	X		<ul style="list-style-type: none"> In accordance with KFA-035. 	In accordance with Accepted Programme	

•	Preparation of KORC/KOSC presentation for implementation approval.		X	<ul style="list-style-type: none"> The KORC presentation covers the Safety Case and implementation approval. The <i>Contractor</i> compiles a KOSC presentation that details the Work Plan and includes all risks identified for the works and associated preventive/contingent actions are included for information as part of this presentation. The use of pictures to demonstrate that plant walk-downs were performed is compulsory. This will also aid the <i>Employer's</i> KOSC members to fully understand the <i>works</i> to be performed. 		
•	Presentation to <i>Employer's</i> approval authorities (KORC/KOSC)		X	<ul style="list-style-type: none"> The <i>Project Manager</i> arranges with KORC/KOSC secretaries the, opportunity to present information. The <i>Employer</i> performs the presentation The <i>Contractor</i> supports the <i>Employer</i> in the presentation. 	In accordance with Accepted Programme	Regular meetings are scheduled every Monday but arrangement of special KORC meetings is possible for urgent issues.
•	Liaison with NNR		X	<ul style="list-style-type: none"> The <i>Contractor</i> responds to one round of questions raised by the National Nuclear Regulator (NNR). The <i>Contractor</i> supports the <i>Employer</i> in responding to questions. Clarifications regarding the 1st response are not considered as additional questions, but part of the 1st round of questions. The <i>Contractor</i> does not communicate directly to the NNR unless agreed, or in liaison, with the <i>Project Manager</i>. 	In accordance with Accepted Programme	The <i>Employer</i> interfaces with the NNR. <i>Contractor</i> addresses questions.
•	NNR approval		X	<ul style="list-style-type: none"> <i>Contractor</i> provides support. 	16 weeks duration	
•	Conclusion			<ul style="list-style-type: none"> This activity is complete upon approval for installation from the NNR. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> A duly signed "Design Change Package Implementation Approval" form - KFA-035 KORC/KOSC presentation NNR letter of approval for installation.

5.7 Temporary works, Site services & construction constraints

5.7.1 *Employer's* Site entry and security control, permits, and Site regulations

Prior to access to Site, the *Contractor* passes through various security check points, viz. entrance at the R27 access gate, entrance at the Duynefontein entrance, Access Control Point 1 (ACP-1) as well as Access Control Point 2 (ACP-2) where security checks are performed.

All temporary worker/visitors permits are issued at ACP-1.

5.7.2 Restrictions to access on Site, roads, walkways and barricades

All Equipment and tools are subject to a security screening before they are allowed on the Site. All Equipment and tools must be listed and specified before they are brought on Site. This list will serve as evidence for removal permits upon Completion of the *works*. Vehicles are only allowed on Site if justification is provided to the *Project Manager* that such a vehicle is essential to Provide the Works.

5.7.3 Health and safety facilities on Site

The *Employer* maintains a first aid and clinic facility which is available for treating minor medical problems. Contractors are permitted to make use of this facility at their own expense provided that they appear during prescribed consulting hours and are duly authorised by the *Contractor* supervisor. Emergency treatment is provided as needed. Casualty facilities are available at hospitals within a 25km radius.

5.7.4 Site records

The *Contractor* maintains and submits current records of activities, including the work of Subcontractors.

These *Contractor's* records include:

- Identification of *Contractor* / Subcontractor work and the area of the Site (Work performed to date giving the location, description and by whom, and reference to the Accepted Programme);
- Equipment with hours worked, idle or down for repair;
- Test results and references to specification requirements. List deficiencies identified, together with the corrective action;
- Plant and Material received with statement as to its acceptability and storage;
- Job safety evaluations;
- Progress photographs;
- A list of instructions given and received and any conflicts in plans and/or specifications;
- Weather conditions encountered;
- The number of persons working on-site by trade, activity and location (Visitors are highlighted separately);
- Information required from and by the *Employer* / *Project Manager* / *Supervisor*;
- Any delays encountered, identifying possible root cause.

5.7.5 Heat stress & confined space entries (where applicable)

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
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• .0	Supply of required protective clothing (coveralls, overshoes, etc.)		X	<ul style="list-style-type: none"> Based in international experience feedback, it is strongly recommended that burnable clothing is not worn in a heat stress zone. The <i>Contractor</i> is to propose the specific PPE to be used for workers for work 		
• .0	Respiratory protection	X		<ul style="list-style-type: none"> Respirators, air-supply suits, SCBA, etc. The <i>Contractor</i> issues a reservation request for said equipment. 	12 weeks prior to use	
• .0	Supply of calibrated and checked oxygen monitors		X		As required	
• .0	Supply of portable ventilation units		X		As required	

5.7.6 Title to materials from demolition and excavation

The *Contractor* has no title to materials from excavation and demolition.

5.7.7 Removal and disposal of redundant / replaced Plant and Materials (as applicable)

The *Contractor* removes and disposes, from Site, all redundant Plant and Materials on a regular basis and ensures the Site is clean and tidy.

5.7.8 Cooperating with and obtaining acceptance of Others

The *Project Manager*, in conjunction with the *Supervisor*, co-ordinates the work of Others on Site. The *Contractor* co-operates with and does not delay, impede or otherwise impair the work of Others.

5.7.9 Publicity and progress photographs

Written acceptance from the *Project Manager* is required prior to :

- The issue of photographs, even if included in a report or submission, to a third party,
- Any publication on notice boards, advertising, media relations, and photography and progress photographs.

