



NEC3 Engineering & Construction Contract

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

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

for FENCING AROUND KRIEL POWER STATION
EFFLUENT DAMS

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]

Part C1: Agreements & Contract Data

Contents:

**No of
pages**

C1.1 Form of Offer and Acceptance

C1.2a Contract Data provided by the *Employer*

C1.2b Contract Data provided by the *Contractor*

Offer

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

Fencing around Kriel Power Station Effluent Dams

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.

Options B	The offered total of the Prices exclusive of VAT is	R
	Sub total	R
	Value Added Tax @ 15% is	R
	The offered total of the amount due inclusive of VAT is ¹	R
	(in words)	

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.

Signature(s)

Name(s) _____

Capacity _____

For the tenderer:

 (Insert name and address of organisation)

Name & signature of witness

Date

Tenderer's CIDB registration number (if applicable)

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 signed between them of this document, including the Schedule of Deviations (if any).

Unless the tenderer (now *Contractor*) within five working days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the Parties.

Signature(s)

Name(s)

Capacity

**for the
Employer**

.....
*(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		
2		
3		
4		
5		
6		
7		

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)

Name & signature of witness _____

Date _____

C1.2 ECC3 Contract Data

Part one - Data provided by the Employer

Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option	
	dispute resolution Option	A: Priced contract with activity schedule W1: Dispute resolution procedure X2 Changes in the law X7: Delay damages X17: Low Service Damages X18: Limitation of liability Z: Additional conditions of contract
	of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)	
10.1	The <i>Employer</i> is (Name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
10.1	The <i>Project Manager</i> is: (Name)	S D Jack
	Address	Kriel Power Station, Bethal/Ogies Road Private Bag X5009 2271
	Tel	017 615 2438
	Fax	086 663 9048
	e-mail	JackSH@eskom.co.za
10.1	The <i>Supervisor</i> is: (Name)	M Ramoshaba
	Address	Kriel Power Station, Bethal/Ogies Road Private Bag X5009 2271
	Tel No.	017 648 0037
	e-mail	RamoshME@eskom.co.za

11.2(13)	The <i>works</i> are	FENCING AROUND KRIEL POWER STATION EFFLUENT DAMS	
11.2(14)	The following matters will be included in the Risk Register	Time Quality Costs	
IME	The <i>boundaries of the site</i> are	None	
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	Two Working days	
2	The Contractor's main responsibilities	Data required by this section of the core clauses is provided by the Contractor 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	01 April 2024.	
11.2(9)	The <i>key dates</i> and the <i>conditions</i> to be met are:	Condition to be met	key date
		1 Establish site	Two weeks after award
		2 QCP approvals	1 month after contract award
		3 Completion of the works	Eight months
30.1	The <i>access dates</i> are:	Part of the Site	Date
		1 Establish site	Two weeks after award
		2 Construction work	1 month after award
31.1	The Contractor is to submit a first programme for acceptance within	Two weeks after contract award	
31.2	The <i>starting date</i> is	01 July 2023	
32.2	The Contractor submits revised programmes at intervals no longer than	Every two weeks.	
E	The Employer 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	52 weeks after Completion of the whole of the	

		<i>works.</i>
43.2	The <i>defect correction period</i> is	A week
5	Payment	
50.1	The <i>assessment interval</i> is	Between the 25th day of each successive month.
51.1	The <i>currency of this contract</i> is the	South African Rand.
51.2	The period within which payments are made is	Four weeks.
51.4	The <i>interest rate</i> is	<p>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 Limited (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 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</p>	<p>Bethal</p> <p>The cumulative rainfall (mm)</p> <p>the number of days with rainfall more than 10 mm</p> <p>the number of days with minimum air temperature less than 0 degrees Celsius</p> <p>the number of days with snow lying at 09:00 hours South African Time</p> <p>and these measurements:</p> <p>South African Weather Bureau</p>

weather measurements for each calendar month which were recorded at:

Bethal weather station

and which are available from:

the South African Weather Bureau and included in Annexure A to this Contract Data provided by the *Employer*

60.1(13)	Assumed values for the ten 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>. Note: If this arrangement is used, delete the rows above for 60.1(13) and delete this note.
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	
80.1	These are additional <i>Employer's</i> risks	1 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	
11	Data for Option W1	
W1.1	The <i>Adjudicator</i> is	The person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (See www.ice-sa.org.za). 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)	The <i>arbitration procedure</i> is	the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	South Africa
	The person or organisation who will choose an arbitrator	The Chairman for the time being or his nominee of the Association of Arbitrators
	- if the Parties cannot agree a choice or	
	- if the arbitration procedure does not	

	state who selects an arbitrator, is	(Southern Africa) or its successor body.		
12	Data for secondary Option clauses			
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.		
X5	Sectional Completion			
X5.1	The <i>completion date</i> for each <i>section</i> of the <i>works</i> is:	Section	Description	Completion date
		1	Fence construction per dam	One month
X7	Delay damages (but not if Option X5 is also used)			
X7.1	Delay damages for late Completion of the <i>sections</i> of the <i>works</i> are:	section	Description	Amount per day
		1	Fence construction per dam per month	R 20 000
	Remainder of the <i>works</i>		Works on dams can be done concurrently	
	The total delay damages payable by the <i>Contractor</i> does not exceed:	R 200 000.00		
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 the total of the Prices at the Contract Date and <ul style="list-style-type: none"> 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. The additional excluded matters are amounts		

for which the *Contractor* is liable under this contract for

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

(i) [●] years after the *defects date* for latent Defects and

(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.

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.

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".

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 *Contractor* 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 *Contractor*, 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 <i>works</i> , Plant and Materials	The replacement cost where not covered by the <i>Employer's</i> insuranc The <i>Employer's</i> policy deductible, at Contract Date, where covered b 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 <i>works</i> , 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> insuranc The <i>Employer's</i> policy deductible, at Contract Date, where covered b 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 limit 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

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 *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.
- SANAS** Means the South African National Accreditation System.
- TWA** Means the average exposure, within a given workplace, to airborne asbestos fibres, normalized 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.

Month	<i>Weather measurement</i>				
	Cumulative rainfall (mm)	Number of days with rain more than 10mm	Number of days with min air temp < 0 deg.C	Number of days with snow lying at 08:00 CAT	[Other measurements if applicable]
January	97.7	3	0	0	None
February	50.9	2	0	0	None
March	256.2	7	0	0	None
April	2	0	0	0	None
May	31.5	1	4	0	None
June	1	0	16	0	None
July	0	0	15	0	None
August	0	0	6	0	None
September	14.1	0	0	0	None
October	110.5	6	0	0	None
November	192.9	7	0	0	None
December	159.5	7	0	0	None

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

C1.2 Contract Data

Part two - Data provided by the *Contractor*

[Instructions to the contract compiler: (delete this notes before issue to tenderers with an enquiry) Whenever a cell is shaded in the left hand column it denotes this data is optional. If not required select and delete the whole row, otherwise insert the required Data.]

Notes to a tendering contractor:

1. Please read both the NEC3 Engineering and Construction Contract (April 2013) and the relevant parts of its Guidance Notes (ECC3-GN)² in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on pages 156 to 158 of the ECC3 (April 2013) Guidance Notes.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

Clause	Statement	Data
10.1	The <i>Contractor</i> is (Name): Address Tel No. Fax No.	
11.2(8)	The <i>direct fee percentage</i> is The <i>subcontracted fee percentage</i> is	Compensation events : direct expenditure (subject to quotation acceptance) will be paid in full by Eskom plus this% fee
11.2(18)	The <i>working areas</i> are the Site and	
24.1	The <i>Contractor's</i> key persons are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job Responsibilities: Qualifications: Experience:	

² Available from Engineering Contract Strategies Tel 011 803 3008, Fax 011 803 3009 or see www.ecs.co.za

		CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is	30 April 2024
11.2(14)	The following matters will be included in the Risk Register	Time Quality Costs
11.2(19)	The Works Information for the <i>Contractor's</i> design is in:	
31.1	The programme identified in the Contract Data is	
A	Priced contract with activity schedule	
11.2(20)	The <i>activity schedule</i> is in	
11.2(30)	The tendered total of the Prices is	(in figures) (in words), excluding VAT

Part 2: Pricing Data
ECC3 Option B

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

C2.1 Pricing assumptions: Option A

How work is priced and assessed for payment

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

Identified and defined terms 11
 11.2 (20) The Activity Schedule is the *activity schedule* 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 specifications and descriptions of the work or any constraints on 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”. Ideally the tendering contractor will develop a high level programme first then resource each activity and thus arrive at the lump sum price for that activity both of which can be entered into the *activity schedule*.

– **Preparing the *activity schedule***

Generally it is the tendering contractor who prepares the *activity schedule* by breaking down the work described within the Works Information into suitable activities which can be well defined, shown on a programme and priced as a lump sum.

The *Employer*, in his Instructions to Tenderers 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.

It is assumed that in preparing his *activity schedule* the *Contractor*:

- Has taken account of the guidance given in the ECC3 Guidance Notes pages 19 and 20;
- Understands the function of the Activity Schedule and how work is priced and paid for;
- Is aware of the need to link the Activity Schedule to activities shown on his programme;
- Has listed and priced activities in the *activity schedule* which 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;
- Has priced work he decides not to show as a separate activity within the Prices of other listed activities in order to fulfil the obligation to complete the *works* for the tendered total of the Prices.
- Understands 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.

SUPPLY AND INSTALLATION OF FENCE AT KRIEL POWER STATION FOR A PERIOD OF 9 MONTHS					
Item	Description	Unit	Qty	Rate	Amount
	<u>SECTION NO. 1</u>				
	<u>PRELIMINARY & GENERALS</u>				
	FIXED RELATED ITEMS		1		
	TIME RELATED ITEMS		1		
	SUB TOTAL(100)				
	<u>SECTION NO.2</u>				
	<u>EXTERNAL WORKS (PROVISIONAL)</u>				
	<u>Approved security fencing including site clearance, preparation of ground, cutting and removing of trees where required.</u>				
	-				
200	<u>CUT 1</u>				
201	1 800mm high x 75mm x 2.0mm diamond with High pressure flat razor wire 2.24mm	m	1200		
202	1800mm high concrete palisade with 500mm raor flat wrap above	m	120		
203	5000mm x 1800mm high double swinging gate including installation	Each	1		
	SUB TOTAL(200)				
300	<u>CUT 1B</u>				
301	1 800mm high x 75mm x 2.0mm diamond with High pressure flat razor wire 2.24mm	m	2100		
302	5000mm x 1800mm high double swinging gate including installation	Each	1		
	SUB TOTAL(300)				
400	<u>CUT 2</u>				
401	1 800mm high x 75mm x 2.0mm diamond with High pressure flat razor wire 2.24mm	m	7600		

402	1800mm high concrete palisade with 500mm raor flat wrap above	m	90		
403	5000mm x 1800mm high double swinging gate including installation	Each	1		
	SUB TOTAL(400)				
500	<u>CUT 2B</u>				
501	1 800mm high x 75mm x 2.0mm diamond with High pressure flat razor wire 2.24mm	m	900		
502	5000mm x 1800mm high double swinging gate including installation	Each	1		
	SUB TOTAL(500)				
600	<u>DUCK'S POND</u>				
601	1 800mm high x 75mm x 2.0mm diamond with High pressure flat razor wire 2.24mm	m	1600		
602	1800mm high concrete palisade with 500mm raor flat wrap above	m	90		
603	5000mm x 1800mm high double swinging gate	Each	1		
	SUB TOTAL(600)				
700	<u>DAM FENCE</u>				
701	1 800mm high x 75mm x 2.0mm diamond with High pressure flat razor wire 2.24mm	m	4000		
702	1800mm high concrete palisade with 500mm raor flat wrap above	m	90		
703	5000mm x 1800mm high double swinging gate including installation	Each	1		
	SUB TOTAL(700)				
800	<u>SIGNAGE</u>				
801	Supplying and installing Safety Signage on the fence	Each	500		
	SUB TOTAL(700)				
	<u>SUMMARY</u>				
	-				
	PRELIMINARY & GENERALS				
	CUT 1				
	CUT 1B				
	CUT 2				
	CUT 2B				
	DUCK'S POND				
	DAM FENCE				
	SIGNAGE				
	TOTAL EXCLDING VAT & CPA				

Part 3: Scope of Work

Document reference	Title	No of pages
C3.1	This cover page	1
C3.2	<i>Employer's Works Information</i>	
	<i>Contractor's Works Information</i>	
	Total number of pages	

C3.1: Employer's works Information

Contents

When the document is complete, insert a 'Table of Contents'. To do this go to: Insert, → Reference, → Index and table's → Table of Contents. Three levels and the title (but not the subtitle) may be shown if the formats used in this template are retained.

- **Part 3: Scope of Work 4**
- **C3.1: Employer's works Information 5**
- **1 Description of the works 7**
- 1.1 Executive overview 7
- 1.2 *Employer's objectives and purpose of the works* 7
- 1.3 Interpretation and terminology 7
- **2 Management and start up. 8**
- 2.1 Management meetings 8
- 2.2 Documentation control 9
- 2.3 Health and safety risk management 10
- 2.4 Environmental constraints and management 13
- 2.5 Quality assurance requirements 15
- 2.6 Programming constraints 19
- 2.7 *Contractor's management, supervision and key people* 23
- 2.8 Invoicing and payment 23
- 2.9 Insurance provided by the *Employer* 24
- 2.10 Contract change management 24
- 2.11 Provision of bonds and guarantees 25
- 2.12 Records of Defined Cost, payments & assessments of compensation events to be kept by the *Contractor* 25
- 2.13 Training workshops and technology transfer 25
- **3 Engineering and the Contractor's design 25**
- 3.1 *Employer's design* 25
- 3.2 Parts of the *works* which the *Contractor* is to design 26
- 3.3 Procedure for submission and acceptance of *Contractor's design* 27
- 3.4 Other requirements of the *Contractor's design* 28
- 3.5 Use of *Contractor's design* 28
- 3.6 Design of Equipment 29
- 3.7 Equipment required to be included in the *works* 29
- 3.8 As-built drawings, operating manuals and maintenance schedules 29
- **4 Procurement 30**
- 4.1 People 30
- 4.1.1 Minimum requirements of people employed on the Site 30
- 4.1.2 BBEE and preferencing scheme 30
- 4.1.3 Accelerated Shared Growth Initiative – South Africa (ASGI-SA) 30
- 4.2 Subcontracting 30
- 4.2.1 Preferred subcontractors 30
- 4.2.2 Subcontract documentation, and assessment of subcontract tenders 30
- 4.2.3 Limitations on subcontracting 31
- 4.2.4 Attendance on subcontractors 31
- 4.3 Plant and Materials 31
- 4.3.1 Quality 31
- 4.3.2 Plant & Materials provided "free issue" by the *Employer* 32
- 4.3.3 *Contractor's procurement of Plant and Materials* 32
- 4.3.4 Spares and consumables 32
- 4.4 Tests and inspections before delivery 32

- 4.5 Marking Plant and Materials outside the Working Areas 33
- 4.6 *Contractor's* Equipment (including temporary works). 33
- 4.7 Cataloguing requirements 33
- **5 Construction 34**
- 5.1 Temporary works, Site services & construction constraints 34
- 5.1.1 *Employer's* Site entry and security control, permits, and Site regulations 34
- 5.1.2 Restrictions to access on Site, roads, walkways and barricades **Error! Bookmark not defined.**
- 5.1.3 People restrictions on Site; hours of work, conduct and records **Error! Bookmark not defined.**
- 5.1.4 Health and safety facilities on Site **Error! Bookmark not defined.**
- 5.1.5 Environmental controls, fauna & flora, dealing with objects of historical interest **Error! Bookmark not defined.**
- 5.1.6 Title to materials from demolition and excavation 42
- 5.1.7 Cooperating with and obtaining acceptance of Others 42
- 5.1.8 Publicity and progress photographs 42
- 5.1.9 *Contractor's* Equipment 43
- 5.1.10 Equipment provided by the *Employer* 43
- 5.1.11 Site services and facilities 43
- 5.1.12 Facilities provided by the *Contractor* 43
- 5.1.13 Existing premises, inspection of adjoining properties and checking work of Others 43
- 5.1.14 Survey control and setting out of the *works* 43
- 5.1.15 Excavations and associated water control 43
- 5.1.16 Underground services, other existing services, cable and pipe trenches and covers 44
- 5.1.17 Control of noise, dust, water and waste 44
- 5.1.18 Sequences of construction or installation 44
- 5.1.19 Giving notice of work to be covered up 44
- 5.1.20 Hook ups to existing works 44
- 5.2 Completion, testing, commissioning and correction of Defects 44
- 5.2.1 Work to be done by the Completion Date 44
- 5.2.2 Use of the *works* before Completion has been certified 45
- 5.2.3 Materials facilities and samples for tests and inspections 45
- 5.2.4 Commissioning 45
- 5.2.5 Start-up procedures required to put the *works* into operation 45
- 5.2.6 Take over procedures 45
- 5.2.7 Access given by the *Employer* for correction of Defects 45
- 5.2.8 Performance tests after Completion 45
- 5.2.9 Training and technology transfer 46
- 5.2.10 Operational maintenance after Completion 46
- **6 Plant and Materials standards and workmanship 47**
- 6.1 Investigation, survey and Site clearance **Error! Bookmark not defined.**
- 6.2 Building works **Error! Bookmark not defined.**
- 6.3 Civil engineering and structural works **Error! Bookmark not defined.**
- 6.4 Electrical & mechanical engineering works **Error! Bookmark not defined.**
- 6.5 Process control and IT works **Error! Bookmark not defined.**
- 6.6 Other [as required] 57
- **7 List of drawings 58**
- 7.1 Drawings issued by the *Employer* 58
- **C3.2 Contractor's Works Information** Error! Bookmark not defined.

