NEC3 Term Service Contract (TSC3)

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

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

for **Ground- and Surface water monitoring at Kriel power Station for a period of 5 years**

Contents:

CONTRACT No.

PART C1: AGREEMENTS & CONTRACT DATA

Contents:

C1.1 Form of Offer & Acceptance

Offer

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

Ground- and Surface water monitoring at Kriel power Station for a period of 5 years

.

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 A	The offered total of the Prices exclusive of VAT is	**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: .....

[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: Service 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 and signed original copy of this document, including the Schedule of Deviations (if any).

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		

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 TSC3 Contract Data

Part one - Data provided by the *Employer*

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

Clause	Statement	Data
1	**General**	
	The *conditions of contract* are the core clauses and the clauses for main Option:	
		A: Priced contract with price list
	dispute resolution Option	**W1: Dispute resolution procedure**
	and secondary Options	
		X1: Price adjustment for inflation
		X2 Changes in the law
		X17: Low service damages
		X18: Limitation of liability
		X19: Task Order
		Z: *Additional conditions of contract*
	of the NEC3 Term Service Contract April 2013[2] (TSC3)	
10.1	The *Employer* 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**
	Tel No.	**017 615 2300**
	Fax No.	**-**
10.1	The *Service Manager* is (name):	**Ethel Simelane**
	Address	**Kriel Power Station Private Bag X5009, Kriel 2271**
	Tel	**017 615 2542**
	Fax	**-**
	e-mail	**simelaNE@eskom.co.za**

[2] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

11.2(2)	The Affected Property is	**Kriel Power Station Sewage Plant**
11.2(13)	The *service* is	**Ground- and Surface water monitoring at Kriel power Station for a period of 5 years**
11.2(14)	The following matters will be included in the Risk Register	**1. Unprotected Strikes** **2. As stipulated in the Site information section of this contract**
11.2(15)	The Service Information is in	**Part 3: Scope of Work and all documents**
12.2	The *law of the contract* is the law of	**the Republic of South Africa**
13.1	The *language of this contract* is	**English**
13.3	The *period for reply* is	**- Within 2 working days if there is no incident** **- If there is an incident within 8 hours including weekends and public holidays**
2	**The *Contractor*'s main responsibilities**	**Data required by this section of the core clauses is also provided by the *Contractor* in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data**
21.1	The *Contractor* submits a first plan for acceptance within	**Within 1 week of the Acceptance of the contract**
3	**Time**	
30.1	The proposed *starting date* is (proposed)	**01 October 2023**
30.1	The *service period* is	**5 Years / (60 months)**
4	**Testing and defects**	**N/A**
5	**Payment**	
50.1	The *assessment interval* is	**- 20th day of each successive month** **- Service manager may when deemed necessary request early assessments only if agreed with the contracts manager**
51.1	The *currency of this contract* is the	**South African Rand**
51.2	The period within which payments are made is	**30 days upon receipt of valid invoice**
51.4	The *interest rate* is	**(i) zero percent above the publicly quoted prime rate of interest (calculated on a 365-day year) charged by 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** **(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 *mutatis mutandis* 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.
6	**Compensation events**	**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**
7	**Use of Equipment Plant and Materials**	**There is no data required for this section of conditions of Contract**
8	**Risks and insurance**	
80.1	These are additional *Employer*'s 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 price list**	
20.5	The *Contractor* prepares forecasts of the final total of the Prices for the whole of the Task Order at intervals no longer than	**2 weeks.**
11	**Data for Option W1**	
W1.1	The *Adjudicator*	**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 *Adjudicator nominating body* is:	**the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the Institution of Civil Engineers (London) (see www.ice-sa.org.za) or its successor body.**

W1.4(2)	The *tribunal* is:	**arbitration**
W1.4(5)	The *arbitration procedure* 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	**Johannesburg South Africa**
	The person or organisation who will choose an arbitrator - if the Parties cannot agree a choice or - if the arbitration procedure does not state who selects an arbitrator, is	**the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.**

12 Data for secondary Option clauses

X1	**Price adjustment for inflation**	**Tenderer to complete**
X1.1	The *base date* for indices is	**One month prior to tender closing date**
	The proportions used to calculate the Price Adjustment Factor are:	**Proportion** / **linked to index for** / **Index prepared by** **[0.80]** / **Table C-3** / **Labour** **[0.05]** / **Table L-2(A)** / **Transport** **[0.15]** / **non-adjustable** / **Fixed portion** **1.00**
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.**
X17	**Low service damages**	
X17.1	The *service level table* is in	**Annexure B** Services delay the submission of the report by the 5th day of every month, to authorities 2%of the task order apply to the limited maximum of 10% of the contract
X18	**Limitation of liability**	
X18.1	The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to:	**R0.0 (zero Rand)**
X18.2	For any one event, the *Contractor*'s liability to the *Employer* for loss of or damage to the *Employer*'s property is limited to:	**the amount of the deductibles relevant to the event**
X18.3	The *Contractor*'s 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** • **the amounts excluded and**

		unrecoverable from the *Employer*'s 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 *Contractor*'s total liability to the *Employer* 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 *Contractor's* 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) 1 year after the *defects date* for latent Defects and**
Z	**The *Additional conditions of contract* are**	**Z1 to Z15 always apply.**
X19	**Task order**	
X19.5	*The contractor submits a Task Order programme to the Service Manager within*	**7 days of receiving the task order**

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 *works*, Plant and Materials	The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible, as at Contract Date, where covered by the *Employer*'s insurance
Loss of or damage to Equipment	The replacement cost
Liability for loss of or damage to property (except the *works*, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the *Contractor*) caused by activity in connection with this contract	Loss of or damage to property *Employer*'s property The replacement cost where not covered by the *Employer*'s insurance The *Employer*'s policy deductible, as at Contract Date, where covered by the *Employer*'s insurance Other property The replacement cost Bodily injury to or death of a person The amount required by applicable law
Liability for death of or bodily injury to employees of the *Contractor* 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

Z14 Nuclear Liability

Z14.1 The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.

Z14.2 The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or resulting from nuclear damage, as defined in Act 44 of 1999, save to the extent that any liabilities are incurred due to the unlawful intent of the *Contractor* or any other person or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.

Z14.3 Subject to clause Z14.4 below, the *Employer* waives all rights of recourse, arising from the aforesaid, save to the extent that any claims arise or liability is incurred due or attributable to the unlawful intent of the *Contractor* or any other person, or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.

Z14.4 The *Employer* does not waive its rights provided for in section 30 (7) of Act 44 of 1999, or any replacement section dealing with the same subject matter.

Z14.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

Z15 Asbestos

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

AAIA	means approved asbestos inspection authority.
ACM	means asbestos containing materials.
AL	means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
Ambient Air	means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means ooccupational 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.
TW	means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4-hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA.

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

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

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

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

Z15.5 The *Contractor*'s personnel are entitled to stop working and leave the contaminated area forthwith

until such time that the area of concern is declared safe by either Compliance Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.

Z15.6 The *Contractor* continues to Provide the Services, without additional control measures presented, on presentation of Safe Levels. The contractually agreed dates to Provide the Services, including the Completion Date, are adjusted accordingly. The contractually agreed dates are extended by the notification periods required by regulations 3 and 21 of the Asbestos Regulations, 2001.

Z15.7 Any removal and disposal of asbestos, asbestos containing materials and waste, is done by a registered asbestos contractor, instructed by the *Employer* at the *Employer*'s expense, and conducted in line with South African legislation.

Annexure B: Table of low service damages (X17)

Low Service Damage Description	Value of Low Service Damages	Limit of Low Service Damage
- Service delays not finishing as per agreed upon Programme submitted to the *Service Manger*	- 1% of the monthly payment per day	- Limited to 10% of the Task Order value
- Submission of documents as per agreed upon CDSS in this *service agreement*	- 0.5% of the monthly payment per day	- Limited to 10% of the Task Order value
- Submission of the monthly report after the 5th day of the month, penalty will apply	- 2% of the monthly payment per day	- Limited to 10% of the monthly payment
- Shortage of staff as agreed on the contract	- 1% of the monthly payment per day	- Limited to 10% of the monthly payment
- Failure to close out of audit actions within 14 days - Incidents reporting and 1 pager within 8hrs.	- 1% of the monthly payment per day	- Limited to 10% of the monthly payment per day
- Failure to close out of avail yourselves for the audit or to produce information required by the auditors	- 2% of the monthly payment per day	- Limited to 10% of the monthly payment per day
Failure to submit daily and weekly report	1 % of the monthly payment per day	Limited to 10% of the monthly payment per day

C1.2 Contract Data

Part two - Data provided by the *Contractor*

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

Notes to a tendering contractor:

1. Please read both the both the NEC3 Term Service Contract April 2013 and the relevant parts of its Guidance Notes (TSC3-GN)[3] in order to understand the implications of this Data which the tenderer is required to complete.
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.
3. Data is required to be inserted in the relevant areas.

Clause	Statement	Data
10.1	The *Contractor* is (Name):	
	Address	
	Tel No.	
	Fax No.	
	E-mail address	
	The fee percentages below are applicable to a compensation event. The accepted quotation amount will be invoiced plus this agreed percentage fee. If the direct fee and subcontractor fee is not completed, payment will be at accepted quotation value only without any fee.	
11.2(8)	The *direct fee percentage* is	**%**
	The *subcontracted fee percentage* is	**%**
11.2(14)	The following matters will be included in the Risk Register	**None**
11.2(15)	The Service Information for the *Contractor*'s plan is in:	**Part 3: Scope of Work**
21.1	The plan identified in the Contract Data is contained in:	
24.1	The key people are:	
	1 Name:	
	Job:	
	Responsibilities:	
	Qualifications:	
	Experience:	

[3] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 5391902 or www.ecs.co.za

	2 Name:	
	Job	
	Responsibilities:	
	Qualifications:	
	Experience:	
		CV's (and further key person's data including CVs) are in.
A	**Priced contract with price list**	
11.2(12)	The *price list* is in	
11.2(19)	The tendered total of the Prices is	**R**

PART 2: PRICING DATA

TSC3 Option A

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option A	2
C2.2	The *price list*	**[●]**

C2.1 Pricing assumptions: Option A

How work is priced and assessed for payment

Clause 11 in NEC3 Term Service Contract (TSC3) core clauses and Option A states:

Identified and defined terms 11 11.2

(12) The Price List is the *price list* unless later changed in accordance with this contract.

(17) The Price for Services Provided to Date is the total of

- the Price for each lump sum item in the Price List which the *Contractor* has completed and
- where a quantity is stated for an item in the Price List, an amount calculated by multiplying the quantity which the *Contractor* has completed by the rate.

(19) The Prices are the amounts stated in the Price column of the Price List. Where a quantity is stated for an item in the Price List, the Price is calculated by multiplying the quantity by the rate.

This confirms that Option A is a priced contract where the Prices are derived from a list of items of service which can be priced as lump sums or as expected quantities of service multiplied by a rate or a mix of both.

Function of the Price List

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

Link to the *Contractor*'s plan

Clause 21.4 states "The *Contractor* provides information which shows how each item description on the Price List relates to the operations on each plan which he submits for acceptance". Hence when compiling the *price list*, the tendering contractor needs to develop his first clause 21.2 plan in such a way that operations shown on it can be priced in the *price list* and result in a satisfactory cash flow in terms of clause 11.2(17).

Preparing the *price list*

Before preparing the *price list*, both the *Employer* and tendering contractors should read the TSC3 Guidance Notes pages 14 and 15. In an Option A contract, either Party may have entered items into the *price list* either as a process of offer and acceptance (tendering) or by negotiation depending on the nature of the *service* to be provided. Alternatively 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 the *price list* to be prepared and priced by him.

It is assumed that in preparing or finalising the *price list* the *Contractor:*

- Has taken account of the guidance given in the TSC3 Guidance Notes relevant to Option A;
- Understands the function of the Price List and how work is priced and paid for;
- Is aware of the need to link operations shown in his plan to items shown in the Price List;
- Has listed and priced items in the *price list* which are inclusive of everything necessary and incidental to Providing the Service in accordance with the Service 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 item within the Prices or rates of other listed items in order to fulfil the obligation to complete the *service* for the tendered total of the Prices.
- Understands there is no adjustment to items priced as lump sums if the amount, or quantity, of work within that item later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the (lump sum) Prices is as a result of a compensation event.

Format of the *price list*

(From the example given in an Appendix within the TSC3 Guidance Notes)

Entries in the first four columns in the *price list* in section C2.2 are made either by the *Employer* or the tendering contractor.

If the *Contractor* is to be paid an amount for the item which is not adjusted if the quantity of work in the item changes, the tendering contractor enters the amount in the Price column only, the Unit, Expected Quantity and Rate columns being left blank.

If the *Contractor* is to be paid an amount for an item of work which is the rate for the work multiplied by the quantity completed, the tendering contractor enters the rate which is then multiplied by the Expected Quantity to produce the Price, which is also entered.

If the *Contractor* is to be paid a Price for an item proportional to the length of time for which a service is provided, a unit of time is stated in the Unit column and the expected length of time (as a quantity of the stated units of time) is stated in the Expected Quantity column.

