

# NEC3 Engineering & Construction Contract

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

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

**for** **Drakensberg Pumped Storage Scheme Jagersrust Water Pipeline Replacement**

| **Contents:** | | **No of pages** |
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**CONTRACT No.** **[Insert at award stage]**

# Part C1: Agreements & Contract Data

**Contents:**


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# 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:

### Drakensberg Jagersrust Water Pipeline Replacement

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** |
| | Sub total | **R** |
| | Value Added Tax @ 15% is | **R** |
| | The offered total of the amount due inclusive of VAT is[1] | **R** |
| | (in words) **[•]** | |

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

Signature(s)

Name(s) ..... .....

Capacity ..... .....

**For the tenderer:** .....

*(Insert name and address of organisation)*

Name & signature of witness ..... Date .....

Tenderer's CIDB registration number (if applicable) .....

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

## Acceptance

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

The terms of the contract, are contained in:

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

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

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

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

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

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

| | | | |
|---|---|---|---|
| Signature(s) | | | |
| Name(s) | | | |
| Capacity | | | |
| **for the Employer** | | | |
| Name & signature of witness | *Eskom Holdings SOS Limited*<br>*PO Box 3487*<br>*Tygervalley*<br>*7536* | Date | |

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

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

Note:

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

| No. | Subject | Details |
|---|---|---|
| 1 | **[•]** | **[•]** |
| 2 | **[•]** | **[•]** |
| 3 | **[•]** | **[•]** |
| 4 | **[•]** | **[•]** |
| 5 | **[•]** | **[•]** |
| 6 | **[•]** | **[•]** |
| 7 | **[•]** | **[•]** |
| | | |

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

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

| | **For the tenderer:** | **For the Employer** |
|---|---|---|
| Signature | | |
| Name | | |
| Capacity | | |
| On behalf of | *(Insert name and address of organisation)* | *Eskom Holdings SOS Limited*<br>*PO Box 3487*<br>*Tygervalley*<br>*7536* |
| Name & signature of witness | | |
| Date | | |

# C1.2 ECC3 Contract Data

## Part one - Data provided by the *Employer*

**[Instructions to the contract compiler: (delete these two notes in the final draft of a contract)**

1. Please read the relevant clauses in the conditions of contract before you enter data. 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.

1. Some ECC3 options are always selected by Eskom Holdings SOC Ltd. The remaining ECC3 options are identified by shading in the left hand column. In the event that the option is not required select and delete the whole row. Where the following symbol is used "**[●]" -** data is required to be inserted relevant to the specific option selected.]

Completion of the 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 activity schedule** |
| | dispute resolution Option | **W1:** | **Dispute resolution procedure** |
| | and secondary Options | | |
| | | **X1:** | **Price adjustment for inflation** |
| | | **X2** | **Changes in the law** |
| | | **X7:** | **Delay damages** |
| | | **X13:** | **Performance Bond** |
| | | **X15:** | **Limitation of *Contractor's* liability for design to reasonable skill and care** |
| | | **X16:** | **Retention** |
| | | **X18:** | **Limitation of liability** |
| | | **Z:** | ***Additional conditions of contract*** |
| | of the NEC3 Engineering and Construction Contract, April 2013 (ECC3) | | |
| 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** | |
| 10.1 | The *Project Manager* is: (Name) | **Xolisa Ketwa** | |

| | | |
|---|---|---|
| | Address | **Eskom Peaking Generation, 15 Pasita Street, Rosenpark, Tygervalley, 7536** |
| | Tel | **021 941 5806** |
| | e-mail | **KetwaX@eskom.co.za** |
| 10.1 | The *Supervisor* is: (Name) | **Lindokuhle Hlatshwayo** |
| | Address | **Eskom Peaking Generation, 15 Pasita Street, Rosenpark, Tygervalley, 7536** |
| | Tel No. | **+27 17 612 6095** |
| | e-mail | **HlatshTL@eskom.co.za** |
| 11.2(13) | The *works* are | **As Part C3.2 *Employers* Works Information.** |
| 11.2(14) | The following matters will be included in the Risk Register | **All early warning matters notified by either party**<br>• **Weather conditions.**<br>• **Community unrests.**<br>• **Labour unrests.**<br>• **Industrial related matters.**<br>• **Non-compliance with legislative and regulatory framework applicable to the contract.** |
| 11.2(15) | The *boundaries of the site* are | **Drakensberg Pumped Storage Scheme, Jagersrust Water Treatment Plant & Jagersrust Development** |
| 11.2(16) | The Site Information is in | **Part 4: Site Information** |
| 11.2(19) | The Works Information is in | **Part 3: Scope of Work and all documents and drawings to which it makes reference.** |
| 12.2 | The *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 | **2 (two) weeks working days prior to site installation and 24 hours during site installation.** |
| **2** | **The *Contractor's* main responsibilities** | **Data required by this section of the core clauses is provided by the *Contractor* in Part 2, and terms in italics used in this section are identified elsewhere in this Contract Data.** |
| **3** | **Time** | |
| 11.2(3) | The *completion date* for the whole of the *works* is | **TBC.** |
| 11.2(9) | The *key date*s and the *condition*s to be met are: | ***Condition* to be met** ***key date*** |

| | | | | |
|---|---|---|---|---|
| | | **1** | **Material Delivery to site** | **30 June 2027** |
| | | **2** | **Installation & Commissioning** | **30 September 2027** |
| 30.1 | The *access dates* are: | **Part of the Site** | | **Date** |
| | | **1** | **Drakensberg Pumped Storage Scheme, Jagersrust water Treatment Plant & Jagersrust Development** | **30 July 2027** |
| 31.1 | The *Contractor* is to submit a first programme for acceptance within | **Two (2) weeks of the Contract Date.** | | |
| 31.2 | The *starting date* is | **30 October 2026** | | |
| 32.2 | The *Contractor* submits revised programmes at intervals no longer than | **Two (2) weeks.** | | |
| 35.1 | The *Employer* is not willing to take over the *works* before the Completion Date. | | | |
| **4** | **Testing and Defects** | | | |
| 42.2 | The *defects date* is | **Fifty Two[52] weeks after Completion of the whole of the *works*.** | | |
| 43.2 | The *defect correction period* is | **Two (2) weeks** | | |
| **5** | **Payment** | | | |
| 50.1 | The *assessment interval* is | **between the 25th day of each successive month.** | | |
| 51.1 | The *currency of this contract* is the | **South African Rand.** | | |
| 51.2 | The period within which payments are made is | **30 days after receipt of acceptable Tax Invoice and all relevant supporting documentation.** | | |
| 51.4 | The *interest rate* is | **the publicly quoted prime rate of interest (calculated on a 365 day year) charged from time to time by the Standard Bank of South Africa Limited (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands and**<br><br>**(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** | |
| 60.1(13) | The place where weather is to be recorded is: | **Drakensberg – KwaZulu Natal, South Africa. The weather measurements are supplied by the Contractor to obtain the one in ten year return weather data from South African Weather Bureau** |
| | The *weather measurements* to be recorded for each calendar month are, | **the cumulative rainfall (mm)**<br>**the number of days with rainfall more than 10 mm**<br>**the number of days with minimum air temperature less than 0 degrees Celsius**<br>**the number of days with snow lying at 09:00 hours South African Time**<br>**and these measurements:** |
| | The *weather measurements* are supplied by | **The SA Weather Bureau** |
| | and which are available from: | **the South African Weather Bureau and included in Annexure A to this Contract Data provided by the *Employer*** |
| **7** | **Title** | **There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.** |
| **8** | **Risks and insurance** | |
| 80.1 | These are additional *Employer*'s risks | **None** |
| **9** | **Termination** | **There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.** |
| **10** | **Data for main Option clause** | |
| **A** | **Priced contract with activity schedule** | **There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.** |
| **11** | **Data for Option W1** | |
| W1.1 | The *Adjudicator* is | **the person selected from the ICE-SA Division (or its successor body) of the South African** |

| | | |
|---|---|---|
| | | **Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).** |
| W1.2(3) | The *Adjudicator nominating body* is: | **the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za ) or its successor body.** |
| W1.4(2) | The *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 | **Cape Town South Africa** |
| | The person or organisation who will choose an arbitrator<br>- if the Parties cannot agree a choice or<br>- 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** | |
| X1.1(a) | The *base date* for indices is | SARB exchange rate published 7 calendar days before closing date |

| | | | | |
|---|---|---|---|---|
| X1.1(c) | The proportions used to calculate the Price Adjustment Factor are: | **proportion** | **linked to index for** | **Index prepared by** |
| | | **0.85%** | **StartsSA: Table B CPI** | **StatsSA** |
| | | **0. 15** | **Non-adjustable** | **StatsSA** |
| | Total | **1.00** | | |

| | | |
|---|---|---|
| **X2** | **Changes in the law** | **Applicable as per secondary option Clause X2.** |
| **X7** | **Delay damages** | |
| X7.1 | Delay damages for Completion of the whole of the *works* are | **R20 000 per day up to a limit of 10% of the total of the prices.** |
| **X13** | **Performance bond** | |
| X13.1 | The amount of the performance bond is | **10% of the total of the prices.** |
| **X15** | **Limitation of the *Contractor*'s liability for his design to reasonable skill & care** | **There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.** |
| **X16** | **Retention** | |

| | | |
|---|---|---|
| X16.1 | The *retention free amount* is<br><br>The *retention percentage* is | **R0.00.**<br><br>**10% of the Prices, 5% will be released at Completion of the whole of the works and the remaining 5% will be released after the Defects Certificate has been issued.** |
| **X18** | **Limitation of liability** | |
| X18.1 | The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to: | **10% of the contract value.** |
| 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 Contract Value**<br>• **the total of the Prices at the Contract Date and**<br>• **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.**<br><br>**The *Contractor's* total liability for the additional excluded matters is not limited.**<br><br>**The additional excluded matters are amounts for which the *Contractor* is liable under this contract for**<br><br>• **Defects due to manufacture and fabrication outside the Site,**<br>• **loss of or damage to property (other than the *works*, Plant and Materials),**<br>• **death of or injury to a person and**<br>• **infringement of an intellectual property right.** |
| X18.5 | The *end of liability date* is | **(i) One (1) year after the *defects date* for latent Defects and**<br><br>**(ii) the date on which the liability in question prescribes in accordance with the Prescription Act No. 68 of 1969 (as amended or in terms of any replacement legislation) for any other matter.**<br><br>**A latent Defect is a Defect which would not have been discovered on reasonable inspection by the *Employer* or the *Supervisor* before the *defects date*, without requiring any** |

| | | |
|---|---|---|
| | | **inspection not ordinarily carried out by the *Employer* or the *Supervisor* during that period. If the *Employer* or the *Supervisor* do undertake any inspection over and above the reasonable inspection, this does not place a greater responsibility on the *Employer* or the *Supervisor* to have discovered the Defect.** |
| **Z** | **The *Additional conditions of contract* are** | **Z1 to Z15 always apply.** |

**Z1 Cession delegation and assignment**

Z1.1 The *Contractor* does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer.*

Z1.2 Notwithstanding the above, the *Employer* may on written notice to the *Contractor* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.

**Z2 Joint ventures**

Z2.1 If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Employer* for the performance of this contract.

Z2.2 Unless already notified to the *Employer*, the persons or organisations notify the *Project Manager* within two weeks of the Contract Date of the key person who has the authority to bind the *Contractor* on their behalf.

Z2.3 The *Contractor* does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the *Employer* having been given to the *Contractor* in writing.

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

Z3.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor*'s B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.

Z3.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Project Manager* within thirty days of the notification or as otherwise instructed by the *Project Manager*.

Z3.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor*'s obligation to Provide the Works.

Z3.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are P1, P2 and P3 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.

**Z4 Confidentiality**

Z4.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.

Z4.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Project Manager*.

Z4.3 In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.

Z4.4 The taking of images (whether photographs, video footage or otherwise) of the *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Project Manager*. All rights in and to all such images vests exclusively in the *Employer*.

Z4.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

**Z5 Waiver and estoppel: Add to core clause 12.3:**

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

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

Z6.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *works*. Without limitation the *Contractor*:

- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Site;
- warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of *works*; and
- undertakes, in and about the execution of the *works*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z6.2 The *Contractor*, in and about the execution of the *works*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

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

Z7.1 Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer*'s procedures stated in the Works Information, showing the amount due for payment equal to that stated in the payment certificate.

Z7.2 If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms of core clause 51.2 is then calculated from the delayed date by when payment is to be made.

Z7.3 The *Contractor* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer*'s VAT number 4740101508 on each invoice he submits for payment.

**Z8 Notifying compensation events**

Z8.1 Delete from the last sentence in core clause 61.3, "unless the *Project Manager* should have notified the event to the *Contractor* but did not".

**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<br><br>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<br>*Employer*'s property<br>The replacement cost where not covered by the *Employer*'s insurance<br><br>The *Employer*'s policy deductible, as at Contract Date, where covered by the *Employer*'s insurance<br><br>Other property<br>The replacement cost<br><br>Bodily injury to or death of a person<br>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 Intellectual Property – Eskom owning Intellectual Property

| | |
|---|---|
| "**Intellectual Property"** | means (a) patents, trade marks, service marks, rights in designs, trade names, trade secrets, know how, copyrights and topography rights, in each case whether registered or not; (b) applications for registration of any of them; (c) rights under licences and consents in relation to any of them; (d) all forms of protection of a similar nature or having equivalent or similar effect to any of them which may subsist anywhere in the world. |
| **"Background Intellectual Property"** | means any and all Intellectual Property rights that are not Foreground Intellectual Property, and are owned or controlled by the relevant party or licensed to the relevant party prior to or outside of the *works* but required for the purposes of the *works*. |
| **"Foreground Intellectual Property"** | means all Intellectual Property rights and other matter capable of being the subject of intellectual property rights that is conceived, first reduced to practice or writing or developed in whole or in substantial part in the course of the execution of the *works* and rights which are developed substantially as a result of the *works*. Any *works* that will be developed, changed, modified and/or improved specifically for the Purposes will be Foreground Intellectual Property. Any data or any other information relating to *Employer's* proprietary information generated from the use of the *Contractor's* Background Intellectual Property. |
| **Z14.1** | The *Contractor* retains ownership of all Background Intellectual Property rights made by or on behalf of the *Contractor* as part of the *works* in information or material it uses in carrying out the *works*. |
| **Z14.2** | All Foreground Intellectual Property rights, contained in any developed materials which are created by the *Contractor* or on behalf of the *Contractor*, for the purposes of and in support of the execution of the *works* ([*Employer*'s IP) vest with the *Employer.* |
| **Z14.3** | Any data or any other information relating to *Employer's* proprietary information generated from the use of the *Contractor's* Background Intellectual Property, the copyright therein shall be owned by the *Employer.* |
| **Z14.4** | The *Contractor* acknowledges that all rights, title, and interest in and to the Foreground Intellectual Property that may result or originate from or be developed in execution of the *works* vests in the *Employer* and that the *Contractor* has no claim of any nature in and to the Foreground Intellectual Property. |
| **Z14.5** | The *Contractor* ensures that a copyright notice is incorporated or embossed or labelled on the Foreground Intellectual Property, where the *Employer* is reflected as the owner of the Foreground Intellectual Property. |
| **Z14.6** | The *Contractor* is obliged to provide Foreground Intellectual Property manufacturing documents, designs, processes and/or specifications to the *Employer* before/on the *completion date*. |
| **Z14.7** | The *Contractor* procures that each Sub-*Contractor* executes all and any *works*, and takes all and any other actions as may be required, in order to give effect to this Agreement. |
| **Z14.8** | The *Employer* retains all Background Intellectual Property rights in all documents made by or on behalf of the *Employer* including all documents and requirements provided prior to or during the execution of the *works*. The *Contractor* does not, without the written consent, of the *Employer*, copy, use or issue to a third party any of the *Employer's* Background Intellectual Property documents and requirements except for the purposes of executing the *works.* |
| **Z14.9** | Either party procures that any third party executes confidentiality undertakings not to disclose to any other third parties, any of the *Employer*'s Background Intellectual Property and IP documents and requirements at all, in respect of the *Employer*, or the Background Intellectual Property, in respect of the *Contractor.* |

**Z14.10 Third Party Claims:**

**Z14.10.1** In the event of any claims being made or actions brought against the *Employer*, on the ground that the *Contractor* infringed any patent, trade mark or copyright, the *Contractor* is notified thereof and at its own expense, conducts all negotiations in consultation with the *Employer* for the settlement of the claim and litigation that may arise from such alleged infringement, provided that the *Employer* will not bear any financial burden or losses.

**Z14.10.2** Save where the *Contractor* fails to take over the conduct of the negotiation or litigation within a reasonable time of the notification of the alleged infringement, the *Employer* does not make any admission which might be prejudicial to the *Contractor*'s position. The *Employer*, at the request and the cost of the *Contractor* affords it all reasonable technical assistance that the *Employer* is able to provide for the purpose of contesting any such claim or action.