1 Description of the works

1.1 Executive overview

Put yourself in the position of the *Contractor's* senior management who need a high level overview of what is involved – the scope of work - so that they can decide when tendering whether they have the resources and capability to undertake the work. Include a description of the different services and disciplines of work involved within the *works* and the location where most of the work will be carried out

1.2 Employer's objectives and purpose of the works

The objective of the project is to construct fences around all Dams of Kriel Power Station to prevent fatalities of unauthorised personnel.

1.3 Interpretation and terminology

If required include here definitions additional to those used in the *conditions of contract* which are required only for the purpose of making the Works Information easier to draft and read. Also list abbreviations used and provide a full interpretation of each one, for example:

The following abbreviations are used in this Works Information:

Abbreviation	Description
SOW	Scope of Work
QCP	Quality Control Procedure

Definition	Description
Fence	Predictive maintenance carried out because of findings from analysis of parameters measured under a condition-monitoring regime, or from recommendations from reliability analysis.
Inspection	Activities, which by means of examination, observation or measurement, determine the conformance of material, parts, components etc., to predetermined specifications and quality requirements.
Maintenance	A combination of all technical, administrative and managerial actions during the life cycle of an item intended to retain it in, or restore it to, a condition in which it can perform its required function.
Repair	Restore (something damaged, faulty, or worn) to a good condition.
Replace	Action to provide something new in place of what is damaged or broken

2 Management and start up.

2.1 Management meetings

Meetings will be held monthly between the *Project Manager* and the *Contractor* (and any other co-opted members). The *Contractor* is represented at each meeting by the appropriate members of the staff.

The venue for these meetings is as determined by the *Project Manager*. The *Project Manager* writes the minutes of meetings

The *Contractor* reports the overall progress and as a minimum requirement, the following is addressed:

- a) *Contractor's* current activity progress and planned finish dates;
- b) *Contractor's* to report on all items listed in the NEC core clause, 31.
- c) *Contractor's* and *Project Manager's* programme agenda compared for delays and milestone targets
- d) Current and projected manpower by class;
- e) Health, safety and quality Management;
- f) The progress of any other relevant activities;
- g) To discuss any technical or commercial issues;
- h) Skills Development and Localisation
- i) CSI and Infrastructure Project Implementation Plan
- j) Procurement progress

Problem areas or concerns

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

Title and purpose	Approximate time & interval	Location	Attendance by:
Kick off meeting, implementation strategy	Once off 60 minutes (Time to be announced by Project Manager)	Project Manager's Offices	Project Manager, system engineer and <i>Contractor</i>
Risk register	Daily	On site	Project Manager and <i>Contractor</i>
Compensation events	As and when required	Project Manager's Offices	Project Manager, system engineer and <i>Contractor</i>
Overall contract progress and feedback	Weekly (Fridays), time to be determined by the project manager(30 minutes)	Project Manager's Offices	Project Manager and <i>Contractor</i>
Commissioning	Once off (Time and duration to be announced by Project Manager)	On site	Project Manager, system engineer and <i>Contractor</i>

Meetings of a specialist nature may be convened as specified elsewhere in this Works Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the

works. Records of these meetings shall be submitted to the *Project Manager* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened 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.

2.2 Documentation control

Document identification

The documentation requirements cover the various engineering stages, from the design stage through fabrication, installation, testing and commissioning and most importantly for the operating, maintenance and training stage of the project.

The *Contractor* is responsible for the compilation and the supply of the documentation during the various project stages and to provide the documentation programme to link with the milestone dates. Documentation and drawings are programmed for delivery to meet the milestone dates and in accordance with the agreed VDSS supplied *Employer*.

Documents Submission

All documents and records must be submitted according to Technical Document and Record Management Work Instruction (240-76992014) and Gx Projects Documentation Deliverable Requirements Specification (240-65459834) and the *Employer* ensures that the *Contractor* is provided with latest revisions of all these documents. In order to portray a consistent image it is important that all documents used within the project follow the same standards of layout, style and formatting as described in the documents above. The *Contractor* is required to submit documents as electronic in .pdf format in a CD and hard copies and must be delivered to the *Project Manager* with a transmittal note.

The *Contractor* submits the Master Document List to the *Employer* on a monthly basis for tracking purposes irrespective of whether there are updates or not. The MDL includes list of drawings and documents and contains the following minimum information for each document:

- Date of submission
- Transmittal number
- Transmittal title
- Document description
- Document number
- Document Type
- Revision number
- Document Approval Status
- Document Authorisation Status (i.e. Accepted With Comments, Not Accepted with Comments, Accepted)

Documentation Review and Turn-around

The Employer has a minimum 14 calendar days to review and consolidate review comments for documentation submitted by the Contractor. The Contractor also has a minimum 14 calendar days to respond and / rectify as per the comments by the Employer

Drawings Format and Layout

The creation, issuing and control of all Engineering Drawings will be in accordance to the latest revision of 36-943 (Engineering Drawing Office and Engineering Documentation Standard) and 36-945 and 36-946 (associated Work Instructions) to be supplied as part of the enquiry documents. Drawings issued to the *Employer* will be a minimum of one hardcopy and an electronic copy. All *Contractors* are required to submit electronic drawings in Micro Station (DGN) format, and scanned drawings in pdf format. No drawings in TIFF, AUTOCAD or any other electronic format will be accepted. Drawings issued to Eskom may not be "Right Protected" or encrypted. (240-86973501) The *Employer* reserves the right to use these drawings to meet its other contractual obligations

2.2.3 Plant Identification

2.2.3.1 Plant Coding Allocation

Coding of the design will be based on the KKS coding system and the *Employer* will undertake the coding in line with its standards. The KKS coding shall be applied during the design review stage(s) and cross referenced to all arrangement drawings, schematics, wiring diagrams, instructions and manuals and where practical to spare parts list/manuals. The *Contractor* will be required to include allocated coding to the electronic design drawings.

2.2.3.2 Plant Labelling

The *Contractor* will also manufacture and install KKS labels to identified plant items as per list supplied by the *Employer*. Labels will be manufactured and installed according to the *Employer's* KKS Plant Labelling and Equipment Descriptions Standard. The labeling standard will be supplied as part of the enquiry documents. Mention no. of standard

2.2.4 Configuration change control

Any changes to the design baselines will be formally managed according to the Eskom Project Engineering Change Procedure (240-53114026). All design reviews will be conducted according to the Design Review Procedure (240-53113685).

2.3 Health and safety risk management

In carrying out its obligations to the *Employer* in terms of this contract, which obligations include, amongst others, providing the *works*; using Plant, Materials and Equipment; and whilst at the site for any reason, the *Contractor* is the "*Employer*" in terms of the Occupational Health and Safety Act, No. 85 of 1993, in respect of its activities and in relation to its employees, agents, *Subcontractor/s* and mandatories.

The *Contractor* does not consider itself under the supervision or management of the *Employer* with regard to compliance with the Safety Health and Environmental requirements.

Furthermore, the *Contractor* does not consider himself to be a subordinate or under the supervision of the *Project Manager* in respect of these matters. The *Contractor* is responsible for the supervision of its employees, agents, *Subcontractors* and mandatories and takes full responsibility and accountability for ensuring that they are competent, aware of the Safety Health and Environmental requirements, whilst executing the *works* in accordance with the Safety Health and Environmental requirements.

The *Contractor* ensures compliance with, amongst others:

- a) The provisions of the Occupational Health and Safety Act, No. 85 of 1993 and all applicable regulations (as amended), binding in terms thereof;

- b) The latest versions of standards, procedures, specifications, rules, systems of work and requirements of the *Employer*, copies of which will be provided to the *Contractor* on request. Refer to Section 6.
- c) The Health and Safety Plan prepared by the *Contractor* in accordance with the *Employer's* Safety Health and Environmental Specification – 240-127760320 and requirements.
- d) The provisions of the National Environmental Management Act (as amended) and all regulations in force from time to time in terms of that Act, including Record of Decisions Kriel waste management procedure-RER 0221, Kriel Environmental Non-conformances, corrective and preventive measures and all applicable environmental legislations.

(The documentation referred to in paragraphs 2.3.1 (a) (b) (c) and (d) are collectively referred to as the Safety Health and Environmental requirements and forms a part of the contract Works Information.)

The *Contractor* ensures that its employees, agents, *Subcontractors* and mandatories comply with the provisions of the Occupational Health and Safety Act, No. 85 of 1993, and all applicable regulations binding in terms thereof as well as the *Employer's* Safety Health and Environmental Specification whilst making use of plant, materials and equipment and whilst at the Site for any reason whatsoever.

The *Contractor* implements a comprehensive health and safety management system, based on the OHSAS 18001: 2007 requirements for utilisation at the project.

The *Contractor* appoints a person, qualified and competent in accordance with the safety health and environmental requirements, as the liaison with the *Employer's* Project Safety, Health and Environment Manager/Officer or delegated person for all such matters as pertaining related to safety, health and the environment. The *Contractor* shall ensure that such a person is contactable 24 hours a day, and is registered with a registered professional council approved by the Principal Director of the Department of Labour, as per the requirements of the latest Construction Regulations, inclusive of all exemptions and amendments pertaining thereto.

The *Contractor* hereby indemnifies the *Employer* and holds the *Employer* harmless in respect of any and all loss, costs, claims, demands, liabilities, damage, penalties or expenses that may be made against the *Employer* and/or suffered or incurred by the *Employer* (as the case may be) as a result of, any failure of the *Contractor*, its employees, agents, *Subcontractors* and mandatories to comply with their obligations, and/or the failure of the *Employer* to procure the compliance by the *Contractor*, its employees, agents, *Subcontractors* and/or mandatories with their responsibilities and/or obligations in terms of or arising from the Occupational Health and Safety Act, No. 85 of 1993.

2.3.1 Mandatory Agreements

The *Contractor* confirms that:

- a. In terms of sections 37(1) and 37(2) of the OHSA, the *Employer* is relieved of any and all of its responsibilities and liabilities pertaining to the activities performed by the *Contractor* (and its employees, agents, *Subcontractors* and mandatories) relating to the *works*; the use of plant, materials and equipment; and whilst at the Site for whatsoever reason.
- b. The *Contractor* confirms that, in terms of the Construction Regulations, regulation 6, it is hereby mandated as the designer and must perform all duties required of a designer. (This will be applicable only where the *Contractor* is required to do design work as part of their Scope).

The *Contractor* confirms that he has been provided with sufficient information regarding the health and safety arrangements applicable to the *works*; the use of Plant, Materials and Equipment, as well as at the Site.

In addition, the **Contractor shall** ensure that:

- a. Prior to the *Contractor* commencing with any operations/ activities relating to the *works* and/or prior to gaining access to the Site, the *Contractor* concludes a written mandatory agreement with the *Employer* in terms of section 37(2) of the OHS Act and 5(1)(k) under the construction regulations. The aforementioned agreement constitutes a record of the written arrangements and procedures between the *Contractor* and *Employer* regarding health and safety.
- b. As far as is reasonably practicable, the safety and absence of risks to health in connection with the production, processing, use, handling, storage or transport of articles or substances is maintained;
- c. As far as is reasonably practicable, all hazards pertaining to the health and safety of persons and harm to the environment that are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in its business, is clearly identified and, as far as is reasonably practicable, further establishes what precautionary measures should be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons and or harm to the environment, and provides the necessary means to apply such precautionary measures;
- d. Such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of its employees, agents, *Subcontractors* and mandatories is provided;
- e. As far as is reasonably practicable, no employee, agent, *Subcontractor* and mandatory performs any work or produces, processes, uses, handles, stores or transports any article or substance or operates any plant or machinery, unless the precautionary measures contemplated in paragraph 2.3.3, or any other precautionary measures which may be prescribed have been taken;
- f. Such measures as may be necessary in the interest of health and safety and the environment are enforced;
- g. Work is performed and that plant, materials or equipment is used under the direct supervision of a person trained to understand the hazards associated with it and who has the authority to ensure that precautionary measures required by the *Employer* are implemented; and

All employees are informed of the scope of their authority as contemplated in OHS Act

2.3.2 Health and Safety Obligations

In addition to the mandatory agreements, the *Contractor*:

- a. Ensures that all statutory appointments (as required in terms of the Occupational Health and Safety Act, No. 85 of 1993 and all applicable regulations binding in terms thereof, as amended) and other appointments required in terms of the *Employer's* Safety Health and Environmental Specification – 240-127760320 and SHE Requirements Procedure (32–726) are in place and that all appointees are cognisant of their duties and responsibilities in terms of such appointments;
- b. Ensures that such appointees execute their duties and responsibilities as required by such an appointment.
- c. Ensures that all personnel brought by itself onto site (including employees of *Contractors* and *Subcontractors*) are suitably qualified and trained for the performance of the task, duties and functions, which will be allocated to them;

- d. Immediately reports any occupational or other injuries, near miss events, property damage, environmental related incidents as well as any potential threat to the health and safety of individuals at the *works* or on the site, as soon as he becomes aware thereof, to the *Project Manager*;
- e. Complies with the *Employer's* Environmental, Occupational Health & Safety Incident Management Procedure - 32-95, relating to the reporting and investigation of incidents. The classification of incidents contained in such document are considered final and must be applied by the *Contractor* relating to any incidents/ injuries relating to its employees, agents, *Contractors*, *Subcontractors* and mandatories whilst on Site;
- f. Conducts a risk assessment regarding the utilisation of PPE and thereafter ensure that PPE of good quality is issued (at its own cost) to its employees, agents, *Contractors*, *Subcontractors* and mandatories prior to such individuals accessing the site, alternatively performing activities related to the *works* at the site, as specified in the Eskom PPE Specification - 240-44175132.

(a) 2.3.4 Fire Protection

The *Contractor* ensures that adequate fire fighting apparatus is provided at all his work sites, and that his staff and sub-*contractors* are trained in the use of this apparatus.