C2.2 the *price list*

GROUND AND SURFACE WATER MONITORING ON AS AND WHEN REQUIRED BASIS AT KRIEL POWER STATION FOR A PERIOD OF 5YEARS					
Item No.	**Activity Description**	**Unit**	**Quantity**	**Rate**	**Price**
100	**PRELIMINARY & GENERALS**				
101	Transport costs to site and from site (Manpower, delivery of X 3 Hard copies)	Trips	1	R	R
102	Report writing and Presentation (All appendices and attachments)	Each	1	R	R
	Total: Preliminary & Generals: (Excluding VAT)				**R**
200	**MONITORING (TYPE A): LARGE PHASE WITH COMPLETE CHEMICAL DATA EVALUATION (INCLUDING METAL ANALYSES) - 1ST QUARTER**				
201	Routine surface water monitoring sites	Each	60	R	R
202	Routine ground water monitoring boreholes sites	Each	73	R	R
203	Evaluation of current state (summary)	Each	1	R	R
204	Chemical analysis - Cations & Anions (All sites)	Each	1	R	R
205	Chemical Analysis - Heavy metal analysis	Each	1	R	R
206	Chemical Analysis - Hydrocarbons	Each	1	R	R
207	Chemical analysis - Bacteriological	Each	1	R	R
	Sub Total: Large Phase (Type A): (Excluding VAT)				**R**
	Total: 5x Phases (5 Year Period): (Excluding VAT)				**R**

Item No.	Activity Description		Quantity	Rate	Price
300	**SMALL PHASE (TYPE B): WITH LIMITED CHEMICAL DATA EVALUATION - 2ND & 4TH QUARTER**				
301	Routine surface water monitoring X 60 monitoring sites	Each	60	R	R
302	Routine ground water monitoring X 73 boreholes sites	Each	73	R	R
303	Evaluation of current state (summary)	Each	1	R	R
304	Chemical analysis - Cations & Anions (All sites)	Each	1	R	R
305	Chemical Analysis - Hydrocarbons (11 sites)	Each	1	R	R
306	Chemical analysis - Bacteriological (14 sites)	Each	1	R	R
	Sub Total: Small Phase (Type B): (Excluding VAT)				**R**
	Total: 10x Phases (5 Year Period): (Excluding VAT)				**R**
400	**MONITORING (TYPE C): LARGE PHASE WITH COMPLETE CHEMICAL DATA EVALUATION (EXCLUDING METAL ANALYSES) - 3RD QUARTER**				
401	Routine surface water monitoring X 60 monitoring sites	Each	60	R	R
402	Routine ground water monitoring X 73 boreholes sites	Each	73	R	R
403	Evaluation of current state (summary)	Each	1	R	R
404	Chemical analysis - Cations & Anions (All sites)	Each	1	R	R
405	Chemical Analysis - Hydrocarbons (11 sites)	Each	1	R	R
406	Chemical analysis - Bacteriological (14 sites)	Each	1	R	R
	Sub Total: Large Phase (Type C): (Excluding VAT)				**R**
	Total: 5x Phases (5 Year Period): (Excluding VAT)				**R**

500	**SMALL PHASE (TYPE D): MONTHLY SURFACE WATER MONITORING WITH LIMITED CHEMICAL DATA EVALUATION**				
501	Routine surface water monitoring X 60 monitoring sites	Each	60	R	R
502	Evaluation of current state (summary)	Each	1	R	R
503	Chemical analysis - Cations & Anions (All sites)	Each	1	R	R
504	Chemical Analysis - Hydrocarbons (5 sites)	Each	1	R	R
505	Chemical analysis - Bacteriological (9 sites)	Each	1	R	R
	Sub Total: SMALL PHASE (TYPE D): MONTHLY: (Excluding VAT)				**R**
	Total: 40x Phases (5 Year Period): (Excluding VAT)				**R**
600	**PURGING OF BOREHOLES (All boreholes)**	Each	5	R	R
700	**EC PROFILING OF BOREHOLES (All boreholes)**	Each	5	R	R
800	**UPGRADE OF THE MONITORING NETWORK - DRILLING OF 18 BOREHOLES (9 x 15m boreholes and 9 x 40m boreholes)**	Each	1	R	R
900	**DOCUMENTATION**				
901	Monitoring Plan & Sampling Procedures	Each	3	R	R
902	All data and Reports	Each	5	R	R
1000	**ADDITIONAL ITEMS**				
1001	Bio-Monitoring (bioassays & Toxicity Testing (Peak or end of the Wet season & Dry season)	Each	10	R	R
1002	Areal & Geophysical Investigation at the AWR dams and Vaal Pan	Each	1	R	R

1003	Monitoring Hydrocarbon & Bacteriological (All Groundwater and Surface water sites)	Each	1	R	R
1004	Detailed 3D Groundwater Model	Each	5	R	R
1005	Monitoring Review Workshop	Each	5	R	R
1006	Detailed Hydrocensus Study	Each	5	R	R
1007	Aquifer Classification & Assessment for Vulnerability	Each	1	R	R
1008	Continues Maintenance on Existing system	Each	5	R	R
1009	Audit Sewage Plant	Each	5	R	R
1010	Asbestos study	Each	1	R	R
Total: Specialist Studies: (Excluding VAT)					**R**

Item No.	Activity Description	Unit	Quantity	Rate	Price
	SUMMARY: SPECIALIST STUDIES AND ADDITIONAL ITEMS				
100	PRELIMINARY & GENERALS		1	R	R
200	LARGE PHASE (TYPE A) SUB-TOTAL		5	R	R
300	SMALL PHASE (TYPE B) SUB-TOTAL		10	R	R
400	LARGE PHASE (TYPE C) SUB-TOTAL		5	R	R
500	SMALL PHASE (TYPE D): SUB-TOTAL		40	R	R
600	PURGING OF BOREHOLE SUB-TOTAL		5	R	R
700	EC PROFILING OF BOREHOLES SUB-TOTAL		5	R	R
800	UPGRADE OF THE MONITORING NETWORK - DRILLING OF 18 BOREHOLES		1	R	R

900	DOCUMENTATION SUB-TOTAL		1	R	R
1000	ADDITIONAL ITEMS		1	R	R
	Total: Specialist Studies and Additional Studies: (Excluding VAT)				**R**

PART C3: SCOPE OF WORK

Document reference	Title	No of pages
	This cover page	1
C3.1	*Employer's* Service Information	23
	Total number of pages	24

C3.1: *EMPLOYER'S* SERVICE INFORMATION

SERVICE INFORMATION

1. Introduction

It is one of the environmental requirements to conduct ground and surface water monitoring four times a year as per the "Minimum requirements" documents for legal compliance. This recommendation was an outcome of the SRK study that was conducted in 2005. Therefore a detailed monitoring plan to mitigate the risk posed to groundwater shall be implemented to address the minimum requirements of the Department of Water And Sanitation and shall be approved by the employer. Part of the requirements to be addressed in the plan is to develop sampling, analysis and reporting protocol and peer reviews be and approved by the employer.

The Employer will place a five year's contract for the monitoring of ground and surface water at Kriel Power Station. The Contract is to conduct monitoring quarterly using a standard monitoring system to ensure efficiency and consistency. Also ensuring compliance to the station Water Use Licence (WUL) and investigating any environmental impact for the station.

1.1 Purpose

Monitoring includes the following:

- To conduct ground and surface water monitoring four times a year as per the "Minimum requirements…" documents;
- Develop a detailed monitoring plan consummate with the risk posed to groundwater. The plan shall as a minimum address the requirement of the Department of Water Affairs and shall be approved by the employer.
- Develop sampling, analysis and reporting protocol. The protocol shall be peer reviewed and approved by the employer.
- Conduct an aquifer vulnerability assessment of the site to identify the risk and vulnerability of the aquifers underlying on the site;
- Conduct geophysical investigations at all identified potential pollution sources to investigate the occurrence of any preferential flow paths.
- Develop a detailed plume model to model potential transport of pollution from all the identified pollution sources to sensitive receptors. The contractor must advise on frequency of modelling, and advise on necessary improvements to the existing model and borehole monitoring network;

Review the current monitoring network to assess its appropriateness and coverage. The network shall include boreholes to indicate potential pollution at source, pathway and receptors.

1.1.1 Applicability

- **This scope of work is applicable at Kriel Power Station**

1.1.2 Nominative/ Informative/ References

- **GHT Consulting Reports**

1.1.3 Informative

- **Kriel Documentation Centre**

1.1.4 Definition

- EC Profiling –

1.1.5 Disclosure Classification

None

1.1.6 Abbreviations

None

1.1.7 Roles and Responsibilities

- Environmental department to ensure compliance at Kriel Power Station
- Contractor to execute the scope of work for the duration of the contract

2. SCOPE OF WORK

Description of work to be done during the 5 year contract period:

1. Groundwater and Surface water monitoring should be conducted quarterly as per Type A, B and C listed and discussed in the scope.
2. Update of Maps and the current database should be done on a quarterly basis.
3. Purging of Boreholes: Purging should be done annually on all available boreholes.
4. EC Profiling: EC Profiling should be done annually on all available boreholes.
5. Current network of boreholes to be evaluated against recent DWS requirements listed in the water use license
6. Develop a detailed monitoring plan consummate with the risk posed to groundwater and surface water. The plan shall as a minimum address the requirement of the Department of Water and Sanitation shall be approved by the employer.
7. All data and reports shall be made available to the Power Station annually.
8. Bio-Monitoring: Bio-Monitoring, Bioassays and Toxicity Testing should be done twice per year (for the Wet and Dry Season).
9. A Detailed Areal and Geophysical investigation and Pollution investigation should be done at the AWR Dams (including Swart Pan, Borrow Pits and HL AWR Dams). The new and current boreholes drilled in this area should be included and used in this investigation. The impact and risks should also be determined.
10. Hydrocarbon and Bacteriological investigation on boreholes: A detailed study should be done to investigate whether any of the current and new boreholes are affected/polluted by bacteriological or hydrocarbon contaminants due to Power Station interference. All boreholes should be analyzed (Hydrocarbon and Bacteriological) as suggested in the scope.
11. 3D Finite Element Groundwater Models: 3D Finite Element Groundwater Models should be done once per year. Detailed models of the whole area (including the Power Station area, Coal Stockyard area, Ashing area and New ash dam Extension, as well as all the AWR dams (including (LL AWR, HL AWR, Borrow Pits and Swart Pan) should be done during Year 1, 3 and 5. Updates of these models should be done during Year 2 and 4.
12. Monitoring Review workshops: Monitoring Review workshops should be done annually to the Environmental department and interested parties.

13. Hydrocensus Study: A detailed Hydrocensus Study should be done in a 5 Km Radius around Kriel and Matla Power Station. All Affected parties in the 5 Km radius should be included in the study. Samples (Cation & Anion) should be taken at all boreholes and surface water sites in the 5 Km Radius and submitted for analyses at an accredited Laboratory. Water levels should be monitored at all boreholes. Detailed studies should be submitted during year 1, 3 and 5. An update of the Hydrocensus should be done during years 2 and 4.

14. Aquifer classification and assessment for Vulnerability: A detailed Aquifer classification and assessment for Vulnerability study should be done for the entire Power Station Area: This study should be done during Year 4 and 5.

15. Continues Maintenance on existing monitoring system: Continues Maintenance on the existing monitoring system should be done annually on the borehole monitoring sites: This includes additional maintenance necessary during the year.

16. A sewage Audit should be done annually at the Waste Water Treatment Works (Sewage Plant).

3. Description of works

The Employer requires a 5 year contract for the monitoring of ground and surface water at Kriel Power Station. The Contractor conducts monitoring quarterly.
It is proposed that TWENTY (20) such monitoring events will take place in the next FIVE (5) years, which will ensure that all the water quality at all the relevant sites will be closely followed and any changes detected early.
The Contractor uses a standard monitoring system to ensure efficiency and consistency. Cost for investigating any environmental impact will be inclusive.
Monitoring includes the following:

4. Frequency and type of audit and monitoring:

Phase	Month	Monitoring Type	Report
1st Quarter	February	[A]	Final big year-end report with Full chemical analyses as discussed in the scope, graphs & interpretation of data.
2nd Quarter	May	[B]	Site audit reports & discussions of problematic sites, including chemical analyses as discussed in scope.
3rd Quarter	August	[C]	½ Year report including chemical analyses as discussed in scope, graphs & interpretation of data
4th Quarter	November	[B]	Site audit reports & discussions of problematic sites, including chemical analyses as discussed in scope.

This Tender/RFQ must include all these aspects and any site visits and meetings with the relevant persons/ departments throughout the proposed period.

5. Field work - Site assessment and audit

A very important part of a routine monitoring investigation is the field visit to the water and waste management and monitoring sites and to perform a site assessment and audit of the water and waste management and monitoring system at the power station in order to identify potential environmental risks. This enables the investigators to make first-hand observations regarding the condition of each site and pollution source. By noting the conditions of the different sites during a specific monitoring phase in table format, problematic sites may be readily identified and reported on. During the subsequent monitoring phases, these problematic sites must then be revisited to determine whether the problematic situation has been addressed. This process allows one to verify whether the reported environmental performance is a true and fair representation of the actual environmental performance.
Sites as stipulated in **Error! Reference source not found.** to **Error! Reference source not found.** to be included during the site inspections (V) done during the different monitoring types field work phases are:

- Monitoring Type A, B and C: Fifty four (54) assessable monitoring boreholes and five (5) Auger holes are currently located at and near Kriel Power Station and included in the monitoring system. Sixty nine 69 assessable Surface water monitoring Sites are currently located at and near Kriel Power Station and included in the monitoring system.
- A detailed description of the current state of each monitoring points must be reported together with the field observations made during the monitoring investigations. Tables with detailed descriptions of the current state of each sites, date, time. water level and flow description, sampled (Y/N), photo taken and proposed mitigation suggested for each site must be included in the Monitoring Type A, B and C. Emphasis must be put on the problematic sites, and how the problem will be or should be rectified. The mitigation measures should be discussed with the Power Station Environmental Manager to rectify or address the challenges and to discuss progress.
- The water levels and flow of all the surface water sites must be recorded quarterly as well as spillages and overflows noted. Photos must also be taken if necessary.
- An investigation of groundwater level fluctuations must be done to identify short- and long-term trends in the groundwater level and to identify possible zones of artificial groundwater recharge by means of seepage from the different dam and canal systems. The water levels of all the groundwater sites must be recorded quarterly with a water level recorder. The specific depth of where samples be taken should be determined prior to sampling of all the boreholes for the first time. All boreholes should then be sampled in future at the specified depth. The borehole depth should also be determined. All tables should be updated with the borehole and sampling depths. Photos must also be taken if necessary. Upgrade of boreholes should be done on an annual basis or when necessary during the year.
- Refer to Table 1 to Table 2 for a description and coordinates of all the surface water sites (dams/ponds, River sites, seepage, sewage discharge and canals) to be included during the surface water site assessment and audit and sampling event done during the different monitoring types field work phases (Type A B and C):

Note: All Surface water sites (dams/ponds, River sites, seepage, sewage discharge and canals) are quarterly sampled when water is available.

6. Chemical (Cation & Anion), Heavy metal, Bacteriological and Total Petroleum Hydrocarbon Analyses

All surface- and groundwater samples must be submitted to accredited laboratories for chemical analyses.

The recommended inorganic, Heavy metal, bacteriological and hydrocarbon parameters that should form part of the contract is listed below and should be included in each quarter phase as stipulated in the scope.

Analyses Type N (Cation and Anions) - pH; EC; TDS, Na; K; Ca; Mg;T-Alk; P-Alk; Cl; B; Fe; Cr; Mn; F, NO_3; NO_2; & SO_4.

Analyses Type B – (Microbial contamination): Standard Agar Plate Count, Total Coliform Count, Escherichia.coli Count, Ammonia as N (NH_4-N) and COD.