5.7.10 Tools, test equipment & consumables

	Activity description	<i>Project Manager</i>	<i>Contractor</i>	Requirements	Planning	Additional notes
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	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Supply of standard tools as well as all specialised tools		X	<ul style="list-style-type: none"> Specialised tools are supplied by the <i>Contractor</i>. In the case where specialised tools are to be manufactured specifically for KOU, the <i>Employer</i> will take ownership of the tools after Completion of the <i>works</i> on the last unit. After implementation on the first unit, the <i>Contractor</i> makes available the specialised tools for any maintenance that might be required by the <i>Employer</i>. 	As required	Any additional special tools furnished by the <i>Contractor</i> , which cannot be recovered (whether decontaminated or not), will be for the <i>Contractor's</i> account.
•	Supply of standard test equipment as well as all specialised test equipment (including specialised calibration tools and equipment).		X	<ul style="list-style-type: none"> Specialised test equipment is supplied by the <i>Contractor</i>. In the case where specialised test equipment has to be manufactured specifically for KOU, the <i>Employer</i> will take ownership of the tools after Completion of the <i>works</i> on the last unit. After implementation on the first unit, the <i>Contractor</i> makes available the specialised test equipment for any testing that might be required by the <i>Employer</i>. 	As required	Any additional special equipment furnished by the <i>Contractor</i> , which cannot be recovered (whether decontaminated or not), will be for the <i>Contractor's</i> account.
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity group is complete upon take over. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Tools and test equipment that may not be recoverable.

5.7.11 Special Equipment for irradiated areas (as applicable)

The *Contractor* has to ensure that all arrangements for decontamination or disposal be taken care of in the event any Equipment cannot be decontaminated, as per regulations.

5.7.12 Control of radioactive Equipment, Plant or Material (as applicable)

Prior to Equipment, Plant or Materials that is to be used in the *Employer's* Site radiological control zones, being brought onto the *Employer's* Site, the *Contractor*.

- obtains the *Project Manager's* acceptance of a Radiological Surveillance Report, provided by the *Contractor*, which details the radiological conditions/cleanliness of the Equipment, Plant or Materials in terms of dose rate and contamination level (fixed/loose); and
- makes available such Equipment, Plant or Materials for scrutiny by the *Employer's* RP Group, when first unpacked/unfolded/uncontained from its original shipment packing.

5.7.13 Contractor's Equipment

All Equipment and tools must be listed and specified before they are brought on Site. This list serves as evidence for removal permits upon Completion of the *works*.

5.7.14 Equipment provided by the *Employer*

Contractor required to supply a list of required equipment to be provided by Employer during submission of the Installation Design acceptance review.

5.7.15 Site services and facilities

5.7.15.1 Electric power supplies

Electric power for construction is supplied free of charge, but connection fees are for the *Contractor's* account. All installations comply with the details set out under Construction Power Supplies, OH&SA (Act 85 of 1993).

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Electrical supply point	X		<ul style="list-style-type: none"> Power supply points will be made available to which the <i>Contractor</i> interfaces for his power requirements. Three levels of power supplies are available: <ul style="list-style-type: none"> 220V AC rated at 15 A at various positions on Site, 380V AC three phase rated at 32 A without neutral at various positions on the Site, 6.6 KV AC three phase at various positions on the Site. 	As required	The <i>Employer</i> does not guarantee continuity of supply and no compensation events for standing time as a result of power failures will be considered.
•	Electrical leads and adapters / connectors and (where required) distribution system.		X	<ul style="list-style-type: none"> All leads, plugs, connections and adapters shall be in good working order and comply with the requirements of the OH&S Act. All portable electrical equipment used by the <i>Contractor</i> is clearly marked; regularly inspected for safety and a register kept of these inspections as required by the OH&S Act. Defective Equipment is removed from Site until restored to a good working order by the <i>Contractor</i>. The <i>Contractor</i> provides and maintains an electrical distribution system (including temporary wiring, cabling, distribution boards, protection, metering etc.) to lead power from the <i>Employer's</i> supply point, to where it is required. On Completion the <i>Contractor</i> removes all such temporary distribution systems (included as part of the Work Plan). 	As required	The <i>Project Manager</i> reserves the right to stop the <i>Contractor's</i> use of any electrical equipment or appliance that in the <i>Project Manager's</i> opinion does not conform to the foregoing.

5.7.15.2 Lighting

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Temporary local lighting 		X	<ul style="list-style-type: none"> Where applicable, the <i>Contractor</i> provides temporary local lighting in accordance with the safety requirements of the Occupational Health and Safety Act. 	As required	The <i>Employer</i> provides no additional lighting other than the local lighting installed and does not guarantee the serviceability or the availability of these installations.

5.7.15.3 Water

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Water supply point 	X		<ul style="list-style-type: none"> Potable water is supplied at standard tapping points. 	As required	The <i>Employer</i> takes no responsibility for disruptions in the supply of water.
	<ul style="list-style-type: none"> Water supply hoses, connectors, piping and temporary plumbing ad pumps. 		X	<ul style="list-style-type: none"> All devices shall be in good working order and comply with the requirements of the OH&S Act. The <i>Contractor</i> provides and maintains all pipework and temporary plumbing and pumps necessary to lead the water from the <i>Employer's</i> points of supply to the various points where it is required. On Completion the <i>Contractor</i> removes such pipework, temporary plumbing and pumps (included in the Work Plan). 	As required	

5.7.15.4 Sanitary facilities

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Sanitary facilities	X		<ul style="list-style-type: none"> The <i>Contractor</i> is allowed access to and use of the <i>Employer's</i> existing sanitary facilities. The <i>Contractor's</i> personnel maintain a clean condition of these facilities. Should temporary sanitary facilities be required, the <i>Contractor</i> provides these. 	Not applicable	

5.7.15.5 Office accommodation and/or yard

The *Contractor* is held liable for any damage to the *Contractor's* facility during the period of occupation. It is imperative that the *Contractor's* facilities checklist be verified prior to occupation and upon departure, as this remains proof of any damage to the facility, which needs to be repaired by the *Contractor*. All expenses incurred by the *Employer* in the event of having to perform repairs are at a fee that is in line with the current building tariffs and be charged for the *Contractor's* account.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Indication of site office requirements for various stages of the project including the office services required.		X	<ul style="list-style-type: none"> Request to be for services in accordance with the requirements of this contract. 	12 weeks notice	
•	Review of request and indication of offices available and container lay-down areas available.	X			2 week duration	The <i>Contractor</i> will be allocated an area on a concrete slab within the security area for establishment of his site office facility.
•	Supply of connection points for phone, fax, network and electrical supply.	X		<ul style="list-style-type: none"> Co-ordination and scheduling by <i>Contractor</i>. 	As required	
•	Supply of containers / Office space		X	<ul style="list-style-type: none"> <i>Contractor</i> to co-ordinate. 	2 months' notice	This is for temporary container laydown area which the <i>Project Manager</i> will designate. The <i>Contractor</i> to furnish his specifications.