Precautions are taken to prevent any occurrence of fires or explosions while carrying out any work near flammable gas and liquid systems.

Any tampering with the *Employer's* Fire Equipment is strictly forbidden. All exit doors, fire escape routes, walkways, stairways and stair landings are kept free of obstruction, and not be used for work or storage at any time. Firefighting equipment remains accessible at all times.

2.4 Environmental constraints and management

The *Contractor* provides an Environmental Management Plan applicable during installation and maintenance of *works*. The plan provides a guideline on the environmental management of the handling of the *works*. All waste will be handled in an environmentally friendly manner. The *Contractor* conforms to the "polluter pays principle", duty of care and other NEMA principles.

The *Contractor* conforms to all requirements dictated in the document "Environmental Management Programme for the Kriel Power Station , Kriel Waste Management Procedure – RER 0221, Kriel Environmental Non-conformances , corrective and preventive measures as well as the National Environmental Management Act (NEMA, Act No. 107 of 1998) and the National Environmental Management Waste Act (NEMWA, Act No. 59 of 2008). This is achieved by undertaking inspections, audits, monitoring and reviews, conducted internally by the *Contractor* and externally by the *Project Manager*.

The *Contractor* ensures that all environmental authorization obligations, applicable legislative requirements and *Employer's* specific requirements are fulfilled. This includes all national, provincial and local environmental legislation and requirements.

The *Contractor* issues on a weekly and monthly basis, Environmental Management Performance and Expenditure Reports to the *Project Manager*.

The *Contractor* conducts their environmental management based on the ISO 14001:2004 requirements and implement their environmental management practices accordingly.

The *Contractor* develops and implements as a minimum the following procedures:

- Environmental Management Plan,
- Waste Management Procedure,
- Spill Management Procedure,
- Hazardous Chemical Substances Management and Storage Procedure,
- Stockpile and Erosion Management Procedure,
- Clear-and-Grub Procedure,
- Environmental Rehabilitation Procedure.

All environmental procedures, as listed above, shall be site-specific and submitted to the *Employer* for acceptance by the *Project Manager* before the commencement of construction activities.

The *Employer* will provide a copy of the environmental authorisation and Environmental Management Plan to the *contractor* for the drafting of the above procedures.

2.4.1 Waste Management

All waste management activities, which includes procurement of control measures, handling and disposal or processing of all waste forms generated on the *Contractor's* site, are conducted according to Kriel PS Waste Management Procedure – RER 0221. All costs associated with waste management are the responsibility of the *Contractor*.

All demolished concrete is treated as Hazardous waste and disposal to be disposed of at a licensed Hazardous Waste Site, and safety disposal certificates are kept for record purposes.

Refuse Disposal

The *Employer* will provide special colour coded bins for refuse disposal. The *Employer* will empty these bins.

The *Contractor* ensures that all workers under his control strictly adhere to the correct use of refuse bins:

Maroon bins: Scrap metal only

White bins: Lagging and general household rubbish

Yellow bins: Ash, dust, coal dust and sand

For the full duration of the *Works*, the *Contractor* is responsible to keep the work area clean of any rubble, and to place all refuse into the bins provided

2.4.2 Spill Management

The *Contractor*, at his cost, has available spill control measures (spill kits, drip trays, etc.), to the satisfaction of the *Employer*. All hazardous wastes generated from a spill are disposed of at a licensed disposal facility, at the cost of the *Contractor*, and safety disposal certificates are kept for record purposes.

2.4.3 Dust and Storm-water Management

The *Contractor* implements dust control measures for the project. The *Contractor* ensures that no ponding of storm water occurs on the site and shall establish good storm-water management in accordance with the *Employer's* requirements as per Environmental Management Programme.

2.4.4 Environmental Rehabilitation

The *Contractor* rehabilitates construction site at the end of the project. The rehabilitation is done in accordance with the Gx Coal Area 1 Environmental Rehabilitation Plan - 240-100259162, as provided by the *Employer*. The *Contractor* submits to the *Project Manager* a rehabilitation plan and schedule at least two (2) weeks before finalisation of the *works* for approval by the *Project Manager*. All rehabilitation costs are the responsibility of the *Contractor*.

2.5 Quality assurance requirements

2.5.1 General

The *Contractor* complies with the *Employer's* Quality Requirements Standards.

- a) The *Contractor* and all Subcontractors comply with the *Employer's* quality requirements including those listed in the *Employers* specification document, (240-105658000)
- b) Certified to ISO 9001 is a mandatory requirement for this contract. The *Contractor* uses the QMS for all phases of the Project. The *Contractor* provides evidence of a fully implemented QMS within its own organisation. The *Employer* may, at his sole discretion, carry out an audit on the *Contractor* or *Subcontractor's* QMS for acceptance.

2.5.2 Quality Management Documents Requirements

The *Contractor* conforms to the quality management requirements as per ISO 9001 and the *Employer's* Supplier Contract Quality Requirements Specification (240-105658000). The *Contractor* shall adhere to the following:

During the Pre-Contract Award: Quality Requirements Categories (1, 2, 3 and 4)

Eskom supplier quality requirements for all existing and potential suppliers and sub-suppliers are classified into four Categories. The following is the minimum documentation for Category 1 to 4:

Category 1.

SECTION A: Valid certification of Quality Management System by an ISO accredited body

- The supplier shall submit a copy of ISO 9001 (or the latest application revision) certificate.

SECTION B: Evidence of QMS in operation

- Copy of appointment letter & CV/ resume of a Quality Representative for the project.
- Signed Organisational structure & Quality dept reporting structure.
- Copy of procedure for control of suppliers & sub*contractors*
- Copy of an internal management system audit report (with NCR, corrective & preventive report).
- Copy of an external management system audit report (with NCR, corrective & preventive report).
- Copy of Customer satisfaction surveys
- Copy of a Quality Plan (incl ITP's) on previous project < 2yrs
- Historical Information (list) of similar work performed < 2yrs

SECTION C: Contract Quality Plan as per Scope of Works (Ref ISO 10005)

- Draft Contract Quality Plan

SECTION D : QCP /ITP (Quality Control Plans) as per Scope of Works

SECTION E : Form A is completed and signed.

2.5.3 The Contract Quality Plan (CQP)

The *Contractor* submits to the *Project Manager* within thirty (30) days of Contract Date for review and acceptance prior to the commencement of work, a CQP which will detail the *Contractor's* organisation, quality assurance and quality control procedures within that organisation specific to this project. The CQP must be aligned to, and reference ISO 10005:2005 QMS, guidelines for quality plans and in compliance with the guideline in QM 240-105658000.

The CQP will make reference to the *Contractor's* QMS documents to be used in this Contract:

- a) The *Contractor's* QMS compliance with the requirements of ISO 9001
- b) *Contractor's* quality manual
- c) *Contractor's* quality procedures
- d) *Contractor's* quality forms and work instructions
- e) *Contractor's* quality system documents referenced in this Works Information
- f) *Employers* Works Information, drawings, specifications, standards and codes, etc.

2.5.4 Quality Control Plan or Inspection and Test Plan

As defined in the approved CQP the *Contractor* drafts and submits to the *Project Manager* for acceptance, prior to the commencement of any works, the requisite Inspection and Test Plan (ITP) or Quality Control Plan (QCP). The ITP/QCP shows each activity from the Works Information. The *Project Manager* inserts intervention points based on the risk profile of the equipment.

- a) The interventions points include all witness, hold, verification, surveillances and review points required by the *Project Manager*. The *Contractor's* failure to allow the intervention points will constitute a non-conformance.
- b) The intervention requirements take into consideration the criticality of the Plant and Materials.
- c) Where intervention points have been bypassed without prior written waiver from the *Project Manager*, result in the repeat performance of the activity in question and a Non-conformance (NC) is issued.

The Contractor shall comply with the following standards to ensure Quality assurance on the equipment and the works in general:

ISO 9001	Quality Management Systems
Osh Act; Act 85 of 93	Occupational Health and Safety Act; Act 85 of 93
NWS 1058	Safety at Construction Sites
PA/270/00	Safety Guide for Contractors
240-99527377	Inspection Manual for Civil Works at Eskom Power Stations
EAP0064	Maintenance Execution Strategy for Civil & Structures
240-101712128	Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with linings
34-1168	Colour coding, symbolic safety signs and demarcation
240-106628253	Standard for Welding Requirements on Eskom Plant

240-83539994	Eskom NDT Personnel Approval for Quality Related special processes on Eskom Plant standard
240-83540088	Requirements for NDT on Eskom Plant Standard

Operational Documents

The *Contractor* submits as a minimum the following documents, as required by the *Project Manager* during the execution of the *works*:

- a) Updated QCP register
- b) Inspection notifications accompanied by their inspection report
- c) Non-conformance and Defects registers and reports
- d) Updated Site and off site inspection schedules.
- e) Inspections, completed and outstanding.
- f) Inspection and test reports
- g) Weekly and monthly contract quality progress report

Inspections and Tests

All Plant and Materials is comprehensively tested in accordance with the agreed ITP/ QCPs prior to delivery. The *Employer* reserves the right to appoint others to inspect all parts during manufacturing, erection and commissioning to be present at any of the tests specified. The witnessing of tests by the *Supervisor* or Others, and if the *Supervisor* chooses to waive the witnessing of any tests, it does not relieve the *Contractor* of his responsibilities.

Tests that are required by the *Employer* are carried out by the *Contractor* during manufacturing, erection and commissioning to prove compliance with the specification independently of any test that may have been carried out at the *Contractor's* premises.

The *Supervisor* inspects parts of the Plant at his discretion during manufacturing stages and before shipment as per the agreed ITP/QCP;

- a) The *Contractor* is responsible for the inspection of all the work that is performed and the *Supervisor* only verifies that the work is conducted as per the Works Information.
- b) The *Contractor* conducts all inspections in accordance with the accepted ITP/QCP.
- c) The *Contractor* provides suitably qualified personnel to conduct on-and-offsite inspections
- d) The *Contractor* ensures that all are inspected and approved before the *Supervisor* is invited for verification.
- e) The *Contractor* provides a minimum of five (5) working days' notice for local off-site inspections, 24 hours for local on-site inspection, and 21 working days' notice for foreign inspections. The notice contains copies of the *Contractor's* inspection reports.

Quality Responsibility

The *Contractor* responsibilities include but are not limited to the following:

- a) The *Contractor* is accountable for the quality of the output and liable for any failures.
- b) Implementation of their QMS on site
- c) Administration of their QA/QC systems on site
- d) Verification of approval status of Subcontractor's Quality programmes, that is, CQP's, QCPs, NC's, Defects and all their operational procedures and works instructions
- e) On-and-offsite inspections
- f) Weekly and monthly progress reporting on quality performance
- g) The *Contractor* is responsible for defining the level of intervention of QA/QC or inspections in line with the *Employers* requirements.
- h) The *Contractor* is responsible for defining the level of intervention of QA/QC or inspections to be imposed on his *Subcontractor*, suppliers and sub-suppliers and must ensure that these are in line with the *Employer's* requirements.

The *Supervisor* will be responsible for the following:

- a) Reviews of the quality submissions
- b) Verification of the *Contractor's* intervention points
- c) Reviews the *Contractor's* ITP/QCP documents (procedures, test results)
- d) Reviews the data book
- e) Issue of Defects Certificate
- f) Checks and marks off materials off site

Non Conformances and Defects

Where Non-Conformance (NC) notifications are issued, the *Contractor* acknowledges receipt within the period of reply and proposes corrective and preventive actions to the *Supervisor*. The corrective and preventive actions will include the implementation and completion dates. Progress on all NCs notifications issued to the *Contractor* must be reported to the *Supervisor* on weekly basis.

- a) The *Contractor's* Quality Manager keeps a register of all NC notifications issued
- b) Records of NCs notifications are kept and form part of the data book records.
- c) Deviations from the Contract are treated as a non-conformance.

To ensure reduction of non-conformances, the *Employer* will implement a penalty to the value of R20 000.00 for every NCR issued during the contract period not closed within 14 working days.

During the contract execution phase, the *Contractor* will be monitored by the *Supervisor* for performance on quality related aspects. The monitoring will be in the form of audits and assessments.

Quality Reporting

The *Contractor* submits a monthly quality report, on the last working day of the month. The report includes but not limited to the following:

- a) A register of NCRs and defects
- b) Updated QCP / ITP register
- c) QA monthly report summary
- d) Planned and completed local and foreign inspection dates
- e) Completed and outstanding Inspections
- f) Audit findings report
- g) Risks with Mitigation plan

2.6 Programming constraints

The *Contractor* submits a programme within 1 week of the Contract Date. The program shall be in Microsoft Excel or Projects format.

Requirements for the *Contractor's* programme:

The programme has a revision number and a space for the *Contractor's* and *Employer's* acceptance signatures.

The *Contractor* develops this programme to show as a minimum:

- The Project Start and Finish Dates
- The Completion dates for each task
- All interfaces with the *Employer*, and the times reserved by the *Employer* as stated in the Works Information
- Where applicable, the *Contractor* will show activities that are sub-contracted
- Where applicable, the *Contractor* will also indicate when free issue materials, or any other receivables, are to be provided by the *Employer* to the *Contractor*
- Programme includes items such as:
 - Documentation submissions
 - Procurements
 - Off-site fabrication/assembly
 - Transport time
 - Site mobilisation
 - Design
 - Installation
 - Testing
 - Commissioning
 - Handover
 - Training
 - Drawings
- The programme is an integral part of the *Contractor's* offer and shall be part of his tender returnable submission.

Planning requirements:

- For final installation planning and/ or design requirements, plant access can be made available to the *Contractor* after awarding of contract.

For final installation planning, there must be close co-operation between the *Contractor* and the 2.6.1 General

The *Contractor* submits a single integrated Level 3 programme that incorporates all the work to be performed including that of his *Subcontractors*. The interfaces between *Subcontractors* as well as the interfaces between *Subcontractors* and the *Contractor* are clearly identified. Project key dates are incorporated into the programme.

2.6.2 Computerised Planning

Primavera is the only planning tool Eskom accepts for this project; therefore the *Contractor* is required to obtain this planning tool for the use of producing their programmes. The *Project Manager* does not intend duplicating the *Contractor's* planning and scheduling, however, the Accepted Programme will be used in the *Employer's* internal integrated and Master project programmes for project control purposes, updating and monitoring. The accepted programme will be in Primavera XER file. The *Project Manager* requires one project programme to be used and updated during the installation process, which will remain with Eskom. This insures that any changes, deviations to the Programme can be carried out on the agreed programme and monitored. The initial programme supplied to Eskom after Contract award must be fully resource loaded.

Any changes that are required to be made to the Project/Programme i.e. scope changes, delays and the such, will be recorded through the Eskom change process and documentation, where all parties agree to the changes and sign.

The *Contractor* and *Project Manager* shall agree on the format of how the updates will be done i.e. PDF, XER, and the frequency of the updates i.e. such as on a weekly basis, or at any other time as required by the *Contractor*, or as instructed by the *Project Manager*.

The latest version of Primavera has been adopted by the *Employer* for all planning, progress monitoring and reporting on the Contract. The *Contractor* obtains this software and applies it for the planning and control of the work in line with the Work Breakdown Structure (WBS) which will be agreed upon contract award.

2.6.3 Planning and Scheduling Levels

All planning and scheduling is done based on the Critical Path Method (CPM). The *Contractor* uses activity codes to define interfaces to be agreed upon between project manager and *contractor*. The *Contractor's* programme shows the actual critical path clearly.

The schedule layout takes into account the approved WBS, reflecting the manner the *works* are to be performed as per the *Contractor's* Method Statement and how activities are to be summarised, reported and monitored.