Analyses Type H – Total Petroleum Hydrocarbon analyses.

Analyses Type A - Additional elements (Heavy Metals): Al; Cu; Pb; Zn, SiO_2 and Cr6+ if high levels of Cr Total are detected.

Monitoring Type A:

- Analyses Type N (Cation and Anions) at Surface and groundwater sites.
- Analyses Type A - Additional elements (Heavy Metals): 80 sites:
- Analyses Type B – (Microbial contamination): 12 sites
- Analyses Type H – (Total Petroleum Hydrocarbon analyses): 9 sites

Monitoring Type B:

- Analyses Type N (Cation and Anions) at Surface and groundwater sites.

- Analyses Type B – (Microbial contamination): 12 sites
- Analyses Type H – (Total Petroleum Hydrocarbon analyses): 9 sites

Monitoring Type C:

- Analyses Type N (Cation and Anions) at Surface and groundwater sites.
- Analyses Type B – (Microbial contamination): 12 sites
- Analyses Type H – (Total Petroleum Hydrocarbon analyse): 9 sites

Boreholes occurring near the sewage plant must be sampled to investigate the levels of bacterial activity, while boreholes near sites where oil contamination could occur must be sampled for petroleum hydrocarbon contamination.

Apart from the monitoring groundwater and surface water sites other groundwater and surface water sites such as famer's boreholes, fountains or springs occur in the vicinity of the power station and some of these sites must be sampled from time to time or when requested by the power station or when necessary.

In addition to the parameter specified in the above chemical analyses any additional parameters provision must be made

- **Updating of the water quality data base and maps of Kriel Power Station**

Currently all the historical data till June 2022 is kept on a database. During each monitoring phase the data base must be updated with all the newly gathered data.

All new water level, chemical, bacteriological, hydrocarbon, drilling information, new site coordinates, borehole depths and EC profiling data should be incorporated on a quarterly basis into the database

The mapping software currently in operation is MapInfo and this is the only mapping software that must be used. All the maps must be updated after each monitoring event.

The data acquired should be submitted in a soft copy to be incorporated to the Power station database on an annual basis.

7. Interpretation of Data

3.4.1 Monitoring TYPE A - Final big year-end report with graphs & interpretation of data

- Evaluate the information gathered during the audit and site assessment and compare it with the assessment done during the previous phase;
- Examination of the temporal trends in the ground water levels by means of time graphs;
- Compilation of data tables containing the results of the chemical analyses and highlighted according to the South African Water Quality Standards for Domestic Use. When the WUL is awarded, the new limits specified by DWS will be used to analyse the data.
- All Chemical, Heavy Metal, Bacteriological and Hydrocarbon analyses should be inserted into the report. The analyses should be discussed in detail and also inserted in the appendix. The risks should be stipulated, discussed and recommendations should be made.
- Calculation of Pollution Indices to evaluate the pollution statuses of the surface and groundwater sampling sites. The groundwater pollution indices were determined from the hydrocensus survey that was conducted as part of the Baseline Study. The analyses from the upstream sample sites must be use for the calculation of the pollution indices for the river and stream samples;
- Maximum/minimum, average and current (MMAC) plots of the water chemistry to relate the current water chemistry to the chemistry observed during previous monitoring phases;
- Examination of the temporal trends in the ground and surface water chemistry by means of time graphs;
- Investigation of the spatial variation in water chemistry of the natural rivers/streams by means of bar charts.
- All geochemical data presentations, plotting and analysis must be with Wish, or AquaChem or PHREEQC software.

- Prediction of environmental impacts of all sites: Perform a complete risk analysis assessment on identified areas with high levels of contamination;
- Conclusions and recommendations.

3.4.2 Monitoring TYPE B - Site audit reports & discussions of problematic sites;

- Evaluate the information gathered during the audit and site assessment and compare it with the assessment done during the previous phase;
- Examination of the temporal trends in the ground water levels by means of time graphs;
- Compilation of data tables containing the results of the chemical analyses and highlighted according to the South African Water Quality Standards for Domestic Use. When the WUL is awarded, the new limits specified by DWS will be used to analyse the data.
- Prediction of environmental impacts of problematic sites: Perform a risk analysis assessment on identified areas with high levels of contamination was picked up during the current phase.
- All Chemical, Bacteriological and Hydrocarbon analyses should be inserted inserted in the appendix.
- Conclusions and recommendations.

3.4.3 Monitoring TYPE C - ½ Year report with graphs & interpretation of data;

- Evaluate the information gathered during the audit and site assessment and compare it with the assessment done during the previous phase;
- Examination of the temporal trends in the ground water levels by means of time graphs;
- Compilation of data tables containing the results of the chemical analyses and highlighted according to the South African Water Quality Standards for Domestic Use. When the WUL is awarded, the new limits specified by DWS will be used to analyse the data.
- All Chemical, Bacteriological and Hydrocarbon analyses should be inserted into the report. The analyses should be discussed in detail and also inserted in the appendix. The risks should be stipulated, discussed and recommendations should be made.
- Calculation of Pollution Indices to evaluate the pollution statuses of the surface and groundwater sampling sites. The groundwater pollution indices were determined from the hydrocensus survey that was conducted as part of the Baseline Study. The analyses from the upstream sample sites must be use for the calculation of the pollution indices for the river and stream samples;
- Maximum/minimum, average and current (MMAC) plots of the water chemistry to relate the current water chemistry to the chemistry observed during previous monitoring phases;
- Examination of the temporal trends in the ground and surface water chemistry by means of time graphs;
- Investigation of the spatial variation in water chemistry of the natural rivers/streams by means of bar charts.
- All geochemical data presentations, plotting and analysis must be with Wish, or Aqua Chem or PHREEQC software.

- Prediction of environmental impacts of all sites: Perform a complete risk analysis assessment on identified areas with high levels of contamination;
- Prediction of environmental impacts of problematic sites: Perform a risk analysis assessment on identified areas with high levels of contamination was picked up during the current phase.
- Conclusions and recommendations.

8. Report Writing

Reports summarising the results of each monitoring phase must be compiled and submitted to Kriel Power Station. These reports must include recommendation for the improvement of the water and waste management systems and must address any potential or existing pollution problems noted during the interpretation of the chemical data. The reports for the different types of monitoring must include at least the following:
Monitoring TYPE A - Final big year-end report with graphs & interpretation of data. Write a report containing findings on the current condition of the monitoring network and the water and waste management system. Special attention must be given to the all the work done during the previous twelve months regarding the monitoring system. The report must include a risk assessment based on the site assessment of the water and waste management and monitoring system as well as on the results of the chemical analyses performed on the surface- and groundwater samples. Recommendations for remedial actions where deemed necessary will also be provided:

- Site assessment and audit with current state descriptions of all the areas and sites.
- Responses receive from the power station regarding problems identified during previous phases.
- Water level fluctuations graphs with discussions.
- Chemical data tables of all the sites with comparison to the water quality standards of the current phase and discussions.
- Pollution indices tables and discussions for all the surface and groundwater sites.
- Chemical Min, Max, Average and Current plots (MMAC) of all the sites with discussions.
- Chemical time graphs of all the sites with discussions.
- Chemical line and bar graphs of all the sites with discussions.
- Discussion of the impacts on the environment of the all the different areas and sites.
- Propose rehabilitative measures and the required measures to be implemented.
- 3 x binded copies to be supplied of each report.
- All graphs, maps and drawings and photos to be in colour in all copies.
- A preliminary report discussing the field observations and current state must be available within Four (2) weeks from date of sampling.
- The final report must be available within two (2) months from date of sampling. Monitoring

9. **TYPE B - Site audit reports & discussions of problematic sites.**
    - Write a report containing findings on the current condition of the monitoring network and the water and waste management system. The report must include a risk assessment based on the site assessment of the water and waste management and monitoring system as well as recommendations for remedial actions where deemed necessary:

10. Site assessment and audit with current state descriptions of the problematic areas and sites.
11. Responses receive from the power station regarding problems identified during previous phases.
12. Water level fluctuations graphs with discussions.

13. Chemical data tables of all the sites with comparison to the water quality standards of the current phase and discussions.
13.3 Pollution indices tables and discussions for the river and stream sites.
13.6 Chemical line and bar graphs of all the stream and river sites with discussions.
13.7 Discussion of the impacts on the environment of the different areas and sites where problems were observed.
2.8 Propose rehabilitative measures and the required measures to be implemented.
13.9 X binded copies to be supplied of each report.
13.10 All graphs, maps and drawings and photos to be in colour in all copies.
13.11 A preliminary report discussing the field observations and current state must be available within Four (2) weeks from date of sampling.
13.12 The final report must be available within two (2) months from date of sampling.

14. Monitoring TYPE C - ½ Year report with graphs & interpretation of data.

14.9 Write a report containing findings on the current condition of the monitoring network and the water and waste management system. The report must include a risk assessment based on the site assessment of the water and waste management and monitoring system as well as on the results of the chemical analyses performed on the surface- and groundwater samples. Recommendations for remedial actions where deemed necessary will also be provided:
14.10 Site assessment and audit with current state descriptions of all the areas and sites.
14.11 Responses receive from the power station regarding problems identified during previous phases.
14.12 Water level fluctuations graphs with discussions.
15. Chemical data tables of all the sites with comparison to the water quality standards of the current phase and discussions.
16. Pollution indices tables and discussions for all the surface and groundwater sites.
17. Chemical Min, Max, Average and Current plots (MMAC) of all the sites with discussions.
18. Chemical time graphs of all the sites with discussions.
19. Chemical line and bar graphs of all the sites with discussions.
20. Discussion of the impacts on the environment of the all the different areas and sites.
21. Propose rehabilitative measures and the required measures to be implemented
22. 3 x binded copies to be supplied of each report.
23. All graphs, maps and drawings and photos to be in colour in all copies.
3.14 A preliminary report discussing the field observations and current state must be available within Four (2) weeks from date of sampling.
23.15 The final report must be available within two (2) months from date of sampling.
23.16 Training

Training to be done on an annual basis and must be mainly to give the Eskom personnel a better understanding of the total monitoring system. This will ensure them to be proactive and to minimise any environmental problems that could arise from any of the power generation activities.

23.17 Purging of Monitoring Boreholes

- All available boreholes should be purged on an annual basis. Five (5) such events must occur over a five year period. Purging must be conducted as follows:

- The large diameter boreholes must be purged with a submersible pump during monitoring TYPE B (2nd Quarter) once annually. Purging must be done after the sample has been taken.

- The pump must be able to fit within a 100 mm inside diameter borehole and deliver 0.5 l/s at a depth of 40 m.
- EC measurement must be taken continuously during the purging of the boreholes.
- Low yielding boreholes must be pumped dry.
- At least three times the volume of the standing water must be removed at high yielding boreholes.
- After purging the boreholes must be sampled during the next monitoring phase at the specific depths determined during previous investigations. This is necessary to ensure that the aquifer conditions have recovered to its natural state and that no artificial inflow into the borehole is sampled**.**

23.18 EC Profiling

All available boreholes should be EC Profiled on an annual basis. Five (5) such events must occur over a five year period. EC Profiling must be conducted as follows:

23.19 Boreholes must be EC profiled after purging during monitoring TYPE C (3rd Quarter) once annually.

3.20 Report regarding the EC profiling (including EC Profiling graphs) must be submitted to Kriel Power Station.

24. **Hydrological Numerical Models – Update of Existing Mode**l

A 3D finite element numerical Groundwater Models should be done once per year. Detailed models of the whole area (including the Power Station area, Coal Stockyard area, Ashing area and New ash dam Extension, as well as all the AWR dams (including (LL AWR, HL AWR, Borrow Pits and Swart Pan) should be done during Year 1, 3 and 5. Updates of these models should be done during Year 2 and 4.

24.1 The following issues must be addressed during the above mentioned modelling:

4.2 To obtain data and reports from the Kriel Power Station on the present status of groundwater pollution and contamination sources at the sites.

24.3 Gathering of previous modelling reports.

24.4 Determination of the total area and volume of contaminated groundwater at the site.

24.5 Delineation of pollution plume - plot on map. This will be done by using the numerical model of the area with data gathered during the field investigation as well as data currently available on the area under investigation.

24.6 Apply analytical methods to determine salt content within aquifers, flow rate, mass and flux.

24.7 Modelling of different scenario’s relevant to the site,

24.8 Consideration of current DWS regulations and Kriel license conditions,

24.9 Do detailed risk assessment on the natural water sources to satisfy the minimum requirements according to DWS standards,

24.10 Evaluate the options for solutions to the groundwater influx and pollution based on risks and costs,

24.11 Determine the current flux (volume of water) and salt loads into the surrounding natural water courses as well as to the groundwater regime.

24.12 Model different scenarios to simulate the new proposed developments at the power station. The impacts of the proposed increased flux (volume of water) and salt loads on the surface and groundwater bodies will be assessed and evaluated with the new upgraded model.

24.13 Different scenarios to intercept and remediate these problems will also be tested with the model. Possible interception and remedial methods that will be tested are cut-off trenches, production boreholes, grouting and sealing of preferred pathways with different designs for instance the depths etc. This is of utmost importance before any trenches or interception systems are designed and constructed.

24.14 Water Monitoring System Maintenance and Upgrade

During previous investigations shortcoming in the surface and groundwater monitoring system were identified and must be rectified during the first 4 months of the contract. The following problems are identified and must be rectified:

The extension of the ashing Complex will be done to the east and south of the current Ashing complex. The current boreholes located to the east and south of the complex will be replaced, however, sampling of these sites will continue until the extension starts. These boreholes should be plugged by the contractor prior to ashing over these boreholes.

New boreholes should be drilled within the next 4 months to the east and south of the planned extended ashing facility to start with monitoring.

The current surface water sites (canals and seepage sites) will be replaced with time as the new canals and seepage sites are developed over the 5 year contract period.

The exact localities of the new monitoring boreholes must be done by consulting aerial maps as well as ground geophysics. Prior to drilling of the boreholes a detailed magnetic survey should be conducted using a G5 Proton Magnetometer manufactured by Geotron Systems (Pty) Ltd. This information should then be useful in placing of boreholes to identify pollution transport in the shallow and deeper aquifer.

A professional geohydrologist / geologist must oversee (site and log the boreholes) the drilling phase and must determine the drilling depths of the boreholes as well as the depth of casing installations The areas where solid and perforated casing must be installed must also be determined by the geohydrologist on site.

6.15 The boreholes headworks must consist of the following, concrete plinths (1mx1mx300mm), tamper free caps, marker posts, labels and locking pins.