**Z14.10.3** Should it be held in any such action that any such protected rights have been infringed, as definitely stated by a judgment of the court before which the action is brought, the *Contractor*, at its own expense and in consultation with the *Employer*, either:

a. procures for [Employer/Client/Purchaser] the right to continue to use the affected item or design, or
b. replaces the said affected item or design with a non-infringing item, or
c. provides a design of equivalent quality or modify such affected item or design so as to make it non-infringing without affecting the quality.

**Z14.10.4** Notwithstanding anything contained in this contract, the foregoing sets forth the entire responsibility of [Contractor / Consultant / Supplier] with respect to claims relating to infringement.

**Z14.10.5** Where it is alleged that the *Employer* has committed an infringement as intended vis-à-vis the *Contractor* as set out in the third party intellectual property infringement clause, the *Employer* has the same rights and obligations as the *Contractor*, mutatis mutandis, as regards such alleged infringement.

**Z14.10.6** The *Contractor* herewith indemnifies the *Employer* and undertakes to keep the *Employer* indemnified against all claims of whatsoever nature, real or imagined, which may be made against the *Employer* arising from the infringement of any third party intellectual property rights.

**Z15 Asbestos**

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

**AAIA** means approved asbestos inspection authority.

**ACM** means asbestos containing materials.

**AL** means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.

**Ambient Air** means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.

**Compliance Monitoring** means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.

| | |
|---|---|
| **OEL** | means occupational exposure limit. |
| **Parallel Measurements** | means measurements performed in parallel, yet separately, to existing measurements to verify validity of results. |
| **Safe Levels** | means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles. |
| **Standard** | means the *Employer*'s Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles. |
| **SANAS** | means the South African National Accreditation System. |
| **TWA** | means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4 hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA. |

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

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

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

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

Z15.5 The *Contractor*'s personnel are entitled to stop working and leave the contaminated area forthwith until such time that the area of concern is declared safe by either Compliance Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.

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

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

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

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

| | *Weather measurement* | | | | |
|---|---|---|---|---|---|
| Month | Cumulative rainfall (mm) | Number of days with rain more than 10mm | Number of days with min air temp < 0 deg.C | Number of days with snow lying at 08:00 CAT | [Other measurements if applicable] |
| January | **[●]** | **[●]** | **[●]** | **[●]** | |
| February | **[●]** | **[●]** | **[●]** | **[●]** | |
| March | **[●]** | **[●]** | **[●]** | **[●]** | |
| April | **[●]** | **[●]** | **[●]** | **[●]** | |
| May | **[●]** | **[●]** | **[●]** | **[●]** | |
| June | **[●]** | **[●]** | **[●]** | **[●]** | |
| July | **[●]** | **[●]** | **[●]** | **[●]** | |
| August | **[●]** | **[●]** | **[●]** | **[●]** | |
| September | **[●]** | **[●]** | **[●]** | **[●]** | |
| October | **[●]** | **[●]** | **[●]** | **[●]** | |
| November | **[●]** | **[●]** | **[●]** | **[●]** | |
| December | **[●]** | **[●]** | **[●]** | **[●]** | |

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

# C1.2 Contract Data

## Part two - Data provided by the *Contractor*

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

**Notes to a tendering contractor:**

1. Please read both the NEC3 Engineering and Construction Contract (April 2013) and the relevant parts of its Guidance Notes (ECC3-GN)[2] in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on pages 156 to 158 of the ECC3 (April 2013) Guidance Notes.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data
3. Where a form field like this [ ] appears, data is required to be inserted relevant to the option selected. Click on the form field ***once*** and type in the data. Otherwise complete by hand and in ink.

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

| Clause | Statement | Data |
|---|---|---|
| 10.1 | The *Contractor* is (Name):<br>Address<br>Tel No.<br>Fax No. | |
| 11.2(8) | The *direct fee percentage* is<br>The *subcontracted fee percentage* is | **%**<br>**%** |
| 11.2(18) | The *working areas* are the Site and | |
| 24.1 | The *Contractor's* key persons are:<br>1 Name:<br>Job:<br>Responsibilities:<br>Qualifications:<br>Experience:<br>2 Name:<br>Job<br>Responsibilities:<br>Qualifications:<br>Experience: | |

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

| | | |
|---|---|---|
| | | **CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .** |
| 11.2(3) | The *completion date* for the whole of the *works* is | |
| 11.2(14) | The following matters will be included in the Risk Register | |
| 11.2(19) | The Works Information for the *Contractor*'s design is in: | |
| 31.1 | The programme identified in the Contract Data is | |
| **A** | **Priced contract with activity schedule** | |
| | **Data for Schedules of Cost Components** | *Note "SCC" means Schedule of Cost Components starting on page 60, and "SSCC" means Shorter Schedule of Cost Components starting on page 63 of ECC3 (April 2013).* |
| **A** | **Priced contract with activity schedule** | **Data for the Shorter Schedule of Cost Components** |

# C1.3 Forms of Securities

## Pro formas for Bonds & Guarantees

For use with the NEC3 Engineering & Construction Contract

***[Note to contract compiler:***
***Once it has been decided which securities are required for this contract delete from this file the ones not required, revise the notes below accordingly and delete this note.]***

The *conditions of contract* stated in the Contract Data Part 1 include the following Secondary Options:

Option X13: Performance Bond

Each of these secondary Options requires a bond or guarantee "in the form set out in the Works Information". Pro forma documents for these bonds and guarantees are provided here for convenience but are to be treated as part of the Works Information.

Option X16: Retention (not used with Option F)

The *Contractor* may provide a Retention Money Guarantee in the form stated here. When the *Employer* receives and accepts a Retention Money Guarantee exactly in the form stated he will instruct the *Project Manager* not to assess any amount be retained in terms of secondary Option X16.

The *Contractor* shall guarantee his ASGI-SA Obligations by providing the *Employer* with an ASGI-SA Guarantee in the form provided here.

***[Note to contract compiler: If there are no ASGI-SA Obligations in this contract, delete the above statement]***

The organisation providing the bond / guarantee does so by copying the pro forma document onto his letterhead without any change to the text or format and completing the required details. The completed document is then given to the *Employer* within the time stated in the contract.

# Pro forma Performance Bond – Demand Guarantee (for use with Option X13)

*(to be reproduced exactly as shown below on the letterhead of the Contractor's Parent Company)*

**Eskom Holdings SOC Ltd**
**Megawatt Park**
**Maxwell Drive**
**Sandton**
**Johannesburg** Date:

Dear Sirs

Reference No. **[●]** *[Drafting Note: Bank reference number to be inserted]*

**Performance Bond – Demand Guarantee**: *[Drafting Note: Name of Contractor to be inserted]*

Project [ ] Contract Reference: …… *[Drafting Note: Contractor contract reference number to be inserted]*

1. In this Guarantee the following words and expressions shall have the following meanings:-

1.1 "Bank" - means [●], [●] Branch, (Registration No. [●]); [Drafting Note: Name of Bank to be inserted]

1.2 "Bank's Address" - means [●]; [Drafting Note: Bank's physical address to be inserted]

1.3 "Contract" – means the written agreement relating to the Project, entered into between Eskom and the Contractor, on or about the [●] day of [●] 200[●] (Contract Reference No. [.]as amended, varied, restated, novated or substituted from time to time; [Drafting Note: Signature Date and Contract reference number to be inserted]

1.4 "Contractor" – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]. [Drafting Note: Name and details of Contractor to be inserted]

1.5 "Eskom" - means Eskom Holdings SOC Ltd, a company registered in accordance with the laws of the Republic of South Africa under Registration Number 2002/015527/30].

1.6 "Expiry Date" - means the date on which the Defects Certificate is issued in terms of the Contract.

1.7 "Guaranteed Sum" - means the sum of R [●] ([●] Rand);

1.8 "Project" - means [insert if applicable.].

2. At the instance of the Contractor, we the undersigned _____ and _____, in our respective capacities as _____ and _____ of the Bank, and duly authorized thereto, confirm that we hold the Guaranteed Sum at the disposal of Eskom, as security for the proper performance by the Contractor of all of its obligations in terms of and arising from the Contract and hereby undertake to pay to Eskom, on written demand from Eskom received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.

3. A demand for payment under this guarantee shall be made in writing at the Bank's address and shall:

3.1 be signed on behalf of Eskom by a Group Executive, Divisional Executive, Senior General Manager, General Manager or its delegate;

3.2 state the amount claimed ("the Demand Amount');

3.3 state that the Demand Amount is payable to Eskom in the circumstances contemplated in the

Contract.

4. Notwithstanding the reference herein to the Contract the liability of the Bank in terms hereof is as principal and not as surety and the Bank's obligation/s to make payment:

4.1 is and shall be absolute provided demand is made in terms of this bond in all circumstances; and

4.2 is not, and shall not be construed to be, accessory or collateral on any basis whatsoever.

5. The Bank's obligations in terms of this Guarantee:

5.1 shall be restricted to the payment of money only and shall be limited to the maximum of the Guaranteed Sum; and

5.2 shall not be discharged and compliance with any demand for payment received by the Bank in terms hereof shall not be delayed, by the fact that a dispute may exist between Eskom and the Contractor.

6. Eskom shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting our liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Contract.

7. Should Eskom cede its rights against the Contractor to a third party where such cession is permitted under the Contract, then Eskom shall be entitled to cede to such third party the rights of Eskom under this Guarantee on written notification to the Bank of such cession.

8. This Guarantee:

8.1 shall expire on the Expiry Date until which time it is irrevocable;

8.2 is, save as provided for in 7 above, personal to Eskom and is neither negotiable nor transferable;

8.3 shall be returned to the Bank upon the earlier of payment of the full Guaranteed Sum or expiry hereof;

8.4 shall be regarded as a liquid document for the purpose of obtaining a court order; and

8.5 shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the Courts of the Republic of South Africa.

8.6 Any claim which arises or demand for payment received after expiry date will be invalid and unenforceable.

9. The Bank chooses domicilium citandi et executandi for all purposes in connection with this Guarantee at the Bank's Address.

Signed at _____ Date _____

For and behalf of the Bank

Bank Signatory: _____ Bank Signatory: _____

Witness: _____ Witness: _____
Bank's seal or stamp

# Pro forma Retention Money Guarantee (may be used when Option X16 applies)

*(to be reproduced exactly as shown below on the letterhead of the Bank providing the Guarantee)*

**Eskom Holdings SOC Limited**
**Megawatt Park**
**Maxwell Drive**
**Sandton**
**Johannesburg** Date:

Dear Sirs

Reference No. **[●]** *[Drafting Note: Bank reference number to be inserted]*

**Retention Money Guarantee**: *[Drafting Note: Name of Contractor to be inserted]*

Project [ ] : Contract Reference: *[Drafting Note: Contractor contract reference number to be inserted]*

1. In this Guarantee the following words and expressions shall have the following meanings:-

1.1 "Bank" - means [●], [●] Branch, (Registration No. [●]); [Drafting Note: Name of Bank to be inserted]

1.2 "Bank's Address" - means [●]; [Drafting Note: Bank's physical address to be inserted]

1.3 "Contract" – means the written agreement relating to the Project, entered into between Eskom and the Contractor, on or about the [●] day of [●] 200[●] (Contract Reference No. ……. as amended, varied, restated, novated or substituted from time to time; [Drafting Note: Signature Date and Contract reference number to be inserted]

1.4 "Contractor" – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]. [Drafting Note: Name and details of Contractor to be inserted]

1.5 "Eskom" - means Eskom Holdings SOC Limited, a company registered in accordance with the laws of the Republic of South Africa under Registration Number 2002/015527/30

1.6 "Expiry Date" - means the date on which the Defects Certificate is issued in terms of the Contract.

1.7 "Guaranteed Sum" - means the sum of R [●] ([●] Rand); [Drafting Note: Insert amount of Retention Money Guarantee.].

1.8 "Project" - means the……..

2. At the instance of the Contractor, we the undersigned _____ and _____, in our respective capacities as _____ and _____ of the Bank, and duly authorized thereto, confirm that we hold the Guaranteed Sum at the disposal of Eskom, as security for the proper performance by the Contractor of all of its obligations in terms of and arising from the Contract and hereby undertake to pay to Eskom, on written demand from Eskom received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.

3. A demand for payment under this guarantee shall be made in writing at the Bank's address and shall:

3.1 be signed on behalf of Eskom by a director of Eskom or his authorised delegate.

3.2 state the amount claimed ("the Demand Amount');

3.3 state that the Contractor has failed to carry out his obligation(s) to rectify certain defect(s) for which he

is responsible under the Contract (and the nature of such defect(s)) alternatively that the Demand Amount is payable to Eskom in the circumstances contemplated in the Contract.

4. Notwithstanding the reference herein to the Contract the liability of the Bank in terms hereof is as principal and not as surety and the Bank's obligation/s to make payment:

4.1 is and shall be absolute provided demand is made in terms of this bond in all circumstances; and

4.2 is not, and shall not be construed to be, accessory or collateral on any basis whatsoever.

5. The Bank's obligations in terms of this Guarantee:

5.1 shall be restricted to the payment of money only and shall be limited to the maximum of the Guaranteed Sum; and

5.2 shall not be discharged and compliance with any demand for payment received by the Bank in terms hereof shall not be delayed by the fact that a dispute may exist between Eskom and the Contractor.

6. Eskom shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting our liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Contract.

7. Should Eskom cede its rights against the Contractor to a third party where such cession is permitted under the Contract, then Eskom shall be entitled to cede to such third party the rights of Eskom under this Guarantee on written notification to the Bank of such cession.

8. This Guarantee:

8.1 shall expire on the Expiry Date until which time it is irrevocable;

8.2 is, save as provided for in **7** above, personal to Eskom and is neither negotiable nor transferable;

8.3 shall be returned to the Bank upon the earlier of payment of the full Guaranteed Sum or expiry hereof;

8.4 shall be regarded as a liquid document for the purpose of obtaining a court order; and

8.5 shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the Courts of the Republic of South Africa.

8.6 Any claim which arises or demand for payment received after expiry date will be invalid and unenforceable.

9. The Bank chooses domicilium citandi et executandi for all purposes in connection with this Guarantee at the Bank's Address.

Signed at _____ Date _____ Bank's seal or stamp

For and behalf of the Bank

Bank Signatory: _____ Bank Signatory: _____

Witness: _____ Witness: _____

# Pro forma ASGI-SA Guarantee

*(to be reproduced exactly as shown below on the letterhead of the Bank providing the Guarantee)*

**Eskom Holdings Limited**
**Megawatt Park**
**Maxwell Drive**
**Sandton**
**Johannesburg** Date:

Dear Sirs

Reference No. **[●]** *[Drafting Note: Bank reference number to be inserted]*

**Pro-Forma ASGI-SA Guarantee**: *[Drafting Note: Name of Contractor to be inserted]*

Project [ ] Contract Reference: **[●]** *[Drafting Note: Contractor contract reference number to be inserted]*

1. In this Guarantee the following words and expressions shall have the following meanings:-

1.1 "Bank" - means [●], [●] Branch, (Registration No. [●]); [Drafting Note: Name of Bank to be inserted]

1.2 "Bank's Address" - means [●]; [Drafting Note: Bank's physical address to be inserted]

1.3 "Contract" – means the written agreement relating to the Project, entered into between the *Employer* and the *Contractor*, on or about the [●] day of [●] 200[●] (Contract Reference No. **[●]** as amended, varied, restated, novated or substituted from time to time; [Drafting Note: Signature Date and Contract reference number to be inserted]

1.4 "*Contractor*" – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]. [Drafting Note: Name and details of Contractor to be inserted]

1.5 "*Contractor's* ASGI-SA Obligations" – means the *Contractor's* ASGI-SA Obligations under and as defined in the Contract.

1.6 "*Employer*" - means Eskom Holdings Limited, a company registered in accordance with the laws of the Republic of South Africa under Registration Number 2002/015527/06.

1.7 "Expiry Date" - means the [●] day of [●] 200[●]; [Drafting Note: anticipated date of issue of ASGI-SA Performance Certificate to be inserted.]

1.8 "Guaranteed Sum" - means the sum of R [●] ([●] Rand);

1.9 "Project" – means the …….

2. At the instance of the *Contractor*, we the undersigned _____ and _____, in our respective capacities as _____ and _____ of the Bank, and duly authorized thereto, confirm that we hold the Guaranteed Sum at the disposal of the *Employer*, as security for the proper performance by the *Contractor* of the *Contractor's* ASGI-SA Obligations and hereby undertake to pay to the *Employer*, on written demand from the *Employer* received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.

3. A demand for payment under this guarantee shall be made in writing at the Bank's address and shall:

3.1 state the amount claimed ("the Demand Amount');

3.2 state that the Demand Amount is payable to the *Employer* in the circumstances contemplated in the Contract.

4. Notwithstanding the reference herein to the Contract the liability of the Bank in terms hereof is as principal and not as surety and the Bank's obligation/s to make payment:

4.1 is and shall be absolute provided demand is made in terms of this bond in all circumstances; and

4.2 is not, and shall not be construed to be, accessory or collateral on any basis whatsoever.