The following levels of programmes are to be used for this project for integrated project control:

- (a) Management programme (Level 1)
- (b) Project programme (Level 2)

- c) Control programme (Level 3 – Sub-system level)
- d) Discipline specialty programme (Level 4)

2.6.3.1 Management Programme (Level 1) – Project Master Programme

The management programme Level 1 is the project master programme and is used to show the overall time frames for the *works*. It is a statement of project objectives recorded in graphic form.

2.6.3.2 Project Programme (Level 2)

A "rolled up" programme from the control level 3 programme is produced. It will be separated by unit, plant area and by phase (engineering, procurement, construction and commissioning).

2.6.3.3 Control Programme (Level 3 – Sub-system level)

The project programme is prepared representing the significant work activities and deliverables associated with the *works*.

The programme includes:

- a) Major milestones, interface dates, access dates and key dates (for the new plant, existing plant and between *Subcontractors*)
- b) The duration of major activities and their relationship to one another.
- c) Identified long-lead material items.
- d) Responsibility assignments for accomplishing project objectives end product is a time scaled bar-chart programme developed using logic network.

This programme is separated by unit, by plant area, by phase, by WBS. The work within each plant area is broken down by engineering discipline, procurement, delivery, construction by the *Contractor*, start-up and commissioning. The programme is resource-loaded and it forms the basis for progress measurement, progress curves and histograms for each discipline within a plant area. This is used for Evaluations and for the accepted programme after contract award. This will be saved and used as the original.

The *Contractor* submits a Level 3 Programme to the *Project Manager* which breaks the Works Information down to a sub-system level as per the Activity Schedules. This programme is in alignment with the *Contractor's* Method Statement. The *Contractor's* Forecasted Rate of Invoicing (FRI) should also align with the resource loading on the programme.

2.6.3.4 Discipline Programme (Level 4)

The discipline specialty programme is developed and maintained by the *Contractor* and generated for tracking and control of various activities and deliverables for all phases of the project. This programme is formatted as a spreadsheet or database report utilizing the WBS breakdown. This programme represents the day-to-day activities which are work-unit based and are summarized in the level 3 activities.

Resource information for manpower, plant, material and equipment and reflected in resource histograms is provided by the *Contractor*. Staffing histograms are required to be submitted based on "equivalent personnel".

- *Employer*.

2.6.4 Planning Programmes

The *Contractor* develops a contract programme which will include a bar chart conforming to the project master programme dates included and sufficient detail to indicate the *Contractor's* intention for executing the *works*. This programme covers major items relating to design, procurement, manufacture, delivery, erection, start-up and commissioning. The critical path is clearly shown.

Key milestones, access dates, interface dates and commissioning key dates are clearly identified in the contract programme, including access dates and release of terminal points that involve the *Employer* or *Others*.

The programme makes provision for site related preparation such as site establishment, safety induction and medical clearance of the entire *Contractor's* staff that will be working on site.

2.6.4.1 Procurement and Manufacturing Programme

The *Contractor* is required to submit a procurement and manufacturing programme for review by the *Project Manager* which identifies as a minimum:

- a) Details of orders and target dates for placing subcontracts
- b) Any detailed design required within the manufacturing period
- c) Long-lead delivery items
- d) Hold-points and witness-points for inspection and tests for acceptance and release.
- e) CSI roll out plan to be incorporated.

This programme is in sufficient detail to enable the work to be adequately tracked and progressed.

2.6.4.2 Construction Programme

The *Contractor* is required to submit a construction programme that is resource loaded for review by the *Project Manager*. This programme includes the following criteria:

- a) Full details of all civil/mechanical/electrical/C&I terminal point release requirements
- b) Identify any erection or commissioning activities that may affect other construction activities
- c) Identify when services are required for commissioning purposes

This programme meets the requirements of the *Contractor* and *Others* engaged on the project.

The programme shall be based on the following working hours: Where applicable

- a) Twenty four (24) hours per day
- b) Seven (7) days per week
- c) Holidays included as working days
- d) Pay weekends to be negotiated (if working 7 day work week)

2.6.4.3 Commissioning Programme

During the progress of the *works*, the *Contractor* develops a detailed commissioning programme with sufficient detail to enable the work to be adequately progressed and tracked to meet the commissioning key dates.

Training programme to be incorporated into the commissioning programme.

The commissioning programme is detailed to sub-system level and is fully integrated with the Construction Programme.

2.6.4.5 Reporting and Data Requirements for *Contractors* Document number 240-83561037

This specification is included as an Annexure to the Works Information. This specification lists all the data and reporting that must be submitted by the *Contractor* on a weekly / monthly basis to the *Project Manager*. The purpose of this information is to implement proper project controls on this project.

2.7 *Contractor's* management, supervision and key people

The *Contractor* will provide the *Employer* and the *Project Manager* with an organogram showing the key people and the roles and responsibilities.

The organogram provided must show clear reporting lines between individuals, including individuals from *subcontractors* or joint ventures.

The *Contractor* provides the following key personnel as a minimum:

- a) Dedicated *Project Manager*
- b) Dedicated Project Planner
- c) Dedicated *Site Manager*
- d) Dedicated *Quality Manager*
- e) Dedicated *Site Safety Manager*

Dedicated Environmental Manager

2.8 Invoicing and payment

The Z clauses make reference to invoicing procedures stated here in this Service Information. Also include a list of information which is to be shown on an invoice.

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.

At each *assessment interval*, the *Contractor* submits to the *Project Manager* a forecast rate of invoicing that includes all the expected payments by the *Employer* to the *Contractor* on a month-by-month basis.

The invoices from the *Contractor* contain the following information:

- a) The registered name of the *Contractor*
- b) The VAT registration number of the *Contractor*
- c) The address of the *Contractor*
- d) The *Employer's* contract number
- e) The VAT registration number of the *Employer*

- f) The amount paid to date
- g) The value of the invoice split into payments as per the *activity schedule* as indicated in the Price Lists.
- h) Any retention monies to be deducted from the invoice
- i) Any interest payable
- j) Escalation formula used where applicable
- k) Settlement discount
- l) Proof of ownership of materials supplied

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

All invoices in PDF format shall be emailed straight from your system to an Eskom email address (see email addresses below):

- Email addresses for invoice submission:
 - All invoices:
 - The *Project Manager* shall be copied when submitting invoices.
- All queries and follow up on invoice payments should be made by contacting the FSS Contact Centre:
 - Tel: 011 800 5060 or e-mail: fss@eskom.co.za
- For Foreign invoices, the *Contractor* is required to physically deliver hard copies of original documents to the *Project Manager* even though the *Contractor* has e-mailed those invoices.
- The *Contractor* ensures compliance with the tax Requirement for submitting invoices electronically.
- If there is Cost Price Adjustment (CPA) on your invoice, the *Employer* recommends that the *Contractor* issue a separate invoice for CPA so that if there are any issues on the CPA the rest of the invoice can be paid while resolving CPA issues.
- The base invoice number needs to be mentioned on the CPA invoice.
- Electronic invoicing does not guarantee payment but ensures visibility of all invoices and ensures that no invoices get lost. If the Goods Receipt (GR) is not done the invoice will be parked and the system will automatically send an e-mail to the *Project Manager* to do the goods receipt. This is also tracked by the *Employer* through the parked invoice report.
- The *Contractor* can request a parked invoice report from the Finance Shared Services (FSS) Contact Centre which can then be followed up and corrected. You are welcome to forward the details of invoices corrected to the FSS Contact Centre.

2.9 Insurance provided by the *Employer*

N/A

2.10 Contract change management

The *Contractor* submits a programme within 1 week of the Contract Date. The program shall be in Microsoft Excel or Projects format. The programme indicates the followings:

- The hour duration of each activity,
- The working calendar (number of work hours per day, days per week),
- The exact quantity of people per day
- All phases and interfaces

2.11 Provision of bonds and guarantees

Not applicable

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

The Contractor may keep records of payments, assessments of compensation events if he deems it necessary.

2.13 Training workshops and technology transfer

No training required

3 Engineering and the Contractor's design

3.1 Employer's design

All materials must be delivered to the Kriel site in the lay down area that will be identified during the site establishment phase of the project.

Stripping shall be done for the following reasons:

- Where construction vehicles will be moving
- Where temporary facilities will be placed such as toilets
- Where the fence will be erected

Stripping the topsoil which includes the top 150mm of soil (or to the depth of the bedrock where the soil is shallower than 150mm) and root material of cleared vegetation, for subsequent use during rehabilitation. Topsoil shall be stripped from all areas of the working area where topsoil will be impacted by construction activities including areas for temporary facilities. Stockpile area shall be identified by Eskom power stations EO (environmental officer) for the contractor to comply to. Topsoil and subsoil stockpiles shall not exceed 2m in height and shall be so placed as to occupy the minimum width compatible with the natural angle of repose of the material, and shall be taken to prevent the material from spreading over too wide a surface.

Clearing areas of all grass, weeds, shrubs, debris, including grubbing up all roots and cart away all vegetation and debris to indicated spoil areas. Once the clearing is completed the setting out will be carried out by the qualified Surveyor, according to the coordinates on the drawings prior to any excavation commences. All excavations work will be performed in accordance with method and specification under 1200D. The excavation material will be stockpiled at the designated areas approved by Eskom Kriel power station. Tipper trucks will be used to transport the top soil to the area of the stock pile. Compaction and backfill to be carried out to the specifics according to the inspection test method. Compaction of at least 90% of Mod AASHTO will be applicable on the backfill around fence mesh trench, fence post and G5 material and will be randomly tested by an independent laboratory.

Around the dams, the contractor is responsible for installing a 1.8 m diamond mesh – 1800 x 75 x 2.0mm with High pressure flat razor wire 2.24mm at the top and bottom of the fence. (High tensile and difficult to cut). This must include all support poles, carrier poles and corner poles.

Around the pump and panel area, 1.8 m concrete palisade fencing with extra-long post to fit 500mm flat-wrap (flat razor wire) on top of concrete palisades as well as all post, pale and cross bars required.

All gates must be installed and must have heavy duty lockable hitches

Safety warning signs to be installed as per SANS standards (every 50m). Safety warning sign must have hole in the middle to allow wind flow. Safety signage must consist of the following minimum description and in at least 2 languages (English & Zulu)

Labour will be supplied by the contractor to supervise on and off site activities, including normal & overtimes (Overtime work up to contractor discretion). All plant operators must have competent and certified operators. Supervisor (with safety training (HIRA) to conduct risk assessments) must be full time on site to supervise all work activities and required. Operators and/or General workers will be supplied by the contractor to execute the work activities.

Kriel Power Station Security required to patrol the fencing using the access roads surrounding the various dams. Security is required to (but not limiting to):

- Map and schedule patrol route around fence (multiple access roads surround the cuts and dams)
- Report any missing or damaged fencing for repair or replacement

3.2 Parts of the works which the Contractor is to design

The Contractor is responsible for the supply and design of the below mentioned works. The design and/or construction drawings must be submitted to the Project Manager in advance in order for the Employer to review and accept. A method statement, clearly defining the execution of the works, must be submitted to the Project Manager for approval as part of the design package

3.2.1 Responsibility for Design

- i. The *Contractor* takes full professional accountability and liability for all designs done by the *Contractor*.
- ii. The *Contractor* is responsible for the design of all temporary *works* required for the execution of the project.
- iii. The *Contractor* takes full professional accountability and liability for all designs of all temporary *works* required for execution of the project.
- iv. All designs, design reports and construction drawings prepared by the *Contractor* are signed off by an ECSA Professionally registered Technologist and/or Engineer who takes full professional accountability for the designs.
- v. The *Contractor* is mandated in terms of Construction Regulations 2014: Duties of Designer, 6(1) g to fulfil the duties described therein for the detailed designs done by the Contractor. Any risk associated with the *Contractor's* design is highlighted to the *Employer* together with mitigation measures.
- vi. The *Contractor's* design is required to be in accordance with all National Standards and Specifications referenced in this *Works Information*

i. Civil and Structural

- i. The *Contractor* is responsible for the design, supply and erection of all temporary works required for the project.
- ii. The *Contractor* is responsible for the design and shop detail drawings of all the fences specified by the employer and any outstanding items not supplied by the *Employer*. This includes surveying and setting out points for the fence around each dam.
- iii. The *Contractor* is responsible for the design, supply and installation of the perimeter fence and access gates to be installed at all Dams owned by Kriel Power Station. The *Employer* has supplied general specifications of the fence details and design requirements, for the perimeter fences and access gates.
- iv. The *Contractor* submits the final design, method statement and detailed construction drawings of the perimeter fences and access gates to the *Project Manager* for acceptance prior to construction and/or installation.

ii. Signage

- i. The *Contractor* is required to provide applicable signage's for the following system:
 - Safety warning signs to be installed as per SANS standards (every 50m). Safety warning sign must have hole in the middle to allow wind flow. Safety signage must consist of the following minimum description and in at least 2 languages (English & Zulu)
- ii. The *Contractor* provides all signs in accordance with SANS 1186

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

The *Contractor* submits all designs to the Employer for record purposes. The designs submitted are complete packages with all elements (drawings, calculations) included.

The *Employer* conducts a high-level review of the drawings. The *Employer* reserves the right to review any design in the detail that is deemed necessary. The *Employer* accepts no accountability and liability due to the review of any designs or if any acceptance is given.

The *Contractors* is the Design Authority as defined in the Design Review Procedure 240-53113685 for the works. In terms of the Construction Regulations, the *Employer's* review of the *Contractor's* design does not influence the design as only the *Contractor* can amend,

update and revise the design. The *Contractor* remains the "Designer" as per the Construction Regulations, the Employer is not the "Designer". The *Contractor* is responsible for following this design procedure and submits all the necessary information to the *Employer* to allow the following reviews to be conducted:

a) Design Freeze Review

b) System Integrated Design Review

c) The *Contractor* considers this review process in the schedule

The following process will be followed during submission of documents:

a) The *Contractor* submits the documents/drawings to the *Employer's* Document Controller.

b) The *Employer's* Document Controller registers the documents.

c) The *Employer's* Document Controller will supply the documents/drawings to all relevant parties within the *Employer's* project team.

d) The *Employer's* project team reviews the documents/drawings and will submit all comments or inputs to the *Contract Manager* who submits to the *Contractor* for consideration.

e) If the Employer finds major deficiencies in the submitted documents/drawings, the *Contractor* revises the documents/drawings and resubmits to the Employer.

f) The Employer reviews the documents/drawings and if no major deficiencies are found, the *Contractor* organises a review session.

g) The Employer and the *Contractor* conduct a review.

h) If any fundamental errors were found in the review or further actions are required, the *Contractor* record all concerns raised and revises the documents/drawings.

i) The *Contractor* organises a review session once all documents/drawings have been revised according to the concerns raised by the Employer.

j) If no fundamental errors were found in the documents/drawings during the review session, the *Contractor* compiles the review minutes/report and submits it to the Employer.

k) The Employer's Document Controller registers the report.

l) The Employer's project team reviews the *Contractor's* report/minutes. If the report/minutes are not acceptable, the *Contractor* revises the report/minutes and resubmits to the Employer.

m) The Employer will accept the *Contractor's* documents/drawings once the report/minutes are accepted by the Employer's project team.