5.7.15.6 Garbage collection

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Garbage collection	X		<ul style="list-style-type: none"> A central garbage collection point is provided on the Site and is pointed out by the <i>Project Manager</i> on request from the <i>Contractor</i>. No facilities are provided for the removal of construction debris. The <i>Contractor</i> is responsible for the removal of all construction debris/scrap from Site to the central garbage collection point. 	Not applicable	

5.7.15.7 Compressed air supply

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Compressed air supply point	X		<ul style="list-style-type: none"> Compressed air is supplied at 6 to 8 bar(g) at standard air supply points on the plant. All air points at the Site are equipped with staubli quick connecting valves. The <i>Contractor</i> provides and maintains all connections and fittings (male staubli connector to be fitted to <i>Contractor's</i> equipment by the <i>Contractor</i>). 	N/A	The <i>Employer</i> takes no responsibility for disruptions in the supply of compressed air.
•	Air supply hoses and connectors		X	<ul style="list-style-type: none"> All air hoses and connections shall be in good working order and comply with the requirements of the OH&S Act. 	As required	

5.7.15.8 House keeping

The *Contractor* is responsible for any damage to buildings, floors and plant incurred during the Provision of the Works. The work-sites are to be kept clean, neat and free of waste at all times. The *working areas* and material storage areas are barricaded off and sign-posted to prevent access to anyone not involved with the job. The plant is left in the same or better condition, after Completion, than it was found.

5.7.15.9 Personal computers

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Supply of phones, faxes and computers including the microwave or radio link for connection to the external internet networks.		X	N/A	In accordance with Accepted Programme	No cellular or mobile phones are allowed on Site.

5.7.15.10 Canteen and snack bar

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Canteen, snack bar and vending supplies	X		<ul style="list-style-type: none"> The <i>Employer's</i> canteen and snack bar may only be used on a cash basis. The <i>Contractor</i> supplies vending machines if required. 	Not applicable	

5.7.15.11 Telephones

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Telephone and Fax account payments and LAN account payments		X	<ul style="list-style-type: none"> <i>Contractor</i> to provide his own communication tools and equipment 	As required	

5.7.16 Facilities provided by the *Contractor*

The *Contractor* provides all remaining facilities to Provide the Works. Facilities provided by the *Contractor* are removed prior to Completion.

5.7.17 Existing premises, inspection of adjoining properties and checking work of Others

The *Contractor* is required to take the following special precautions whilst executing the *works*:

- Barricades between the work area and the remainder of the plant (if used) are kept in place and are respected at all times by the *Contractor's* staff.
- All existing services in the area of the *works* will be operational during the period of the contract and at no time will the *Contractor* be permitted to move or disturb these services. It is a requirement of the contract that the *Contractor* perform the *works* within the constraints of these services.
- The *Contractor* ensures that all plant and associated systems are protected from sustaining damage, of any form whatsoever, during the *works*.
- The *Contractor* ensures that all existing services such as cables; instrumentation; cable trays; fire barriers and pipe work that may be damaged during installation have been identified and where possible relocated away from possible harm. However, due to the limited space available such relocation of services may be impractical and could still result in restricted working space available to the *Contractor*.

5.7.18 Survey control and setting out of the works

The *Contractor* participates in the mandatory Site visit to view the Site and associated constraints. The *Contractor* provides its requirements for any related survey control and setting out of the *works* in the *Contractor's* Works Information – submitted as part of the tender.

Further details is developed, by the *Contractor*, as part of the Work Plan as stated in this Works Information.

5.7.19 Excavations and associated water control

Not applicable to this scope of work.

5.7.20 Underground services, other existing services, cable and pipe trenches and covers

Not applicable to this scope of work.

5.7.21 Control of noise, dust, water and waste

Contractor to develop waste removal plan and disposal of removed waste according to KAE-012 Rev 8 – Hazardous and non-Hazardous waste and scrap disposal requirements.

5.7.22 Sequences of construction or installation

Sequencing of construction activities are established as part of the Work Plan development and submitted with the Work Plan.

5.7.23 Giving notice of work to be covered up

The *Contractor* gives 24 hour notice, prior to work being covered up, of any inspections the *Supervisor* needs to perform on Site. Should the *Contractor* require inspections off Site, the *Contractor* allows for enough time to enable the *Supervisor* to make travel arrangements, following the *Contractor's* notification.

5.7.24 Hook ups to existing works

Where hook-ups to existing works are required, the impact and effect of such hook-ups are detailed in the Installation Design and specific requirements identified in the Work Plan.