5. The Bank's obligations in terms of this Guarantee:

5.1 shall be restricted to the payment of money only and shall be limited to the maximum of the Guaranteed Sum; and

5.2 shall not be discharged and compliance with any demand for payment received by the Bank in terms hereof shall not be delayed, by the fact that a dispute may exist between the *Employer* and the *Contractor*.

6. The *Employer* shall be entitled to arrange its affairs with the *Contractor* in any manner which it sees fit, without advising us and without affecting our liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the *Contractor* or any variation under or to the Contract.

7. Should the *Employer* cede its rights against the *Contractor* to a third party where such cession is permitted under the Contract, then the *Employer* shall be entitled to cede to such third party the rights of the *Employer* under this Guarantee on written notification to the Bank of such cession.

8. This Guarantee:

8.1 shall expire on the Expiry Date until which time it is irrevocable;

8.2 is, save as provided for in **7** above, personal to the *Employer* and is neither negotiable nor transferable;

8.3 shall be returned to the Bank upon the earlier of payment of the full Guaranteed Sum or expiry hereof;

8.4 shall be regarded as a liquid document for the purpose of obtaining a court order; and

8.5 shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the courts of the Republic of South Africa.

8.6 Any claim which arises or demand for payment received after expiry date will be invalid and unenforceable.

9. The Bank chooses domicilium citandi et executandi for all purposes in connection with this Guarantee at the Bank's Address.

Signed at _____ Date _____

For and behalf of the Bank

Bank Signatory: _____ Bank Signatory: _____

Witness: _____ Witness: _____
Bank's seal or stamp

# PART 2: PRICING DATA
## ECC3 Option A

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

# C2.1 Pricing assumptions: Option A

## How work is priced and assessed for payment

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

| | | |
|---|---|---|
| **Identified and defined terms** | 11<br>11.2 | (20) The Activity Schedule is the *activity schedule* unless later changed in accordance with this contract.<br><br>(27) The Price for Work Done to Date is the total of the Prices for<br><br>• each group of completed activities and<br>• each completed activity which is not in a group.<br><br>A completed activity is one which is without Defects which would either delay or be covered by immediately following work.<br><br>(30) The Prices are the lump sum prices for each of the activities on the Activity Schedule unless later changed in accordance with this contract. |

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

## Function of the Activity Schedule

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

## Link to the programme

Clause 31.4 states that "The *Contractor* provides information which shows how each activity on the Activity Schedule relates to the operations on each programme which he submits for acceptance". Ideally the tendering contractor will develop a high level programme first then resource each activity and thus arrive at the lump sum price for that activity both of which can be entered into the *activity schedule*.

## Preparing the *activity schedule*

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

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

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

- Has taken account of the guidance given in the ECC3 Guidance Notes pages 19 and 20;
- Understands the function of the Activity Schedule and how work is priced and paid for;
- Is aware of the need to link the Activity Schedule to activities shown on his programme;
- Has listed and priced activities in the *activity schedule* which are inclusive of everything necessary and incidental to Providing the Works in accordance with the Works Information, as it was at the time of tender, as well as correct any Defects not caused by an *Employer's* risk;

- Has priced work he decides not to show as a separate activity within the Prices of other listed activities in order to fulfil the obligation to complete the *works* for the tendered total of the Prices.
- Understands there is no adjustment to the lump sum Activity Schedule price if the amount, or quantity, of work within that activity later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the Prices is as a result of a compensation event.

# C2.2 the *activity schedule*

Use this page as a cover page to the *Contractor*'s *activity schedule* or provide the schedule here

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 1 | Preliminary & General | 1.1.1 | Contractual requirements / site facilities | Sum | 1 | | |
| 1 | Preliminary & General | 1.1.2 | Facilities for Engineer | Sum | 1 | | |
| 1 | Preliminary & General | 1.1.3 | Facilities for Contractor – COVID-19 safe | Sum | 1 | | |
| 1 | Preliminary & General | 1.1.4 | General responsibilities – COVID-19 | Sum | 1 | | |
| 1 | Preliminary & General | 1.1.5 | Removal of site establishment on completion | Sum | 1 | | |
| 1 | Preliminary & General | 1.1.6 | OHS compliance / COVID-related adjustments | Sum | 1 | | |
| 1 | Preliminary & General | 1.1.7 | Preparation of OHS Plan | Sum | 1 | | |
| 1 | Preliminary & General | 1.1.8 | Initial (baseline) medical examinations | No. | 20 | | |
| 1 | Preliminary & General | 1.1.9 | Exit examinations | No. | 20 | | |
| 1 | Preliminary & General | 1.2.1 | Contractual requirements – time related | Sum | 1 | | |
| 1 | Preliminary & General | 1.2.2 | Engineer site facilities – time related | Sum | 1 | | |
| 1 | Preliminary & General | 1.2.3 | Contractor site facilities – time related | Sum | 1 | | |
| 1 | Preliminary & General | 1.2.5 | General responsibilities – COVID-19 | Sum | 1 | | |
| 1 | Preliminary & General | 1.2.6 | OHS compliance – COVID-related | Sum | 1 | | |
| 1 | Preliminary & General | 1.2.8 | Full-time OHS supervision | Month | 12 | | |
| 1 | Preliminary & General | 1.2.9 | Contractor supervision | Month | 12 | | |
| 1 | Preliminary & General | 1.3.1 | Community Liaison Officer (CLO) | Prov. Sum | 1 | | |
| 1 | Preliminary & General | 1.3.2 | Contractor markup on CLO | % | 0.1 | | |
| 1 | Preliminary & General | 1.3.3 | Full-time site supervision – provisional | Prov. Sum | 0 | | |
| 1 | Preliminary & General | 1.3.5 | Civil Engineering trainee | Prov. Sum | 1 | | |
| 1 | Preliminary & General | 1.3.7 | Accommodation for site personnel | Prov. Sum | 1 | | |
| 1 | Preliminary & General | 1.3.8 | Contractor markup on accommodation | % | 0.1 | | |
| 1 | Preliminary & General | 1.3.9 | Bakkie for Engineer's Representative | Month | 12 | | |
| 1 | Preliminary & General | 1.3.10 | Data and airtime – Engineer's personnel | Prov. Sum | 1 | | |
| 1 | Preliminary & General | 1.3.11 | Engineering survey | Prov. Sum | 1 | | |
| 1 | Preliminary & General | 1.3.12 | EMPr for working in forest | Prov. Sum | 1 | | |
| 1 | Preliminary & General | 1.3.13 | PSC members – meetings | Prov. Sum | 1 | | |
| 1 | Preliminary & General | 1.3.14 | Contractor markup on PSC meetings | % | 0.1 | | |
| 1 | Preliminary & General | 1.3.15 | Temporary works – maintain roads | Prov. Sum | 1 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 2 | Site Clearance | 2.1.1 | Clear and grub vegetation in 2m strip | m | 3700 | | |
| 2 | Site Clearance | 2.1.2 | Remove/grub large trees >1m to 2m girth | No. | 5 | | |
| 2 | Site Clearance | 2.1.3 | Remove topsoil 600mm strip, 150mm deep | $m^3$ | 283 | | |
| 2 | Site Clearance | 2.1.4 | Remove existing gravel layer to stockpile | $m^3$ | 75 | | |
| 2 | Site Clearance | 2.1.4.2 | Gravel layer works to residential roads | $m^3$ | 75 | | |
| 2 | Site Clearance | 2.1.4.3 | Fill material | $m^3$ | 0.2 | | |
| | Site Clearance | 2.1.4.4 | Relocation of existing fences | km | 0.2 | | |
| 2 | Site Clearance | 2.1.4.5 | Relocation of existing fences | m | 200 | | |
| 2 | Site Clearance | 2.1.4.6 | Working adjacent to existing services | m | 2100 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 2 | Site Clearance | 2.1.1 | Clear and grub vegetation in 2m strip | m | 3700 | | |
| 2 | Site Clearance | 2.1.2 | Remove/grub large trees >1m to 2m girth | No. | 5 | | |
| 2 | Site Clearance | 2.1.3 | Remove topsoil 600mm strip, 150mm deep | $m^3$ | 283 | | |
| 3 | Pipe Trenches | 3.1.1.1 | Excavation – depth up to 1.5m | $m^3$ | 3607.5 | | |
| 3 | Pipe Trenches | 3.1.1.2 | Excavation – depth >1.5m to 3.5m | $m^3$ | 0 | | |
| 3 | Pipe Trenches | 3.1.1.3 | Extra over – intermediate excavation | $m^3$ | 360.75 | | |
| 3 | Pipe Trenches | 3.1.1.4 | Extra over – hard rock | $m^3$ | 1731.6 | | |
| 3 | Pipe Trenches | 3.1.1.5 | Extra over – boulder excavation | $m^3$ | 541.125 | | |
| 3 | Pipe Trenches | 3.1.1.6 | Blasting to remove rock | Sum | 1 | | |
| 3 | Pipe Trenches | 3.2.1 | Earth diversion berms | No. | 1 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 4 | Gabions & Pitching | 4.1 | Excavate materials for gabions | $m^3$ | 20 | | |
| 4 | Gabions & Pitching | 4.2.1 | Surface preparation / cavities – excavated material or rock | $m^2$ | 10 | | |
| 4 | Gabions & Pitching | 4.2.2 | Cavities filled with 15MPa concrete | $m^3$ | 10 | | |
| 4 | Gabions & Pitching | 4.3.1 | 2 x 1 x 1m rock-filled gabion baskets | $m^3$ | 15 | | |
| 4 | Gabions & Pitching | 4.3.2 | 3 x 2 x 0.3m Reno mattress | $m^2$ | 15 | | |
| 4 | Gabions & Pitching | 4.4.1 | Geotextile below gabion mattresses | $m^2$ | 30 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 5 | Bedding | 5.1.1 | Selected granular material from trench excavation | $m^3$ | 1004 | | |
| 5 | Bedding | 5.1.2 | Selected fill material from trench excavation | $m^3$ | 2997 | | |
| 5 | Bedding | 5.2.1.1 | Selected granular material – other excavations | $m^3$ | 178.79 | | |
| 5 | Bedding | 5.2.1.2 | Selected fill material – other excavations | $m^3$ | 449.55 | | |
| 5 | Bedding | 5.2.2.1 | Selected granular material – commercial sources | $m^3$ | 1013.15 | | |
| 5 | Bedding | 5.2.2.2 | Selected fill material – commercial sources | $m^3$ | 2546.515 | | |
| 5 | Bedding | 5.3 | Concrete bedding cradle 15/19 grade | $m^3$ | 0 | | |
| 5 | Bedding | 5.4.1 | Encasement of pipes in 25/19 concrete incl. 100kg/$m^3$ steel | $m^3$ | 0 | | |
| 5 | Bedding | 5.4.2 | Overhanging stream crossing on concrete pedestals | $m^3$ | 6 | | |
| 5 | Bedding | 5.5.1 | Thrust blocks in 25/19 concrete | $m^3$ | 27 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 6 | Medium Pressure Pipelines | 6.1.1 | 50mm dia. PN10 HDPE | m | 0 | | |
| 6 | Medium Pressure Pipelines | 6.1.2 | 50mm dia. PN12.5 HDPE | m | 150 | | |
| 6 | Medium Pressure Pipelines | 6.1.3 | 63mm dia. PN12.5 HDPE | m | 0 | | |
| 6 | Medium Pressure Pipelines | 6.1.4 | 63mm dia. PN10 HDPE | m | 0 | | |
| 6 | Medium Pressure Pipelines | 6.1.5 | 75mm dia. PN10 HDPE | m | 0 | | |
| 6 | Medium Pressure Pipelines | 6.1.6 | 75mm dia. PN12.5 HDPE | m | 200 | | |
| 6 | Medium Pressure Pipelines | 6.1.7 | 90mm dia. PN10 HDPE | m | 0 | | |
| 6 | Medium Pressure Pipelines | 6.1.8 | 90mm dia. PN16 HDPE | m | 700 | | |
| 6 | Medium Pressure Pipelines | 6.1.9 | 110mm dia. PN16 HDPE | m | 1500 | | |
| 6 | Medium Pressure Pipelines | 6.1.10 | 200mm dia. PN16 HDPE | m | 1500 | | |
| 6 | Medium Pressure Pipelines | 6.1.11 | 250mm dia. PVC Class 20 | m | 0 | | |
| 6 | Medium Pressure Pipelines | 6.1.12 | 100mm dia. Klambon Class 40 steel pipe | m | 40 | | |
| 6 | Medium Pressure Pipelines | 6.1.13 | Pipeline markers | No. | 30 | | |
| 6 | Medium Pressure Pipelines | 6.1.14 | Standpipe complete | No. | 0 | | |
| 6 | Medium Pressure Pipelines | 6.1.15 | Aqua Flow limiter | No. | 0 | | |
| 6 | Medium Pressure Pipelines | 6.1.16 | Refurbishment of damaged standpipe | No. | 0 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 7 | Pipe Specials & Fittings | 7.1.1 | 50mm x 45° HDPE bend PN25 | No. | 30 | | |
| 7 | Pipe Specials & Fittings | 7.1.2 | 50mm x 90° HDPE bend PN25 | No. | 30 | | |
| 7 | Pipe Specials & Fittings | 7.1.3 | 63mm x 45° HDPE bend PN25 | No. | 10 | | |
| 7 | Pipe Specials & Fittings | 7.1.4 | 63mm x 90° HDPE bend PN25 | No. | 4 | | |
| 7 | Pipe Specials & Fittings | 7.1.5 | 75mm x 45° HDPE bend PN25 | No. | 8 | | |
| 7 | Pipe Specials & Fittings | 7.1.6 | 75mm x 90° HDPE bend PN25 | No. | 3 | | |
| 7 | Pipe Specials & Fittings | 7.1.7 | 90mm x 45° HDPE bend PN25 | No. | 3 | | |
| 7 | Pipe Specials & Fittings | 7.1.8 | 90mm x 90° HDPE bend PN25 | No. | 3 | | |
| 7 | Pipe Specials & Fittings | 7.1.9 | 250mm x 45° HDPE bend PN25 | No. | 15 | | |
| 7 | Pipe Specials & Fittings | 7.1.10 | 250mm x 90° HDPE bend PN25 | No. | 10 | | |
| 7 | Pipe Specials & Fittings | 7.2.1 | 63mm x 50mm socketed reducer PN25 | No. | 0 | | |
| 7 | Pipe Specials & Fittings | 7.2.2 | 75mm x 63mm socketed reducer PN25 | No. | 0 | | |
| 7 | Pipe Specials & Fittings | 7.2.3 | 90mm x 75mm socketed reducer PN25 | No. | 9 | | |
| 7 | Pipe Specials & Fittings | 7.3.1 | 50mm x 50mm equal tee PN25 | No. | 0 | | |
| 7 | Pipe Specials & Fittings | 7.3.2 | 63mm x 63mm equal tee PN25 | No. | 0 | | |
| 7 | Pipe Specials & Fittings | 7.3.3 | 75mm x 75mm equal tee PN25 | No. | 0 | | |
| 7 | Pipe Specials & Fittings | 7.3.4 | 90mm x 90mm equal tee PN25 | No. | 0 | | |
| 7 | Pipe Specials & Fittings | 7.4.1 | 63mm x 50mm unequal tee PN25 | No. | 9 | | |
| 7 | Pipe Specials & Fittings | 7.4.2 | 75mm x 63mm unequal tee PN25 | No. | 9 | | |
| 7 | Pipe Specials & Fittings | 7.4.3 | 90mm x 75mm unequal tee PN25 | No. | 9 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 8 | Valves | 8.1.1 | 250mm isolation valve complete incl. chamber | No. | 4 | | |
| 8 | Valves | 8.1.2 | 250mm air valve complete incl. chamber/scour works | No. | 2 | | |
| 8 | Valves | 8.1.3 | Scour valve complete incl. chamber | No. | 2 | | |
| 8 | Valves | 8.1.4 | Check / non-return valve complete | No. | 1 | | |
| 8 | Valves | 8.1.5 | 80mm bulk water meter complete | No. | 2 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 9 | Reservoirs | 9.1.1 | Refurbish and clean existing reservoir incl. pipework, valves, chambers, etc. | No. | 1 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 10 | Small Works | 10.1 | Booster pumphouse | Sum | 1 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 11 | Fencing | 11.1 | 2.4m high security fence with razor wire | m | 100 | | |
| 11 | Fencing | 11.2 | Double-leaf vehicle gates | No. | 1 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 12 | Drilling & Testing | 12.1.1 | Desktop study / potential determination | Sum | 1 | | |
| 12 | Drilling & Testing | 12.1.2 | Geological reconnaissance, hydrocensus & geophysical surveys | Sum | 1 | | |
| 12 | Drilling & Testing | 12.1.3 | Drilling supervision | Sum | 1 | | |
| 12 | Drilling & Testing | 12.1.4 | Yield testing control | Sum | 1 | | |
| 12 | Drilling & Testing | 12.1.5 | Disbursements – travel, accommodation, reporting | Sum | 1 | | |
| 12 | Drilling & Testing | 12.1.6 | Drilling – 2 attempts | Sum | 1 | | |
| 12 | Drilling & Testing | 12.1.7 | Pump testing – new | Sum | 1 | | |
| 12 | Drilling & Testing | 12.1.8 | Contractor markup on items above | % | 0.05 | | |
| 12 | Drilling & Testing | 12.2.1 | Hydrogeological spring characterisation & pollution risk assessment | Sum | 0 | | |
| 12 | Drilling & Testing | 12.2.2 | Flow determination & seasonal variation assessment | Sum | 0 | | |
| 12 | Drilling & Testing | 12.2.3 | Sampling & on-site water quality analysis | Sum | 0 | | |
| 12 | Drilling & Testing | 12.2.4 | Hydrochemical water analysis | Sum | 0 | | |
| 12 | Drilling & Testing | 12.2.5 | Project management & reporting | Sum | 0 | | |
| | | | **Sub-Total** | | | | |

| Section | Section Description | Item | Description | Unit | Qty | Rate | Amount |
|---|---|---|---|---|---|---|---|
| 12 | Drilling & Testing | 12.1.1 | Desktop study / potential determination | Sum | 1 | | |
| 13 | Booster Pumps | 13.1 | Supply and install booster pumps | Prov. Sum | 1 | | |
| 13 | Booster Pumps | 13.2 | Contractor markup on booster pump | % | 0.1 | | |
| | | | **Sub-Total** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | **OVERAL TOTAL** | | | |
| | | | VAT | 15% | | |
| | | | **OVERAL TOTAL INCL** | | | |