The *Contractor* is to implement the following activities for acceptance:

a) The *Contractor* reviews, stamps, dates and signs to signify his approval and submit in the manner required by the Employer in an orderly sequence so as to cause no delay in the work, all *Contractor's* drawings, equipment selections and/or samples required by the

Works or subsequently by the Employer. *Contractor's* drawings, equipment selections and samples are to be properly identified as specified or as the Employer may require.

b) At the time of submission, the *Contractor* informs the Employer in writing of any deviation in the *Contractor's* drawings, equipment selection or samples from the requirements of the Works.

c) Each individual plant & material selection submission is to be accompanied by a copy of the applicable detailed technical specification. Each clause of this specification to be marked "Complies" or "Does not comply", complete with reason stated, alternative offered and countersigned by the *Contractor*.

d) Plant & material selection submissions are to be indexed like the index for plant & material part of the "Operating Instructions and Maintenance Manual".

e) The *Contractor* is required to submit two copies of drawings and plant & material selections along the channels agreed.

f) By submitting drawings, plant & material selections and/or samples, the *Contractor* represents that he has determined and verified all site measurements, site instruction criteria, materials, catalogue numbers and similar data, and that he has checked and co-ordinated each services drawing and sample with the requirements of the Works.

g) The Employer reviews *Contractor's* drawings, plant & material selections and samples so as to cause no delay, but only for conformance with the design of the Works. The Employer's approval of a separate item does not indicate approval of an assembly in which the item functions.

h) The *Contractor* makes any corrections required by the Supervisor and re-submits the required number of corrected copies of the *Contractor's* drawings, plant & material selections or new samples until approved. The *Contractor* directs specific attention in writing on resubmitted drawings to revisions other than the corrections required by the Supervisor on previous submissions.

3.4 Other requirements of the *Contractor's* design

Use this section to describe any particulars which must be taken into account by the *Contractor* in his design; for example codification (configuration management) of Plant and Materials.

3.4.1 Site Conditions

The *Consultant* ensures that Plant and Materials are designed to accommodate the following ambient conditions such that the operation of Plant and Materials is not impaired, damaged or does not perform according to requirements.

Kriel Power Station is a coal fired power station situated about 10 km west from the town Kriel and has been in operation since 1979 (26° 15' 15" S 29° 10' 46" E). Kriel is approximately 1600 m above sea level.

Winters at Kriel Power Station are mild and dry with an average maximum temperature dropping below 25 °C in May, June, July and August. In June and July, the temperature drops below 0°C. Average summer temperatures exceed 27 °C from September to March. In extreme conditions during summer the temperature can exceed 30 °C. This is usually between October and February.

The humidity at Kriel Power Station is between 15% and 95%. The wind direction is predominantly North and North-West. There are occasional easterly winds that are associated with the relative location and strength of the Indian Ocean anticyclone

3.4.2 As Built Drawings

The *Consultant's* Staff will maintain a master set of red-lined as-built drawings. The *Consultant* will provide drawing mark-ups as work is completed. The *Employer* and the *Consultant* will ensure that all appropriate information is transferred to the field record copy of drawings. The *Employer* and the *Consultant* will check the "as-built" for completeness and accuracy.

The following types of drawings will be updated to as-built status:

- Article II. • Plant arrangements
- Civil & Structural drawings

3.5 Use of *Contractor's* design

First read core clause 22.1 and then include here the exceptions and other purposes if applicable. If there are none this section could be deleted leaving the core clause to stand.

3.6 Design of Equipment

Article III. All designs of equipment by the *Consultant* shall be used only and once review & approval of the designs has occurred. The review & approval shall be submitted to the *employer*.

- The *Consultant* is solely responsible for providing the protection of the equipment from damage or loss due to weather, fire, theft, unexplained disappearance or similar during the execution of the works
- The liability of the use of such equipment in the execution of the works shall remain that of the *Consultant*.

3.7 Equipment required to be included in the works

All plant, machinery and equipment required to perform the services are provided by the *Consultant*.

3.8 As-built drawings, operating manuals and maintenance schedules

The *Consultant's* Staff will maintain a master set of red-lined as-built drawings. The *Consultant* will provide drawing mark-ups as work is completed. The *Employer* and the *Consultant* will ensure that all appropriate information is transferred to the field record copy of drawings. The *Employer* and the *Consultant* will check the "as-builts" for completeness and accuracy.

The following types of drawings will be updated to as-built status:

- Plant arrangements
- Civil & Structural drawings

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed on the Site

4.1.2 BBBEE and preferencing scheme

Specify constraints which *Contractor* must comply with after contract award in regard to any Broad Based Black Economic Empowerment (B-BBEE) or preferencing scheme measures.

4.1.3 Accelerated Shared Growth Initiative – South Africa (ASGI-SA)

If the ASGI-SA requirements are to be included in this contract specify constraints which *Contractor* must comply with after contract award in regard to any ASGI-SA requirements. The ASGI-SA Compliance Schedule completed in the returnable tender schedules is reproduced here. If ASGI-SA does not apply, delete this paragraph.

The *Contractor* complies with and fulfils the *Contractor's* obligations in respect of the Accelerated and Shared Growth Initiative - South Africa in accordance with and as provided for in the *Contractor's* ASGI-SA Compliance Schedule stated below

.
[Insert the agreed ASGI-SA Compliance Schedule here]

The *Contractor* shall keep accurate records and provide the *Project Manager* with reports on the *Contractor's* actual delivery against the above stated ASGI-SA criteria. [Elaborate on access to and format of records and frequency of submission etc.]

The *Contractor's* failure to comply with his ASGI-SA obligations constitutes substantial failure on the part of the *Contractor* to comply with his obligations under this contract.

4.2 Subcontracting

4.2.1 Preferred subcontractors

ECC does not make use of nominated subcontracting, but the *Employer* may list which subcontractors or suppliers the *Contractor* is required to enter into subcontracts with. This is usually only required where Plant and Materials need to be obtained from a particular supplier or group of suppliers in order to comply with operational standards.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

Specify any constraints on how the *Contractor* is to prepare subcontract documentation, whether use of the NEC system is compulsory or not (compulsory is recommended) and how subcontract tenders are to be issued, received, assessed (using a joint report?) and awarded.

4.2.3 Limitations on subcontracting

The *Employer* may require that the *Contractor* must subcontract certain specialised work, or that the *Contractor* shall not subcontract more than a specified proportion of the whole of the contract.

4.2.4 Attendance on subcontractors

State requirements for attendance on Subcontractors, if any

4.3 Plant and Materials

4.3.1 Quality

Quality is usually designed in or specified in the technical specifications referred to in section 6 of this Works Information. However to cover circumstances where quality may not be prescribed, this sub-paragraph could be used as an overarching default requirement. It could also be used to deal with how repairs are carried out after a Defect has been notified; for example can the item be fixed up or must it be replaced by a new one. See also SANS 1200A, sub-paragraph 3.1

- i. Only components of high reliability will be utilised, with a proven operating history, to enable the Plant to achieve required reliability and availability. Plant and Material design, engineering and manufacture will accord with the best modern practice applicable to high-grade products of the type to be furnished, so as to ensure the efficiency and reliability of the *works* and the strength and suitability of the various parts for the *works*.
- ii. Plant and Materials withstands ambient conditions and the variations of temperature arising under working conditions without distortion, deterioration or undue strains in any part.
- iii. All parts are made accurately, and where practicable, to standard gauges so as to facilitate replacement and repairs. Like parts are interchangeable.
- iv. No repair of defective Plant and/or Materials will be permitted without the *Project Manager's* acceptance and any such repair, if accepted, will be carried out to the satisfaction of the *Employer*.
- v. The *Contractor* is required to produce the Quality Control Plans (QCP) for the project which indicates the level of product quality control to be applied. The QCPs to be developed will comply with the Eskom Quality Standard (QM 58).
- vi. The Contractor is to submit the QCP for review to the *Project Manager*.
- vii. The *Project Manager* is free to specify holding and witness points during the installation and on site testing stages of the project. The *Contractor* issues preliminary notification of such holding and witness points by fifteen working days advance notice to the *Project Manager*, and confirms such holding and witness points at least seven working days prior to the activity.
- viii. Typical hold points are listed below:
 - Design Review
 - Factory Acceptance Test
 - Delivery to Site
 - Erection
 - Site Acceptance Test
 - All manuals and drawings (in the specified format)
 - Commissioning
- ix. In addition to maintaining appropriate inspection and test records to substantiate conformance to requirements, the following records are safely stored for a minimum period of seven years following the final completion of the Works:
 - Construction, layout and component approvals
 - Type and routine test certificates
 - Construction drawings and approvals
- x. After this period, the *Contractor* offers these records to the *Employer* (in writing) and obtains a disposal instruction.

- xi. All *work* is to be done in accordance with the quality management system of Kriel Power Station as set out in the quality manual, in addition to the ISO 9001:2015 quality management system. High quality standards are also assured by conforming to the following:
- The use of sound design and engineering principles
 - The design process uses a good performance and functional specification
 - All installations conforms to the Works Information
 - Design Review Procedure is followed
 - Engineering Change Procedure
 - QA/QC on the project (manufacturing, installation)

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

Contractor.

State arrangements for collection by *Contractor* or delivery by others on behalf of the *Employer*, off loading, inspection, storage, care custody and control, return of unused Plant and Materials, etc. State whether any samples are to be provided by the *Employer* and if so how, where and when. Always include a statement to the effect that 'all other Plant and Materials are to be provided by the

4.3.3 *Contractor*'s procurement of Plant and Materials

Specify any constraints on how the *Contractor* is to order, codify, expedite, freight, import, transport to Site and any other requirements for delivery and storage before installation. The *Employer* may require warranties from suppliers to be in favour of the *Employer* and not just to the *Contractor* during the life of the contract. Also include requirements for vendor data which the *Employer* may need after Completion of the whole of the *works*. THIS IS A VERY IMPORTANT SECTION IN PROCESS PLANT AND UTILITY PROCUREMENT CONTRACTS.

4.3.4 Spares and consumables

Some contracts may need to include provision for the supply of a minimum category of spares, fuel, oil or other feed stock and consumables which the *Employer* may need at or just after take over and that it is best the *Contractor* provide these initially as part of his Providing the Works.

4.4 Tests and inspections before delivery

- i. The *Employer* carries out quality inspections at own discretion. The *Employer* will inspect and accept stages of manufacture of all equipment necessary to ensure the correct quality of equipment as prescribed in the accepted project quality plan.
- ii. All inspections and testing to be performed in accordance with the Quality Control Procedure (QCP) developed by the *Contractor* after acceptance by the *Project Manager*.
- iii. The *Contractor* must provide facilities for inspection of all items of equipment at the place of the manufacture and this requirement must extend to all Subcontractors and suppliers. All material labour or assistance, tools, gauges, articles or apparatus that the *Employer* may require for the purpose of testing, gauging and inspection, must be provided by the *Contractor*. The *Contractor* provides all such facilities for testing and the contract price must include for this.
- iv. The *Employer* reserves the right to reject items that do not conform to the requirements of the Works Information. When the plant has passed the test referred to in this Works Information, the *Employer* will furnish to the *Contractor* a certificate or endorse the *Contractor*'s test certificate to that effect. Examination by the *Employer* are to not relieve the *Contractor* from the responsibility of carrying out

all tests which may be necessary to ensure the required standard of manufacture or from any obligations in terms of the contract.

- v. The achievement of adequate standards during the tests at the place of manufacture, if performed, is only the first requirement. The final criterion will be performance onsite, and any of the requirement which proves defective due to bad workmanship or material must be replaced forthwith by the *Contractor* at his own cost on the instruction of the *Employer*.
- vi. The following tests are conducted by the *Contractor* and are to be witnessed by the *Employer* at the manufacturer's works or *Contractor's* premises as a minimum requirement:
 - Visual inspection of the equipment
 - Review of the certification requirements
 - Functional tests of the systems
 - Inspection of paint work and corrosion protection.
 - Verification that all components are delivered to the *Contractor's* premises.
 - Verification that components installed is correct.
 - Verification that all labels are correct.
 - Phase rotation

Test Certificates

- i. One copy of all type-test certificates and results must be submitted to the *Project Manager* for approval to substantiate the details stated in the Works Information.
- ii. Two copies of all routine-test certificates and results must be supplied/submitted to the *Project Manager*.

4.5 Marking Plant and Materials outside the Working Areas

All Plant and Materials paid for by the *Employer* must be clearly labelled as being the *Employer's* property

4.6 Contractor's Equipment (including temporary works).

The *Contractor* provides all permanent and temporary plant, materials and equipment required in order to complete the *works*. The *Contractor* supplies, installs, maintains and removes all temporary construction facilities and utilities necessary to provide the *works*

4.7 Cataloguing requirements by the Contractor

State whether cataloguing is applicable, if it is, reference the requirements for cataloguing that need to be satisfied by the *Contractor* (consult Procurement Instruction Number 1 of 2018 – Incorporating Cataloguing into the Procurement Environment, Unique Identifier 240-1289988974).

5 Construction

5.1 Temporary works, Site services & construction constraints

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

Access to Site

Access to the site is controlled and it is governed by the terms and conditions lay down by Kriel Power Station security officials. The proposed site will be shown to the *Contractor* during the site meeting or clarification meeting by the *Employer*.

The *Contractor* liaises with the GCD SHE Practitioner/Officers for Safety Induction prior work to commence. During Safety Induction, site access permits with a copy of the medical and a certified ID copy/passport (not older than three months) should be handed to the GCD SHE Practitioner/Officer for approval.

The Contractor employees will take the signed site access documents to security reception official in order to finalize their site access.

The *Contractor* ensures that all its employees carry their site access forms with them all the time.

The *Contractor* is subjected to alcohol testing on a daily basis.

The Contractor submits his application for vehicle permit to the *Project Manager*. The personnel and vehicles entering and leaving the site are subjected to routine searches.

The *Contractor* obtains a "Gate Removal Permit" from the *Project Manager* before materials and equipment can be removed from site. The "Gate Removal permit" gives itemised list of materials and equipment to be removed from site.

The *Contractor* ensures that a tool list is available on the day of arrival and that all tools are captured on the tool list. The tool list will be handed over to the Reception Security official that will stamp the tool list. The tool list will be kept safe and will be used when tools needs to be remove from site. This message should be handed over to any Subcontractor that will be working on Kriel Power Station.

Site Regulations

The *Contractor* complies with the Site Regulations as per *Employer's* Safety Health and Environmental Specification 240-127760320.

Any subject within the authority of the *Project Manager* may be addressed by a Site Regulation.

Before work starts on Site, a kick-off meeting is held with the *Contractor* and the *Project Manager*, to explain in detail all requirements of the Site Regulations.

The *Contractor* is issued with a CD with the current Site Regulations at the project kick-off meeting.

Permit to Work System

The *Contractor* allocates staff to be trained and authorised as Responsible Persons according to the *Employer's* Plant Safety Regulations (36-681) and/or High Voltage Regulations. These Responsible Persons are available on Site as and when required to take out permits to work.

In this contract the *Contractor* shall appoint employees to attend and be authorised as follows:

- All Construction Managers, Assistant Managers, Supervisors and Assistant Supervisors to attend PSR and be authorised as Authorised Supervisors.
- Four(4) Supervisors to be authorised in terms of the PSR as Responsible Persons; and
- Two (2) to be authorised in terms of ORHVS as Responsible Persons.

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

Restrictions and hours of work may apply at Kriel Power Station. The *Contractor* keeps records of his people on Site, including those of his Subcontractors which the *Project Manager* or *Supervisor* have access to at any time. These records may be required when assessing compensation events.

Health and safety facilities on Site

The *Contractor* provides a First Aid service and SHE representative to his employees and Sub-Contractors. In the case where these prove to be inadequate, like in the event of a serious injury, the *Employer's* Medical Centre and facilities will be available. Outside the *Employer's* office hours, the *Employer's* First Aid Services are only available for serious injuries and life threatening situations. The *Employer* recovers the costs incurred, in the use of the above *Employer's* facilities, from the *Contractor*.

Environmental controls, fauna & flora, dealing with objects of historical interest

As per Kriel Waste Management Procedure – RER 0221, National Environmental Management Act (NEMA, Act No. 107 of 1998) and the National Environmental Management Waste Act (NEMWA, Act No. 59 of 2008).

Title to materials from demolition and excavation

As per Clause 73.2 the *Contractor* has no title to materials from excavation and demolition (e. g. copper).

Cooperating With and Obtaining Acceptance of Others

Other Contractors are working in the same area as the work of this contract. In this regard, the *Contractor* co-ordinates his work with the *Project Manager* to maintain harmonious working conditions on Site.