5.7.25 Change Management during Implementation

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Compilation of Discrepancy Report. 		X	<ul style="list-style-type: none"> Any deviation from any of the accepted designs, changes to Work Plans and/or test procedure(s) identified during implementation and /or testing are documented, analysed and approved and the impact on configuration updated. As per 331-86, a Discrepancy Report (DR) may be used by the <i>Contractor</i> to notify the changes. 	As required	<p>The DR is a notification, tracking and control tool for discrepancies encountered during the installation and testing and commissioning stages of the project, however, the design (as-built) change must be formalised by means of a design revision update at completion of the works.</p> <p>The following is to be noted regarding the processing of a Design Field Change:</p> <ul style="list-style-type: none"> All DRs to be formalised by means of a DFC or design revision update. All DFCs to be issued to the NNR for information (new requirement) Any DR or DFC changing the design intent will require a design revision update and subsequent NNR approval.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Notification of the <i>Project Manager</i> of any discrepancies to any of the accepted designs, changes to Work Plan and/or Test Procedure(s).		X	<ul style="list-style-type: none"> The <i>Project Manager</i> is notified of the discrepancy prior to any corrective work being performed. 	As required	
•	Assessment of <i>Employer</i> input required and/or acceptance of the DR.	X		<ul style="list-style-type: none"> Only an authorised <i>Employer's</i> engineering representative (Project Engineer) may accept the DR. The <i>Contractor</i> only proceeds with the change implementation once the <i>Employer</i> has accepted the DR. 	1 working day.	
•	Review of impact on Design and Implementation Files (Work Plans, Test Procedures etc) and implement the change (upon <i>Employer's</i> acceptance).		X	<ul style="list-style-type: none"> The <i>Contractor</i> performs a review of the change impact on Design and Implementation Files The <i>Contractor</i> maintains a log and tracks the status of each DR. 	As required	
•	Compilation of Design Field Change(s)		X	<ul style="list-style-type: none"> Where discrepancies have been found and notified during the installation process, the <i>Contractor</i> consolidates all DRs into at least one Design Field Change 331-313 prior to PTW suspension for testing (i.e. at installation completion). The DFC references all the DRs that it addresses as well as all configuration updates processed as part of the DRs. Where discrepancies have been found and notified during the testing/commissioning process, the <i>Contractor</i> consolidates all DRs into a design revision update which incorporates any previously approved DFCs. 	As required	Design revision updates issues following the completion of testing on the units will be considered the unit-specific As-Built submission.
•	Obtaining <i>Employer</i> Line Group signatures on Design Field Change	X		<ul style="list-style-type: none"> <i>Supervisors</i> with support from the <i>Project Engineer</i>. The <i>Contractor</i> supports with any queries/clarifications. 	As a minimum the <i>Contractor</i> must allow 2 days.	For critical path work, this duration may be reduced.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
	<ul style="list-style-type: none"> Employer acceptance of the <i>Contractors</i> Design Revision Change / Design Field Change. 	X		<ul style="list-style-type: none"> Acceptance is subject to the change being correctly documented. Where reference to the Discrepancy Report is made, the report is included as part of the change documentation. Where configuration updates are impacted, the <i>Contractor</i> submits the new update change requests, with associated tracking (DDR) numbers with the change proposal. 	Submission to <i>Project Manager</i> at modification final commissioning test + 1 week	
	<ul style="list-style-type: none"> Identification, mark-up and processing of configuration control changes due to DDR 		X	<ul style="list-style-type: none"> The <i>Contractor</i> provides all "mark ups" drawings as part of the applicable discrepancy report / design field change. 	As required	For critical reviews, a shorter period can be negotiated with the <i>Employer</i> .
	<ul style="list-style-type: none"> Revision of Safety Evaluations (if required). 		X	<ul style="list-style-type: none"> In accordance with KAA-709. 	As required	For critical reviews, a shorter period can be negotiated with the <i>Employer</i> .
	<ul style="list-style-type: none"> Engineering support during installation and testing. 		X	<ul style="list-style-type: none"> The <i>Contractor</i> ensures that adequate technical and administrative support is available on Site to support the construction team during installation and testing stages with the change management process. 	As required	
	<ul style="list-style-type: none"> Engineering support for problem resolution. 		X	<ul style="list-style-type: none"> The <i>Contractor</i> ensures that adequate technical support is available to support the construction team with problem resolutions during installation and testing stages. 	As required	
	<ul style="list-style-type: none"> Conclusion 			<ul style="list-style-type: none"> This activity group is complete at <i>Employer</i> acceptance of the design change and/or design field change. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Discrepancy Reports (as required) Design Change Revision (as required) Design Field Change (as required)

5.7.26 General

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Control Room Package make-up and submittal to Control Room.		X	• Refer to <i>Employer's</i> Administrative Instruction AI-025	To - 4weeks	In liaison with the <i>Project Manager</i>
•	Plant status for works - verification.		X	• According to Work Plan	As required	
•	Co-ordination for project Safety Risk Management authorisations.		X	• Ensured by Responsible Person - provided by <i>Contractor</i> .	As required	Safe Entry, Heat Stress Zones etc
•	Safety Risk Management authorisation	X			As required	
•	Plant Isolation (Pipes draining, Locking of valves etc.)	X			As required	
•	Issue PTW	X			As required	Boundaries specified by <i>Contractor</i> in Isolation Plan
•	Verification of plant isolations		X	• Performed by Responsible Person - provided by <i>Contractor</i> - in accordance with the <i>Employer's</i> Plant Safety Regulations.	As required	
•	Take out PTW		X	• By <i>Contractor's</i> Responsible Person.	As required	
•	Issue Hot Work Permit	X			As required	
•	Take out Hot Work Permit		X	• By <i>Contractor's</i> Responsible Person.	As required	
•	Conduct daily pre-job briefings		X	• By <i>Contractor's</i> supervisor. <i>Employer's</i> Supervisor to observe.	As required	
•	Perform pre-job surveys	X			As required	
•	Wall / floor opening (cables)		X	• For walls acting as fire barriers: Holes through walls need to be filled with fireproof bags during periods when no personnel is in the area. Alternatively a fire watch will be required which is supplied by the <i>Contractor</i> .	As required	Authorisation by the <i>Employer</i> .