# PART 3: SCOPE OF WORK

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# PART 3: SCOPE OF *WORK*

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# C3.1: *EMPLOYER*'S *WORKS* INFORMATION

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# 1 Description of the *Works*

## 1.1 Executive overview

The works comprise the replacement of the potable water pipeline at Jagersrust and the replacement of the Surface Water Tanks that form part of the Drakensberg Pumped Storage Scheme (DPSS).
The purpose of the works is to ensure a continuous, safe, and reliable supply of potable water to all users served by the systems, including Eskom's surface facilities, staff residences, the Department of Water and Sanitation facilities, and the nearby resorts.
The project scope entails:

a) Replacement of approximately 1 500 m of the existing Ø150 mm galvanised mild steel pipeline with an HDPE PE100, SDR13.6, PN12.5 main transmission pipeline. The new HDPE pipeline must be buried in a trench and be equipped with inspection manholes and valve chambers as required.

b) Installation of approximately 3 000 m of a Ø22 mm HDPE pipeline to the Visitor's Centre from the Surface Water Tanks. The new HDPE pipeline must be buried in a trench and equipped with isolation valve manholes where required.

c) Replacement of the existing distribution pipeline network that comprises approximately 700 m of Ø100 mm asbestos cement and supplemented by 1 500 m of Ø80 mm and Ø100 mm steel distribution pipelines. The entire distribution network must be replaced with HDPE pipelines of the same existing diameters. The network starts at the bulk gravity supply pipe connection at the reservoir and terminates at the flowmeter at each residence/household. Provision of a new flowmeter, including upstream and downstream isolation valves, is included in the *Contractor's* scope.

d) Realignment of the proposed pipeline to avoid the sensitive wetland crossing and to improve long-term accessibility to the pipeline for maintenance. Figure 3-1 below illustrates the proposed alignment of the main transmission pipeline (approximately 1 500 m) from the WTP to the reservoirs.

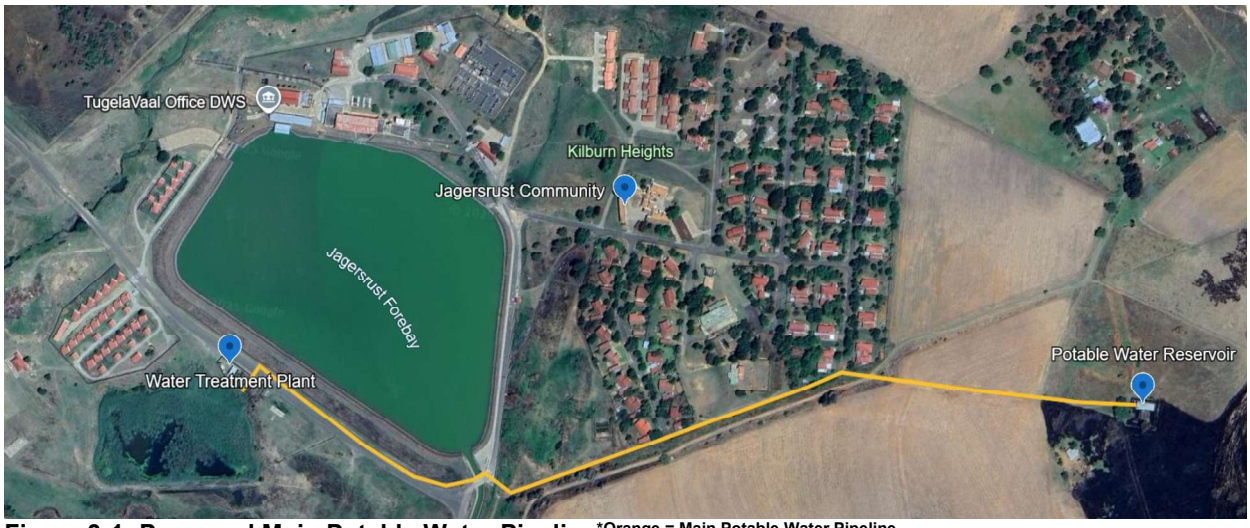


**Figure 3-1: Proposed Main Potable Water Pipeline** *Orange = Main Potable Water Pipeline

e) Decommissioning of all existing infrastructure where necessary and safe disposal of the asbestos cement pipeline where required, in full compliance with the Asbestos Regulations. Please note that leaving the asbestos cement pipeline undisturbed underground is the preferred approach, and the asbestos cement pipeline should only be disturbed when necessary.

f) Construction of a new reinforced concrete tank foundation that is a minimum of approximately 7.2m (length) x 3.6m (width), resulting in an approximate footprint of approximately 26m$^2$. Installation of a new potable water tank that is sized to meet the minimum demand of the entire DPS. Together with all associated infrastructure (e.g. Foundation, structural supports, etc.).

g) Installation of a new deluge tank (same capacity as existing deluge tank) that is currently supplied by the Surface Water Tanks with all necessary infrastructure (e.g. Foundation, structural supports etc.)

h) Installation of a fibre optic cable for real-time tank level monitoring. The Fibre optic cable will be installed inside a protective sleeve and buried next to the 1 500 m long main transmission pipeline. Please note that the connection and integration of the fibre optic cable is outside of the *Contractor's* scope of work.

i) Installation of necessary appurtenances, including scour valves, air valves, isolating valves, and marker posts on all buried pipework where necessary.

j) Restoration of affected terrain and implementation of environmental protection measures during and after construction.

The works will be executed at the Drakensberg Power Station (surface area) and the Jagersrust community, both within the uThukela District Municipality.

## 1.2 Scope

The project involves the design refinement Jagersrust potable water pipeline and Surface Water Tanks, materials procurement, construction, testing, decommissioning, commissioning, and handover of new potable water infrastructure to ensure a safe, reliable, and sustainable water supply to the following end users:

*a)* Eskom staff residences and operational facilities,
*b)* The Jagersrust community,
*c)* The Department of Water and Sanitation (DWS) facilities,
*d)* The DPSS Visitor's Centre, and
e) Surrounding resorts.

The existing Jagersrust water pipeline system has reached the end of its design life and is characterised by frequent leaks, corrosion, and maintenance challenges. The replacement project is therefore intended to restore system integrity, improve water quality, and ensure compliance with Eskom and SANS standards for potable water systems.

The *Contractor* must execute all works necessary for the complete and operational potable water transfer, storage, and distribution system, including but not limited to the following:

**a) Galvanised Pipeline Replacement and Realignment:**

Replacement of the existing galvanised steel pipeline between the Water Treatment Plant (WTP) and the Jagersrust reservoirs with a High-Density Polyethylene (HDPE) pipeline. The pipeline must be realigned to improve accessibility, reduce environmental disturbance in sensitive wetland areas, and enhance hydraulic performance.

**b) Asbestos Cement Pipeline Replacement:**

Replacement of the existing asbestos cement potable water distribution pipelines between the reservoir and the household connections with HDPE pipelines of equivalent nominal diameters, maintaining the existing hydraulic capacity and alignment where practicable.

**c) Surface Water Storage Tank:**

Installation of a new surface potable water storage tank with increased capacity to accommodate both current and future demands. Tanks must be installed on reinforced concrete foundations designed for site-specific soil conditions, wind uplift, and seismic loads, ensuring structural stability and durability. Together with all associated infrastructure (e.g., foundation, structural supports, etc.).

**d) Deluge Tank:**

Replacement of the current deluge tank (fire system tank) with a similar capacity to the existing tank. Together with all associated infrastructure (e.g., foundation, structural supports, etc.).

**e) Piping to Visitor's Centre:**

The existing Ø22 mm pipeline from the Surface Building to the Stores Building will be replaced and extended to the Visitor's Centre by installing a diverging Y-branch (or equivalent) from the Stores Building to provide a direct connection to the Visitor's Centre.

**f) Pipeline Appurtenances and Structures:**

Construction of all associated valve chambers, scour and air valve assemblies, thrust and anchor blocks, manholes, and access structures necessary for the safe operation and maintenance of the potable water system.

**g) Decommissioning of Existing Infrastructure:**

Safe decommissioning of existing infrastructure, removal, and disposal of existing galvanised steel and asbestos cement pipelines in full compliance with the Department of Employment and Labour's Asbestos Regulations (Government Notice R1196 in GG 43893 of 10 November 2020). All decommissioning activities must be conducted under approved method statements and environmental control measures.

**h) Instrumentation and Control:**

Provision and installation of fibre optic cabling and instrumentation to facilitate real-time water level monitoring.

**i) Testing, Disinfection, and Commissioning:**

Comprehensive testing of all civil, mechanical, and electrical systems and commissioning of the entire system to demonstrate compliance with SANS 241: Drinking Water Quality, SANS 1200, and applicable Eskom standards.

**j) Environmental and Safety Compliance:**

Implementation of all necessary environmental management, occupational health, and safety measures, including erosion control, waste management, and spill prevention.

The completed works shall deliver a durable, low-maintenance, and operationally efficient potable water system that meets the long-term requirements of the Drakensberg Pumped Storage Scheme (DPSS) and its associated facilities.

This specification shall apply to all *Contractors* and *Sub-contractors* engaged in providing the works and serves as the binding technical reference for tendering, detailed design, procurement, construction, testing, and commissioning activities under this contract.

# 2 *Employer*'s objectives and purpose of the *Works*

## 2.1 *Employer*s' objective

The *Employer's* objective is to replace the potable water infrastructure at the DPSS to achieve the following outcomes:

a) Reliability: Eliminate frequent failures and leaks caused by ageing and corroded infrastructure.

b) Compliance: Ensure adherence to SANS, Eskom, and statutory requirements for potable water systems.

c) Maintainability: Improve access for inspection, repair, and long-term operation.

d) Environmental Protection: Avoid construction and operation within sensitive wetland areas.

e) Sustainability: Provide a durable system with an extended service life and reduced maintenance costs.

f) Operational Integration: Enable data transmission and system monitoring through fibre optic connectivity between the WTP and the reservoir

# 3 Interpretation and terminology

The following terminology and abbreviations are used in this *Work's* Information for ease of reference and to support clarity in interpretation. These terms apply only to this Contract and supplement the definitions contained in the NEC3 ECC Conditions of Contract.

## 3.1 Abbreviation

| Abbreviation | Meaning given to the abbreviation |
|---|---|
| DPSS | Drakensberg Pumped Storage Scheme |
| DPS | Drakensberg Power Station |
| WTP | Water Treatment Plant |
| SWT | Surface Water Tank |
| HDPE | High-Density Polyethylene |
| SANS | South African National Standards |
| DWS | Department of Water and Sanitation |
| QA | Quality Assurance |
| QC | Quality Control |

| | |
|---|---|
| ISO | International Standards Organisation |
| ITP | Inspection and Test Plan |
| ECC | Engineering Change Committee |
| SHEQ | Safety, Health, Environment, and Quality |
| VC | Visitor's Centre |
| NEC | New Engineering Contracts |
| OHSA | Occupational Health and Safety Act |

# 4 Interpretation of incorporated documentation

Wherever the following words or phrases are used in the listed or referred documentation, they are interpreted in this contract as tabled below.

| Word or Phrase | Interpretation |
|---|---|
| Eskom Holdings SOC' in the context of:<br>• Owner<br>• Insurer of the Works<br>• Paymaster<br>• A party to the contract | The *Employer*. |
| Eskom Holdings SOC' in the context of:<br>• A duty or procedure to be performed by the administration of the contract | The *Project Manager* or *Supervisor,* as determined by the conditions of the contract. |
| Accepted or approved by (or to the satisfaction of) the *Project Manager*, Engineer, *Employer,* or the Architect. | Accepted by the *Project Manager* or the *Supervisor*. |
| A duty, procedure, decision, or action of the Engineer, *Employer,* or the Architect and or the Superintendent, Eskom's Representative, Site Supervisor, or Clerk of *Works*. | An action of the *Project Manager* or the *Supervisor,* depending on the context. Clause 14 of the Core Clauses determines what the actions of each are. Either may delegate in terms of Clause 14.2 |

## 4.1 Project Phasing and Implementation Strategy

The Jagersrust Potable Water Pipeline and Surface Water Tanks Replacement Project are planned to be executed in Two Phases. The first Phase (Detailed Design Phase) of the project will be used for the Water Use License (WUL) application. A separate *Contractor* will be responsible for the WUL and EIA. The second Phase (Construction Phase) will be the implementation Phase.

The detailed design is to be submitted to the *Department of Water and Sanitation (DWS)* for the WUL application. Should any amendments, comments, or additional requirements be issued by the *DWS* during the approval process, the *Contractor* must revise and resubmit the detailed design documentation accordingly before commencement of construction activities at the *Contractor*'s cost. The same *Contractor* is responsible for the execution of both Phases as part of a single contract.

#### 4.1.1 Phase 1: Detailed Design Phase

Phase 1 of the project comprises the detailed design and engineering development of all infrastructure associated with the potable water system replacement works.
The Detailed Design Phase must include, but not be limited to, the following:

a) Verification and refinement of all information contained within the Basic Design Report and Technical Specification,

b) Site investigations, detailed topographical verification, and confirmation of existing infrastructure and services,

c) Detailed hydraulic analysis and design of the potable water pipeline system,

d) Detailed design of the main transmission pipeline and distribution pipelines,

e) Detailed design of the Surface Water Storage Tanks and associated reinforced concrete foundations,

f) Detailed design of all required valves (scour valves, air valves, etc., where required), thrust blocks, and associated infrastructure,

g) Detailed design of the conduit system of the fibre optic cable, the main water transmission line and associated infrastructure,

h) Confirmation of gravity supply requirements to the Visitor's Centre and Stores Building,

i) Preparation of detailed construction drawings, calculations, material specifications, and technical schedules,

j) Preparation of construction Method Statements (MSs), Quality Control Plans (QCPs), and Inspection and Test Plans (ITPs), and

k) Training and frequent engagement sessions with Employer personnel throughout the design process for skills transfer and design review purposes.

No construction activities commence until the detailed design documentation has been reviewed and accepted by the *Project Manager* and submitted and approved by DWS for the WUL application.

#### 4.1.2 Phase 2: Construction Phase

Phase 2 comprises the construction, decommissioning, installation, testing, commissioning, and handover of all infrastructure designed and accepted by the *Project Manager* during Phase 1.
The Construction Phase includes, but is not limited to, the following:

a) Site establishment,

b) Construction of all associated infrastructure,

c) Submission of as-built documentation, and

d) Final handover of the completed works to Eskom.

The *Contractor* ensures that all construction works are executed in accordance with the approved detailed design, Technical Specification, applicable standards, and *Employer* requirements. Phase 2 depends on Phase 1 being accepted by the *Project Manager*.

# 5 Management and start-up.

The *Contractor* submits a company profile which includes a list of traceable references that adequately prove that the *Contractor* and/or their Sub-Contractor has the relevant experience as required by the *works*. In addition, the *Contractor* provides guarantees on his workmanship, materials, and watertightness.

## 5.1 Management meetings

1) To support the effective administration of the Contract, the *Contractor* must attend and participate in management meetings convened by the *Project Manager*.
2) These meetings are intended to:
    - Monitor and coordinate progress,
    - Address risks and safety issues,
    - Review quality assurance and testing milestones,
    - Confirm contract deliverables and communication obligations.
3) Meeting minutes or registers must be prepared by the person convening the meeting and circulated within five (5) *Work*ing Days. These must not substitute for formal communications issued in accordance with Clause 13 of the Contract.
4) Meetings may be held on-site or via Microsoft Teams, subject to the nature of the discussion and the availability of the parties.

5) The *Project Manager* may convene additional meetings as required to manage issues of a technical, programme-related, or commercial nature.