During the progress of the *works* the *Contractor* provides access to others who also execute work in the same area, on an as and when required basis.

The *Contractor* makes his own assessment of the problems and difficulties which may be encountered for providing access to and interfacing with others (this includes access difficulties experienced during construction or commissioning phase).

Publicity and Progress Photographs

The taking of photographs at Kriel Power Station including the Project *works* is restricted and subject to the approval by the *Project Manager*.

For the purpose of the Progress Reporting Requirements, the *Project Manager* may prohibit the taking of such photographs and/or require that all such photographs be taken by an official *Employer* photographer. In the latter event, the *Contractor* is required to make arrangements directly with the photographer for the taking of the photographs required by the *Contractor* for the purpose of the Progress Reporting Requirements.

Contractor's Equipment

- a) The *Contractor* provides all Equipment that is required to complete the *works*.
- b) The *Contractor* shall ensure that all his construction labour and equipment remains within the fenced off allocated construction area.
- c) The *Contractor* shall ensure that any staff, labour, or equipment moving outside his allocated construction site does not obstruct the normal operation of the power station. Any additional access routes required must be coordinated with the *Project Manager*.
- d) The *Contractor* must keep daily records of his equipment used on Site and the Working Areas (distinguishing between owned and hired Equipment) with access to such daily records available for inspection by the *Project Manager* at all reasonable times.
- e) All Equipment used by the *Contractor* in providing the *Works* shall comply with the General Machinery Regulation 4 of the Occupational Health and Safety Act (Act 85 of 1993).

Equipment provided by the Employer

No Equipment will be supplied by the *Employer*, however the *Employer* does reserve the right to negotiate with the *Contractor* that different equipment be used of another origin for whatever purpose that may become apparent at the time.

The Contractor supplies all equipment including cranes, scaffolding and other earthmoving equipment for the construction of the works.

Site services and Facilities

Site Yard

Site Yard for the Contractor shall conform to the *Employer's* Safety Health and Environmental Specification 240-127760320. It is required, for the proper co-ordination and execution of the works that the *Contractor* has an office on site for the duration of the contract.

A site will be made available to the *Contractor* for his yard within the Power Station security area. The proposed site will be shown to the *Contractor* during site meeting or clarification meeting. The yard is a raw site of approximately one hectare and will be used by the *Contractor* for the establishment of his offices, workshop and stores.

The *Contractor's* yard is subject to periodic inspection by the *Project Manager/delegated* person.

The location of the nearest sewer manhole, power distribution point, portable water connection storm water channel and road access point is indicated by the *Employer*. The Contractor is responsible for connection to the closest point of supply.

Supply of Electricity

Electricity will be made available for construction purposes free of charge from power points which will be indicated by the *Project Manager*. The *Contractor* is responsible for the provision of the reticulation system from the point of supply. Both 220 (AC) Volt and 380 (AC) Volt are available on request. All points of supply requested by the *Contractor* are provided in terms of quantity and location at the discretion of the *Project Manager*.

No guarantees of power supply quality are given and power supply breaks of some duration may occur without warning. Planned outages are also a possibility. The *Contractor* makes arrangements at his own expense to improve continuity and quality of power where necessary for any reason and no claim of any nature relating to power failures is considered.

No connection is made to the permanent installation at Kriel Power Station without the prior acceptance of the *Project Manager*.

The power supply is managed in accordance with the latest revision of the Eskom safety regulations i.e.:

- a) 32-846, Operating Regulations for High-Voltage Systems
- b) 36-681, Generation Plant Safety Regulations
- c) COC for the site installation is required prior to power being switched on.

Lighting

The *Contractor* at his own expense provides temporary local lighting in accordance with the requirements of the OHS Act as amended. The *Project Manager* provides no local lighting. All construction lighting is the responsibility of the *Contractor*.

Water

Water will be made available on request free of charge from water points on site. The *Contractor* supplies at his own cost all the necessary connections, fittings, piping work, temporary plumbing and pumps necessary to lead water from the *Employer's* points of supply to the various points where it is required. The *Contractor* is responsible for maintaining this equipment and for removing it at Completion of the whole of the works.

The Project Manager does not guarantee continuity of supply and the *Contractor* makes his own provision for standby supplies to maintain continuity of work. Claims of any nature relating to discontinuity of water supply are not considered.

Roads

Main access roads are surfaced and complete and may be used by the *Contractor* with the necessary care. The *Employer* maintains the Site roads, described above, to a fair condition. Any costs incurred by the *Project Manager* from damage caused to underground services, structures, etc. as a result of the *Contractor* not using the prescribed routes is recovered from the *Contractor*.

The *Contractor* provides temporary access points from the prescribed routes and roads to the points where the *Contractor* is required to perform work, having first obtained permission in writing from the *Project Manager*.

Setting-Out Beacons

The *Project Manager* provides permanent beacons marking the main setting out grid lines for the works, and permanent level benchmarks.

The *Contractor* takes reasonable steps to preserve beacons and benchmarks provided by the *Project Manager* who is not to be held responsible if any existing beacons are removed as long as other beacons exist.

Facilities provided by the Contractor

Contractor's Yard, Offices, Workshops and Stores

It is required, for the proper co-ordination and execution of the works that the *Contractor* has an office on Site for the duration of the contract.

The *Contractor* includes in his establishment rates for all further treatment of the yard areas that he considers necessary for his entire operation throughout his period of occupation and under all weather conditions. The *Contractor* also includes for all security fencing, security and access arrangements. The yard will be kept clean and tidy at all times, this will include all workshops and storage areas under the control of the *Contractor*. Maintenance of the yard is the *Contractors* responsibility and is for the *Project Managers* acceptance.

Outfall drainage of all surface run-off drains is constructed by the *Contractor* to the acceptance of the *Project Manager* to minimise erosion and to effect control of contaminated water. The *Contractor's* plan for

the layout of his yard area are accepted by the *Project Manager* prior to occupying the yard and the *Contractor* does not occupy any site area other than that allocated to him. The *Contractor's* plan states fully what measures are taken regarding removal and storage of topsoil, stabilisation of eroded areas and further loss of topsoil.

The *Contractor* complies with the environmental policy given in the Site Regulations. The *Contractor* provides, erects and maintains for his own use adequate size office accommodation and stores together with such drainage, lighting, heating, and hot and cold water services as may be required. Provision is also made for adequate parking and a turning area adjacent to all the aforesaid structures. The *Supervisor* prior to commencement of any work on Site accepts all designs and layouts for these provisions.

The *Contractor* dismantles and clears the yard of all such temporary structures and associated foundations and infrastructure at the direction of the *Project Manager* on Completion of the whole of the *works*. No such dismantling and clearance work is carried out without prior acceptance from the *Project Manager*.

The *Contractor* shall make provision for carrying out of all quality control testing required in terms of the works involved. This shall include, but is not limited to, the following:

- Soil grading analysis from 0.075 mm up to 100 mm as per TMH 1 A1a) and A5;
- Soil testing for Atterberg limits as per TMH 1 A2-A4;
- Soil density testing (nuclear and sand replacement as per TMH 1 A10);
- Soil testing for moisture content;
- DCP testing.

The *Contractor* shall either provide a laboratory on site or may make use of approved external laboratories and/or laboratories of other contractors on site subject to the approval of the *Project Manager*.

Results of permeability testing will only be accepted if carried out by an accredited laboratory.

Telecommunications

Neither a network point nor a telephone is available on site. Should the *Contractor* require one, he is to make his own arrangements with relevant authorities. Arrangements may also be made to use the telephones of the station if they are available. Calls from these will be charged for at prevailing GPO rates.

Should the *Contractor* wish to use radio communication equipment on site, he will make his own arrangements with the relevant authorities. In this case, he is requested to liaise with the head of security at the station to ensure that there is no interference with existing channels or equipment.

Sanitary Facilities and Refuse

The *Contractor* is to supply own sanitary facilities at his *Contractor's* yard. A refuse control system will be established by the *Contractor*. All waste and refuse will be collected and disposed of as directed by the *Project Manager*, at the Power Station refuse disposal site. In case where refuse disposal sites are not provided by the Power Station, then *Contractor* is responsible for the removal of such waste to an authorised waste site.

Equipment/Appliances

Any electrical Equipment, or appliances, used by the *Contractor* conforms to the applicable OHS Act safety standards and is maintained in a safe and proper working condition. The *Project Manager* has the right to stop the *Contractor's* use of any electrical Equipment, or appliance, which, in the opinion of *Project Manager*, does not conform to the foregoing. Inspection of equipment/appliance will be done as required by OSH Act.

The *Employer* may assist the *Contractor* with the off-loading of equipment, plant and material but the responsibility for off-loading remains with the *Contractor*.

Any special tools and equipment to be used on site for the execution of the *works* is the responsibility of the *Contractor*.

Survey control and Setting Out of the Works

The *Project Manager* designates the working area boundary limits and assigns for the *Contractor's* use access roads, parking areas, storage areas, existing facilities areas and construction areas. The *Contractor* does not trespass in or on areas not designated for his work.

The *Contractor* is responsible for keeping *Contractor's* personnel out of areas not designated for *Contractor's* use, except, in the case of isolated work located within such areas for which the *Contractor* is authorised to do so.

The control points will be established by the *Contractor*. Land surveys will be done by the *Contractor* before and after clear and grub, before and after topsoil strip and after final excavation before construction commences.

The *Contractor* will ensure that application for excavation permit is done well in advance before any excavation work can start in an area. The *Employer* will need the drawings of the work to be conducted in the area to show the Excavation authorised person of Kriel the drawings so that an excavation permit can be issued. A copy of the excavation permit with the drawings will be handed to the *Employer* for record keeping.

In addition, the survey information is to be according to the National LO co-ordinate grid system and is to be provided in digital format (either YXZ format or preferably in Model Maker file system ver. 7 or above).

The following survey information is additionally required in order to approve construction works executed. This list is intended to give an indication of some of the survey work required, and is not intended to be an exhaustive list of all the surveys that will be required.

- Detailed bottom of excavation survey, before placement of any layer works, clearly showing toe and crest lines of the basin excavation and embankment walls (for all works).
- Survey of invert level subsoil and leakage detection collection collector and outlet pipes to verify falls and length of pipes installed.
- Detailed survey of final HDPE liner surface, clearly showing toe and crest lines of the facility.
- As-built surveys of the bottom and top of primary and secondary Compacted Clay Liners to verify liner thickness, as well as of the final surface of the ballast layer, will be required.
- Inverts levels of storm water drains.

- Any extensions to stockpile areas.

Final As-Built survey information must be given to the *Supervisor* in the same format as what the setting out was given in the drawings. Final completion will not be processed before this survey information has been evaluated and verified using a DTM package.

Control of Noise, Dust, Water and Waste

The *Contractor* maintains a high standard of cleanliness during the conduct of his activities at Kriel Power Station. This includes areas allocated for storage of materials, site offices etc. to the satisfaction of the *Project Manager*. The *Contractor* keeps these areas clean and free from accumulation of waste materials and refuse regardless of the source.

The *Contractor* ensures during sweeping and dusting, that a minimum amount of dust is liberated into the atmosphere. Cleaning by vacuum cleaners is preferred and the use of compressed air for cleaning is prohibited.

The *Contractor* is responsible for the prompt removal of all waste to a designated disposal area. The disposal area will be on or in the vicinity of the Power Station and be indicated by the *Project Manager*.

For the purpose hereof, "waste" any matter, whether liquid or solid or any combination thereof, which is a by-product, emission, residue or remainder of any process or activity carried out in connection with the *works* and which is not reused on the Site in the ordinary course of carrying out the *works* within seven days of production.

The *Contractor* provides an adequate number of marked bins and containers at offices, in yards, at workshops and on the Site for the temporary storage of waste. These bins and containers are subject to approval by the *Project Manager*. The *Contractor* is required to segregate certain items of waste by type as designated by the *Project Manager*.

Bins and containers are emptied and waste removed to the designated area at least once a week. All the temporary storage areas for bins and containers are kept tidy and must not constitute a nuisance to others. The *Contractor* takes all required steps to avoid spillage of waste alongside the bins and containers during removal and disposal thereof.

All waste that cannot be contained in either a bin or container is placed on a temporary waste site which the *Project Manager* identifies. The waste is removed as soon as possible but in any event at least once a week. No burning of waste is allowed at the Power Station.

Hazardous waste is dealt with in accordance with the safety, health and/or environmental requirements of the *works* and the *Contractor* is solely responsible for the proper disposal thereof. Hazardous waste will be disposed of at an authorised landfill site. Waste manifest will be kept for record keeping and hand over at the end of the Project.

Controlling water from excavations is done as required by the Environmental legislation and only after a method statement to this regard has been accepted by the *Project Manager*.

The *Contractor* must ensure that adequate pumping capacity is provided for the continual pumping of water from excavations. Water may be contaminated and should not be discharged into the environment unless tested.

Sequences of Construction or Installation

The *Contractor* is responsible for the construction and installation of the equipment according to the *Contractor's* construction and installation plans.

The *Contractor* complies with the *Employer's* Work Co-ordination Process.

Without derogating from the provisions of the Conditions of Contract, the Work Co-ordination Process is used by the *Project Manager* to monitor and manage activities on the Power Station and to facilitate the integration and co-ordination of the various *works* by others.

If not included in the contract, the *Project Manager* will notify the *Contractor* of the requirements of the Work Co-ordination Process prior to the date of site establishment by the *Contractor*.

Giving Notice of Work to be covered up

The *Contractor* provides a notice of work to be covered up to the *Supervisor*.

Hook ups to Existing Works

The adjacent plant and equipment may not be modified without written permission from the *Project Manager*. The *Contractor* complies with Eskom Life Saving Rules and will report any non-conformance.

5.1.2 Title to materials from demolition and excavation

Clause 73.2 states that the *Contractor* has title to materials from excavation and demolition (e. g. copper) only as stated in the Works Information. Hence state here any special arrangements regarding such title. If nothing is stated then the default position is the *Contractor* has no such title.

5.1.3 Cooperating with and obtaining acceptance of Others

This sub-paragraph could be used to deal with two issues.

- 1) The cross reference from core clause 25.1 about cooperation generally as well as details about others with whom the *Contractor* may be required to share the working areas. See clause 11.2(10) for the definition of others.
- 2) Requirements for liaison with and acceptance from statutory authorities or land owners.

5.1.4 Publicity and progress photographs

State requirements for notice boards, advertising rights, media relations, photography and progress photographs if required.

5.1.5 Contractor's Equipment

This sub-paragraph is intended to address how records are to be kept of Equipment on Site including whether it is owned or hired. Include any constraints about scaffolding, rigs, heavy lifts and cranes, including removal from the Working Areas. Also silencing similar to Clause 4.1 in SANS 1200 A

5.1.6 Equipment provided by the Employer

Provide details of equipment made available for use by the employer and set out conditions relating thereto.

5.1.7 Site services and facilities

This is a mandatory cross reference from clause 25.2 in ECC3. State what the *Employer* will provide in the way of power, water, waste disposal, telecoms, ablutions, fire protection, lighting etc. Give hook up locations and any constraints on how the hook up is to be done. Always conclude by stating that the *Contractor* shall provide everything else necessary for providing the Works.

5.1.8 Facilities provided by the Contractor

Describe what the *Contractor* is to provide in the way of Site accommodation, laboratories, storage, vehicles and office equipment etc for the *Project Manager* and the *Supervisor*, and any restrictions or minimum requirements concerning the *Contractor's* own facilities. State requirements for facilities to be provided by the *Contractor* such as construction camps. Also state what happens to these facilities upon completion of the contract. Set out constraints, if any, as to the location by the *Contractor* of such facilities on the Site and requirements for drawings of Site facilities, as necessary.