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Fire detection / Fire Watch		X	<ul style="list-style-type: none"> A fire watch will be required for when a fire barrier is temporarily removed during the installation of a modification – the Fire Watch is provided by the <i>Contractor</i>. <i>Contractor's</i> Responsible Person to ensure that all aspects of the Hot Work Permit are respected. 	As required	
•	Core drilling in walls.		X	<ul style="list-style-type: none"> Requirements and civil structure verifications to be included in the design document. Core drilling to be performed in accordance with the approved Work Plan. 	As required	The <i>Employer</i> may advise in terms of location of re-enforcement, number and location of holes.
•	Floor grating removal, barricading and replacement.		X	<ul style="list-style-type: none"> Scaffolding barrier to be installed around the hole because "tape barrier" is not acceptable. 	As required	
•	Supply of Scaffolding Material		X	<ul style="list-style-type: none"> <i>Contractor</i> to supply if not supplied by <i>Employer</i> 	In accordance with Accepted Programme	As required
•	Scaffold transport to site, erection, certifications and inspection, maintenance, modifications, dismantling and transport to work shop.		X	<ul style="list-style-type: none"> <i>Contractor</i> may sub-contract to approved <i>Employer</i> scaffolding <i>Contractor</i> – note requirements stated in KSM-031 (. 	As required	Approved <i>Employer</i> scaffolding <i>Contractor</i> .
•	Rigging Material		X	<ul style="list-style-type: none"> <i>Contractor</i> to supply if not supplied by <i>Employer</i> 	In accordance with Accepted Programme	As required
•	Rigging material transport to site, verification, rigging labour and transport of material back to work shop.		X	<ul style="list-style-type: none"> <i>Contractor</i> may sub-contract to approved <i>Employer</i> rigging <i>Contractor</i> – note requirements stated for rigging KSA-132. 	As required	
•	Operation of plant cranes		X	<ul style="list-style-type: none"> The <i>Contractor</i> provides personnel for the operation of plant cranes. Plant cranes are those considered to be part of the existing Plant. 	In accordance with Accepted Programme	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Installation in accordance with Work Plan		X	<ul style="list-style-type: none"> During installation, it is the responsibility of the <i>Contractor</i> to: <ul style="list-style-type: none"> Comply with the requirements as stated in the Work Plan and associated referenced documentation. Comply with the requirements prescribed in the "Permit to Work" issued in accordance with the Plant Safety Regulations; (Where applicable) Comply with the requirements prescribed in the Radiation Protection Certificate (RPC). Ensure that all hold and/or witness points are respected; Adhere to the OH&S Act, the Safety Guidelines for Contractors and <i>Employer</i>; and Continuously assess the working area and conditions in conjunction with the scope of the risk assessments performed. Where any changes occur, the risk assessment and associated sign posting is updated and required actions taken. 	As required	
•	Labelling of plant items		X	<ul style="list-style-type: none"> Requirements in accordance with TRS. 	As required	
•	Welding		X	<ul style="list-style-type: none"> The <i>Contractor</i> ensures compliance to KNM-001. 	As required	
•	Radiographic Testing		X	<ul style="list-style-type: none"> All radiography performed on-site shall be performed in accordance with 238-40: Radiation Protection and Safety Requirements for Industrial Radiography Radioactive sources are controlled in accordance with KAA-633. The <i>Employer's</i> Radiation Protection Manager will supply, on request, all various procedures and guides applicable to radiography to the <i>Contractor</i>. 	As required	

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Notification of <i>Supervisor</i> for a required Design Field Changes.		X	<ul style="list-style-type: none"> As stated in 331-86, a Discrepancy Report may be used to notify the required change by the <i>Contractor</i>. However, the change is documented, reviewed and approved in accordance with the <i>Employer's</i> Design Field Change 331-313. 	As required	<i>Contractor</i> Discrepancy Report Process may be followed for changes during implementation.
•	Touch-up paintwork.		X	<ul style="list-style-type: none"> In compliance with KSA-106. 	As required	
•	Certificate of Conformance (COC)		X	<ul style="list-style-type: none"> In accordance with KAA 501. <i>Contractor</i> arrange, <i>Supervisor</i> participate. 	As required	This document is issued by an accredited electrical qualified person in accordance with the requirements of the OH&S Act and is applicable to all electrical installations of 50V and higher.
•	Construction Status Certificate (CSC)		X	<ul style="list-style-type: none"> The <i>Employer's</i> requirements for performing CSCs are in accordance with KAA 664. Prior to notifying the <i>Employer</i> of the CSC, the <i>Contractor</i> performs an internal CSC inspection with the applicable Subcontractor(s) and <i>Contractor's</i> quality assurance and control staff. This is to ensure that: <ul style="list-style-type: none"> the <i>works</i> are to the <i>Contractor's</i> satisfaction when notifying the CSC to the <i>Employer</i>; and limit the number of people at the time of the CSC with the <i>Employer</i>. At notification to the <i>Employer</i>, the <i>Contractor</i> submits proof of his internal CSC. and ensures that a person with sufficient knowledge of the modification attends the CSC with the <i>Employer</i>. The <i>Supervisor</i> arranges the <i>Employer</i> CSC, in liaison with the <i>Contractor</i> who participates. The <i>Contractor's</i> project manager and lead design staff are present at the CSC with the <i>Employer</i>. 	In accordance with Accepted Programme	This document certifies that the installation meets the requirements of the accepted design and that all mandatory static testing has successfully been completed. "Installation work" will be considered complete once all newly installed / modified Plant and Materials have been safety cleared (where applicable) and CSCs signed with all safety reservations cleared.