### 5.1.1 General Execution Meetings

#### 5.1.1.1 Project kick-off meeting

A project kick-off meeting is convened and chaired by the *Project Manager* before *Work* commences:

| Interval | Location | Attendance by: |
|---|---|---|
| Once-off meeting | MSTEAMS or on-site | *Project Manager*, *Contractor*, *Project Supervisor*, *Project Engineer*, Power Station Manager, and Others as required |

### 5.1.2 Implementation meetings for specific progress/QC, and feedback

| Title and purpose | Approximate time & interval | Location | Attendance by: |
|---|---|---|---|
| Risk register and compensation events | As required | MSTEAMS or on-site | *Project Manager*, *Contractor*, *Project Co-Ordinator*, *Quantity Surveyor,* and *Project Engineer* |
| Overall contract progress and feedback | Minimum Bi-weekly or as required by the *Project Manager*. | MSTEAMS or on-site | *Project Manager*, *Contractor*, *Supervisor*, and *Project Engineer* |
| Installation progress meetings | Daily | on-site | *Contractor*, Supervisor, and relevant Engineer when required |

### 5.1.3 Meetings of a specialist nature

1) The *Project Manager* or the *Contractor* may convene specialist meetings to address:
   a. Design review and clarification
   b. Interface management with third parties or stakeholders,
   c. Quality Control Plan (QCP) or Inspection and Test Plan (ITP) reviews,
   d. Safety audits and technical compliance discussions.
2) The attendance, frequency, and location of such meetings shall be fit for purpose and recorded accordingly.
3) Records of specialist meetings shall be submitted to the *Project Manager* within five (5) *Work*ing Days after the meeting.

### 5.1.4 Post-implementation meeting for project feedback and review

1) The post-implementation meeting is held between the *Employer*, *Contractor,* and Others as required to report on implementation issues and reviews, for project close-out, if required:

| Interval | Location | Attendance by: |
|---|---|---|
| Once-off | MSTEAMS or on-site | *Project Manager*, *Contractor*, *Project Supervisor*, *Project Engineer*, Power Station Manager, and Others as required |

## 5.2 Documentation control

1) The *Contractor* must establish and maintain a structured document management system for all project documentation throughout the duration of the Contract. This document management system applies to all documents related to correspondence, design, procurement, manufacturing, construction, commissioning, handover, and as-built *Works*.
2) The documentation control system must provide full traceability, version control, transmittal records, and clear identification of document status (e.g., "Issued for Review", "Accepted by *Project Manager* for Construction", "As-Built").
3) The *Contractor* adheres to the following *Employer* Document control standards:
   a. 240-86973501: Engineering Drawing Standard – Common Requirements,
   b. 240-54179170: Classification and Designation of Technical Documentation,
   c. 32-644: Documentation Management Standard.
4) All documentation must:
   a. Be submitted in South African English and use SI units.
   b. Be legible, professionally prepared, and signed by authorised personnel,
   c. Be submitted in editable electronic formats (no password protection or write protection) unless otherwise agreed,
   d. Be issued with a formal transmittal form, uniquely numbered, indicating:
      i. Document title and number,
      ii. Revision number and status,
      iii. Date of issue,
      iv. Purpose of issue (e.g., “For Review”, “For Acceptance”).
5) Final “As-Built” submissions must include:
   a. One complete hardcopy drawing set with signed title blocks,
   b. Editable electronic copies of all documentation,
   c. O&M manuals, maintenance schedules, and configuration data.
6) Presentation and formatting requirements:

a. Final hard copies shall be submitted in ISO A4 binders, using D-ring mechanisms (not post binders),
b. Binders shall not exceed 80 mm in thickness,
c. The *Contractor* ensures that the front and spine of each binder are properly identified.

7) All formal communications, including document submissions and technical queries, have to:
   a. Be issued as signed letters or forms on the *Contractor*'s letterhead,
   b. Be submitted as PDFs attached to an email (not in the email body),
   c. Be acknowledged by the recipient, with a record of receipt returned to the sender,
   d. Reference the applicable ECC clause (if contractual), the contract number, subject, and any relevant cross-references.
8) All document deliverables must be routed to the *Project Manager* and aligned with the design review and acceptance process.

### 5.3 Communication Requirements

All communication from the *Contractor* must be addressed to the *Project Manager*, as specified in the ECC contract. All communication must refer to:

### 5.4 Health and safety risk management

1) The *Contractor* complies with the health and safety requirements contained in the OHS Specification/Requirements and the approved safety file. Eskom reserves the right to review the OHS Specification/Requirements to address operational risks, and the *Contractor* must comply with the latest OHS Specification/Requirements as amended, at no additional cost.
2) The 37(2) agreement must be signed by *Contractor* and *Employer* representatives.
3) The *Contractor* OHS professional must conduct internal audits at planned intervals to monitor compliance with the contractual health and safety requirements.
4) The *Employer* or his representative will conduct inspections at planned intervals to monitor compliance with the contractual health and safety and legal requirements.
5) The *Contractor* may be selected during internal and/or external Power Station audits to verify compliance with legal and contractual OHS requirements. The *Project Manager* will communicate this at relevant periods, and the *Contractor* shall avail themselves for this audit.
6) In addition to the requirements of the applicable laws governing occupational health and safety, the Power Station OHS requirements particular to the service and the Affected Property for this contract shall be adhered to for the duration of the contract.
7) The minimum requirements for the *Contractor* to gain access to Peaking Generation Power Stations include, but are not limited to:

a) A Valid Medical fitness certificate
b) Police clearance from SAPS or an accredited supplier/service provider linked to the SAPS AFIS system, not older than thirty (30) days.
c) Identification document (RSA ID or equivalent).
d) National Driver's Licence (applicable to drivers).
e) Adherence to the Eskom Life-saving rules.
f) Applicable risk-based PPE.
g) A Valid letter of good standing always (COIDA or equivalent). Access to the site to perform *Work* will be denied should the Letter of good standing not be valid.
h) The *Contractor*/supplier/consultant who is *working* alone and not eligible to register with the compensation fund must provide Eskom with the member benefit statement of the insurance cover, which includes life and disability cover to the minimum fund of R500 000.

**Note:** Induction will only be done after the above documents have been submitted and accepted by the *Employer*.

### 5.4.1 Key Performance Indicators

The *Contractor* must monitor, manage, and report on the following Key Performance Indicators (KPIs) related to health and safety performance for the duration of the Contract. These indicators will be used to assess compliance with the *Employer*'s OHS Specification, legal obligations, and safe *Work* practices.

The *Contractor* must:

1) Maintain a Health and Safety file and ensure compliance with the health and safety plan, Eskom OHS specification, and applicable legislation as amended.

2) Always maintain good housekeeping where the task is being executed and/or within the area of responsibility.

3) Implement and monitor near-miss reporting strategy/programme (reporting of near misses).

4) Develop and comply with Behavioural Safety Observation (BSO) and Planned Job Observation programmes (PJO).

5) Maintain Zero Fatalities for the duration of the contract.

6) At any given point, the OHS performance must be within the lost time injury (LTI) tolerance level as amended.

7) All incidents must be reported immediately or before the end of the shift in which the incident occurred.

8) All incident investigations must be completed within 30 days of the occurrence of an incident.

9) Incident investigation recommendations shall be closed within the recommended time frame recorded in the Incident investigation report.

10) Close audit findings as per the *Employer*'s procedure or audit report recommended time frames.

11) Close non-conformance as per the recommended time frames.

**Note:** The KPIs listed above are subject to regular monitoring through audits and site inspections conducted by the *Employer*.

### 5.4.2 Contract completion and sign-off

Upon completion of the *Works*, the parties will conduct a final meeting to identify any remaining gaps before the contract is closed out.

The *Contractor* ensures the following requirements are met before completion of the *Works*:

1) Close all incidents and audit findings.
2) Clean the respective site establishment areas and ensure good housekeeping where the *Contractor* was *working*.
3) The *Contractor* must submit safety statistics and a safety file to the *Employer's* BU Safety department for closeout and filing.
4) Completion of a closeout report (Annexure D form as per 32-726) to close the contractual *Work*

## 5.5 Environmental constraints and management

The *Contractor* complies with all the National and Local legislation requirements as well as the Eskom procedures and policies as stated in this *Works* Information.

1) The *Contractor* complies with:
   a) All applicable national, provincial, and municipal environmental legislation and by-laws, including but not limited to:
      I. National Environmental Management Act (Act 107 of 1998)
      II. National Water Act (Act 36 of 1998)
      III. National Environmental Management Waste Act (Act 59 of 2008)
      IV. Applicable Eskom environmental procedures and standards as provided in the Annexure.

b) The requirements of the site's ISO 14001 Environmental Management System, where applicable.

2) The *Contractor* must:
   a) Prepare and implement a site-specific Environmental Method Statement, including but not limited to:
      I. Identification of potential environmental impacts of the *Works*
      II. Management of waste streams
      III. Hazardous materials handling and spill prevention
      IV. Protection of flora, fauna, and cultural heritage sites
      V. Noise, dust, and emissions control
      VI. Stormwater and wastewater management
   b) Submit this Environmental Method Statement to the *Employer* for acceptance before commencement of any *Work* on site.
   c) Provide Safety Data Sheets for all hazardous substances brought onto the site.
   d) Immediately report any environmental incidents or potential non-compliances to the *Employer*.
   e) Maintain proper temporary storage and clearly demarcated areas for all waste and hazardous materials, in line with best practice and legal requirements.

3) The *Contractor*'s activities must be planned and executed to minimise the risk of harm to the environment and shall reflect a principle of zero harm to the environment, in line with Eskom's environmental policy.

4) The *Contractor*'s compliance with the environmental requirements will be monitored through audits and inspections carried out by the *Employer*.

## 5.6 Engineering Quality Assurance Requirements

a) The *Contractor* ensures that a complete Quality Control Plan (QCP), Method Statement, Inspection and Test Plan (ITP), and temporary *works* calculations, if applicable, are submitted to the *Project Manager* for review and acceptance before the works can commence.
b) During reviews of the ITPs, the *Employer* provides the necessary intervention points.
c) The *Contractor* has previous relevant experience concerning the scope of the works.
d) The *Contractor* submits a company profile which includes a list of traceable references that adequately prove that the *Contractor* (or their Sub-Contractor) has the relevant similar (size and scope) experience as the *works*.
e) All Quality Management System requirements must comply with Supplier Quality Management: Specification 240-105658000 Category 3.

f) The *Contractor* is responsible for the quality of, and testing of, materials, workmanship, and production processes used in completing the *works*. Prior to commencement of Phase 2 (Construction Phase), the *Contractor* must submit the Quality Control Plans, Method Statements, Data Sheets, and all required documentation prior to commencement of the construction works.
g) The *Contractor* is responsible for the preparation, maintenance during the execution of the works, and submission of all quality requirements as stipulated in Supplier Quality Management: Specification 240-105658000 (Category 3) Quality Advisor /*Supervisor* for acceptance at least thirty (30) days before the execution of the project.
h) On completion of the project, the *Contractor* is to hand in all data books (Packs) before the Completion Certificate is issued
i) Where the *Contractor* maintains an official Quality Management System, details of the level of the *Contractor's* self-certification procedures shall be adopted in respect of supplied materials shall be agreed with the Supervisor before commencement of work.
j) Where no official Quality Management System exists, the *Contractor* must plan all quality management procedures, carry out all quality control testing as required, and shall make available records of such testing for the *Supervisor's* acceptance.
k) The *Contractor* must submit full details of the proposed quality management system and procedures for acceptance by the *Project Manager*, who will have full access to all records, site trials, and tests. The *Contractor* must ensure that monitoring and measuring equipment are calibrated and verified to confirm serviceability before use, and records of such shall be kept on Site.
l) The *Contractor* is responsible for submitting, before commencement of any work on site, a method statement together with a quality control plan and/or inspection and test plan.

### 5.6.1 Quality Control Plan

Quality Control Plans will include, but are not limited to, the following aspects of the *work*:

a) Concrete Works (thrust blocks, reinforced concrete foundation, etc.)
b) Structural Steel Works (reinforced concrete works)
c) Pipe Works (HDPE pipe, steel pipe, etc.)
d) Electrical Works (fibre optic cable)

## 5.7 Programming constraints

The *Contractor* develops and maintains a programme for the *Works* in accordance with Clause 31 of the Conditions of Contract:

1) The programme must be prepared using either:
   a) Primavera P6 (.xer format) or
   b) Microsoft Project (.mpp format).
2) The programme has to be detailed and logically linked, clearly indicating:
   a) The start and Completion Dates of the *Works*.
   b) The order and timing of activities for the *Works*.
   c) The time for submission and acceptance of *Contractor*'s submissions.
   d) The time for *Employer* approvals and review of *Contractor* submissions.
   e) The approved baseline dates vs actual completion dates.
   f) The *Work* of the *Employer* and Others, including but not limited to:
      I. *Employer*'s provision of site access and any isolations required.
      II. *Employer*'s review and acceptance of documentation.
      III. *Employer*'s review of test results and participation in Witness and Hold Points.
      IV. *Any* other site activities or constraints imposed by *Employer* maintenance or operations teams.

3) The programme also indicates:
   a) The critical path of the project.
   b) Float where applicable.
   c) Milestones, including delivery of major equipment, tests, and final commissioning.
   d) Any specific constraints, including but not limited to:
      I. *Work* sequencing to avoid disruption to live plant operations at Drakensberg Pumped Storage Scheme.
      II. Working during agreed plant access windows as coordinated with the *Employer*.

4) The *Contractor* submits the initial baseline programme within two (2) weeks of Contract Award**.**
5) The programme to be updated and submitted to the *Employer*:
   a) Fortnightly, during engineering and manufacturing stages.
   b) Weekly during on-site installation and commissioning phases, or more frequently as requested by the *Employer*.
6) All updates to the programme have to clearly identify:
   a) Changes from the previous submission.
   b) The current forecasted Completion Date.

c) The status of *Employer* and Others' activities shown on the programme.

7) No Work is undertaken by the *Contractor* that impacts plant operation or safety systems unless formally coordinated with and accepted by the *Project Manager* and reflected in the agreed programme.

### 5.8 *Contractor's* management, supervision, and key people

In addition to the requirements stated elsewhere in this *Works* Information and in the Conditions of Contract, the *Contractor* must ensure that:

1) The *Works* are managed and supervised by competent and suitably experienced personnel.

2) The *Contractor* must nominate a *Project Manager* who is registered as a Professional Construction Manager (PrCM) or Professional Project and *Construction Manager* (PrCPM) with the South African Council for the Project and Construction Management Professions (SACPCMP).

3) The nominated person is responsible for the day-to-day management of the construction activities and must be permanently based on the Site for the duration of all construction *Works*. The *Contractor* must ensure that this person has the necessary authority to make decisions on behalf of the *Contractor* and is present during all critical construction phases

4) An organogram to be provided by the *Contractor* to the *Employer* within two (2) weeks of Contract Award, showing:
   a) Key people allocated to the Contract.
   b) Lines of authority and communication within the *Contractor*'s organisation.
   c) Reporting lines between *Contractor's* management, *Sub-Contractors*, and *Employer* representatives.
   d) This is particularly required if the *Contractor* is a Joint Venture or is employing multiple *Sub-Contractors*.

5) All key people must:
   a) Be suitably qualified and competent to perform their roles.
   b) Have sufficient authority to manage the Works and coordinate with the Employer.
   c) Be available at all relevant project meetings.
   d) Be fully conversant with the Works Information, Contract requirements, and relevant Eskom standards and procedures.

6) The *Contractor* notifies the *Employer* of any proposed changes to key people after Contract Award, and such changes shall be subject to acceptance by the *Employer*.

7) No person may simultaneously fill multiple key positions unless agreed in writing with the *Employer*.

8) The *Contractor* ensures adequate site supervision is always maintained while *Work* is taking place in the *Work*ing Areas.

## 5.9 Invoicing and payment

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

2) The *Project Manager is* to be copied in on all electronic invoices emailed.

3) Failure to submit the invoice to the correct address could result in payment delays.

4) The *Contractor*'s Tax Invoices comply with the requirements as stated in clause Z7 of the Contract Data.

5) Invoices are submitted electronically to:

- Local Eskom Invoices - invoiceseskomlocal@eskom.co.za
- Foreign Eskom Invoices - invoiceseskomforeign@eskom.co.za

6) The following details are required when submitting invoices and additional data:

a) The subject line of your email should only contain your vendor number.
b) Each invoice in PDF should be named with your invoice number only.
c) All electronic invoices are sent in PDF format only.
d) Attach the proof of delivery to your invoice.
e) Where applicable, supporting documents are attached to the scanned PDF invoice as one attachment.
f) A copy of the signed assessment certificate.
g) CPA calculation sheet.
h) Retention Certificate, where it is a retention invoice.
i) Any other appropriate documents, e.g.

I. For shipping invoices, please ensure the following documents are attached.
II. Invoice (this should only reflect the shipping cost).
III. Commercial invoice.
IV. Delivery note.
V. Your shipping costs calculation is relevant to that invoice – not a generic calculation (The amount of the shipping costs calculation has to balance the amount on the invoice).
VI. Forwarding agent's invoice.

VII. The customs document.

j) Please do not attach unnecessary documents, as this will make the file too large.