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

Details under this sub-paragraph are very contract specific and may be quite extensive in some cases. State requirements for the inspection with the owners of adjacent buildings and properties and representatives of local authorities before commencing with the *works* that have the potential to damage surrounding buildings and property. State whether *Contractor* is required to inspect the work of Others to which he is required to connect and if so by when to avoid delays to his work.

5.1.10 Survey control and setting out of the works

Provide information on survey controls established by the *Employer*, if any, and state requirements for survey control and the setting out of the *works*.

5.1.11 Excavations and associated water control

State any particular requirements for handling deep foundations and controlling water from excavations.

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

Describe known services making reference to drawings containing known services and state requirements for locating, marking and recording such services.

State requirements for the treatment of existing services i.e. their termination, diversion or continued use, either temporarily or permanently, and set out the procedures relating thereto.

State requirements, as necessary, for the use and availability of detection equipment for the location of underground services.

State responsibility for damage to services, known and unknown, and requirements for working in close proximity to services etc.

State requirements and reinstatement procedures for the notification and repair of damage to services and any penalties applicable to the damage of services.

5.1.13 Control of noise, dust, water and waste

State requirements, if any.

5.1.14 Sequences of construction or installation

Only prescribe sequences of work where absolutely necessary such as when *Contractor* has to give access to others (without take over) and for technical reasons such as under tidal conditions and in rivers.

5.1.15 Giving notice of work to be covered up

State the procedure for notifying the *Supervisor*

5.1.16 Hook ups to existing works

State any constraints

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Work to be done by the Completion Date

This is mandatory. Core clause 11.2(2) defines Completion as when the *Contractor* has done all the work which the Works Information states he is to do by the Completion Date. Rather than list all work to be done by the Completion Date, state that all work is to be done by the Completion Date except for [●]. For example:

On or before the Completion Date the *Contractor* shall have done everything required to Provide the Works except for the work listed below which may be done after the Completion Date but in any case before the dates stated. The *Project Manager* cannot certify Completion until all the work except that listed below 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.

Item of work	To be completed by
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	As built drawings of	Within days after Completion
	Performance testing of the <i>works</i> in use as specified in paragraph of this Works Information.	See performance testing requirements.

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

Clause 35.2 in ECC3 provides that the *Employer* may use any part of the *works* before Completion has been certified but if he does so he takes over the part of the *works* except if the use is for a reason stated in the Works Information. State the reason here if this applies.

5.2.3 Materials facilities and samples for tests and inspections

State what materials facilities and samples for tests and inspections the *Contractor* and the *Employer* are to provide, per core clause 40.2.

5.2.4 Commissioning

Required mainly for contracts including mechanical and electrical work. Would typically refer to detailed commissioning procedure attached as an Annexure. Confirm whether commissioning is to be done before or after Completion. If after Completion, include this item of work in the list in sub-paragraph 5.2.1 above.

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

In order to put the *works* into operation the *Employer* may require the *Contractor* to either do this for him or be in attendance whilst he does it, depending on who is the responsible person. State requirements of the *Contractor* here together with any special arrangements associated with operating plant and machinery.

5.2.6 Take over procedures

Take-over is after or at the same time as Completion. The *Employer* may require the *Contractor* to provide assistance, security personnel on a temporary basis etc.

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

Clause 43.4 requires that the *Project Manager* arranges for the *Employer* to allow the *Contractor* access to and use of a part of the *works* which has been taken over if needed to correct a Defect. After the *works* have been put into operation, the *Employer* may require the *Contractor* to undertake certain procedures before such access can be granted (for example barricading a motorway or in a nuclear power station). Include these here.

5.2.8 Performance tests after Completion

Many design and build or turnkey projects require the *Contractor* to demonstrate that the *works* can operate as guaranteed by the *Contractor* (in *Contractor's Works Information*) or specified by the *Employer* either here or elsewhere in this *Works Information*. State here the procedures for carrying out such proving tests. These details should link up with any performance levels stated in Contract Data if secondary Option X17 in ECC3 applies.

5.2.9 Training and technology transfer

Include if the *Employer* requires the *Contractor* to provide training in the use and maintenance of the *works* or any associated transfer of technology from him to the *Employer*.

5.2.10 Operational maintenance after Completion

The *Employer* may require the *Contractor* before the *defects date* to perform certain duties after Completion and take over which relate to maintenance of the *works*. (Not to be confused with Defect correction) For example oil and filter changes

6 Plant and Materials standards and workmanship

During the construction of the *works* there are numerous standards and specifications to which the *Contractor* must adhere to. The documents listed below, including normative references within, are not bound in this document but are obtained by the *Contractor* at his own expense and must be adhered to during the implementation of the *works*.

All references to standard/codes/publications are to be the latest issue of each, together with the latest additions and/or amendments thereto, as of the date of contract, unless otherwise indicated. This list is not all-inclusive and does not relieve the Contractor from complying with all applicable codes.

The following specifications are required to be complied to:

List of Applicable Standards	
240-56364545	Structural Design and Engineering Standard
240-85549846	Standard for Design of Drainage and Sewerage Infrastructure
240-84418186	Road Specification Manual
SANS 10400	The Application of the National Building Regulations
SANS 2001-BE1	Construction works Part BE1: Earthworks (general)
SANS 2001-BS1	Construction works Part BS1: Site clearance
SANS 2001-CC1	Construction works Part CC1: Concrete works (structural)
SANS 2001-CC2	Construction works Part CC2: Concrete works (minor works)
SANS 2001-CM1	Construction works Part CM1: Masonry walling
SANS 2001-CM2	Construction works Part CM2: Strip footings, pad footings and slab-on-the-ground foundations for masonry walling
SANS 2001-CS1	Construction works Part CS1: Structural steelwork
SANS 2001-DP1	Construction works Part DP1: Earthworks for buried pipelines and prefabricated culverts
SANS 2001-DP5	Construction works Part DP5: Stormwater drainage
SANS 1200 A	Standardized specification for civil engineering construction Section A: General
SANS 1200 D	Standardized specification for civil engineering construction Section D: Earthworks
SANS 1200 DK	Standardized specification for civil engineering construction Section DK: Gabions and pitching
SANS 1200 HA	Standardized specification for civil engineering construction Section HA: Structural steelwork (sundry items)
SANS 1200 HB	Standardized specification for civil engineering construction Section HB: Cladding and sheeting
SANS 1200 HC	Standardized specification for civil engineering construction Section HC: Corrosion protection of structural steelwork
SANS 1200 M	Standardized specification for civil engineering construction Section M: Roads (general)
SANS 1200 ME	Standardized specification for civil engineering construction Section ME: Subbase
SANS 1200 MF	Standardized specification for civil engineering construction Section MF: Base
SANS 1200 MJ	Standardized specification for civil engineering construction Section MJ: Segmented paving
SANS 1200 MK	Standardized specification for civil engineering construction Section MK: Kerbing and channelling
SANS 10109-1	Concrete floors Part 1: Bases to concrete floors

6.1 Particular Specification

The following codes are required to be complied to:

- i. SANS 1200 A: **General**
- ii. **SANS 1921-1**: Construction and management requirements for works contracts, Part 1: **General engineering and construction works**

The table below indicates particular specifications pertaining to SANS 1200 A and must be read in conjunction with the code.

Clause	Particular Specification
5.1	Survey
5.1.1	<p>Add:</p> <p>The <i>Contractor</i> is responsible for the complete surveying and setting out of the <i>works</i> including the establishment of any beacons and benchmarks required to complete the <i>works</i>.</p> <p>The <i>Contractor</i> is required to consult the Surveyor-General's office to obtain information on available registered beacons near Kriel Power Station to use for the establishment of any required benchmarks close to the <i>works</i>.</p>
6.2	Degrees Of Accuracy
6.2 b)	Degree of accuracy II is applicable to the <i>works</i> .

6.2 Site Clearance

The following codes are required to be complied to:

- i. **SANS 2001 BS1: Site Clearance**
- ii. **SABS 2001 C: Site Clearance (Only Clause 8 – Measurement and Payment)**
- iii. **240-57127953: Execution of Site Preparation and Earthworks**

The table below indicates particular specifications pertaining to SANS 2001-BS1 and must be read in conjunction with the code.

Clause	Particular Specification
4.1	Areas to be cleared and grubbed
4.1.1	The designated areas are also as shown on the Drawings.
4.2	Clearing
4.2.1	Activity numbers 1, 5, 6, 8, 9 and 10 will apply.
4.2.1	The reusable material comprises of topsoil and is to be stacked as specified below in clause 4.9
4.2.3	Use of masonry units is not permitted.
4.4	Disposal of material
4.4.1	Materials from clearing and grubbing operations are to be disposed of at a disposal site accepted by the <i>Project Manager</i> . Disposal certificates are required to be kept on record by the <i>Contractor</i> .
4.4.1	Combustible material is required to be disposed of as follows: <ul style="list-style-type: none"> • Cleared combustible material is to be taken to an accepted waste disposal site. • Disposal certificates are to be kept on record by the <i>Contractor</i>.
4.4.2	Tree trunks and cleared tree debris are to be taken to a waste disposal site accepted by the <i>Project Manager</i>
4.4.4	The material which is to be reused is to be stacked at a site proposed by the <i>Contractor</i> which is accepted by the <i>Project Manager</i> .
4.9	Conservation of topsoil
4.9	Topsoil together with grass and other suitable vegetation are to be removed and placed in stock piles not higher than 1.5m
Variations	
CI 4.9	Add the following

Clause	Particular Specification
	Topsoil stripping is to be scheduled for the dry season, as far as possible.
CI 4.9	Add the following Topsoil is handled twice only - once to strip and stockpile, and secondly to replace, level, shape and scarify.
CI 4.9	Add the following Topsoil stripped from different sites are stockpiled separately and clearly identified as such.
CI 4.10	Add the following: Where protected plant species of medicinal value is identified prior to commencement of construction on the Site, representatives of the South African San Council, Griqua National Council and National Khoisan Council must be contacted to provide an opportunity to collect and remove (with the appropriate permits for medicinal use) plant species such as <i>Harpagophyllum procumbens</i> .
Additional Clauses	
1	The size of areas subjected to land clearance are to be kept to a minimum
2	All vegetation not required to be removed are to be protected against damage
3	No trees may be removed without prior permission in writing from the <i>Project Manager</i>

6.3 Earthworks

The following codes are required to be complied to:

- i. **SANS 2001 BE1: Earthworks (General)**
- ii. **SANS 1200 D: Earthworks (Only Clause 8 – Measurement and Payment)**
- iii. SANS 1921-5: Construction and management requirements for works contracts, Part 5: Earthworks activities which are to be performed by hand

The table below indicates particular specifications pertaining to SANS 2001-BE1 and must be read in conjunction with the code.

Clause	Particular Specification
3.1	Classification for Excavation Purposes
3.1	This Sub-Clause is deleted and the following classifications of material applies: <u>Hard Material</u> Material which cannot be excavated except by drilling and blasting, or with the use of pneumatic tools or mechanical breakers and; boulders exceeding 0,1m ³ are to be classified as hard material. Where more than 40% of any material (by volume) consists of boulders each exceeding 0,1m ³ in size, the material is classified as hard material. <u>Soft Material</u> All material not classified as hard material is classified as soft material <u>NOTE:</u> Should the <i>Contractor</i> consider that any material to be excavated can only be removed by explosives, he is required to submit a written request to the <i>Project Manager</i> for his ruling. Failing such a request, the excavations are deemed to be in soft material.

Clause	Particular Specification
	The decision of the <i>Project Manager</i> as to the classification of the material is final and binding and any objection to the classification is to be made in writing before the excavations have been backfilled.
4.1.5.1	Topsoil is conserved
4.2.2.1.3	Sides off excavations are not used as formwork

6.4 Concrete Works

The following codes are required to be complied to:

- i. **SANS 2001 CC1: Concrete Works (Structural)**
- ii. **SANS 1200 G: Concrete (Structural) (Only Clause 8 – Measurement and Payment)**

The table below indicates particular specifications pertaining to SANS 2001-CC1 and must be read in conjunction with the code.

Clause	Particular Specification
4.2	Materials
4.2.1	Cementitious binders
4.2.1.1	Cement is to comply with the relevant requirements of CEM1-42.5N, Ordinary Portland Cement in accordance with SANS 50197
4.2.3	Aggregates
4.2.3.1 (b)	The coarse aggregate nominal size is to be specified as follows: Cover to rebar < 25 mm – 13.2 mm diameter Cover to rebar >= 25 mm – 19 mm diameter
4.2.3.4	Plums are not permitted
4.2.3.5	The following tests are required: drying shrinkage on fine and coarse aggregates; drying shrinkage of concrete; flakiness index of the stone; alkali-aggregate reaction.
4.2.4	Admixtures, air-entrainment agents and curing agents
4.2.4.1	The use of admixtures is permitted, provided that the results of trial tests which demonstrate their suitability and the following are made available: The trade name of the admixture, its source and the manufacturers' recommended method of use. Typical dosages and possible detrimental effects of under and over doses. Whether compounds are likely to cause corrosion of the reinforcement or deterioration of the concrete. The average expected air content of freshly mixed concrete containing an admixture that causes air to be entrained when the admixture is used at the manufacturer's recommended dose.

Clause	Particular Specification
4.2.6	Grade of concrete
4.2.6	The grade of concrete is required to be as follows, unless otherwise stated on the Drawings. Class 15 MPa/ 19 mm for Blinding/Mass Concrete (28 days), Class 35 MPa/ 19 mm for Structural Concrete (28 days). Class 35 MPa/ 13.2 mm for Screed/Topping
4.2.7	In general, one of the following types of non-shrink grout are required to be used: Cement-based non-shrink grout, not less than 50 MPa; Special proprietary non-shrink or expansive grout, not less than 50 MPa.
4.2.11.4	Galvanising of cover plates is required.
4.3	Formwork
4.3.1	General
4.3.1.5	Earth cuts may not be used as forms for vertical surfaces
4.3.1.8	The formed surfaces are as follows: Foundations (below 150 mm from finished floor level) – Rough finish is acceptable. All concrete from 150 mm below finished floor level which receives an additional finish – Smooth finish is required Off-shutter exposed concrete (not receiving any further finishes) – Smooth special finish is required.
4.4	Reinforcement
4.4	Add the following: All reinforcement is stamped with a SANS quality assurance mark
4.4.1.3	Bars may not be hot bent
4.4.2.2	Welding of bars is not permitted
4.4.3	Cover
4.4.3.1	Cast in-situ concrete cover is required to be: 50 mm or as shown on the Drawings
4.5	Holes, chases and fixing bolts
4.5.1	Fixtures to be embedded in the concrete are attached as shown on the Drawings.
4.6	Embedded items
4.6.3	Pipes, conduits and ducts
4.6.2.1	The type and location of pipes are as specified on the Drawings.
4.7	Quality of Concrete
4.7.1.1	<i>Contractor</i> submits to the <i>Project Manager</i> full details and samples of all materials which he proposes to use for making concrete at least 28 days before the concreting of the works is due to commence.
4.7.3.2	Pumping of concrete is permitted.