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Safety Clearance Certificate (SCC)		X	<ul style="list-style-type: none"> In accordance with KAA 501 (where required). <i>Contractor</i> arrange, <i>Supervisor</i> participate. 	In accordance with Accepted Programme	This certification is required by the operations personnel in order to extend the boundaries of the system from the original (unmodified) system to the newly modified system.
•	Issue Sanction For Test (SFT)	X		<ul style="list-style-type: none"> The <i>Employer</i> will issue the Sanction for Test / TA upon completion of the installation works. 	In accordance with Accepted Programme	
•	Take out SFT and suspension of PTW		X	<ul style="list-style-type: none"> By <i>Contractor's</i> Responsible Person. 	As required	
•	Testing in accordance with test procedure(s).		X	<ul style="list-style-type: none"> During Testing and Commissioning it is the responsibility of the <i>Contractor</i> to: <ul style="list-style-type: none"> Comply with the approved test procedure(s) and the requirements on the "Sanction for Test" issued in accordance with the requirements of the Plant Safety Regulations; Ensure that all hold and witness points are respected. 	As per Accepted Programme	
•	Control Room operations required during testing.	X			As required	<i>Employer's</i> operators responsibility.
•	End of works evaluation		X	<ul style="list-style-type: none"> The <i>Contractor</i> ensures that all work is completed, and tests are acceptable prior to PTW/SFT clearance. The <i>Contractor</i> obtains the required test acceptance signatures as stated in KFA-006 prior to clearance of PTWs and SFTs. 	As required	
•	Clearance of PTW's and SFT		X		As required	
•	Transfer of waste to scrap yard		X	<ul style="list-style-type: none"> Waste is transferred to the <i>Employer's</i> designated scrap yard. 	As required	
•	Disposal of waste	X		<ul style="list-style-type: none"> The <i>Employer</i> will dispose of waste dropped in its scrap yard. 		

	Activity description	Project Manager	Contractor	Requirements	Planning	Additional notes
•	Writing History to SAP	X		<ul style="list-style-type: none"> In accordance with KSM-015. The <i>Contractor</i> ensures that the <i>Employer</i> has sufficient updated information to write history to its SAP systems. 	As required	
•	Conclusion	X	X	<ul style="list-style-type: none"> This activity group is complete upon clearance of PTW / SFT. 	In accordance with Accepted Programme	Deliverables: <ul style="list-style-type: none"> Control Room Package Work plan and QCPs – Signed off Discrepancy Reports – Signed off Design Field Changes – Signed off All certification required In accordance with the PSR and in accordance with KAA-501 complete and accepted by the <i>Employer</i>. Non-destructive examination records submitted and accepted by the <i>Employer</i>. Test records submitted and accepted by the <i>Employer</i>. Non-conformances cleared and accepted by the <i>Employer</i> (unless otherwise agreed by the <i>Supervisor/Project Manager</i>). Return to Service certificates submitted and accepted by the <i>Employer</i>.

5.8 Completion, testing, commissioning and correction of Defects

5.8.1 Work to be done by the Completion Date

On or before the Completion Date the *Contractor* does everything required to Provide the Works. The *Project Manager* cannot certify Completion until all the work has been done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the *works* and Others from doing their work.

5.8.2 Use of the *works* before Completion has been certified

The *Employer* and Others may use the *works* for the performance of acceptance tests, and commissioning as well as production.

5.8.3 Equipment used for tests and inspections

The *Contractor* provides the *Project Manager* with copies of valid calibration certificated for all Equipment intended for use during testing and inspections.

5.8.4 Materials facilities and samples for tests and inspections

Materials facilities and samples for tests and inspections are detailed in the TRS 240-161645104 rev 1 section 7 in Appendix 9.1

5.8.5 Tests before Completion

Tests before Completion are detailed in the TRS 240-161645104 rev 1 section 7 in Appendix 9.1.

5.8.6 Commissioning

Commissioning tests to be performed are detailed in the TRS 240-161645104 rev 1 section 8 in Appendix 9.1 and supplements the items listed below. All testing and commissioning requirements is stated in the Installation Design and procedures are developed and submitted for *Project Manager's*.

- It is the *Contractor's* responsibility to perform the commissioning in accordance with the agreed commissioning procedures in the design document and conform to this specification.
- The *Contractor*, with the assistance of the *Employer's* commissioning team, is responsible for commissioning.
- It is the *Contractor's* responsibility, with the assistance and input from the *Employer's* commissioning team, to establish project commissioning policies and plans which cover:
 - a) Development and approval of commissioning programs and procedures.
 - b) Safety assurance and statutory requirements.
 - c) The coordination of the *Contractor's* commissioning interfaces with the *Employer's* existing commissioning programs and procedures.
 - d) The scheduling and monitoring of commissioning activities.
 - e) The availability of personnel, plant, material and equipment resources.
 - f) Conduct inspections necessary for the issue of a completion certificate.
 - g) Ensure that Defects are timely rectified.
- It After the testing done under TRS 240-161645104 rev 1 section 7.4 in Appendix 9.1, commissioning shall include basic functional verification

of each instrument loop. A suggested method is to tie all loops in a feedthrough to zero potential except for the loop under test. Correct operation at a single point (preferably full scale) would be adequate to verify the loop.

- It Commissioning shall be completed while easy access to containment is still possible.

5.8.7 Start-up procedures required to put the *works* into operation

As part of the detailed design, the *Contractor* shall provide to the *Employer* for acceptance a post-installation testing and commissioning plan in accordance with KFA-006 [28] and KAA-648 [24].

5.8.8 Take over procedures

The *Employer* will use the *works* during start-up of each unit up to and including the point where any related testing and commissioning that requires the plant to be in operation have been successfully completed.

The *Employer* is not willing to take over the *works* until all related testing and commissioning have been completed, all as built documentation updated by the *Contractor*, all implementation records completed by the *Contractor*, accepted by the *Project Manager* and all related configuration updates completed by the *Contractor*.

5.8.9 Access given by the *Employer* for correction of Defects

Upon the *Supervisor's* notification of Defect following unit start-up, the *Supervisor* shall identify the period wherein access will be given to the *Contractor* for access to correct Defects. Ordinarily, access will only be given during a planned shutdown of the applicable Koeberg Operating Unit.

5.8.10 Performance tests before Completion

Performance tests requirements are detailed in TRS 240-161645104 rev 1 section 8 in Appendix 9.1

5.8.11 Performance tests after Completion

Performance tests requirements are detailed in TRS 240-161645104 rev 1 section in 8 Appendix 9.1

As part of the detailed design, the *Contractor* shall provide to the *Employer* for acceptance a post-installation testing and commissioning plan in accordance with KFA-006 [28] and KAA-648 [24].