24.16 Field measurements and laboratory tests:

24.17 Penetration rates, geological logging, water strikes etc. must be recorded during the drilling phase.

24.18 Permeability tests, EC profiling and sampling at different depths must be conducted on all the new boreholes at least three weeks after drilling;

24.19 Samples must be collated from the unconsolidated overburden and submit to a laboratory for sieve analyses to determine the permeability of the soils. Coordinates must be taken for all the new groundwater monitoring points.

-

24.20 10 New boreholes located to the east and south of the planned Ashing extension to replace the current boreholes. 5 Pairs - 5 Deep boreholes (165mm) boreholes (40 m) and 5 shallow boreholes (165mm) boreholes (15 m).

24.21 Replacement of existing damaged boreholes. 6 New boreholes to replace (KB01S and KB01D, KB05S and KB05D and KB10S and KB10D) - 3 Deep boreholes (165mm) boreholes (40 m) and 3 shallow boreholes (165mm) boreholes (15 m).

24.22 8 New boreholes in the vicinity of the AWR Dams (Swart pan, Borrow Pits and HL AWR Dams) as part of a Pollution investigation. 4 Pairs - 4 Deep boreholes (165mm) boreholes (40 m) and 4 shallow boreholes (165mm) boreholes (15 m).

MON. EVENT	YEAR	
	1ST YEAR	2ND YEAR
1ST QUARTER JANUARY	PHASE 74 ROUTINE MONITORING • DETAILED SITE ASSESSMENT +/- NUMBER OF SITE • SUBMISSION OF MONITORING PROGRAMME/PLAN • MAINTENANCE OF BOREHOLES	PHASE 78 ROUTINE MONITORING • DETAILED SITE ASSESSMENT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 33 SITES

	(SPECIFICALLY BOREHOLES HIGHLIGHTED IN PHASE 73 MONITORING REPORT) • SAMPLING SURFACE AND GROUND WATER +/- 39SITES • GROUNDWATER LEVEL MEASUREMENT SITES • CONSOLIDATION OF DATA INTO DATA BASE • PROVIDE SOFT COPY OF ALL DATA • RISK ASSESSMENT AND EVALUATION • DETAILED REPORT AND EVALUATION OF CHEMICAL DATA • PROVIDE ALL RAW DATA ACCUMULATED (TO DATE) • PROVIDE SOFT COPIES OF ALL GROUNDWATER REPORTS DONE (TO DATE) • SUMMARY REPORT OF ALL GROUNDWATER MONITORING, MODELLING AND SPECIAL STUDIES DONE (TO DATE)	• CONSOLIDATION OF DATA INTO DATA BASE • RISK ASSESSMENT AND EVALUATION • DETAILED REPORT AND EVALUATION OF CHEMICAL DATA • MAINTENANCE OF BOREHOLES • GEOPHYSICAL INVESTIGATION AROUND ALL IDENTIFIED POLLUTION SOURCES
2ND QUARTER APRIL	**PHASE 75 ROUTINE MONITORING** • SITE AUDIT SITES • SAMPLING SURFACE AND GROUND WATER SITES • GROUNDWATER LEVEL MEASUREMENT +/- 39 SITES • CONSOLIDATION OF DATA INTO DATA BASE • FULL CHEMICAL ANALYSIS INCLUDING HEAVY METALS • AQUIFER CHARACTERISATION AND VULNERABILITY STUDY AND REPORT • PROVIDE SOFT COPY OF ALL DATA • MAINTENANCE OF BOREHOLES	**PHASE 79 ROUTINE MONITORING** • SITE AUDIT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 39 SITES • PROVIDE SOFT COPY OF ALL DATA • CONSOLIDATION OF DATA INTO DATA BASE • EC PROFILING – 39 SITES • EC PROFILING REPORT • BIO-MONITORING •
3RD QUARTER JULY	**PHASE 76 ROUTINE MONITORING** • DETAILED SITE ASSESSMENT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 39 SITES • CONSOLIDATION OF DATA INTO DATA BASE • SUBMISSION OF DATA • EC PROFILING • EC PROFILING REPORT • RISK ASSESSMENT AND EVALUATION • DETAILED REPORT AND EVALUATION OF CHEMICAL • MAINTENANCE OF BOREHOLES	**PHASE 80 ROUTINE MONITORING** • DETAILED SITE ASSESSMENT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 39 SITES • SUBMISSION OF DATA • CONSOLIDATION OF DATA INTO DATA BASE • RISK ASSESSMENT AND EVALUATION • DETAILED REPORT AND EVALUATION OF CHEMICAL DATA • UPDATE VISUAL MODFLOW NUMERICAL MODEL
4TH QUARTER OCTOBER	**PHASE 77ROUTINE MONITORING** • SITE AUDIT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 33 SITES • CONSOLIDATION OF DATA INTO DATA BASE • SUBMISSION OF DATA IN SOFT COPY • ANNUAL CONSOLIDATED GROUNDWATER	**PHASE 81 ROUTINE MONITORING** • SITE AUDIT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 39 SITES • CONSOLIDATION OF DATA INTO DATA BASE • SUBMISSION OF DATA • ANNUAL CONSOLIDATED GROUNDWATER

	AND SURFACE WATER REPORT • REVIEW AND UPDATE PLUME MODELLING	AND SURFACE WATER REPORT • REVIEW AND UPDATE PLUME MODELLING
MON. EVENT	**YEAR**	
	3RD YEAR	
1ST QUARTER JANUARY	**PHASE 83ROUTINE MONITORING** • DETAILED SITE ASSESSMENT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 39 SITES • CONSOLIDATION OF DATA INTO DATA BASE • PROVIDE SOFT COPY OF ALL DATA • RISK ASSESSMENT AND EVALUATION • DETAILED REPORT AND EVALUATION OF CHEMICAL DATA • MONITORING REVIEW WORKSHOP	
2ND QUARTER APRIL	**PHASE 82ROUTINE MONITORING** • SITE AUDIT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 39 SITES • CONSOLIDATION OF DATA INTO DATA BASE • PROVIDE SOFT COPY OF ALL DATA • EC PROFILING – 39 SITES • ASSESSMENT AND MAINTENANCE OF BOREHOLES • AUDIT SEWAGE PLANT • AUDIT REPORT	
3RD QUARTER JULY	**PHASE 83 ROUTINE MONITORING** • DETAILED SITE ASSESSMENT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 39 SITES • CONSOLIDATION OF DATA INTO DATA BASE • PROVIDE SOFT COPY OF ALL DATA • RISK ASSESSMENT AND EVALUATION • DETAILED REPORT AND EVALUATION OF CHEMICAL DATA • EC PROFILING – 39 SITES • BIOMONITORING	
4TH QUARTER OCTOBER	**PHASE 84 ROUTINE MONITORING** • SITE AUDIT +/- 56 SITES • SAMPLING SURFACE AND GROUND WATER +/- 56 SITES • GROUNDWATER LEVEL MEASUREMENT +/- 33 SITES • CONSOLIDATION OF DATA INTO DATA BASE • PROVIDE SOFT COPY OF ALL DATA ANNUAL CONSOLIDATED GROUNDWATER AND SURFACE WATER REPORT • REVIEW AND UPDATE PLUME MODELLING	

STANDARDS, STANDARD SPECIFICATIONS AND PROCEDURES

	Origin	Type	No. / shts. / rev.	Description
1	Eskom	Procedure	QM-58	Supplier Contract Quality Requirements Specification
2	Kriel	Procedure	RSR0001	Safety, Health And Environment Requirements For Contractors At Kriel P/S
3	Eskom	Policy	32-727	Safety, Health, Environmental And Quality Policy
4	Eskom	-	37(2)	SHE Agreement
5	Eskom		ESKASAAA	Approval Of Personnel Performing Quality Related Special Processes On All Eskom Plant
6	Eskom		OPR 3305 (rev 3)	Eskom Plant Safety Regulation
7	Kriel Power Station	Procedure	RER 0221	Environmental Management System: Waste Management Procedure
8	Eskom - Generation	Procedure	OPS 3450/17-2	Standard Specification For Quality Assurance, Quality Control And Inspection Requirement
9	Kriel Power Station	Procedure	RER 0207	Environmental Management System Manual
10	Kriel Power Station	Procedure	RER 0093	Environmental Management System: Competence, Training & Awareness
11	Kriel Power Station	Procedure	RER 0221	Environmental Management System: Waste Management Procedure
12	Eskom - Generation	Procedure	OPS 3450/17-2	Standard Specification For Quality Assurance, Quality Control And Inspection Requirement
13	Kriel Power Station	Procedure	RER 0207	Environmental Management System Manual
14	Kriel Power Station	Procedure	RER 0223	Oil Spillage Response Procedure
15	Kriel Power Station	Procedure	RER 0093	Environmental Management System: Competence, Training & Awareness
16	Kriel Power Station	Procedure	36-505	Personnel And Entities Performing Welding Related Special Processes On Eskom Plant
17	Kriel Power Station	Procedure	36-775	Control Of Plant Construction, Repair And Maintenance Welding Activities
18	Eskom	Standard	32-136	Contractor Health & Safety Requirements
19	Kriel Power Station	Procedure	ESP 32-345	Vehicle Safety Specifications & Vehicle Inspection Requirements

Supplier Development & Localisation

GHT to offer training/exposure/skills transfer for minimum 3 people over the 3 year contract period (one per year). Full details to be provided after contract award.

SAFETY

- The contractor shall conduct a safety inspection and hold a meeting with all employees once per month.
- The minutes of the meeting must be handed in to Eskom not later than the 4th last working day of the current month.
- The contractor is responsible to ensure the safety of all employees as far as practicable without risk to their health.

- The contractor must provide Eskom with a report of each employee's yearly medical screening not later than end February of every year.
- The contractor is responsible to report all safety deficiencies to Eskom immediately for action.
- The Contractor must attend the monthly Main Safety meeting representing his company
- The site supervisor must keep the companies Contractors Safety File updated and hand it in for Auditing purposes on a quarterly basis.

➢ **Safety Equipment**

- Appropriate safety equipment such as a self-contained breathing apparatus, life buoys and lifelines shall be made available by the Employer's Representative at a relevant places at the plant, e.g. chlorine house, etc. The Contractor will be responsible for maintenance of this safety equipment.
- The Employer shall initially provide all exposed moving parts of machinery with safety guards. These guards shall be maintained and repaired by the employer.
- The Contractor shall train his employees at the plants in the use of safety equipment.
- No employee shall be allowed to work unaccompanied at and/or on potentially dangerous equipment and areas, e.g. chlorinating equipment / house, etc.
- The contractor shall hold at least once a month a safety meeting and keep records thereof for perusal by the asset owner as and when required. The meeting will also include a work team discussion and a discussion regarding IBI. The employer will attend the meeting as and when required to ensure effective implementation of the program. date list to be provided to the employer by the contractor.
- The contractor is required to attend the station's main safety meeting which is held once a month and give feedback as required.
- The minutes of the Safety and work team session meetings must be handed in to Eskom not later than the 1st working day of the next month.
- The contractor must provide Eskom with a report of each employee's yearly medical screening not later than end March of the year.
- The contractor is responsible to report all safety deficiencies to Eskom immediately for action.

ENVIRONMENTAL MANAGEMENT SYSTEM

- All service providers appointed to render any services within Eskom Kriel Power Station are required to comply with the station's Environmental Management System requirements.

- NB: Before commencing with any work, the service providers are required to visit the station's environmental section for evaluation. The station's environmental practitioner will evaluate the services to be rendered by the service provider and therefore allocate relevant legal and other requirements documents which the contractor shall comply with during the works. The service provider together with Eskom's Environmental practitioner shall sign in the Environmental Agreement Register to indicate that the agreement is reached.

- The service provider shall then commence with the works but paying inordinate attention towards implementing the relevant legal and other requirements measures as agreed in the register. Failure to comply with this agreement may ultimately lead to the termination of this contract. This requirement shall also be clearly stipulated in the NEC contracts between Eskom Kriel Power Station and any service providers.

- It should always be noted that Kriel Power Station is ISO14001 certified and therefore promotes Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development. All activities taking place within Kriel Power Station must consider section 28 of the National Environmental Management Act (107 of 1998) which makes provision for the duty of care approach. The contractor's team must commit to review and to continually improve environmental management, with the objective of improving overall environmental performance. The Contractor must consult with Kriel Environmental section on a regular basis for on-going assistance and advices.

- The EMS shall clearly cover the following areas as per ISO 14001;
  - Environmental policy
  - Environmental legal and other requirements
  - Risk Assessments/Aspects & Impacts Register
  - Improved management of monitoring and measurement documentation(e.g. devices calibration certificates)
  - Provision of necessary resources (e.g. computers, adequate human resource) and allocation of roles and responsibility (through clear appointments) to achieve effective implementation of the EMS.
  - Continuous commitment towards complying with operational controls such as work instructions, operational procedures, etc. (either provided by the Contractor or by Eskom) as well as emergency preparedness and response procedures/plans.
  - The contractor shall continually evaluate the compliance to legal requirements (e.g. sewage treatment plant permits and other applicable legislation); this should also be documented within the monthly environmental site inspections reports.
  - Kriel Power Station's procedure for non-conformity, corrective action and preventive actions shall be followed in case of the environmental incidents.
  - Setting of KPI's and
  - Contingency plans.

Environmental Management Programmes

- Environmental Management Programmes shall be established and maintained to ensure that objectives and targets are achieved.

Audits

Audits covering various Environmental aspects, Safety, Operational, IBI and Maintenance Management at the plant shall be carried out within an acceptable interval to ensure compliance with statutory requirements and Eskom's policies, Directives, procedures etc.

QUALITY MANAGEMENT

Quality management system

The *Contractor* shall be required to demonstrate by means of a Contract Quality Plan (CQP) that this organisation is so structured that all the requirements of the specification will be properly monitored and controlled. The Contract Quality Plan (CQP), which must include the Quality Control Plan (QCP), is to be drafted in accordance with QM-58 and the Supplier Contract Quality Requirement Specification (QM58). The Quality documents are to be submitted for approval to *the Project Manager* within thirty (30) days after a contract has been awarded to the *Contractor.*

No work may commence unless the Contract Quality Plan and Quality Control Plan documents have been approved in writing and a copy submitted to *the Project Manager*. The *Contractor*, in conjunction with *the Project Manager* must sign off all Quality Control documents after completing all work as per the agreed scope. The *Contractor* to submit a copy of the final signed off documents/data packages to *the Project Manager* within one (1) week after completion of work.