Clause	Particular Specification
4.7.4	Chloride and sulphate content
4.7.4.1	Efflorescence on exposed concrete surfaces is not permitted
4.7.6	Prescribed-mix concrete
4.7.6.1	The mix proportions for the prescribed mix are as determined by the <i>Contractor</i> for the required grade based on test results using the cement, fine and coarse aggregate available. Mix designs and the mix test results are to be submitted to the <i>Project Manager</i> for acceptance prior to the commencement of work on site.
4.7.10	<p>Add the following:</p> <ul style="list-style-type: none"> A layer of blinding concrete of 50 mm minimum thickness is required to be placed under foundations, sumps and trenches A polyethylene sheet with a minimum thickness of 375 microns is required under ground slabs
4.7.10	Placing
4.7.10.11	Plums are not permitted.
4.7.10.15	Pumping of concrete is permitted.
4.7.12	Joints
4.7.12.1	Construction joints
4.7.12.1.1	Construction joints are not permitted, unless where shown on the Drawings.
4.7.12.2.3	All angled corners are chamfered 25 mm x 25 mm, unless such other larger size is detailed on the Drawings.
4.7.12.1.4	<p>Where construction joints are shown on the Drawing, the follow is required:</p> <ul style="list-style-type: none"> Proprietary bonding compounds between old and new concrete is permitted.
4.7.12.4	Sealing of joints
4.7.12.4	Joints are sealed as shown on the Drawings.
4.7.19.3	<ul style="list-style-type: none"> <i>Contractor</i> submits a detailed procedure for acceptance by the <i>Project Manager</i> on how he intends to carry out the repairs of structural concrete defects
4.7.22	<ul style="list-style-type: none"> For concrete pour records, the <i>Contractor</i> submits a detailed Quality Control Plan to the <i>Project Manager</i> for acceptance. In addition the <i>Contractor</i> supplies the <i>Project Manager</i> with two copies of these records each day covering works carried out the preceding day.
5.1	Testing
5.1.1.4	<ul style="list-style-type: none"> Six 150 mm cube samples taken from each batch or place of concrete deposition, three cubes are tested at 7 days and three at 28 days. Strength at 7 days is required to be at least two thirds of 28 day strength.
5.1.1.8	The test for the percentage of alkali-aggregate is to be ASTM C289 – Potential reactivity of aggregate (chemical method) or alternative method accepted by the <i>Project Manager</i> .

Clause	Particular Specification
5.1.3.3	Add the following: <ul style="list-style-type: none"> ..., unless no more than three batches of concrete is being mixed.
5.2	Tolerances
5.2.1.1	<ul style="list-style-type: none"> Tolerances on all concrete work is required to be a level II degree of accuracy as specified in SANS 2001-CC1 with and is to be carefully maintained throughout the construction.
Variations	
CI 4.7.8.2	Add the following: Should "ready-mixed" concrete be used, the uninterrupted supply of the correct volume to Site should be guaranteed.
CI 4.7.8.2	Add the following: The <i>Project Manager</i> may permit production of concrete at a central production facility other than on the Site of construction and reserves the right to inspect for acceptance of these central production facilities. The <i>Contractor</i> is responsible for conducting all control testing.
4.7.10	Add the following: Concrete may not be placed before the <i>Project Manager's</i> acceptance has been given in writing and a minimum written notice period of 24 hours prior to pouring is required for each part of the structure.

- i. All concrete work is required to be in accordance with SANS 2001-CC1 and SANS 10100-2 unless otherwise stated.
- ii. All concrete surfaces and cast-in items is required to be inspected and accepted by the *Project Manager* in writing before casting of concrete may commence.
- iii. The *Contractor* is required to obtain written acceptance from the *Project Manager* for the use of any add-mixture or the use off ready mixed concrete, to pump concrete, or to use cement or cement blends other than Ordinary Portland Cement (OPC)
- iv. Compaction of concrete is required to be done by means of mechanical vibrators only.
- v. The *Contractor* is required to demonstrate, by means of a report from an approved laboratory, that the aggregates do not exhibit excessive shrinking properties in accordance with SANS 1083 and is also required to demonstrate that the aggregates do not have a potential alkali silica reaction.
- vi. All concrete is required to have a maximum water/cement ratio of 0.45 with a minimum cement content of 420 kg/m³

The *Contractor* is required to perform a slump test on the same batch of concrete every time a sample is taken and the result recorded

6.5 Structural Steel

The following codes are required to be complied to:

- i. SANS 2001 CS1: Structural Steelwork
- ii. SANS 1200 H: Structural Steelwork (Only Clause 8 – Measurement and Payment)
- iii. AWS D1.1: Structural welding code – steel
- iv. SANS 1921-3: Construction and management requirements for works contracts, Part 3: Structural steelwork
- v. SANS 50025-2: Hot rolled products of structural steels – Part 2- Technical delivery conditions for non-alloy structural steels
- vi. SANS 1700: Fasteners

vii. SANS 10162: The structural use of steel

The table below indicates particular specifications pertaining to SANS 2001-CS1 and must be read in conjunction with the code.

Clause	Particular Specification
4.1	Materials
4.1.1	Add the following: All structural steelwork is required to be grade S355JR
4.1.4.1	Electrodes for electric welding are required to be E7018.
4.1.5.1	Ordinary bolts to be grade 8.8 with class 8 nuts, as a minimum
4.2	Drawings
4.2.4	Fabrication drawings (shop detailing)
4.2.4	The following clause is added: "Fabrication drawings are to be prepared by the <i>Contractor</i> . These are issued to the <i>Project Manager</i> for acceptance in the form of two paper prints and in "PDF" electronic format. The <i>Contractor</i> may not commence with fabrication until written acceptance from the <i>Project Manager</i> is received."
4.2.4.2	Attachments to facilitate erections may not remain as part of the permanent structure.
4.2.4.7	Connections to allow movements are as shown on the Drawings.
4.3	Workmanship (General)
4.3.1.1	All steel elements are marked to be traceable to a specific cast or heat of steel.
4.3.6	Holing
4.3.6	The following clause is added: "Flame cutting of holes is not permitted."
4.4	Workmanship (Welding)
4.4.4.3	Tack welds are not to be incorporated into the final welds.
4.5	Workmanship (Bolting)
4.5.1.3	The maximum protrusion beyond the nut is not less than 3mm, but not greater than 5mm.
4.5.1.4	Washers under nuts and bolt heads on flat surfaces are required.
4.6	Workmanship - Erection
4.6.5	<ul style="list-style-type: none"> On site welding is not permitted
5.3	Non-destructive testing of welds
5.3.3	<ul style="list-style-type: none"> Fillet welds are required to undergo magnetic particle inspection (20 % of welds)
5.3.4	<ul style="list-style-type: none"> All butt welds and full penetration welds are required to undergo ultrasonic non-destructive testing (100 % of welds)
Variations	
CI 5.2	Add the following: Properly documented evidence of previous qualification of welders

Clause	Particular Specification
	are acceptable.
Additional Clauses	
1	All materials are to be new and as specified in this document and on the relevant Drawings.
2	Materials not listed in this specification or on the relevant Drawings are not permitted.
3	In the event of any specified steel not being available, the <i>Contractor</i> advises the <i>Project Manager</i> in writing. The <i>Project Manager</i> is to reply in writing on alternative materials and / or sections.
4	Fabrication drawings are prepared by the <i>Contractor</i> . The drawings are issued to the <i>Project Manager</i> for acceptance in the form of two paper prints and in "PDF" electronic format and in Native Format (dgn or dwg). The <i>Contractor</i> does not commence with fabrication until written acceptance from the <i>Project Manager</i> is received.
5	All gutters and down pipes are provided to ensure free water flow away from the <i>works</i> .
6	Handling and lifting plant have sufficient capacity to ensure that steelwork is placed in its final position without distortion or undue stressing of members.
7	Except where otherwise authorised in writing by the <i>Supervisor</i> , the <i>Contractor</i> ensures that the work is carried out strictly in accordance with the relevant drawings supplied to the <i>Contractor</i> by the <i>Project manager</i> or supplied by the <i>Contractor</i> and accepted by the <i>Project Manager</i>
8	<p>Tolerances:</p> <ul style="list-style-type: none"> • Tolerances for overall dimensions (length, width, height, etc.) are 3mm unless otherwise specified by the drawing. • Tolerances for door locations are +/- 9mm. • Tolerances for stiffener, channels, angles and bars are +/- 3mm non-accumulative, unless noted of the drawing. • Tolerances for attachments such as supports, plates and pipes are located within 3mm of the required drawing location. • The centre line of a bolt hole is aligned within 1.5mm of the drawing dimension. • Bolt hole spacing is 3mm (non-accumulative) and 6mm (overall) of the drawing dimension. • Bolt hole diameter is within 2mm of the drawing dimension. • Special tolerances are shown on the <i>Employer's</i> drawings and take precedence. <p>Unless otherwise specified by the drawing, tolerances for all overall dimensions (length, width, height, etc.) are within 3mm.</p>
9	The <i>Project Manager</i> may instruct the <i>Contractor</i> to replace any welding equipment which is unsuitable or unsatisfactory for the service in which it is being used.

The table below indicates particular specifications pertaining to SANS 1921-3 and must be read in conjunction with the code.

Clause	Particular Specification
4.2	Responsibility for design and construction
4.2.1	The responsibility strategy assigned to the <i>Contractor</i> is “B” for the portion of <i>works</i> designed by the <i>Employer</i> .
4.2.2	The structural engineer is The <i>Employer’s</i> , Structural Design CoE for the <i>works</i> designed by the <i>Employer</i> .
4.3	Planning, programme and method statement
4.3.2	Programme
4.3.2.1	The requirements for sequencing of the <i>works</i> are: The sequence of the work is as per the project Schedule.
4.3.2.1	The procedures to be followed where required are as shown on the Drawings or defined within the scope of work.
4.3.3	Method Statements
4.3.3.2	The steelwork <i>Contractor</i> provides the steelwork structural engineer with a detailed method statement for the erection of each structure. Add the following: The methodology for any work that will be carried out after hours must be accepted one week prior to the event.
4.4	Quality assurance
4.4.3	Inspections, tests and certification
4.4.3.4	The following items and procedures need to be tested/certified by a recognised body: Welders qualification Material certificates
4.5	Drawings, information and calculations
4.5.1	Format, number and register
4.5.1.1	Information, Drawings and calculations provided to the steelwork <i>Contractor</i> will be provided in the following format: 2D drawings provided electronically in PDF format.
4.5.1.2	The steelwork <i>Contractor</i> is to provide information in the following format: Electronic in PDF format.
4.5.3	Drawings and other information provided by the steelwork <i>Contractor</i>
4.5.3.1	Drawings and other information are to be submitted in accordance with the steelwork <i>Contractor’s</i> accepted programme.
4.5.3.4	The steelwork <i>Contractor</i> is required to submit the following additional information with general arrangement drawings to the <i>Employer</i> for approval: Erection methodologies. Detail drawings marked up for each part, if different from the supplied details
4.7	Site establishment
4.7.6	The steelwork <i>Contractor</i> is required to make his own arrangements for the provision of the following services: Compressed air

Clause	Particular Specification
	Welding machines Cutting torches and gas Lifting attachments
4.11	Health and Safety
4.11.1	The specific health and safety requirements are as per the requirements in conditions of contract.
4.11.3	The steelwork <i>Contractor</i> is required to submit a report on the assessment and management of risk.
4.11.4	The steelwork <i>Contractor</i> is required to enclose the steelwork for the protection of the public and others.

6.6 Steel Corrosion protection

The following codes are required to be complied to:

- i. SANS 1200 **HC: Corrosion Protection of Structural Steel**
- ii. SANS 10064: The preparation of steel surfaces for coating
- iii. SANS 121: Hot dip galvanized coatings on fabricated iron and steel articles

The table below indicates particular specifications pertaining to SANS 1200 HC and must be read in conjunction with the code.

Clause	Particular Specification
Variations	
CI 5.3	Add the following: All burrs and sharp areas are to be removed by: Chamfering or Ground to a smooth radius of at least 1mm.
CI 5.4.1	Add the following: The method of cleaning and preparing the substrate of steelwork prior to the application of the coating system is to be in accordance with the applicable provisions of SANS 10064
CI 5.4.3.1. b)	Add the following: Dry abrasive blast cleaning: Silica sand abrasive material not permitted. Blast cleaning media is not recycled.
CI 5.7	Add the following: The coating system is to be hot-dip galvanising which is carried out in accordance with SANS 121:2011.
Additional Clauses	
1	Surface preparation and painting is to be carried out as indicated on the Drawing.

6.7 Other [as required]

Document reference	Title	No of pages
C4	<p>This cover page</p> <p>Site Information</p>	1
	Total number of pages	

Part 4: Site Information

Core clause 11.2(16) states

“Site Information is information which

describes the Site and its surroundings and is in the documents which the Contract Data states it is in.”

In Contract Data, reference has been made to this Part 4 of the contract for the location of Site Information.

Delete this note and others given in boxes like this one at final draft stage.

1. General

The Kriel Power Station is situated approximately halfway between Bethal and Ogies on the R545, being just over 30 km from each town and 10 km north-west of Kriel town.

2. Climate

Kriel Power Station is situated in a summer rainfall area with an average annual precipitation of about 750-mm falling almost entirely during the months of October to April. The average rainfall per month generally exceeds 40 mm during this period, although drought periods do occur which can last for 20 days or longer. Drought periods occur most frequently during the months of October/November and March/April. January is statistically the highest rainfall month with an average monthly rainfall of about 130-mm. June has the lowest rainfall with an average monthly rainfall of about 7 mm.

Approximately 85% of the annual rainfall occurs in the summer months and heavy falls of 125 to 150 mm occasionally occur in a single day. The annual average number of thunderstorms is about 75. These storms are often violent with severe lightning and strong (but short-lived) gusty winds and are sometimes accompanied by hail. This region has among the highest hail frequencies in South Africa; about 4 to 7 occurrences (depending mainly on altitude) may be expected annually.

January is normally the hottest month with an average daily maximum temperature of 27°C with a mean daily temperature in winter being about 16°C. Winter average daily temperatures vary from 18,5°C maximum to -1°C minimum. The extreme temperatures recorded range from 34,7°C to minus 12,4°C for the period 1920 - 1984. (Source: Weather Bureau, Pretoria)

Winds are generally light to moderate except during thunderstorms. Generally the prevailing wind directions are from the North West during the day and from the east at night. During daytime, the prevailing winds are from the north-western direction. During night-time, the prevailing winds are from the north-eastern direction. The highest recorded average wind speed is 17,6 km/hour. The average wind velocity over the year is 14,5 km/hour.

(Source: MSN weather & Weather 24, average records 2008 - 2009.)

3. Weather Data – Refer to Annexure A

4. Relative Humidity

Records for Bethal (2008 - 2009)

The average relative humidity on an annual base is as follows:

For 08:00 = 80%
14:00 = 52%
20:00 = 73%

5. Prevailing Winds

Records for Bethal (2008 - 2009)

Winds are mostly north-westerly except for February and March when they are easterly to south-easterly. The highest wind speeds are recorded from the south-east: on average 14km/h.

6. Other Climatic Factors

Records for Bethal (2008 - 2009)

Thunder occurs mostly from November to January with average of 35.7 days annually.

- a) Hail occurs mostly in December with average of 2.8 days annually.
- b) Fog occurs mostly in the winter months with an average of 19 days annually.
- c) Snow rarely occurs
- d) Cloud coverage is highest in the summer months with annual average as follows:
 - 08:00 = 2.8/8
 - 14:00 = 3.8/8
 - 20:00 = 3.1/8
- e) Evaporation for the area is in range of 75mm to 190mm per month. The highest evaporation occurs in December, and the lowest in June.

7. Topography

The surface topography of the Kriel area is typical of the Mpumalanga Highveld consisting in the main of a gently undulating plateau. The flood plains of the local streams are at an average elevation of \pm 1540 meters above mean sea level and drainage generally is a northerly direction.

8. Air Quality

The existing and potential sources of air pollution in Kriel area are the following:

- Kriel Power Station stack emissions
- Kriel Power Station dry dust (fly ash) handling plant
- Dust blow from the Eskom coal stock yard
- Dust blow from the roads in the area
- Seasonal dust blow caused by ploughing of farmlands, and dust blow off denuded fields
- Dust blow from dried out exposed surfaces of the wet ash dam.

However, Eskom utilises the majority of the top surface of the ash dam as an evaporation pan for polluted water, which means that the exposed surface is constantly wet. The sides

of the ash dam have largely been rehabilitated, with the result that dust blow from the ash dam.