5.8.12 Operational maintenance after Completion

Operational maintenance will be performed by the *Employer* in accordance with the maintenance requirements specified by the *Contractor*.

- Maintenance Manuals as listed in TRS 240-161645104 rev 1 section 2.2 in Appendix 9.1 shall be updated (marked up) to reflect changes made by this modification. Such mark ups shall be supplied with the detailed design.
- The maintenance manual shall include a spares list and maintenance programs.

5.8.13 Shipment requirements

ICOTERM DDP applies to this supply contract

- Equipment shall be under the supervision and insurance of the Contractor during all stages of packaging and shipping of the equipment
- No shipment of equipment shall take place without an associated factory release authorised by Eskom or its appointed representative
- The Contractor shall ensure that the manufacturer's recommendations regarding shipping and packaging are adhered to..

Specific technical requirement relating to shipping will be developed and specified in the *Contractor's* design.

Refer to "*Contractor's* procurement of Plant and Materials" in this Works Information.

The *Contractor* arranges all shipments of Plant and Materials and equipment to the Site and consigns all such shipments to himself as consignee at the project shipping address, freight fully prepaid. The *Contractor* makes demurrage agreements and settlements with carriers for his shipments.

6. Plant and Materials standards and workmanship

Poor quality of workmanship will not be tolerated by the *Employer*. *Contractor* staff, including subcontractor staff performing construction work on Site will be subject to skills assessment tests in accordance with the requirements stated in KSA-119.

6.4 Investigation, survey and Site clearance

The *Contractor* is allowed access, by the *Employer*, to the Site to further inspect the Working Area on Site. Any *works* that may be required to survey the plant area, will be subjected to standard planning and scheduling requirements of plant work i.e. work plan with associated risk assessment and planning and scheduling in accordance with KAA-721 Rev 6.

6.5 Building works

Not applicable to this scope of work.

6.6 Civil engineering and structural works

Not applicable to this scope of work.

6.7 Electrical & mechanical engineering works

Required Electrical works are detailed in TRS 240-161645104 rev 1 Appendix 9.1

6.8 Process control and IT works

Not applicable to this scope of work.

6.9 Other [as required]

7. List of drawings

7.4 Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

Note: Some drawings may contain both Works Information and Site Information.

Drawing number	Revision	Title

8. References

- 8.4 238-102 Quality and Safety Management Requirements for Nuclear Suppliers L2 Rev 2
- 8.5 238-40 Rev 0 – Radiation Protection Requirements for Industrial Radiography
- 8.6 240-62989893 Rev 2 - DRIVER'S VEHICLE ACCIDENT REPORTING FORM
- 8.7 240-77046688 Rev 2 - Occupational Health and Safety Investigation Report Template
- 8.8 240-83539994 Rev 1 – Eskom NDT Personnel Approval (NPA) for Quality Related Special Processes on Eskom Plant Standard
- 8.9 240-83540088 Rev 1 - Requirements for Non-Destructive Testing (NDT) on Eskom Plant Standard
- 8.10 32-136 Rev 2 – Construction Safety, Health and Environment Procedure
- 8.11 32-421 Rev 0 – Eskom cardinal rules
- 8.12 32-95 Rev 6 - Procedure Manual for Perform Occupational Health and Safety Management and Environmental Management : Conduct EH&S Incident Management
- 8.13 331-170 Rev 0 – Requirements for Protective Coatings for use at Koeberg Nuclear Power Station

- 8.14 331-313 Rev 0 – Design Field Change Form
- 8.15 331-86 Design to Plant, Plant Structures or Operating Parameters
- 8.16 331-93 Rev 0 - Guide for Classification of Plant Components, Structures and Parts
- 8.17 335-68 Rev 2 – Fitness for Duty Process for Contractors who are required to Perform Work Inside the Owner Controlled Area of Koeberg Nuclear Power Station
- 8.18 AI-025 Rev 1 – Modification Work - Control Room Packages
- 8.19 ASME B31.1 – Boiler & Pressure Vessel Code [Commercial Document – not supplied]
- 8.20 ASME III 2001 – Boiler & Pressure Vessel Code [Commercial Document – not supplied]
- 8.21 ASME VIII – Boiler & Pressure Vessel Code [Commercial Document – not supplied]
- 8.22 Basic Conditions of Employment Act No. 75 of 1997 [Public Document – not supplied]
- 8.23 DSG-317-094 Rev 4 – Specifications for Chemical Products & Materials Used at KNPS
- 8.24 *Employer's* internal Design Template Revision 30
- 8.25 GGG-1299 Rev 0 – Guide for Technical Writing
- 8.26 Immigration Act, Act 13 of 2002 [Public Document – not supplied]
- 8.27 ISO-8601 – Data elements and interchange formats — Information interchange — Representation of dates [Commercial Document – not supplied]
- 8.28 KAA-501 Rev 10 – Project Management Process for Koeberg Nuclear Power Station Modifications
- 8.29 KAA-611 Rev 5 – Emergency Mustering, Accountability and Evacuation
- 8.30 KAA-614 Rev 8 – Control of Spares Assessments and New Stock Applications
- 8.31 KAA-633 Rev 10 – Control of Radioactive Sources and X-Ray Equipment
- 8.32 KAA-664 Rev 4 – Issuing a Construction Status Certificate / Safety Clearance Certificate
- 8.33 KAA-667 Rev 6 – Processing a Permit to Work
- 8.34 KAA-688 Rev 17 - The Corrective Action Process
- 8.35 KAA-709 Rev 6 – Process for Performing Safety Screenings, Safety Evaluations, Safety Justifications and Safety Cases
- 8.36 KAA-721 Rev 8 – Online work Management Process
- 8.37 KAA-751 Rev 3 – The Control of Chemical Products at Koeberg Nuclear Power Station