7) Other requirements:

a) For foreign invoices, suppliers will still be required to physically deliver hard copies of original documents to the respective Document Management centres even though the invoices have been submitted electronically.
b) Ensure compliance with the tax requirements for submitting invoices electronically.
c) Each PDF should contain one credit note, one debit note, or one credit note only. More than one invoice can be submitted per email.
d) Any CPA applicable is invoiced separately so that if there are issues with the CPA, the rest of the invoices can be paid while the CPA issues are resolved.

8) Include the following information on the Invoice:

a) Name and address of the *Contractor* and the *Project Manager*
b) The contract number and title
c) *Contractor*'s VAT registration number
d) The *Employer*'s VAT registration number 4740101508
e) The total amount invoiced excluding VAT, the VAT, and the invoiced amount including VAT.
f) *Contractor*'s company registration number if applicable.
g) *Contractor*'s banking details.
h) Name and address of the recipient.
i) Tax invoice number and date of issue.
j) Description of goods/services provided.
k) Quantity or volume of goods/services.
l) Period time for which the Tax Invoice is being rendered.
m) Purchase Order Number (commencing with a 45 prefix).
n) Relevant line-item number.
o) State whether the value-added tax is included or excluded.

### 5.10 Insurance provided by the *Employer*

Insurance by the *Employer* is managed per section 87 of the core clauses in ECC3.

### 5.11 Contract change management

Contract change management is managed in accordance with core clause 6 in ECC3.

## 5.12 Provision of bonds and guarantees

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

2) The *Contractor* provides the required bond or guarantees within two (2) weeks of the Contract Date.

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

4) The *Contractor* ensures that any bond or guarantee submitted:

a) Is issued by an insurer or financial institution acceptable to the *Employer*.

b) Complies with the wording and format prescribed in Document C1.3 Sureties.

c) Remains valid for the full duration required under the Contract, including any agreed extensions.

5) The *Contractor* promptly provides replacement guarantees should any guarantee provided cease to be valid for any reason during the execution of the *Works.*

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

The *Contractor* keeps and maintains proper records of Defined Cost, payments, and assessments of Compensation Events, in accordance with Clause 52.2 of the Conditions of Contract. The following records are kept as a minimum:

| Type of Cost | Type of Record |
|---|---|
| People employed by the *Contractor* (labour) | Signed timesheets, payroll reports, payslips |
| People employed by Sub*Contractor*s (labour) | Signed timesheets, certified payroll reports from Sub*Contractor*s |
| Equipment owned or hired | Equipment hire agreements, delivery notes, usage logs, plant daily reports, and actual paid invoices |
| Plant and Materials | Delivery notes, invoices, stock issue records, material usage records, and actual paid invoices |

| Type of Cost | Type of Record |
|---|---|
| *Work* subcontracted by the *Contractor* | Subcontract agreements, invoices, proof of payment, and relevant correspondence |
| Other Third-Party Costs | Third-party invoices, proof of payment |
| Accommodation | Invoices, proof of payment |
| Transport and Logistics | Vehicle logs, fuel records, transport invoices |
| Testing and Certification | Test certificates, inspection reports, laboratory results, calibration certificates |
| Insurance Costs (if reimbursable) | Insurance policy documents, premium invoices, proof of payment |

# 6 Engineering and the *Contractor*'s design

## 6.1 *Employer*'s design

The *Employer* has completed the Basic Design Phase, establishing the technical baseline and preliminary engineering parameters for the potable water pipeline and surface water tank replacement project.

This includes:

- Alignment of the new potable water pipeline,
- Preliminary hydraulic sizing and flow capacity design,
- Preliminary structural design parameters for the surface water tank and deluge tank foundations, and
- Integration requirements with the existing Water Treatment Plant and reticulation network for both the Jagersrust community potable water project and the Surface Water Tanks project.

The *Contractor* may use the Basic Design Report as the starting point for the Detailed Design Stage, which will be supplied at contract award, refining and verifying all design elements to produce construction-ready drawings and specifications. Please note that all information required for the tender is contained within this Works Information.

All design documentation produced by the *Contractor* must comply with the latest Eskom standards and SANS codes and be submitted to the *Project Manager* for acceptance before procurement or construction.

## 6.2 Parts of the Works Which the *Contractor* is to Design

The *Contractor* is responsible for completing the detailed design of all elements necessary for the successful execution of the works, including but not limited to:

a) Main Transmission Potable Water Pipeline:
   I. Final alignment of the main transmission potable water pipeline (approximately 1 500 m),
   II. Detailed design for road and bridge crossings,
   III. Design of thrust blocks, anchor blocks, and air/scour valve chambers where necessary, and
   IV. Detailing of all connections, fittings, and appurtenances.

b) Distribution Pipeline to the community of Jagersrust:
   I. Final alignment of the distribution pipeline network,
   II. Detailed design for road crossings,
   III. Design of thrust blocks, anchor blocks, and air/scour valve chambers where necessary, and
   IV. Detailing of all connections, fittings, and appurtenances.

c) Distribution Pipeline to the Visitors Centre:
   I. Final alignment of the distribution pipeline network (detailed drawings, etc.),
   II. Detailed design for road and bridge crossings,
   III. Design of thrust blocks and anchor blocks where necessary, and
   IV. Detailing of all connections, fittings, and appurtenances where necessary.

d) Surface Water Tanks and Deluge Tank:
   I. Conduct a basic geotechnical investigation in the proposed area where the Surface Water Tanks will be installed. The purpose of this geotechnical investigation is to verify the soil bearing capacity at the location where the reinforced concrete structure will be constructed. The footprint area is approximately 7.2 m (length) x 3.6 m (width), resulting in an approximate footprint of 26 $m^2$. The basic geotechnical investigation may include a Dynamic Cone Penetrometer (DCP) test of the footprint area, with recommendations developed based on the interpreted DCP data,
   II. The existing Surface Water Tanks will be fully replaced with resized modular units designed to accommodate increased water demand. Design of the new tank should preferably be a Braithwaite water storage tank, or an equivalent type, and must include the necessary foundation design and support structures,

III. The existing Deluge tank (fire system tank) will be fully replaced. Design of the new tank should preferably be a Braithwaite water storage tank, or an equivalent type, and must include the necessary foundation design and support structures. The fire system is to remain operational during the works,

IV. Design of tank inlet/outlet manifolds, overflow systems, and interconnecting pipework that will be required, and

V. Provision of safe access platforms, handrails, and guardrails onto the slab where the potable water storage tanks will be installed as per OHSA requirements (depending on the slab design).

e) Trench Design for the Potable Water Pipeline:

I. Material specifications for trenches as summarised in Table 5-1 to Table 5-6.

**Table 5-1: Trench Design Summary Table for Main Transmission Pipeline (Ø160 mm)**

| Components | Material | Thickness (mm) | Max. Particle Size | Compaction Target (Modified AASHTO) |
|---|---|---|---|---|
| Trench Width Without Fibre Cable (160 mm OD HDPE pipe) | - | 760 mm base width | - | - |
| Trench Width With Fibre Cable (160 mm OD pipe) | - | 860 mm base width | - | - |
| Cradle (Bedding) | Selected granular (0.6 - 19 mm) | 100 mm (compacted) | 19 mm | ≥ 90% |
| Blanket (Selected Fill) | PI ≤ 6, stone size ≤ 30 mm | 300 mm above pipe crown | 30 mm | ≥ 90% |
| Main Fill | Screened site or imported granular | To NGL | 50 mm | 90 - 98% |

**Table 5-2: Trench Design Summary Table for Distribution Pipeline (Ø100 mm)**

| Components | Material | Thickness (mm) | Max. Particle Size | Compaction Target (Modified AASHTO) |
|---|---|---|---|---|
| Trench Width Without Fibre Cable (100 mm OD HDPE pipe) | - | 700 mm base width | - | - |
| Cradle (Bedding) | Selected granular (0.6 - 19 mm) | 100 mm (compacted) | 19 mm | ≥ 90% |
| Blanket (Selected Fill) | PI ≤ 6, stone size ≤ 30 mm | 300 mm above pipe crown | 30 mm | ≥ 90% |
| Main Fill | Screened site or imported granular | To NGL | 50 mm | 90 - 98% |

**Table 5-3: Trench Design Summary Table for Distribution Pipeline (Ø80 mm)**

| Components | Material | Thickness (mm) | Max. Particle Size | Compaction Target (Modified AASHTO) |
|---|---|---|---|---|
| Trench Width Without Fibre Cable (80 mm OD HDPE pipe) | - | 680 mm base width | - | - |
| Cradle (Bedding) | Selected granular (0.6 - 19 mm) | 100 mm (compacted) | 19 mm | ≥ 90% |
| Blanket (Selected Fill) | PI ≤ 6, stone size ≤ 30 mm | 300 mm above pipe crown | 30 mm | ≥ 90% |
| Main Fill | Screened site or imported granular | To NGL | 50 mm | 90 - 98% |

**Table 5-4: Trench Design Summary for Distribution Pipeline (Ø40 mm)**

| Components | Material | Thickness (mm) | Max. Particle Size | Compaction Target (Modified AASHTO) |
|---|---|---|---|---|
| Trench Width Without Fibre Cable (40 mm OD HDPE pipe) | - | 640 mm base width | - | - |
| Cradle (Bedding) | Selected granular (0.6 - 19 mm) | 100 mm (compacted) | 19 mm | ≥ 90% |
| Blanket (Selected Fill) | PI ≤ 6, stone size ≤ 30 mm | 300 mm above pipe crown | 30 mm | ≥ 90% |
| Main Fill | Screened site or imported granular | To NGL | 50 mm | 90 - 98% |

**Table 5-5: Trench Design Summary for Distribution Pipeline (Ø25 mm)**

| Components | Material | Thickness (mm) | Max. Particle Size | Compaction Target (Modified AASHTO) |
|---|---|---|---|---|
| Trench Width Without Fibre Cable (25 mm OD HDPE pipe) | - | 625 mm base width | - | - |
| Cradle (Bedding) | Selected granular (0.6 - 19 mm) | 100 mm (compacted) | 19 mm | ≥ 90% |
| Blanket (Selected Fill) | PI ≤ 6, stone size ≤ 30 mm | 300 mm above pipe crown | 30 mm | ≥ 90% |
| Main Fill | Screened site or imported granular | To NGL | 50 mm | 90 - 98% |

**Table 5-6: Trench Design Summary for Distribution Pipeline (Ø22 mm)**

| Components | Material | Thickness (mm) | Max. Particle Size | Compaction Target (Modified AASHTO) |
|---|---|---|---|---|
| Trench Width Without Fibre Cable (22 mm OD HDPE pipe) | - | 622 mm base width | - | - |
| Cradle (Bedding) | Selected granular (0.6 - 19 mm) | 100 mm (compacted) | 19 mm | ≥ 90% |
| Blanket (Selected Fill) | PI ≤ 6, stone size ≤ 30 mm | 300 mm above pipe crown | 30 mm | ≥ 90% |
| Main Fill | Screened site or imported granular | To NGL | 50 mm | 90 - 98% |

f) Main Transmission Pipeline Valve Chambers:

- Subject to verification of requirements, the design shall include at least 1 air valve chamber,
- Subject to verification of requirements, the design shall include at least 1 scour valve chamber, and
- Subject to verification of requirements, the design shall include at least 2 isolation valve chambers.

Please note that the quantities listed above are provisional and may be adjusted based on final design requirements. The chambers may be constructed from precast reinforced concrete, brick and mortar, or an approved equivalent.

g) Fibre Optic Cable:

- Design of conduit layout.

h) Temporary Works:

- Design and verification of all shoring, scaffolding (if applicable), and dewatering systems required during trenching and construction.

All design calculations and drawings must be signed by a Professional Engineer (Pr. Eng.) or Professional Technologist (Pr. Tech.) registered with the Engineering Council of South Africa (ECSA) and submitted for review and acceptance by the *Supervisor* before execution.

## 6.3 Procedure for Submission and Acceptance of *Contractor*'s Design

### 6.3.1 Acceptance of Deliverables

Acceptance of drawings, designs, and calculations by the *Project Manager* will imply that:

a) General arrangement and layout drawings, and (where appropriate) calculations and key diagrams have been examined and appear to be in accordance with the relevant SANS (national and international regulatory codes) and Eskom codes and standards, and meet the requirements of the Works Information.
b) Calculations appear to substantiate the design, rating, and performance of the design in accordance with the specified requirements.
c) Other drawings of Plant and associated items of supply have only been examined in relation to compatibility of the Plant, etc., with the specification and in respect of the interconnections with other Plant.
d) Acceptance of drawings, calculations, or samples does not relieve the *Contractor* from his total liability to complete the works in accordance with the Works Information, Schedules, and the conditions of contract or exonerate him from any of his guarantees.

All correspondence and submittals are to be prominently identified as relating to the works and are submitted under the cover of appropriate letters or transmittal notes in accordance with the correspondence procedures, which will be advised by the *Project Manager* after the signing of the Contract. All documentation supplied by the *Contractor* to the *Project Manager* in hard copy is supplied in electronic format.

#### 6.3.2 Time Required for Acceptance of Designs & Calculations by the *Project Manager*

- Not later than thirty (30) days after receipt, the *Project Manager* will return one copy of the drawing marked “Accepted” or “Not Accepted” as may be appropriate. The notation “Accepted” authorise the *Contractor* to proceed with the manufacture of the Plant covered by such drawings, subject to the corrections, if any, indicated thereon.
- Where prints or drawings have been “Not Accepted,” the *Contractor* shall make the necessary revisions on the drawings and submit further copies for acceptance in the same procedure as for the original submission of drawings. Every revision shall be shown by number, date, and subject in the revision block on the drawing.

### 6.4 Other Requirements of the *Contractor*’s Design

a) The *Contractor* is to discuss and agree with the *Project Manager* the requirements for the designs and submit their drawings for acceptance before the start of manufacturing. All material becomes the property of the *Employer*.
b) All fabrication and installation are as per the accepted drawings.
c) All correspondence and submittals shall be prominently identified as relating to the works and shall be submitted under the cover of appropriate letters or transmittal notes in accordance with the correspondence procedures, which will be advised by the *Project Manager* after the signing

of the Contract. All documentation supplied by the *Contractor* to the *Project Manager* in hard copy must also be supplied in electronic format.

d) The *Supervisor* has the right at all reasonable times to inspect at the factory of the *Contractor* or sub-contractors, or elsewhere, and all drawings of any portion of the works.

e) Where the *Contractor* is to supply the design of designated parts of the permanent Works or temporary works, he is to supply full working drawings supported by a professional engineer's design certificate.

f) The procedures as detailed above equally apply in this section for submission and acceptance.

g) The *Contractor* timeously notifies the *Supervisor* where part of his design requires him to interface with the existing plant and structures, i.e., to complete his design for acceptance.

h) The *Contractor* is required to provide KKS coding and install labels for the plant and will utilise the power station's KKS coding system to fulfil these requirements.

### 6.5 Use of *Contractor's* Design

- The *Employer* may use the *Contractor's* design for any purpose in relation to the Jagersrust potable water pipeline and Surface Water Tanks project.
- The design applies to the Drakensburg Pumped Storage Scheme, and all *works* must become the property of the *Employer*.

### 6.6 Design of Equipment

The *Contractor* must design and select all pipeline components, valves, and appurtenances and related components related to the project to ensure durability, interchangeability, and ease of maintenance. Equipment shall be designed and installed in accordance with the manufacturer's recommendations and SANS standards.

### 6.7 Equipment Required to be Included in the *Works*

The following equipment shall be included but is not limited to the items listed below. Final quantities, sizes, and configurations must be confirmed and refined as part of the *Contractor's* detailed design.

a) Isolation, scour, and air valves (where required).

I. One air valve with a chamber (main transmission pipeline at Jagersrust),
II. One scour valve with chamber (main transmission pipeline at Jagersrust), and
III. Two isolation valve chambers (main transmission pipeline at Jagersrust).

All scour valves must be rated for a pressure of 16 bar (PN16) and be sized to allow a minimum flushing velocity of 0.6 m/s in the pipeline being flushed. The scour valve type must be full-bore ball valves or gate valves, and the drain line shall be routed out of the chamber such that the chamber is not flooded during the scouring process.

Vent valves must be of the ball type, nominal diameter 25 mm, rated for a pressure of 16 bar (PN16). Chambers should be designed with adequate internal dimensions to permit entry and access by at least one (1) person.

b) HDPE potable water pipelines.

I. 1 500 m of Ø160 mm (PE100, PN 12.5, SDR 13.6) HDPE pipe (main transmission pipeline at Jagersrust),

II. 1 000 m of Ø100 mm (PE100, PN 12.5, SDR 13.6) main HDPE pipe (distribution pipeline at Jagersrust),

III. 3000 m of Ø80 mm (PE100, PN 12.5, SDR 13.6) street feeder HDPE pipe (distribution pipeline at Jagersrust),

IV. 1 000 m of Ø40 mm (PE100, PN 12.5, SDR 13.6) intermediate HDPE pipe (distribution pipeline at Jagersrust),

V. 3 000 m of Ø25 mm (PE100, PN 12.5, SDR 13.6) house feeder HDPE pipe (distribution pipeline at Jagersrust),

VI. 1 500 m of Ø22 mm (PE100, PN 12.5, SDR 13.6) HDPE pipe (Stores to the Visitor's Centre pipeline), and

VII. Provide an interface connection for 25 mm chlorine analyser tubing with a suitable isolation valve on the reservoir distribution line and install a support bracket for the chlorine analyser.