The *Contractor* shall be required to read and fully understand the contents of the Supplier Contract Quality Requirement Specification (QM58) and a copy is to be kept in possession or on premises.

The Supplier Contract Quality Requirement Specification (QM58) shall remain applicable in the event of the contract being extended or modified for reasons permitted.

By signature and acceptance of this contract the *Contractor* acknowledges and agrees to comply with and adhere to Eskom's policies and procedures (current and/or latest revisions) including the Supplier Contract Quality Requirement Specification (QM58).

Contract Quality Management Plan Requirement

The *Contractor* prepares a contract quality management plan that, where appropriate, indicates the following:

- Indicates the interface with the *Contractors* quality system and applicable documents such as procedures and work instructions
- Establishes communication channels between the *Contractor* and the *Project Manager* in respect of quality and the integration of such with the prescribed contract communication channels
- Indicates how specific subcontractors will be monitored
- Identifies items or activities for which quality control plans will be prepared
- Identifies the specifications, drawings and acceptance criteria for material for which quality control plans are not required
- Identifies the areas or processes requiring special controls
- Identifies the *Contractor's* Management Representative and personnel responsible for the control of quality activities and their relationship to the *Contractor's* management structure
- Identifies the documents which are to be submitted to the Project Manager
- Indicates the *Contractor's* quality monitoring programme

The *Contractor* periodically updates the contract quality management plan to reflect changes in any of the above details. The frequency of such updates is determined by the Project Manager but will not be greater than one year.

Quality Control Plan

The *Contractor's* or Subcontractor's quality control plans cover inspection and test proposals for items or activities to be supplied as part of the *works*.

The quality control plan indicates the following as appropriate:

- The identification of the item.
- The material.

- A list of the sequence of operations including inspections and tests.
- The identification of the specification, drawings or procedures for each operation.
- The acceptance criteria with reference to the appropriate technical specification, in-house, national or international standard and relevant clause number.
- The inspections and tests the *Contractor* has nominated for hold and witness points.
- Provision for inspections and tests nominated by the *Project Manager.*
- Provision for inspection status indication.
- Inspection and test records which are generated by the *Contractor*.

The quality control plans are reviewed by the *Project Manager* to allow for insertion of his specific requirements, including hold and witness points, prior to commencement of work. The *Contractor* does not commence work until the *Project Manager* accepts.

1.1 Invoicing and payment

Within one week of receiving a payment certificate from the *Service 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 *Service Manager*'s payment certificate. No invoices to be handed to an individual, only per the address arrangement below.

Eskom Holdings SOC Ltd
Reg. No. 2002/015527/30
Accounts Payable
Email to: Invoiceseskomlocal@eskom.co.za

The *Contractor* keeps records of all invoices submitted and paid up to the end of the project, as well as details of Actual Costs.

The following information to be reflected on each invoice:
Name and address of the *Contractor* and the *Service 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

Contractor is required to follow the correct process to ensure the payment is effected in accordance with contractual payment terms.

Name and address of the *Contractor* and the *Service 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

Contractor is required to follow the correct process to ensure the payment is effected in accordance with contractual payment terms.

Contractor is required to follow the correct process to ensure payment is effected in accordance with contractual payment terms:

2.6.1 Service related invoices

a) Once the *service* have been delivered/completed both parties have to agree that the *service* has been delivered/completed successfully prior to invoicing
b) An assessment payment certificate must be completed between the *Contractor* and *Service Manager* according to the *service* performed. Both parties have to sign the assessment/certificate
c) A copy of assessment/payment certificate must be obtained by the *Contractor* to enable the creation of an invoice and to prevent any discrepancies. A copy of the assessment/payment certificate must be attached to the original invoice
d) *Service Manager* performs a service entry and Goods Receipt on the SAP system. (Assessment/Payment Certificate issued as a source document for Service Entry Goods Receipt)
e) *Service Manager* will the forward the Service entry and Goods Receipt Note number to the *Contractor* within 3 working days after the service has been rendered and the Assessment/Payment certificate signed
f) *Contractor* must forward the original invoices together with a copy of the Assessment/Payment certificate to the Eskom Documentation Centre.

2.6.2 Goods Delivered Invoices

a) Once the Goods are delivered, the *Service Manager* preforms a Goods Receipt on the SAP system. (The delivery note is used as source document for Goods Receipt. The invoice should not be used as a delivery note)
b) *Service Manager* will then forward the Goods Receipt note to the Vendor immediately or within 3 working days after the Goods are delivered.
c) Vendors must then forward the Invoices together with a copy of the Assessment/Payment certificate to the Eskom Documentation Centre

2.6.3 Invoices linked to commodity prices

a) The requirements are the same as for Goods Delivered Invoices.
b) Invoices which are linked to commodity prices will result in CPA (Contract Price Adjustment).
c) Attach a copy of the material invoice that has been previously paid to the CPA invoice, as well as the calculation sheet and all indices attached other than SEIFSA.
d) The relevant Eskom Department will then complete the CPA calculation sheet and forwards it to the Eskom Documentation Centre.

2.6.4 Retention Invoices

Not applicable

2.6.5 Foreign exchange Invoices

Not applicable

2.6.6 General Information related to Eskom Invoices

a) *Contractor* must ensure that the Service Entry and Goods Receipt Note number appears on the invoice. (It can be printed or hand written on the invoice).
b) Eskom Purchase Order number must appear on invoice.
c) Invoices must be VAT compliant in line with the VAT Act requirements.
d) Invoices submitted must reflect the bank account details. A once off copy of the banking details may be forwarded to the Documentation Centre and it will be attached to each scanned invoice.

e) Invoices must be original or certified as an original in line with the VAT Act. No electronic invoices will be accepted.
f) Eskom's correct name "**Eskom Holdings SOC Limited**" must appear on the invoice.
g) The Eskom VAT registration number: **4740 101 508** must appear on the invoice.
h) No pro-forma invoices will be accepted.
i) *Contractor* cannot be utilized by Eskom for more than 3 times without a contract being established.

Note:

1. Invoices must be delivered to the Eskom Documentation Centre, as this will speed up the payment process and ensure that invoices are not lost and payments delayed. There is no need for *Service Manager* to sign invoices as they perform Goods Receipt in the system. The assessment certificate and Goods Receipt serves as the approval of payment.
2. Eskom Documentation Centre will review invoices according to a checklist and on completion scan the documentation into Accounts Payable processing system (Documentation can only be scanned where the Purchase order no. and Goods Receipt Note no. is reflected on the invoice, and the invoice complies with the VAT Act).
3. Invoices are processed and released for payment by Accounts Payable Section only where the source documentation is 100% correct

1.2 Contract change management

Any change of the *Contractor's* company ownership should be communicated through to the *Service Manager*. Failing to do this may lead to contract termination with legal consequences.

The correct processes and procedures will be communicated through to the *Contractor* by the *Service Manager.*

If the *Employer's Service Manager* change the *Contractor* will be notified by the *Employer* as soon as possible to ensure that the *Contractor* follow the correct communication channels.

1.3 Records of Defined Cost to be kept by the *Contractor*

In order to substantiate the Defined Cost of Compensation Events, the *Employer* may require the *Contractor* to keep records of amounts paid by him for people employed by the *Contractor*, Plant and Materials, work subcontracted by the *Contractor* and Equipment.

The *Contractor's* Site Manager will complete the site daily log and this will be submitted to the *Service Manager* for his signature before 12 am of the following morning barring weekends. The Friday and weekend logs will be submitted before 12 am Mondays. The log will include but not be limited to the following:

- Date and day.
- Weather.
- Site Conditions.
- Work Done.
- People who are employed by the *Contractor*
- Work sub-contracted by the *Contractor*
- Any incidents during that period.

Any communication and documentation during this service agreement to be filed in the contract file. This file is in the possession of the *Service Manager* at all times.

1.4 Insurance provided by the *Employer*

As stated in Contract Data and as per Annexure A within this Service Agreement.

1.5 Training workshops and technology transfer

The *Service Manager* may request a detailed workshop or bar charts which fit into the logic and time span of the Accepted Programme, and reflects the required manufacturing completion dates.

The *Contractor* should create a programme for training on the plant for the *Employer's* nominated employees if required from the *Service Manager*.

This training should be relevant for the *Employer's* employees to perform front line fault finding or maintenance.

1.6 Design and supply of Equipment

Details of the design of Equipment is shared with the *Service Manager*, not necessarily for his acceptance but, as an assurance that the Equipment will be able to allow the *Contractor* to Provide the *Service* efficiently and without delay.

Also the *Employer* may wish to exercise constraints or include witness and hold points during manufacture, assembly or delivery of such Equipment.

The *Contractor* submits particulars of the design of an item of equipment to the *Service Manager* for acceptance when the *Service Manager* instructs him to. A reason for not accepting is that the design of the item will not allow the *Contractor* to provide the service in accordance with the Service Information, accepted plan or the applicable law.

1.7 Things provided at the end of the *service period* for the *Employer*'s use

1.7.1 Equipment

The contractor must submit a data pack after every outage and the clock cards must be handed to security for safe keeping

1.7.2 Information and other things

The *Contractor* has the right to use Equipment, Plant, and Materials as stated in this Service Information provided by the *Employer* to provide the *service*.

At the end of the *service* period the *Contractor* returns all Equipment and surplus materials to the *Employer*. Provides items of equipment for the *Employer's* use as stated in the Service Information and provides information and other things as stated in the Service Information.

1.8 Management of work done by Task Order

A Task is work within the *service* which the *Service Manger* may instruct the *Contractor* to carry out within a stated period of time.

A signed Task Order is the *Service Manager's* instruction to carry out a Task.

Task Completion is when the *Contractor* has done all the work in the Task and corrected Defects which would have prevented the *Employer* or Others from using the Affected Property and Others from doing their work.

Task Completion Date is the date for completion stated in the Task Order unless later changed in accordance with this contract.

A Task Order includes:

- A detailed description of the work in the Task
- A priced list of items of work in the Task in which items taken from the Price List are identified.
- The starting and completion dates for the Task
- Conditions of the *service agreement* is in accordance with the Task Order issued

The *Service Manager* consults the *Contractor* about the contents of a Task Order before he issues it.

The Prices for items in the Task price list which are not taken from the Price List are assessed in the same way as compensation events.

No Task Order is issued after the end of the service period.

Work will not commence on site without the *Contractor* receiving a signed detailed task order that has been agreed upon by the *Service Manager* and the *Contractor*.

It is the Contractors responsibility to provide the *Service Manager* a detailed Task Order programme for acceptance within the period stated in the Contract Data.

Only when the Task Order programme is accepted and agreed upon by the *Service Manager* and the *Contractor* will any work commence on site.

When any emergencies do arise, it is required from the *Contractor* to adhere to the following terms:

- The *Contractor* will be informed of emergencies when the *Service Manager* first becomes aware of it.
- Response time within 2 hours for any communication when the *Contractor* acknowledges the emergency.
- Provide a programme within 8 hours after Task Order provided to the *Contractor*
- Mobilise within 5 hours after Task Order have been accepted by both parties.

Health and safety, the environment and quality assurance

1.9 Health and safety risk management

The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *service*. Without limitation the *Contractor*:
accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2003 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Affected Property;
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 the *service*; and
undertakes, in and about the execution of the *service*, 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.

The *Contractor*, in and about the execution of the *service*, 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.

SAFETY AND HEALTH (Category C2)	
Annexure B	Is the acknowledgement of **Eskom's SHE rules** and requirements form **(Annexure B)** signed and submitted by the tenderer?
Safety, Health and Environmental Plan for Scope of work not limited to the following:	• SHE organization within the Company-Responsibility & Accountability • SHE Incident management • Planning of conduct of work activities including planning for changes and emergency work • Waste management • PPE- Personal Protective Equipment • Emergency planning and fire risk management • Vehicle and driver behaviour safety • Contractor or supplier selection and management • Design and specifications • Competency, training, appointments • Communication and awareness • Management commitment and visible felt leadership
Baseline SHE Risk Assessment (BRA)	Identification, assessment and management of Safety, Health and Environmental risks related to the scope of work. The methodology used for the risk assessment must be provided together with the BRA
Valid Letter of Good Standing (COIDA or equivalent)	The date of Expiry should not be later than the date of closing date for the tender
SHE policy signed by CEO/ MD	Comply to OHS Act Section 7 or OSHAS 18001

1.10 Environmental constraints and management

All service providers appointed to render any services within Eskom Kriel Power Station are required to comply with the station's Environmental Management System requirements.

NB: Before commencing with any work, the service providers are required to visit the station's environmental section for evaluation. The station's environmental practitioner will evaluate the services to be rendered by the service provider and therefore allocate relevant legal and other requirements documents which the *Contractor* shall comply with during the works. The service provider together with Eskom's Environmental practitioner shall sign in the Environmental Agreement Register to indicate that the agreement is reached.

The service provider shall then commence with the works but paying inordinate attention towards implementing the relevant legal and other requirements measures as agreed in the register. Failure to comply with this agreement may ultimately lead to the termination of this contract. This requirement shall also be clearly stipulated in the NEC contracts between Eskom Kriel Power Station and any service providers.

It should always be noted that Kriel Power Station is ISO14001 certified and therefore promotes Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development. All activities taking place within Kriel Power Station must consider section 28 of the National Environmental Management Act (107 of 1998) which makes provision for the duty of care approach. The contractor's team must commit to review and to continually improve environmental management, with the objective of improving overall environmental performance. The Contractor must consult with Kriel Environmental section on a regular basis for on-going assistance and advices.

The EMS shall clearly cover the following areas as per ISO 14001;
- Environmental policy
- Environmental legal and other requirements
- Risk Assessments/Aspects & Impacts Register
- Improved management of monitoring and measurement documentation (e.g. devices calibration certificates)
- Provision of necessary resources (e.g. computers, adequate human resource) and allocation of roles and responsibility (through clear appointments) to achieve effective implementation of the EMS.
- Continuous commitment towards complying with operational controls such as work instructions, operational procedures, etc. (either provided by the Contractor or by *Service Manager*) as well as emergency preparedness and response procedures/plans.
- The contractor shall continually evaluate the compliance to legal requirements (e.g. sewage treatment plant permits and other applicable legislation); this should also be documented within the monthly environmental site inspections reports.
- Kriel Power Station's procedure for non-conformity, corrective action and preventive actions shall be followed in case of the environmental incidents.
- Contingency plans.

Environmental Management Programmes

- Environmental Management Programmes shall be established and maintained to ensure that objectives and targets are achieved.