- 8.38 KAA-768 Rev 6 - Safety, Health and Environment and Programme
- 8.39 KAA-777 Rev 5 – Process for Access to Koeberg Nuclear Station
- 8.40 KAA-780 Rev 7 – Systematic Approach to Training – Analysis
- 8.41 KAA-838 Rev 0 – Approving NDT Activities within KOU
- 8.42 KAE-012 Rev 8 – Hazardous and non-Hazardous waste and scrap disposal
- 8.43 KBA 0000G001000 Rev Z2 – KNPS Standard Graphic Symbols
- 8.44 KFA-002 Rev 9 – Work Plan Template
- 8.45 KFA-006 Rev 4 – Testing Procedure Template
- 8.46 KFA-035 Rev 10 – Design Change Package Implementation Approval
- 8.47 KFU-026 Rev 8 – Detailed Design Review Report
- 8.48 KFU-PE-008 Rev 1 – Plant Hand-over Certificate
- 8.49 KFV-SR-004 Rev 7
- 8.50 KGA-020 Rev 9 – Initiating a Maintenance Work Request
- 8.51 KLA-023 Rev 6 – Outage Preparation Milestone Checklist
- 8.52 KNM-001 Rev 4 – KNPS Welding Programme
- 8.53 KSA-062 Rev 5 – Reactor Building Access Requirements
- 8.54 KSA-069 Rev 4 – Foreign Material Exclusion
- 8.55 KSA-106 Rev 1 – Requirements for Protective Coatings for use at Koeberg Nuclear Power Station
- 8.56 KSA-109 Rev 4 – Requirements for Access Authorisation at KOU
- 8.57 KSA-119 Rev 2 – Management and Control of Supplemental Workers Koeberg Nuclear Power Station
- 8.58 KSA-132 Rev 0 – Lifting and Rigging Requirements
- 8.59 KSA-913 Rev 0 – Integrated Equipment Reliability Standard: Preventive Maintenance Basis
- 8.60 KSM-015 Rev 5 – Maintenance History Records
- 8.61 KSM-031 Rev 2 – Scaffolding Program
- 8.62 KSU-006 Rev 0 – Maintenance Basis Determination, Documentation and Change Control
- 8.63 KTA-001 Rev 8 – Training and Qualification requirements for Nuclear Safety Review Committees
- 8.64 KWM-MW-WEL-005 - Storage, Handling, Control and Preservation of Stainless Steel
- 8.65 National Environmental Management Act 107 of 1998 [Public Document - not supplied]
- 8.66 National Key Points Act 102 of 1980 [Public Document – not supplied]
- 8.67 Nuclear Energy Act 92 of 1982 [Public Document – not supplied]

- 8.68 Occupational Health and Safety Act (OH&SA#85 of 1993) [Public Document – not supplied]
- 8.69 OHSAS 18001:2007 - Occupational health and safety management standard [Public Document – not supplied]
- 8.70 PP-0012 Manufacturing of Components for Nuclear Installations Rev 0
- 8.71 Project and Construction Management Act, 48 of 2000 [Public Document – not supplied]
- 8.72 Protection of Information Act 84 of 1982 [Public Document – not supplied]
- 8.73 Revenue Laws Amendment Act 45 of 2003 [Public Document – not supplied]
- 8.74 Value Added Tax Act, no 89 of 1991 [Public Document – not supplied]
- 8.75 KAA-641 rev 6 Control of receipt of materials.
- 8.76 KAA-733 rev 6 Monitoring of receipt inspection processes.

9. Appendices

- 9.1 TRS 240-161645104 rev 1 Technical Requirement Specification

C3.2 *CONTRACTOR'S* WORKS INFORMATION

This section of the Works Information will always be contract specific depending on the nature of the *works*.

It is most likely to be required for design and construct contracts where the tendering contractor will have proposed specifications and schedules for items of Plant and Materials and workmanship, which once accepted by the *Employer* prior to award of contract now become obligations of the *Contractor* per core clause 20.1.

Typical sub headings could be

- a) *Contractor's* design
- b) Plant and Materials specifications and schedules
- c) Other

This section could also be compiled as a separate file.

PART 4: SITE INFORMATION

Document reference	Title	No of pages
C4	This cover page Site Information	1
	Total number of pages	

PART 4: SITE INFORMATION

1. General description

1.1. Location of the Site

The site is located on the Duynefontein Farm within boundaries of the Bulk Stores Site at Koeberg Operating Unit (KOEBERG) north of Melkbosstrand in the South Western Cape and is reached via the main road from Cape Town to Saldanha (R27). The turn off to KOEBERG is indicated on the R27. KOEBERG is approximately 30 km north of Cape Town and the approximate co-ordinates are 33°40. 7'S and 18° 26.1'E.

After the turn off, the access route follows the main road to KOEBERG.

The Construction site is denoted on TRS 240-161645104 rev 1

The topography of Duynefontein Farm is relatively flat with a gentle slope toward the coast. Both ancient dunes stabilised by vegetation and recent unconsolidated dunes with heights of up to 10 m are found along the coastline.

Theron et al. (1992) describe the geology of the site as calcareous to acid Quaternary sands. The sites can be described in general terms as being located on a Tertiary to Recent flat sandy plain of neutral to acid sands of marine, estuarine and aeolian origins (Arcus Gibb 2007). The area is underlain by Malmesbury Group sediments which are of marine sedimentary origin, which contributes higher salinities to the wetlands adjacent to the Environmental Survey Laboratory (Day 2008)

1.2. Security check points

Prior to access to Site, there are two PEB security check points, viz, at the entrance from the R27 and at the entrance from Duynefontein. Security access is through the Bulk Stores security office.

Personnel entering the site are to be in possession of their Identity Document (ID) for verification. New personnel are to report to the ACP1 Office for administration and record update.

No cameras, fire arms and sharp objects shall be allowed to enter site.

2. Existing buildings, structures, and plant & machinery on the Site

3. Subsoil information

4. Hidden services

5. Other reports and publicly available information