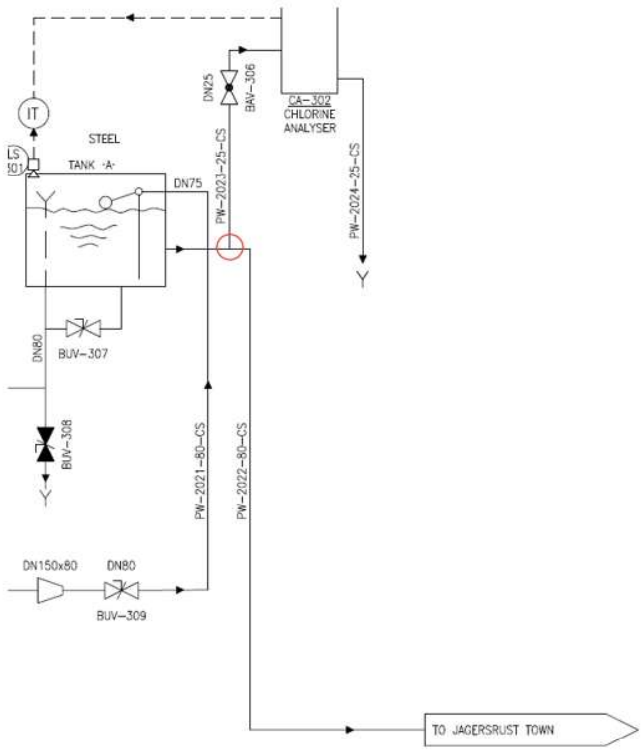


**Figure 3-2: Chlorine Analyser Location Overview**

It should be noted that pipes should be joined by buttwelding, with flanging connections provided where required.

c) Cradle, Blanket, and Main Fill Material.

Quantities to be determined in accordance with the trench widths and pipe lengths for the different pipe types specified above.

d) Reinforced concrete foundations and anchor blocks.

I. The reinforced concrete foundation for the tanks will be constructed above the surface admin building inside the DPSS. The footprint area is approximately 7.2 m (length) x 3.6 m (width), resulting in an approximate footprint of 26 $m^2$.

II. 4 mm mesh wire before casting chambers or placing precast concrete chambers.

III. Approximately 12 anchor blocks will be required in the main transmission pipeline between the WTP and the reservoir, where there are pipe bends and before and after valve chambers.

IV. Approximately 8 anchor blocks will be required in the distribution pipeline from the reservoir to the households.

e) Fibre optic cable.

I. 1 700 m of Ø9.3 mm fibre optic cable (Properties highlighted below).

II. 1 500 m Ø50 mm of PVC ducting pipe.

**Table 6-7: Fibre Cable Typical Properties**

| TYPICAL PROPERTIES | | |
|---|---|---|
| Parameter | Property / Pass criteria | Test Method |
| | Fibre count | |
| | 24 | |
| Number of elements | 4 | |
| Cable diameter (nominal) | Ø9.3 mm | |
| Cable weight (nominal) | 60 kg/km | |
| Maximum installation load | 1200N | IEC 60794-1-E1 |
| Minimum bend radius (Short term) | 20 * Cable Dia | IEC 60794-1-11 |
| Crush resistance (via 100 mm plates) | 2000N | IEC 60794-1-E3 |
| Impact resistance (25mm anvil / 10 blows) | 2J | IEC 60794-1-E4 |
| Temperature performance | -10℃ to 70℃ | IEC 60794-1-F1 |
| Water penetration (3m cable, 1m head of water) | No leak | IEC 60794-1-5B |
| Drip test (300 mm sample of loose tube @ 80 $^{O}$C) | No leak | IEC 60794-1-14 |

f) Potable water storage tanks.

I. Approximately 25 000 L potable storage water tanks (preferably be a Braithwaite water storage tank), and

II. Approximately 30 000 L for the deluge tank (preferably be a Braithwaite water storage tank).

g) Associated fittings, supports, and appurtenances.

The following quantities of fittings and appurtenances listed below were determined based on the overview of the Jagersrust community pipeline network, as illustrated in Figure 3-1 below. The quantities provided below are preliminary estimates and are provided for tender purposes. Final quantities must be as per the accepted detail design.

**Table 5-8: Pipe Fittings**

| **Fittings** | **Quantity** |
|---|---|
| Flowmeters | 110 |
| 100 mm isolation valves | 5 |
| 80 mm insolation valves | 11 |
| 40 mm isolation valves | 110 |
| 25 mm isolation valves | 220 |
| 110 mm elbows | 6 |
| 100 mm reducing Tees | 8 |

| | |
|---|---|
| 80 mm reducing Tees | 110 |
| 100 mm unions | 10 |
| 80 mm unions | 30 |
| 100 mm – 80 mm reducers | 30 |
| 80 mm – 40 mm reducers | 30 |
| 40 – 25 mm reducers | 30 |

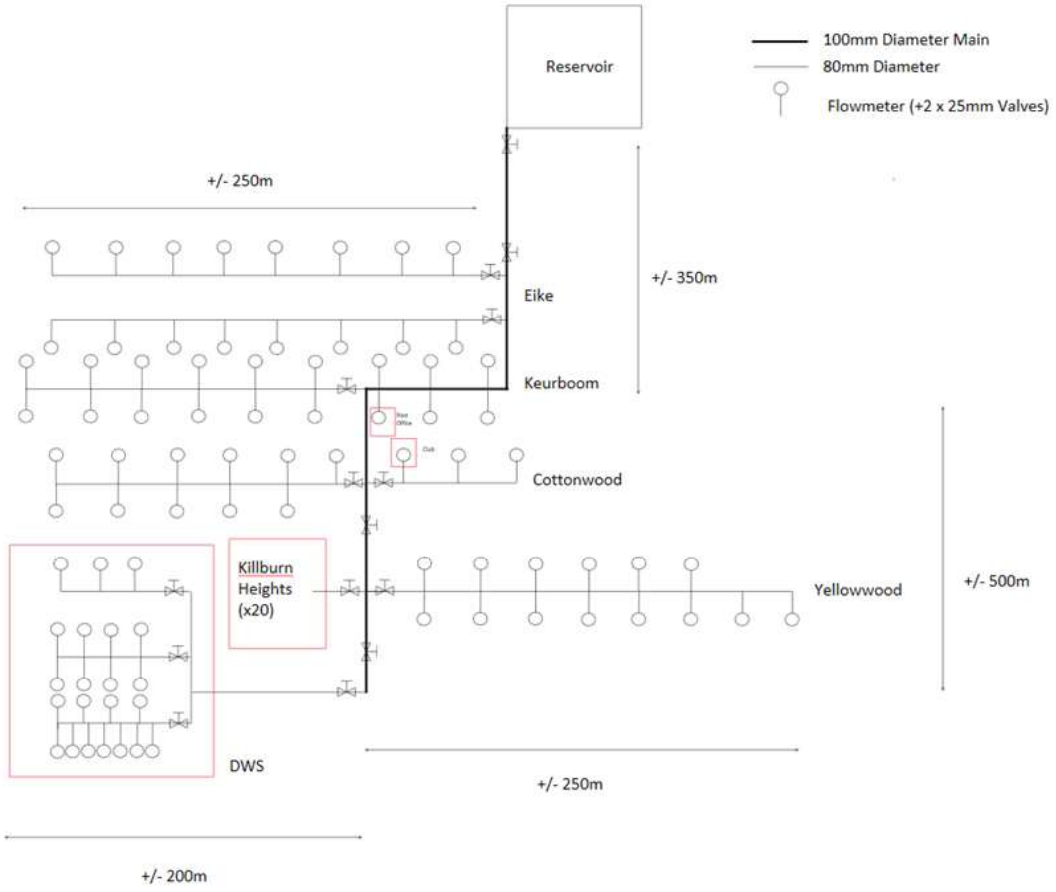


**Figure 3-3: Overview of the Pipeline Network at Jagersrust**

All equipment that will be provided must comply with the requirements of the OHS Act and Eskom SHE Standards.

### 6.8 Operating Philosophy

1) An Operating Philosophy document is developed and submitted by the *Contractor* for acceptance by the *Project Manager*.

This document must demonstrate how the *Contractor*'s proposed system meets the following operational expectations:

The operational philosophy must conform to the Drakensberg Pumped Storage Scheme and must reflect any additional site-specific requirements.

2) Any deviations must be brought to the attention of the *Project Manager* and may only be implemented upon written acceptance.

### 6.8.1 Design Standards, Guidelines, and Codes

1) The *Contractor* carries out Design, manufacturing, decommissioning, installation, and commissioning activities in accordance with the most recent versions of all applicable and relevant statutory requirements, international and national standards, Eskom standards, and technical guidelines listed in this *Works* Information**.**

2) The *Contractor* obtains and maintains its own copies of all applicable standards and guidelines required to perform the *Works*.

3) Where a conflict arises between the Employer-provided specifications and any referenced standard, code, or technical guideline, the *Contractor* shall:
   a) Immediately notify the *Project Manager*; and
   b) Await written instruction before proceeding with the affected design or installation element.
   c) This Specification and *Works* Information shall take precedence over any conflicting standard, guideline, or reference document, except where a statutory or regulatory requirement overrides.

4) Substitutions of any standard must not be made without prior written approval from the *Employer*.

5) The *Contractor* may propose additional or alternative standards, provided that:
   a) They are relevant, up-to-date, and internationally recognised.
   b) Justification is provided in writing; and
   c) Acceptance is granted by the *Employer* before implementation.

### 6.8.2 CIVIL INFRASTRUCTURE AND BUILDING DESIGN

The main potable water pipeline and reservoirs were built approximately 40 years ago. The water treatment plant processes water from the Tugela-Vaal system and pumps the treated water through the main pipeline into reservoirs, supplying nearby villages, resorts, and other water systems.
Two surface water tanks, each with a capacity of 2,500 litres, receive water from the underground water treatment plant. These tanks supply water to the deluge tanks for fire protection, provide

potable water to the surface building, and feed the lawn sprinkling system around the administration building.

### 6.8.3 MAJOR PIPING DESIGN

Not available.

### 6.8.4 MECHANICAL DESIGN

a. Pipeline delivery flow rate will be the expected maximum output of the WTP.
b. Pipeline and all installed components must be designed and selected for the maximum pump delivery pressure at zero flow (i.e., pumping against a closed valve). Pressure test to be conducted at 1.5 times the design pressure.
c. Pipe supports and thrust blocks need to be designed and installed to prevent strain on the pipes and components. Allowance for pipe expansion needs to be considered.

### 6.8.5 ELECTRICAL DESIGN

The power supply source must be reliable and adequate to ensure seamless communication between the reservoir and the water treatment plant. Possible options include utilizing the existing electrical grid, if accessible, or installing solar panels with battery backup for a sustainable and independent energy solution.

### 6.8.6 CONTROL AND INSTRUMENTATION DESIGN

The installation of a water level monitoring device and fiber optic cable will facilitate seamless communication between the reservoir and the water treatment plant. This setup will enable real-time monitoring of water levels, ensuring efficient water management and timely responses to fluctuations in supply and demand.

### 6.8.7 PRIMARY PLANT DESIGN

Not available

### 6.8.8 SECONDARY PLANT DESIGN

Not available

### 6.8.9 LINES DESIGN

Not available

### 6.8.10 Configuration Management

1) The *Contractor* must establish and maintain a Configuration Management Plan (CMP) in accordance with ISO 10007.

2) The CMP must cover:

   a. Baseline control,
   b. Document versioning and traceability,
   c. Change control procedures,
   d. Configuration audits, and verification
   e. Status accounting for both hardware and software.

3) All configuration-controlled items must be clearly identified in the *Contractor*'s submissions, and the *Contractor* takes full responsibility for the integrity of configuration throughout the design, implementation, and handover phases.

### 6.8.11 KKS Plant Codification

1) The *Contractor* applies the **Kraftwerk-Kennzeichensystem (KKS)** for all systems, components, and documentation related to the *Works*, in compliance with:
   a. Eskom KKS Coding Standard 240-93576498
   b. Eskom Plant Identification Work Instruction 240-109607450
   c. VGB-B 106 E series Parts A to B4.
2) Codification must be applied:
   a. Within all diagrams (P&IDs, SLDs, net*Work* diagrams),
   b. In cable schedules, equipment lists, and O&M manuals,
3) The Contractor must:
   a. Verify the uniqueness of all assigned KKS codes,
   b. Submit all newly proposed designations to the *Employer* for review before implementation.

### 6.8.12 Plant Labelling and Documentation Standards

1) All plant and cable labels must be:
   a. Manufactured and installed in accordance with Eskom Plant Labelling Standard 240-71432150 (Drakensberg Pumped Storage Scheme Standard),
   b. Include full KKS codes and service legends,
   c. Accepted by the *Project Manager* before production.

2) Where standard label placement is not feasible (e.g., restricted access or ergonomic impracticality), the *Contractor* shall consult with site configuration management.
3) Abbreviations used for label legends or in control systems shall conform to the *Employer*'s abbreviation list 240-109607332 and character limitations as required by DCS interfaces.

This modification applies to the complete Jagersrust water pipeline and Surface water tanks at DPSS. The following systems are affected by this modification:

- System name: Civil Structures
- KKS Code
  - 0 0GHD20 BR010 Pipeline into reservoir
  - 0 0GHD20 BB001 Reservoir A
  - 0 0GHD20 BB002 Reservoir B
  - 0 0GHD20 BR030 Distribution pipeline to Jagersrust
  - 0 0GKB20 BB001 Surface Potable water tank 1
  - 0 0GKB20 BB002 Surface Potable water tank 2
  - Deluge tank

### 6.8.13 Integration into Project Documentation

1) The *Contractor* ensures that KKS codification and configuration identifiers are consistently and correctly reflected in:
   a. Equipment Lists,
   b. Process and Instrumentation Diagrams (P&IDs),
   c. Single-Line Diagrams (SLDs),
   d. Maintenance Manuals and Spare Parts Lists,

## 6.9 Equipment required to be included in the *Works*

1) The following Equipment is required to be included in the *Works* by the *Contractor*:

   a. Cabling and connectors for:
      i. Power distribution.

2) The *Contractor* ensures that all Equipment included in the *Works* is:
   a. New, unused, and compliant with the *Works* Information.
   b. Fully documented, with as-built records, configuration files, and O&M manuals provided at Completion.

## 6.10 As-built drawings, operating manuals, and maintenance schedules

The *Contractor* prepares and submits to the *Project Manager* for acceptance the following final project documentation:

#### 6.10.1.1 As-built Drawings

At least 1 month before notification of Completion of the works, the *Contractor* must revise drawings where necessary to show the Plant as installed and send two copies for acceptance. Drawings must also be submitted in an electronic format compatible with Micro Station Ver. 8 supplied by Bentley Systems Inc., DWG, one PDF, and two hard copies, in paper size A2. After acceptance, prints must be provided as required by the type and in such quantities as must be determined by the *Project Manager*. Drawings include those drawings necessary for the efficient maintenance of the Plant. The specific KKS code of each plant, piece of equipment, and component shall appear on all drawings.
The prints and electronic files must be deemed to form part of the works for the Defects Liability Certificate.

As-built drawings must have the next revision number applicable to that drawing with status "As-built" on the title block.
Before a Certificate of Completion will be issued, all "as-built" data must be provided to the *Project Manager* upon completion of the Permanent Works. The data must be provided in electronic form or, where appropriate, marked up on a set of drawings. Any information in the possession of the *Contractor* which is necessary for the Supervisor to check the "as built" drawings must be supplied to the Supervisor regularly, and all information must be delivered before a Certificate of Completion will be issued.
Shop drawings, general arrangement drawings, and designs that are required for any installation or structure must be sent to the *Project Manager* for acceptance at least 8 weeks before construction starts.
The data must be provided both in electronic and hard copy formats and delivered for acceptance before a Certificate of Completion is issued.
Any information in the possession of the *Contractor* which is required under this contract must be supplied timeously to the Supervisor on a regular basis.
The *Contractor's* drawings are produced and developed as per the Eskom Drawing Standard.

#### 6.10.1.2 Document Tracking System

The *Contractor* must establish a document tracking system to record the dates for the supply and receipt of all design drawings, calculations, and requests for information.

#### 6.10.1.3 Project Drawing Numbers & Drawing List

The *Contractor* will be issued with a series of project drawing numbers, which shall apply to all drawings, including those from *Sub-contractors*. These numbers will then be used for reference throughout the project.

#### 6.10.1.4 Operating and Maintenance Manuals

I. The *Contractor* must formulate an operation and maintenance program as well as the control philosophy for the complete system. This shall be handed to the *Supervisor* for approval before Construction commences.