Audits

Audits covering various Environmental aspects, Safety, Operational, IBI and Maintenance Management at the plant shall be carried out within an acceptable interval to ensure compliance with statutory requirements and Eskom's policies, Directives, procedures etc.

ENVIRONMENTAL	
Environmental Policy	The contractor must submit Environmental Policy and proof of communicating it with the employees. The policy should demonstrate your organization (top management)'s commitment to comply with legal and other requirements, prevent pollution and continually improve)
Environmental Aspects and Impacts Register	Aspect is an element of organization's activity, products or service which may interact with the environment and may cause negative or positive impact. While impact – refers to any change on the environment whether adverse or beneficiary
Environmental Management Plan	The contractor must develop environmental management plan that demonstrate how activities which have potential to cause environmental impacts will be management during the lifespan of a project.
Method Statement	A method statement must be submitted that explain method which is going to be used to manage certain environmental aspect of the activity. it should clearly explain step by step procedure which will be used execute the task.

1.11 Quality assurance requirements

The *Contractor* shall be required to demonstrate by means of a Contract Quality Plan (CQP) that this organisation is so structured that all the requirements of the specification will be properly monitored and controlled. The Contract Quality Plan (CQP), which must include the Quality Control Plan (QCP), is to be drafted in accordance with QM-58 and the Supplier Contract Quality Requirement Specification (QM58). The Quality documents are to be submitted for approval to *the Project Manager* within thirty (30) days after a contract has been awarded to the *Contractor.*

No work may commence unless the Contract Quality Plan and Quality Control Plan documents have been approved in writing and a copy submitted to *the Project Manager*. The *Contractor*, in conjunction with *the Project Manager* must sign off all Quality Control documents after completing all work as per the agreed scope. The *Contractor* to submit a copy of the final signed off documents/data packages to *the Project Manager* within one (1) week after completion of work.

The *Contractor* shall be required to read and fully understand the contents of the Supplier Contract Quality Requirement Specification (QM58) and a copy is to be kept in possession or on premises.

The *Contractor* shall comply with all *Employer's* requirements as set out in QM-58 (Supplier Contract Quality Specification). .

The *Contractor* further ensures that the subcontractor's programmes comply with the requirements of the Service Information.

The *Contractor* notifies the *Service Manager* of any changes to the Quality System and obtains agreement prior to implementation on existing orders and contracts, or sub orders and sub contracts.

The Supplier Contract Quality Requirement Specification (QM58) shall remain applicable in the event of the contract being extended or modified for reasons permitted.

By signature and acceptance of this contract the *Contractor* acknowledges and agrees to comply with and adhere to Eskom's policies and procedures (current and/or latest revisions) including the Supplier Contract Quality Requirement Specification (QM58).

QUALITY CAT 2	
SECTION A: Quality Management System Requirements ISO 9001 (Option 1) Valid certification of Quality ManagementSystem by an ISO accredited body	- A.1 Product / Service Scoping on ISO 9001 certificateis defined and relevant - A.2 Certificate by Approved and Authorized certificationauthority - A.3 Certification Authority has Recognized International Accreditation - A.4 Validity (expiry date) of certificate
SECTION A: Quality Management System Requirements ISO 9001 (Option 2) Objective evidence of documented QMS thatis not certified but complies with ISO 9001	- A.1 QMS Manual or a document that defines anddescribes the QMS and its scope - A.2 Quality Policy Approved by top management. - A.3 Quality Objectives Approved by top management. - A.4 Control of documented information (i.e., documentand record control) Clause 7.5 of ISO 9001:2015 - A.5 Documented information for Control of nonconforming outputs Clause 8.7 of ISO 9001:2015 - A.6 Documented information for Nonconformity andCorrective action Clause 10.2 of ISO 9001:2015 - A.7 Documented information for Internal audit Clause9.2 of ISO 9001:2015
SECTION B: Evidence of QMS in operation (TenderQuality Requirements -Ref 240-105658000)	- B.1 Documented information for defined roles, responsibilities, and authorities - Organization chart and Responsibility matrix (must include but notlimited to quality management function/role) (Clause 5.3 of ISO 9001:2015) - B.2 Documented information for Control of Externally Provided Processes, Products and Services - Must include criteria for evaluation - B.3 Latest copy of an internal management system audit report (with Nonconformity, Correction and/ or Corrective Action Reports) - Report must include but not limited to Objective, Scope, Criteria, and outcomes of the audit. (Clause 9.2 of ISO9001:2015) - B.4 Latest copy of a certification management system audit report not older than 12 months (with Nonconformity, Correction and/ or Corrective Action Reports) - B.5 Records of Management Review meetings (minutes, attendance registers etc.)

SECTION C: Contract Quality Plan Requirements (Ref240-105658000 and 240-109253698). Draft Contract Quality Plan specific to the scope of work as described in the tender documents (Ref ISO 10005)	- NB! Draft Contract/Project Quality Plan has important QA deliverables as per template provided
SECTION D: Quality Control Plan Requirements (Ref240-105658000 or 240-109253302). QCP /Checklist/ ITP (Quality Control Plans) as per Scope of Works (RefISO 10005)	- NB! Draft Inspection and Test Plan (ITP) or Quality Control Plan (QCP) based on ALL NEC scope of work activities
SECTION E: User defined additional Requirements & miscellaneous (Ref 240-105658000) Customer specific requirements & other standards and required can be listed and evaluated here	E.1 Form A is completed and signed. E.2 Add other requirements (if applicable) as per the scope of work and/ or specification

3.3.1 Contract Quality Management Plan Requirement

The *Contractor* prepares a contract quality management plan that, where appropriate, indicates the following:

- Indicates the interface with the *Contractors* quality system and applicable documents such as procedures and work instructions
- Establishes communication channels between the *Contractor* and the *Service Manager* in respect of quality and the integration of such with the prescribed contract communication channels
- Indicates how specific subcontractors will be monitored
- Identifies items or activities for which quality control plans will be prepared
- Identifies the specifications, drawings and acceptance criteria for material for which quality control plans are not required
- Identifies the areas or processes requiring special controls
- Identifies the *Contractor's* Management Representative and personnel responsible for the control of quality activities and their relationship to the *Contractor's* management structure
- Identifies the documents which are to be submitted to the *Service Manager*
- Indicates the *Contractor's* quality monitoring programme

The *Contractor* periodically updates the contract quality management plan to reflect changes in any of the above details. The frequency of such updates is determined by the *Service Manager* but will not be greater than one year.

3.3.2 Quality Control Plan

The *Contractor's* or Subcontractor's quality control plans cover inspection and test proposals for items or activities to be supplied as part of the *service*.

The quality control plan indicates the following as appropriate:

- The identification of the item.
- A list of the sequence of operations including inspections and tests.
- The identification of the specification, drawings or procedures for each operation.
- The acceptance criteria with reference to the appropriate technical specification, in-house, national or international standard and relevant clause number.
- The inspections and tests the Contractor has nominated for hold and witness points.
- Provision for inspections and tests nominated by the *Service Manager*.
- Provision for inspection status indication.
- Inspection and test records which are generated by the *Contractor*.
- Competence of the people-Level II welding inspector, Coded welders, N3 Fitters /Boiler makers
- Personnel qualifications from approved training and accredited institute
- ITPs and welding procedures
- Material certificates
- Organogram indicating the quality person and his/her duties
- Adhere to the QM58
- Follow the Eskom welding rule book

The quality control plans are reviewed by the *Service Manager* to allow for insertion of his specific requirements, including hold and witness points, prior to commencement of work. The *Contractor* does not commence work until the *Service Manager* accepts.

The *Contractor* shall comply with:

a) The Occupational Health and Safety Act, 1993, and all Regulations made there under.
b) All *Employer* Safety and Operating Procedures, which are attached hereto.

The *Contractor* acknowledges that he is fully aware of the requirements of all the above and undertakes to employ only people who have been duly authorised in terms thereof and who have received sufficient safety training to ensure that they can comply therewith.
The *Contractor* undertakes not to do, or not to allow anything to be done which will contravene any of the provisions of the Act, Regulations or Safety and Operating Procedures.

The *Contractor* shall appoint a person who will liaise with the *Emp*loyer Safety Officer responsible for the premises relevant to this contract. The person so appointed shall on request:

a) Supply the *Emp*loyer Safety Officer with copies of minutes of all Health and Safety Committee meetings, whenever he is required to do so.
b) Supply the *Emp*loyer Safety Officer with copies of all appointments in respect of employees employed on this contract, in terms of the Act and Regulations and shall advise the *Emp*loyer Safety Officer of any changes thereto.

*Emp*loyer may, at any stage during the currency of this agreement be entitled to:

a) Do safety audits at the *Contractor's* premises, its work places and on its employees.
b) Refuse any employees, sub-*Contractor* or agent of the *Contractor* access to its premises if such person has been found to commit any unlawful act or any unsafe working practice or is found to be not authorised or qualified in terms of the Act.

c) Issue the *Contractor* with a work stoppage order or a compliance order should *Emp*loyer become aware of any unsafe working procedures or conditions or any non-compliance with the Act, Regulations and Procedures by the *Contractor* or any of its Employees, sub-*Contractor*s or agents. Stoppages of this nature will not constitute a compensation event.

List of minimum statutory appointments required (where applicable), as required by the OHS Act:

OHS Act, Section 16(2) - Employer
OHS Act, GMR 2(1) - Supervision of Machinery
OHS Act, GMR 2(7) - Assist the designated person
OHS Act, CR 6(1) – Construction Supervisor (Authorised Supervisors and Responsible Persons must be appointed as Construction Supervisor)
OHS Act, CR 6(2) – Assistant Construction Supervisor
OHS Act, Section 17 - Health and Safety Rep
OHS Act, GAR 9 – Incident investigation
OHS Act, CR 12 – Demolition work
OHS Act, CR 19 – Explosive Powered Tools
OHS Act, CR 22 – Electrical installations and machinery
OHS Act, GSR 3 – First Aiders

2 Procurement

2.1 People

2.1.1 Minimum requirements of people employed

As per the accepted resource plan submitted to the *Service Manager*.

KRIEL PERMIT to Work System

The *Contractor* will ensure that he/she is informed of all the requirements of Eskom's Plant Safety Regulations and ORHVS and that he/she at all times comply to the requirements of these Regulations.

The *Contractor* will ensure that all his supervisors who are directly involved with Eskom's Permit to Work System, shall be trained and on successful completion of Kriel's authorization / evaluation process will be authorized as "Responsible Persons".

The Responsible Person shall ensure that:

- The conditions of permits and cautionary notices are strictly adhered to
- The lockout procedures, mechanical as well as electrical, are strictly adhered to and any deviations shall be corrected immediately
- The safe work procedures as laid down by Kriel Power Station and as determined by the Risk Assessment, shall be followed
- The workers register and cautionary notices are discussed daily with workers

2.1.2 BBBEE and preferencing scheme

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.

The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Employer* within thirty days of the notification or as otherwise instructed by the *Employer*.

Where, as a result, the *Contractor's* B-BBEE status has decreased since the *starting date* the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor*'s obligation to provide the *service*.

Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination will be dealt with according to the NEC3 TSC penalty/termination clauses

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

N/A

2.2 Subcontracting

2.2.1 Preferred subcontractors

The *Employer* may list which subcontractors or suppliers the *Contractor* is required to enter into subcontracts with.

If the *Contractor* subcontracts work, he is responsible for providing the Service as if he had not subcontracted. This contract applies as if a Subcontractor's employees and equipment were the *Contractor's*.

2.2.2 Subcontract documentation, and assessment of subcontract tenders

When the Contractor uses a Subcontractor he needs to engage with him on a NEC basis. The Subcontractor needs adhere to all processes, policies and procedures of Eskom as service should be provided as if not subcontracted to Eskom.

All reporting will happen based on the NEC standard forms or as agreed upon in the Kick off meeting.

2.2.3 Limitations on subcontracting

The Contractor submits the name of each proposed Subcontractor to the Service Manager for acceptance. A reason for not accepting the Subcontractor is that the appointment will not allow the Contractor to Provide the Service.

The Contractor does not appoint a Subcontractor until the Service Manager accepted them.

Attendance on subcontractors

The Subcontractor should attend all morning feedback Outage meetings to provide accurate feedback on the progress of *service*. Assessment meetings between *Service Manager* and the *Contractor* should be avoided by the Subcontractor.

2.3 Plant and Materials

2.3.1 Specifications

Plant and Materials are defined as items intended to be included in the Affected Property. This will refer to replacement of worn or defective parts, routine replacement as part of regular preventative maintenance and supply of spare parts.

2.3.2 Correction of defects

The *Service Manager* arranges for the *Employer* to allow the *Contractor* access if it is needed for correcting a Defect.

The *Contractor* needs to correct a Defect within one day or when the first available opportunity arises.

2.3.3 *Contractor*'s procurement of Plant and Materials

N/A

2.3.4 Deliverables

The *Contractor* does not deliver those the month end report by the 5th day of every month, the delay damages shall apply.

2.3.5 Plant & Materials provided "free issue" by the *Employer*

N/A

3 Working on the Affected Property

3.1 *Employer*'s site entry and security control, permits, and site regulations

- The Contractor applies for temporary access permits (Contractor's Permit) at the Security gate, prior to the Possession Date.
- The Contractor personnel are required to be in possession of a Contractor's Permit at all times.
- All Contractor personnel are issued with a temporary access permit (Contractor's Permit) which contains the following information:
- Name
- ID Number
- Company
- Validity date
- All Contractors' permits are submitted to Protective Services when the workers leave the site after completion of the works.
- In order to assist Protective Services with the issuing of permits and the identification of personnel on site, the Contractor supplies a list of all personnel that he intends using on site, at least 24 hours prior to entry of the Security Area.
- This list is delivered to Protective Services, or is faxed to (017) 615 2602
- The list, identified with the Contractor's name, contains the following information:
- Employee Name
- Employee ID Number
- Eskom Safety Co-ordinator signature
- *Service Manager* signature
- Copy of the first page of the ID book of every employee of the Contractor, photocopied to reduce the size to 65%.
- To speed up the process of gaining access to the site, the Contractor compiles detailed lists of all tools and equipment to be taken on site before arriving at the Power Station Security gate.

- A special Tool List form is available at Protective Services.
- An authorised copy of this list is retained to be used again when the tools and equipment is removed from site after the completion of the works.
- The Contractor's visitors and all personnel conform at all times to the security arrangements in force at the site.
- Application forms for visitors are filled in by the Contractor's Site Manager and approved by the Employers Representative, one day before the visit and submitted to the Employer's Protective Services office.
- Visitors are not allowed on site if the necessary forms are not in the possession of security staff.
- The Chief of Protective Services may, with valid cause, remove any of the Contractor's personnel from the site, either temporarily or permanently, without any prejudice. He may deny access to the site to any person whom, in the opinion of the said Chief of Protective Services, constitutes a security risk.

- No unauthorised vehicles are allowed on site.
- Only Contractor's vehicles with displayed Contract Vehicle Permits disks are allowed on site.
- Contract Vehicle Applications are directed to the Employers Representative.
- The Contractor is restricted to the working areas associated with his place of work.
- The Contractor is forbidden to enter any other areas and must ensure that his employees abide by these regulations.
- Parking inside the power station is strictly forbidden, except for loading purposes.
- No recruiting of casual labour is done on Eskom premises, including the area outside the Power Station Security Gate.

5.1.2 Eskom Life Saving Rules*:*

Five Life Saving Rules have been developed that will apply to all Eskom employees, agents, consultants and contractors.

Rule 1: Open, Isolate, Test, Earth, Bond, And / Or Insulate before touch - that is any plant operating above 1 000 V.

Rule 2: Hook up at heights - no person may work at height where there is a risk of falling.

Rule 3: Buckle up – no person may drive any vehicle on Eskom business and/or on Eskom premises: unless the driver and all passengers are wearing seat belts.

Rule 4: Be sober (no person is allowed to work under the influence of drugs and alcohol.)

Rule 5: Use a permit to work – where an authorization limitation exists, no person shall work without the required permit to work.

- Kriel Power Station Health and Safety Standards
- Specifications for Contractors attached to the Invitation to Tender. This procedure will be handed over during tender enquiry and will enable the successful Tenderer to compile a Health & Safety plan that has to be approved by the Employer prior to commencement of work.
- Compliance with Eskom & Kriel No Smoking Policy
- Adhere to the OHS Act 85 of 1993

- All staff will undergo Safety Induction, presented by Kriel Risk Management Department
- *Employer's* site regulations, covering the following:
- Clean lines
- Storage of material
- Safety precautions and fire prevention
- Permits to work
- Other *Contractor*'s work

- Representation of *sub-contractor*s
- Constant Supervision for hot work
- Handing over of *works*
- *Contractor's* Site
- Disposal of waste, oil residue and sludge
- Hot Work permit for welding
- Working at heights
- Working in and around an area that contains flammable substances
- Testing for combustible gases
- Availability of fire extinguishers when working in an area that contains flammable
- Substances

3.2 People restrictions, hours of work, conduct and records

The *Contractor* provides the necessary resources to carry out the *service* as stated in the Service Information.

The *Contractor* provides everything to carry out the Service Information of this contract unless where otherwise stated in this Service Agreement. Everything that should be provided by the *Employer* is stated in this Service Agreement, anything not stated in the Service Agreement should be provided by the *Contractor* to execute the work as stated in the Service Information

It is very important that the *Contractor* keeps records of his people working on the Affected Property, including those of his Subcontractors. The *Service Manager* shall have access to all records of the *Contractor* and Subcontractor at any time when deemed necessary.

3.3 Health and safety facilities on the Affected Property

Any emergency equipment or fire suppression systems to be utilized by the *Contractor* when an emergency arise

Please refer to SHE Requirements for Contractors – Refer to RSR0001 Heading 8.1

3.4 Environmental controls, fauna & flora

General environmental requirements referred to in section 3 above, Kriel Power Station ISO14001

3.5 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 Affected Property. See clause 11.2(9) for the definition of Others.
2) Requirements for liaison with and acceptance from statutory authorities or inspection agencies.

3.6 Records of *Contractor*'s Equipment

The *Contractor* will at all times keep record of his equipment on site with relevant inspections carried out. Inspection reports should be accessible by the *Service Manager* at any given time when he deems necessary.

All equipment or tools signed in by the *Contractor* should strictly adhere to the gate access rules and procedures.

The *Contractor* will keep records of all hired Equipment to execute the Service Information

3.7 Equipment provided by the *Employer*

It is the responsibility of the *Contractor* to provide his Equipment list to the *Service Manager* with all calibration certificates etc.

The *Employer* provides Equipment that are in the building already and nothing more.

3.8 Site services and facilities

3.8.1 Provided by the *Employer*

The Employer will provide in the way of water, waste disposal, ablutions, fire protection and lighting (etc) on the Affected Property.

Refuse Disposal

The *Employer* provides special colour coded bins for refuse disposal. These bins are emptied by the *Employer* free of charge.

The *Contractor* ensures that all workers under his control strictly adhere to the correct use of refuse bins as stated in the Plant.

Supply of Electricity

- *Employer* will make available to the *Contractor* 220/230-volt electrical supply free of charge from the closest existing point of supply.
- The *Contractor* is to make provision for the necessary extensions and plug points.

- The *Contractor* will adhere to the Electrical Installation Regulations of 1992

Medical Facilities

- The *Contractor* provides a First Aid service to his employees and subcontractor. In the case where these prove to be inadequate, like in the event of a serious injury, the *Employer's* Medical Centre and facilities are 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* is entitled, however, to recover the costs incurred, in the use of the above *Employer's* facilities, from the *Contractor*.

Toilet Facilities

The *Employer* provides the Contractor access to toilet facilities.

Temporary chemical toilets are provided by the *Contractor* where deemed necessary.

3.8.2 Provided by the *Contractor*

- The *Contractor* shall provide, for his own use adequate size offices.
- A cleaning service must also be provided.
- Domestic rubbish will be removed free of charge.
- The *Contractor* shall dismantle and clear off site all such infrastructure at the discretion of the *Service Manager* on completion of the contract.
- No such dismantling and clearance work shall be carried out without prior approval by the *Service Manager.*
- Any electrical equipment or appliances used by the *Contractor* shall conform to the applicable South African Safety standards and Kriel standard PSR 010 and shall be maintained in safe and proper working condition.
- The *Employer* shall have the right to stop the *Contractor*'s use of any electrical equipment or appliance, which in the *Employer*'s opinion does not conform to the foregoing.

Site Location

- The boundary of the site is within the Power Station boundary fences.
- The *Contractor* is to mark the boundaries of his site clearly.
- The *Contractor* is to ensure that all his material and equipment is always within the boundaries of his site.
- A site for the *Contractor* will be provided if needed. (The exact position will be determined on site).
- The *Contractor* will ensure further treatment of the yard area to keep all neat and tidy at all times.
- The *Contractor* shall also include for such items as security, watch and access arrangements to his yard area.
- The *Contractor* shall not occupy any site area other than that located to him
- On completion of the service on Site, all areas allocated to the *Contractor* shall be re-instated to their former condition to the satisfaction of *Employer*

Contractor's site requirements

- The *Contractor* supplies, installs, properly maintains and removes all temporary construction facilities and utilities necessary for the complete performance of the *service*
  Including the following:

- The *Contractor's* yard should adhere to sound housekeeping, failing with this the *Employer* may use another *Contractor* to clean up the *Contractor's* yard. These costs will be carried by the *Contractor*.
- Any damage to installed lighting is repaired at the Contractor's expense.
- The reticulation of electricity, water and any other services required by the Contractor from a supplied central distribution point.

- Hazardous Substances to be contained as per Eskom requirements.
- Transportation on and off site
- Telephone connections may be available and the Contractor applies via the *Services Manager* for a connection. Connection fees and calls are for the *Contractor's* account.
-
- Compressed air and gases
- Maintenance of lay-down and storage areas

- Electric panels and distribution wiring for erection and within Contractor's yard
- Security of Contractor's yard
- Temporary lighting to ensure safe working conditions.

Accommodation

The provision of accommodation for Contractor's personnel is the responsibility of the Contractor. The Contractor or any of his employees or subcontractors is not allowed to use the Employer's dining facilities. The shop next to the main office building may be utilized by the *Contractors if still available*.

3.9 Control of noise, dust, water and waste.

All waste introduced to and/or produced on *Employer's* Premises by the *Contractor* for this order, must be handled in accordance with the minimum requirements for the Handling and Disposal of hazardous waste in terms of Government Legislation as proclaimed by the Department of Water Affairs and Forestry 1994 Ref.: BN0621-16296-5. (A copy of this document is available at the Power Station for reference purposes).

Provide sufficient storage containers, labelled depicting general or hazardous waste and store in a designated storage area

No hazardous waste may be stored for a period of more than 90 days on the Kriel Power Station's premises

Ensure that all hazardous waste is disposed of at a licensed Class H disposal site. A copy of the hazardous waste disposal certificate must be submitted to the *Service Manager.*

Ensure that the *Contractor's* site does comply with the general good housekeeping practices. Redundant material will be removed to allocated sites. No scrap shall be stored in the *Contractor's* yard. Scrap is to be cleared from Site daily.

3.10 Hook ups to existing works

Any work performed at heights, must adhere to the correct safety standards, procedures and specifications stated in the Health and safety risk management of Kriel Power Station. Refer to RSR0001 heading 5.7

4 List of drawings

4.1 Drawings issued by the *Employer*

Not applicable. Below are the coordinates and monitoring sites on the last page.

Kriel Power Station - 2023 Current Quarterly Surface and Groundwater monitoring sites

Site Information			
Sites	**"Site Description/Objective"**	**Longitude (ºE)**	**Latitude (ºS)**
*KB06D *KB06S	Next to the entrance of the Ash Office. Monitors seepage from Ash water return dam.	29.191181°	26.279163°
*KB08D *KB08S	Southern side of Ash Dam Extension. Monitors seepage from Ash Dam Extension.	29.20331°	26.271395°
*KB10D *KB10S	Next to dam KP16 in game reserve. Monitors seepage from dam KP16.	29.19819°	26.262316°
*KB12D *KB12S	East of Pit 1 on the edge of the spoils next to the gravel road. Southern pipe. Monitors pollution migration inside spoils. (KB67 and KB68 was drilled to replace KB12S and D).	29.216673°	26.276862°
*KB18D *KB18S	East of Pit 1 between spoils and Onverwacht Spruit. Monitors seepage.	29.221757°	26.273505°
*KB19	Between Cut1 and Cut2 inside spoils. Monitors pollution migration inside spoils.	29.206778°	26.276295°
*KB20	Between Cut1 and Cut2 inside spoils. Monitors pollution migration inside spoils.	29.20999°	26.275726°
*KB22	North east of the sewage plant. Monitors seepage from sewage plant.	29.188941°	26.249197°
*KB23	North of Vaal Pan. Monitors seepage from Power Station & Swart Pan.	29.1693642°	26.250429°

*KB24	West of Vaal Pan. Monitors seepage from Vaal Pan.	29.163661°	26.251151°
*KB27	In the Power Station fence East of Vaal Pan. Monitors seepage from Power Station.	29.172434°	26.253981°
*KB28	South-western side of Pit 1, between Pit 1 and Ash water return dam. Monitors seepage from current ash dams.	29.194051°	26.27964°
*KB29	East of Pit 1 between spoils and Onverwacht Spruit. Monitors seepage.	29.222272°	26.273203°
*KB30	Southern side of Pit 1 seepage.	29.200439°	26.28288°
*KB32	Southern side of the Coal Stockyard next to pipes. Monitors seepage from coal stockyard.	29.177785°	26.268011°
*KB34	East of Coal Stockyard new holding dam next to road. Monitors seepage from coal stockyard	29.186247°	26.256431°
*KB35	South of the Old Ash Dam. Monitors seepage from old Ash Dam.	29.184166°	26.276033°
*KB39	South of Cut 2 next to the spoils. South-eastern side of Pit 1 - seepage.	29.213669°	26.281121°

Site Information

Sites	"Site Description/Objective"	Longitude (ºE)	Latitude (ºS)
*KB40	East of Cut2 inside spoils. Monitors pollution migration inside spoils.	29.216563°	26.271866°
*KB41	In Cut 1 filled with ash. Monitors pollution migration inside spoils.	29.204775°	26.275681°
*KB42	West of Cut 1 inside spoils. Monitors pollution migration inside spoils.	29.202607°	26.274068°
*KB60	Eastern side of the Coal Stockyard next to conveyer and pipes. Monitors seepage from coal stockyard.	29.185992°	26.263726°
*KB61	Eastern side of Ash Dam Extension. Southern pipe, 41m. Monitors seepage from Ash Dam Extension. (KB61 replaced	29.205555°	26.269506°

	KB09D).		
*KB62	Eastern side of Ash Dam Extension. Southern pipe -shallow. Monitors seepage from Ash Dam Extension. (KB62 replaced KB09S).	29.205555°	26.269506°
*KB63	Southeast of the Old Ash Dam. Western pipe closest to road. Monitors seepage from old Ash Dam. (KB63 replace KB07D).	29.19613°	26.2729°
*KB64	Southeast of the Old Ash Dam. Eastern pipe furthest from road. Monitors seepage from old Ash Dam. (KB64 replace KB07S).	29.19613°	26.2729°
*KB65	South west of the Old Ash Dam. Monitors seepage from old Ash Dam.	29.180158°	26.273476°
*KB66	East of Coal Stockyard new holding dam next to road. Monitors seepage from coal stockyard	29.18745°	26.255104°
*KB67	East of Pit 1 edge of spoils next to the gravel road. Southern pipe. Monitors pollution migration out of spoils.	29.219423°	26.275934°
*KB68	East of Pit 1 edge of spoils next to the gravel road. Southern pipe. Monitors pollution migration out of spoils.	29.219423°	26.275934°
*KB70	East of Cut2 on edge of spoils. Monitors pollution migration out of spoils. (KB70 replaced KB31).	29.21639°	26.277791°
*KB71	North of Power Station next to road. Borehole will be used as a background borehole. Borehole KB71 replaced KB36. (Deep BH).	29.176172°	26.24388°
*KB72D	North East of Swart Pan (KP17). New Borehole (Deep borehole). Monitors seepage from Power Station and Swart Pan. (Deep BH).	29.174977°	26.246267°
*KB73S	North East of Swart Pan (KP17). New Borehole (Shallow borehole). Monitors seepage from Power Station and Swart Pan.	29.174989°	26.246226°
*KB74	South of Pit 1 near haulage road. Next to KB16. New borehole replaced KB16. (Deep BH).	29.20308°	26.28377°
*KB75	South of Final Cut. Between KB16 and KB39. Gap in monitoring network. (Deep BH).	29.21036°	26.28231°
*KB76	South of Final Cut. Between KB16 and KB39. Gap in monitoring network. (Shallow).	29.21039°	26.28232°
*KB77	Eastern side of the Coal Stockyard next to access road (deep). Monitors seepage from the Coal Stockyard and the workshop area. (Deep BH).	29.18623°	26.26270°
*KB78	Eastern side of the Coal Stockyard next to access road (Shallow). Monitors seepage from the Coal Stockyard and the workshop	29.18625°	26.26266°

	area.		
*KB79	East of Cut 2 on edge of spoils. New Borehole will replace KB69.(Deep BH).	29.21641°	26.27777°
*KB80	New Borehole next to Dam KP23. Monitors spoils. (Deep BH).	29.218979°	26.26645°
*KB81	Next to KC12. Monitor possible seepage coming from KP22 and the old oil skimmers. New Borehole replacing KB21. (Deep BH).	29.18583°	26.25595°

24

Site Information

Sites	"Site Description/Objective"	Longitude (ºE)	Latitude (ºS)
*KB82	New Borehole at Ulula Ash. South east of Towers. (Deep BH).	29.18128°	26.25305°
*KB83	Next to a dirty water runoff canal running from the eastern side of the plant. (Deep BH).	29.1832070°	26.2536490°
*KB84	Directly downstream of the old oil skimmers. (Deep).	29.1852920°	26.2559880°
*KB85	Directly downstream of the old oil skimmers.	29.1852280°	26.2559650°
*KB86	South west of the Old Ash Dam. Monitors seepage from old Ash Dam. (Deep BH).	29.1828460°	26.2752790°
*KB87	South west of the Old Ash Dam. Monitors seepage from old Ash Dam. (Shallow BH).	29.182818°	26.275243°
*KB88	South of the new proposed Ash Dam extension. Monitors seepage from old Ash Dam and the new proposed Ash Dam extension. (Deep BH).	29.1878760°	26.2776870°
*KB89	South of the new proposed Ash Dam extension. Monitors seepage from old Ash Dam and the new proposed Ash Dam extension. (Shallow BH).	29.1878540°	26.2776700°
*KB90	In the Game camp, east of the Cut 2 and the new proposed Ashing facility. (Deep BH).	29.20733°	26.263681°

*KB91	In the Game camp, east of the Cut 2 and the new proposed Ashing facility. (Shallow BH).	29.2073682°	26.263693°
*KB92	In the Game camp, east of the Cut 2 and the new proposed Ashing facility. (Deep BH).	29.2087060°	26.2635730°
*KB93	In the Game camp, east of the Cut 2 and the new proposed Ashing facility. (Shallow BH).	29.2085850°	26.2636270°
*KB94	North west of Swart Pan possible overflow. Next to mealie land. (Deep BH).	29.1715860°	26.2440320°
*KB95	North west of Swart Pan possible overflow. Next to mealie land. (Shallow BH).	29.1715860°	26.2440320°
*KB96	North east of Swart Pan possible overflow. At Houses. (Deep BH).	29.1728470°	26.2438460°
*KB97	North east of Swart Pan possible overflow. At Houses. (Shallow BH).	29.1728470°	26.2438460°
*KB106	Next to a dirty water runoff canal running from the eastern side of the plant. (Shallow BH).	29.1831960°	26.2536000°
*KD01	Auger Hole. South west of the Old Ash Dam. Monitors seepage from old Ash Dam.	29.178177°	26.272428°
*KD03	Auger Hole. South of the Final Cut. Monitors seepage from Pit 1 and KP02.	29.210281°	26.283068°
*KD05	Auger Hole. East of Pit 1 between spoils and Onverwacht Spruit. Monitors seepage.	29.224302°	26.27018°

20

Site Information

Sites	"Site Description/Objective"	Longitude (ºE)	Latitude (ºS)
KC01	KC01 flow into the LL AWR dams. Ash water return canal south of Old Ash Dam.	29.190451°	26.276473°
*KC02	Small canal northern seepage/decant point. Located south of KS06.	29.22286°	26.2684°
KC03	Ash Water Return canal discharge into KP15. Sample underneath road flowing to KP15.	29.205424°	26.266382°

*KC04	Clean water drain north of the Ash Dam Extension.	29.205284°	26.26376°
*KC05	Canal from PS western drains discharge into Vaal Pan. Receive clean water from the oil and Grid separators.	29.170261°	26.254138°
*KC06	Leaching and seepage into canal from Ash Water Return dams.	29.190455°	26.279499°
*KC07	South of Kriel Ash Dam below KB35 near Onverwacht Spruit. Canal collecting seepage from old Ash Dam.	29.18423°	26.2784°
*KC08	Canal running from main entrance past KB22. Clean water runoff canal.	29.179698°	26.251034°
*KC09	Northern canal discharge into Coal Stockyard holding dam. Intercepts seepage and runoff from power station area.	29.183455°	26.257828°
KC10	Southern inlet from Coal Stockyard settling dams into Coal Stockyard holding dam. Outlet from settling dams discharging water into holding dam.	29.184029°	26.258052°
*KC11	Western canal discharge into Coal Stockyard holding dam. Intercepts seepage and runoff from power station area.	29.183241°	26.257817°
*KC12	Canal from Power Station eastern drains discharge into Maturation Pond.	29.185895°	26.256079°
*KE01	Final sewage effluent discharge at sewage plant.	29.188944°	26.249639°
*KE02	Final sewage effluent discharge from sewage plant.	29.199057°	26.262116°
*KP02	Southern part of Cut 2.	29.209158°	26.27976°
*KP03	Dam south of Cut 1 on spoils.	29.202182°	26.280313°
*KP04	Return water dam south of Cut 1 on spoils.	29.202443°	26.279003°
*KP05	Maturation Pond south of sewage plant.	29.189137°	26.251517°
*KP06	Dam east of Cut 2 on spoils.	29.21609°	26.269081°

19

Site Information

Sites	"Site Description/Objective"	Longitude (ºE)	Latitude (ºS)
*KP07	Raw Water Dam.	29.177521°	26.248348°
*KP08	Vaal Pan.	29.164205°	26.251518°
KP09	Lower Ash water return dams. (Wing dams)	29.190652°	26.27696°
KP10	Dam south of the Ash Dam Extension.	29.202702°	26.271655°
*KP11	Dam south of Cut 2 on spoils - Southern decant point.	29.215798°	26.278496°
*KP12	Pan on mine property east of Maturation Pond. Background site.	29.198157°	26.252637°
*KP14	Northern part of Cut 2.	29.216398°	26.269308°
*KP15	Dam east of Ash Dam Extension.	29.208625°	26.26906°
*KP16	Game reserve Dam. South of hostel inside the game reserve.	29.19787°	26.261427°
KP17	Swart Pan - Borrow Pit Dam under road to Matla.	29.174578°	26.246692°
*KP18	Borrow Pit east of Raw Water Dam. Overflow from Raw Water Dam.	29.182883°	26.246722°
KP19	Coal Stockyard settling dam. North eastern side of the Coal Stockyard.	29.183902°	26.258215°
*KP20	Dam next to Ogies/Bethal road. Clean water dam collecting runoff.	29.221357°	26.265473°
*KP21	Pan on mine property east of KP12. Background site.	29.202416°	26.250073°
KP22	Coal Stockyard Holding Dam.	29.184935°	26.257193°

*KP23	Standing water south west of dam KP20.	29.218985°	26.2665°
*KP25	Standing water south west (upstream) of dam KP04.	29.201212°	26.279496°
*KS01	Seepage South West of Kriel Ash Dam near R17. Seepage from old Ash Dam.	29.177741°	26.271396°
*KS02	Seepage south of the Old Ash Dam. Monitors seepage from old Ash Dam.	29.184333°	26.276012°
*KS03	South of Ash Dam Extension. Seepage from southern ash water return canal.	29.19868°	26.2712°
*KS04	South of Ash Dam Extension. Seepage from southern ash water return canal.	29.20069°	26.2713°
*KS06	Runoff water flowing over road between KC02 and KP20.	29.223311°	26.267675°
*KZ01	Discharging pipe near North-western corner of ash dam.	29.17757°	26.2688°
*KZ02	Small canal next to borehole KB27 water from leaking pipes. Monitors seepage from Power Station.	29.172505°	26.253922°

Site Information

Sites	"Site Description/Objective"	Longitude (ºE)	Latitude (ºS)
*KZ03	Leaking pipes near Coal Stockyard fence.	29.180654°	26.257768°
*KZ04	Dug pit filled with water at leaking pipe. North eastern side of the Coal Stockyard next to conveyer and pipes.	29.1841°	26.2587°
*KZ06	Next to road between KP10 and ash dam.	29.2016°	26.2713°
*KZ07	Pipe discharging north-west of KB42.	29.20005°	26.27278°
*R06	Bakenlaagte Spruit at haulage road south of Pit 1. Monitors runoff & seepage from Kriel/Matla Ash Dams.	29.203639°	26.28483°

*R07	(7th point) . Onverwacht Spruit at haulage road south of Pit 1. Monitors runoff & seepage from Kriel/Matla Ash Dams.	29.204819°	26.285372°
*R08	(8th point) Sample up-gradient from Cut 2 overflow - gabions. Monitors runoff & seepage from Kriel Ash Dams.	29.215364°	26.279932°
*R09	(9th point) Sample down-gradient from Cut 2 overflow - KB29. Monitors runoff & seepage from Kriel Ash Dams.	29.222779°	26.274235°
*R10	(10th point) Sample down gradient of Pit 1 north decant. Monitors runoff & seepage from Kriel Ash Dams.	29.2244°	26.271074°
*R11	(11th point) Sample at Bethal/Ogies road. Water leaving ESKOM property.	29.226856°	26.26624°
*R12	Steenkool Spruit at Bethal/Ogies road (background site).	29.237669°	26.270272°
*R13	Runoff and seepage from old waste site - upstream.	29.250151°	26.255456°
*R14	Runoff and seepage from old waste site - near site.	29.249268°	26.252607°
*R15	Pampoen Spruit at road crossing to Matla Coal.	29.193877°	26.245529°
*R17	(1st point) Down gradient - east of mine loading area.	29.177601°	26.271405°
*R18	(2nd point) Sample at pipeline/haulage road crossing.	29.18214°	26.277551°
*R19	(3rd point) Sample south of Kriel ash dam.	29.183504°	26.278743°
*R20	(4th point) Sample at the first ash water disposal pipes. Monitors runoff & seepage from Kriel/Matla Ash Dams.	29.18531°	26.27945°
*R21	(5th point) Sample at the second ash water disposal pipes. Monitors runoff & seepage from Kriel/Matla Ash Dams.	29.18846°	26.28025°
*R22	(6th point) Sample at the fourth ash water disposal pipes. Monitors runoff & seepage from Kriel/Matla Ash Dams.	29.19673°	26.2823°
*R29	Sample after farm dam overflow. Monitors runoff & seepage from old waste site - downstream.	29.247316°	26.249769°
*R34	Pampoen Spruit at culvert on Bethal/Ogies Road.	29.192801°	26.212945°
Oil and Grit separators	Oil and Grit separators. The Oil and Grit separators is located near KC05 (Power Station western drains into Vaal Pan) and KP08 (Vaal Pan).	29.170091°	26.254153°

Borrow Pits	Borrow Pits across the road (east) of Swart Pan (KP17)	29.175034°	26.247754°	
HL AWR dams	HL Ash water Return dams East of the borrow pits	29.176795°	26.248322°	**26**

TOTAL AMOUNT OF SURFACE AND GROUNDWATER SITES AT KRIEL POWER STATION - MAY 2023	**137**

PART 4: SITE INFORMATION

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

PART 4: SITE INFORMATION

General description

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

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: Brewer & Conlin, 1996, Reference 4, page 2.5.)

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

Not applicable. The *Contractor* to specify any information required if necessary.

Subsoil information

Not applicable. The *Contractor* to specify any information required if necessary.

Hidden services

All known services will be brought to the attention of the Contractor by *Employers Representative*. Should the *Contractor* encounter any other services in the work area, he will immediately bring them to the attention of the *Employers Representative* who will issue instructions as to what actions are to be taken.

The protection of all pipes, gauges and plant is of extreme importance. Should any damage take place, which is due to the *Contractors* negligence, another *Contractor* will be brought onto site to affect repairs. All costs will be to the account of the *Contractor* who caused damage.

Other reports and publicly available information

The assumed 1 in 10-year rainfall figures are:

Month	**Cumulative rain (mm)**	**No of days with rainfall > 10mm**
January	200	6
February	150	6
March	120	5
April	110	4
May	40	3
June	20	2
July	30	2
August	30	2
September	60	3
October	140	6
November	160	7
December	170	6


KB78S
KB77D
KB60
KP16
KE02
KB10S
KB90
KB91
KB92
KB93
KC4
KP20
R11*
KB80
KP23
KB32
KZ01
KC3
KP15
KS06
KC2
R10*
KP14
KP6
KB62
KS01
KD05
KS03
KS04
KZ06
KP10
KB08D
KD05
KB40
R17*
KD01
KB63
KZ07
R09*
KB29
KB18D
KB65
KB42
KP13
R18*
KB87
KB86
KB41
KB20
KB67
KB35
KS02
KC1
KB19
KP2
KB12S
KP9
KB89
KB88
KB79
KD04
KP11
KC7
KP4
R20*
KB105
KB104
KB06S
KC6
KB28
KP25
R08*
KB103
KB102
KP3
KB101
KB100
KB39
KB99
KB98
R22*
KB75
KB76
KB30
KD02
KD03
KB74
R07*


KB95
KB97
KB96
KB94
KB71
KB72D
KP18
KP17
KP7
KB22
KE01
R21*
KC8
KB23
KB24
KP8
KP5
KB82
KC5
KB106
KB83
KB27
KZ02
KP12
KB66
KB85
KB81
KC12
KB34
KP22
KZ03
KC09
KC10
KC11
KP19
KZ04
Ga-Nala
Village
R23
bing
© 2019 Microsoft Corporation © 2019 DigitalGlobe CNES (2019) Distribution Airbus DS © 2019 HERE Terms of Use


FBR42
R14*
ME02
R13*
R11*
R10*
R09*
KP20
KP23
KB80
KS06
KC2
KP15
KP14
KP6
KD05
KB40
KB18S
KB29
KB92
KB93
KRIEL
Mega Mark Mall
Bethal Rd
© 2019 Microsoft Corporation © 2019 DigitalGlobe ©CNES (2019) Distribution Airbus DS © 2019 HERE Terms of Use