II. Six (6) weeks before the commencement of commissioning, the *Contractor* shall supply a draft of the manual for approval. Two (2) weeks after commissioning, the *Contractor* shall supply additional manuals that have been updated and include all commissioning data and “as-built” drawings.

#### 6.10.1.5 Maintenance Schedules

1) The *Contractor* provides detailed Maintenance Schedules, including:
   a. Routine maintenance tasks and intervals.
   b. Inspection procedures.
   c. Recommended spare parts and consumables lists.
   d. OEM recommended maintenance requirements.

2) Maintenance Schedules must be submitted in both hard copy and electronic format (MS Word or PDF).

3) Maintenance Schedules must be provided in draft form at least four (4) weeks before the scheduled Completion Date, to allow for *Employer* review and planning.

#### 6.10.1.6 Timing and Conditions

1) Operating Manuals and Maintenance Schedules must be:
   a. Submitted no later than two (2) weeks before the scheduled Completion Date.
   b. Fully accepted by the *Employer* before issue of the Completion Certificate.

2) Failure to submit and obtain acceptance of these documents shall constitute a reason for withholding Completion in accordance with the Contract

# 7 Procurement

## 7.1 People

### 7.1.1 Minimum requirements of people employed on the Site

1) The *Contractor* ensures that all people employed on the Site:
   a. Are legally entitled to *Work* in the Republic of South Africa.
   b. Foreign *Work*ers must only be employed where:

I. Appropriate *Work* permits or other legal authorisations are in place.
II. Approval has been obtained from the *Employer* before engagement.

2) Have received appropriate training and qualifications relevant to their tasks on the project (excluding Health and Safety training, which is addressed separately).
3) Hold any required competency certifications (electrical *Work*, *working* at heights, lifting operations, etc.).
4) Have completed the *Employer*'s site-specific induction programme before commencing *Work*.
5) Are included in a site-specific labour register, which shall be maintained by the *Contractor* and made available to the *Project Manager* upon request.

#### 7.1.2 BBBEE and preferencing scheme

1) The *Contractor* complies with and fulfils the *Contractor*'s obligations in respect of the Broad-Based Black Economic Empowerment (as per clause Z3 of ECC3).
2) *The Contractor,* as well as his subcontractors, provides valid B-BBEE certificates to the *Project Manager* when updates are required.

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

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

b) The *Contractor* is to provide the agreed ASGI-SA Compliance Schedule.

c) The *Contractor* keeps accurate records and provides the *Project Manager* with reports on the *Contractor's* actual delivery against the above-stated ASGI-SA criteria.

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

### 7.2 Subcontracting

#### 7.2.1 Preferred *SubContractor*s

None

#### 7.2.2 Subcontract documentation and assessment of subcontract tenders

1) The *Contractor* prepares subcontract documentation in a manner consistent with:
   a. The main Contract and this *Works* Information.
   b. The *Employer*'s standards and expectations regarding quality, safety, compliance, and reporting.

2) The use of the NEC family of contracts (NEC3 ECS or NEC3 SC) for subcontracting is strongly recommended. If the *Contractor* proposes to use other forms of subcontract, this must be accepted by the *Project Manager* before the issue of subcontract documentation.
3) Subcontract tenders must be:
   a. Issued following a process that ensures transparency and fairness.
   b. Assessed by the *Contractor* in consultation with the *Project Manager* where practical (through submission of a joint assessment report for major subcontract packages exceeding R500,000.00 or as otherwise instructed).
   c. Awarded based on:
      I. Technical compliance.
      II. B-BBEE requirements.
      III. Cost effectiveness.
      IV. Proven ability to meet the required delivery schedule.

### 7.2.3 Limitations on subcontracting

The following limitations must apply:

1) The *Contractor* must not subcontract more than 50% of the total value of the Contract without prior written approval from the *Project Manager*.
2) The *Contractor* ensures that the following *Works* are only undertaken by appropriately qualified sub*Contractor*s (subject to acceptance by the *Project Manager*):
   a. System configuration and commissioning.
   b. Installation of associated electrical integration.
3) The *Contractor* remains fully responsible for the performance of all subcontracted *Work*

### 7.2.4 Attendance on sub*Contractor*s

1) *Contractor* provides all necessary attendance and support to ensure that sub*Contractor*s can perform their *Work* safely and effectively on the Site, including:
   a. Provision of site access, permits, and inductions.
   b. Coordination of *Work* scheduling and *Work* areas.
   c. Provision of temporary facilities as agreed with the *Project Manager*.
   d. Management of interfaces between sub*Contractor*s and other parties on the Site.
   e. Ensuring that sub*Contractor*s comply fully with the *Employer*'s SHEQ requirements, Cybersecurity requirements, and site rules.

### 7.2.5 Quality

1) The *Contractor* provides all labour, tools, vehicles, consumables, Equipment, and cleaning materials required to provide the *Works*.
2) The Contractor supplies/ procures all Plant and Material, fabrication, manufacturing, handling, storage, testing, delivery, off-loading, and erection/construction, disposal of debris, and finishing in every detail of the *Works*.
3) During the erection period, the *Contractor,* as a builder and/or user of machinery, performs 'building *Work*' in terms of the OHS Act. The *Contractor*, before taking occupation on a Site, obtains a permit to *Work* from the *Project Manager*.
4) No unauthorised person(s) enters any prohibited/restricted area.
5) Daily diaries/logs/data books are kept and signed by the *Contractor* and verified by the Supervisor.
6) The following is recorded (as a minimum) in the daily diaries:
    a. Manpower and Equipment used,
    b. Weather conditions,
    c. Description of any unique occurrences, incidents, or accidents,
    d. Delays and reasons for the delays,
    e. Industrial relations irregularities,
    f. Description of activities to be performed,
    g. Recording of on-site tests, for example, film thickness testing of the different coats of the corrosion protection coating system.
7) In addition to the aforementioned, the *Contractor* adheres to the following:
    a. The *Contractor* and his employees are restricted to the Site and are not to enter any other unauthorised areas.
    b. The *Contractor*'s Equipment does not impair the operation or access to the plant.
    c. The *Contractor* provides any temporary or expendable materials required for the storage of material.
    d. The *Contractor* safeguards and secures all items whilst in the *Contractor*'s custody and control, until completion of the *Works*.
    e. The adjacent plant and equipment are not modified without written permission from the *Project Manager*.
    f. All plant and materials shall conform to the requirements of SANS, Eskom standards, and approved design documentation.
    g. Proof of compliance with materials specifications and samples of materials are required.
    h. This also applies to the *Sub-contractors*. All materials and plants which are procured for the *works* are subject to the provision of a proof of payment by the *Contractor* or his

Subcontractors at least 30 days after delivery to the site; ownership will then transfer to the *Employer* once valued, accepted, and paid for by the *Employer*.

### 7.2.6 Plant & Materials provided "free issue" by the *Employer*

All Plant and Materials are to be provided by the *Contractor*

### 7.2.7 Contractor's procurement of Plant and Materials

1) The *Contractor* ensures that warranties for key items of Plant and Materials:
   a. Are in favour of the *Employer* where required by the Contract.
   b. Cover a period not less than that required by the Contract Specification.
   c. Are assignable to the Employer upon Completion.
2) The *Contractor* provides a schedule of warranties to the *Project Manager* before Completion.
3) The *Contractor* registers all the plant and materials with Eskom, and for materials, it must be in the form of a delivery note. This ensures that when the *Contractor* needs to take something out of the site, there is proof that the *Contractor* owns that particular item. All vehicles utilised for this contract must be roadworthy and certified in terms of the National Road Regulations of South Africa. The *Contractor* is responsible for ensuring that all his/her belongings are always stored safely and do not obstruct other operations in the power station.
4) The *Contractor* is to ensure that stored materials are in a dry area, protected from freezing, staining, and damage.

### 7.2.8 Spares and consumables

The *Contractor* must supply a minimum set of operational spares and consumables required for twelve (12) months of operation post-handover, including valve seals, gaskets, filters, and other replaceable items.

### 7.2.9 Guarantee Inspection

The *Contractor* provides terms and conditions of guarantee on the *works* and further includes labour and materials in his guarantees.

Latent Defects Period as per the NEC Contract.

### 7.2.10 Product Support

All equipment and products used are to be applied in accordance with the manufacturer's specifications and guidance. *Contractor* to liaise with the supplier/manufacturer to ensure the product is applied in accordance with the manufacturer's specification and the *Employer's* specification.

The manufacturers' and *contractors'* workmanship guarantee is to be issued to the *Employer* on completion.

### 7.2.11 Defect correction

All new equipment, materials, and systems must be furnished with a written guarantee with a defects liability period as per the NEC Contract from the date of completion of work. These guarantees shall be furnished in favour of the *Employer*. On Completion of the required and specified work, the systems, installations, and equipment shall be commissioned and handed over to the *Project Manager* for acceptance.

## 7.3 Tests and inspections before delivery

The *Contractor* must provide a testing/ commissioning program and procedure to be accepted by the *Project Manager*. All tests will be witnessed by the Eskom Engineer and/or *Supervisor,* and therefore, the *Contractor* ensures that the *Project Manager* is timeously informed of when and where the tests and inspections will occur.

All tests and commissioning are to be as per National and Eskom Standards.

The *Contractor* is required to perform the following tests aligned with the QCP's, e.g., Concrete Cube Tests, Workshop Drawings for review and acceptance by the *Project Manager*.

As a minimum, before delivery of the *works*, the *Contractor* provides:

- The respective testing procedures to the *Employer* for his review and acceptance before conducting testing at the *Contractor's* facilities.
- Site acceptance testing and commissioning of the integrated system with all associated equipment. The *Contractor* is to submit the respective testing procedures to the *Employer* for his review and acceptance before conducting testing.

### 7.3.1 MANUFACTURING

#### 7.3.1.1 General Requirements

1) The *Contractor* notifies and coordinates with the Engineer and Other Project *Contractor*s regarding inspections and witness points during manufacture, testing, and system integration.

2) The Engineer reserves the right to appoint representatives and specify additional hold or witness points at any stage of fabrication or testing.

3) The *Contractor* must:
   a. Provide preliminary notice of all hold and witness points at least 28 days in advance,
   b. Confirm such points at least 7 days before the scheduled date, as aligned with the Approved Programme,
   c. Include all testing and inspection dates within the Approved Programme,

d. Allow for a minimum of 56 days' notice for major inspections requiring international coordination or *Employer*-appointed overseas agents.

### 7.4 Marking Plant and Materials outside the *Work*ing Areas

All plant and materials stored off-site must be clearly marked as property of Eskom Holdings SOC Ltd, identified by project name and *Contractor's* name.

### 7.5 *Contractor*'s Equipment (including temporary *Works*).

1) The *Contractor* notifies the *Project Manager* in advance of the intended use of any specialised Equipment, including but not limited to:
   a. Specialised lifting equipment or rigging systems for Water Pipeline equipment.
   b. Temporary scaffolding or *Work*ing platforms used in areas with access restrictions or in proximity to live plant.
   c. Temporary power supplies or temporary network equipment used to facilitate testing or commissioning.
   d. Any other temporary *Works* which could affect existing plant integrity, safe access, or progress of the *Works*.
2) The *Project Manager* may identify specific witness points or hold points related to the manufacture, assembly, or delivery of such Equipment where the *Project Manager* or Supervisor may attend or review related activities.
3) The *Contractor* remains fully liable for the:
   a. Design**,** selection**,** suitability**,** safety, and operation of all *Contractor*'s Equipment and temporary *Works*.
   b. No review, witnessing, or attendance by the *Project Manager* or *Employer* shall relieve the *Contractor* of this liability.
4) The *Contractor* must provide all necessary construction plant, tools, and temporary works required for execution. This includes but is not limited to:

   a) Excavation equipment.
   b) Pipe handling and fusion welding machinery.
   c) Concrete mixing and compaction equipment.
   d) Dewatering pumps.
   e) Temporary safe storage facility.

### 7.6 Cataloguing requirements by the *Contractor*

None.

# 8 Construction

## 8.1 Temporary *Works*, Site services & construction constraints

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

1) Temporary *Works* for this contract are *Works* or infrastructure and/or establishment that the *Contractor* requires to provide the *Works*. Temporary *Works* include, inter alia, facilities, laboratories for control and acceptance testing, connection to existing water, sewer, electricity, etc.

2) Temporary *Works* will be adequately decommissioned, and the area made good on completion of the *Works* to the acceptance of the *Project Manager*.

3) Method statements must be prepared before the commencement of any temporary *Work* for the acceptance of the *Project Manager*.

4) Access to the power station is controlled, and site induction is completed before *Work* is allowed to start. It is the responsibility of the *Contractor* to ensure that all employees have attended the site Induction and are fit for duty.

5) Before *Work* starts, a daily site meeting is held between the *Contractor* and the *Project Manager,* the *Employer*, where details of the *Works* are discussed and clarified.

6) The Contractor will be informed of access procedures through site regulations, and procedures may change depending on the prevailing security situation.

7) The *Contractor* complies with all site regulations and instructions.

8) The onus is on the *Contractor* to ensure his familiarity with the *Employer*'s Site regulations and inspections.

9) The *Contractor*'s Site Supervisor is on-site for the entire duration of the *Work*.

10) The *Contractor* must adhere to all security regulations in force during the period of the contract.

11) Any *Work* will not commence without the approval of the SHE files by the *Employer*'s safety representative.

### 8.1.2 Restrictions to access on Site, roads, walkways, and barricades

1) Access routes and *Work*ing areas will be defined by the *Project Manager*.

2) The *Contractor* must not block or restrict access to operational areas without prior approval.
3) The *Contractor* provides barricades**,** warning signage, and safe walkways where required.
4) Temporary road closures or restricted areas must be coordinated with and accepted by the *Project Manager*

### 8.1.3 People restrictions on Site; hours of *Work*, conduct, and records

1) Normal *Work*ing hours:
   a. Monday to Thursday, 07h00 to 16h00, and
   b. Friday 07h00 to 12h00.

2) *Work* outside normal hours, on weekends, or public holidays requires prior written approval from the *Project Manager*. The *Contractor* notifies the *Employer* 72 hours in advance of any overtime request.
3) The *Contractor* maintains an up-to-date Site attendance register for all *Contractor* and Sub*Contractor* personnel. The register must be available to the *Project Manager* or Supervisor on request.

### 8.1.4 Health and safety facilities on Site

Requirements for Health and Safety facilities on Site will be discussed in detail during Site induction.

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

Project specific environmental control

### 8.1.6 Title to materials from demolition and excavation

1) The *Contractor* has no title to plant and/or materials resulting from him carrying out the *works*.
2) Title to any such materials must remain with the *Employer* unless otherwise agreed in writing.

### 8.1.7 Cooperating with and obtaining acceptance of Others

1) The *Contractor* cooperates with the *Employer*'s Operations and Maintenance personnel, and any other parties designated by the *Project Manager*.

The *Contractor* liaises with relevant statutory authorities where required for compliance.

### 8.1.8 Publicity and progress photographs

1) No public statements, media releases, or advertising regarding the project may be made without the *Employer*'s prior written approval.

2) The *Contractor* must submit monthly progress photographs to the *Project Manager*.

### 8.1.9 *Contractor's* Equipment

1) The *Contractor* maintains a register of all *Contractor*'s Equipment on Site, indicating ownership (owned or hired).
2) All scaffolding, rigs, lifting equipment, and cranes used must comply with statutory safety requirements and must be removed from the *Work*ing Areas upon completion of use.
3) Noise suppression measures must be applied where required, consistent with Clause 4.1 of SANS 1200A principles.
4) The *Contractor* is to comply with the Safety and Site Access procedures

### 8.1.10 Equipment provided by the *Employer*

No *Employer* equipment is provided for the *Contractor*'s use under this Contract.

### 8.1.11 Site services and facilities

1) The *Employer* will provide the following services where practicable:
   a. Electrical power is available at designated points for *Contractor*'s temporary use; connection subject to *Employer* approval. The *Employer* indicates which supply points may be used. The *Contractor* is to note that, generally, a 220V Electrical Supply is available in the power station complex.
   b. Water is available at designated points. All points of supply are provided in terms of availability and location. The *Employer* indicates which supply points may be used, and the *Contractor* ensures that the pressure at the tap-off point is regulated to the correct operating pressure to ensure that the pressure and flow supplied to the end-user are within the specified range as per SANS 10252 for specific applications.
   c. General waste bins are available at designated points. Any hazardous waste or waste generated by construction activities: The *Contractor* shall arrange for the removal of such waste in accordance with legal requirements.
   d. No dedicated service is provided for telecommunication; The *Contractor* must make its own arrangements.
   e. Spoil Area. A spoil area will be indicated to the *Contractor* by the *Employer*

2) All other services and facilities required to provide the *Works* must be provided by the *Contractor*.

### *8.1.12* Facilities provided by the *Contractor*

The *Contractor* supplies all facilities to enable work and general site requirements. This will be removed by the *Contractor* on completion of the project, unless otherwise agreed and accepted by the *Project Manager*.

1) The *Contractor* must provide:
   a. Site office accommodation as required.
   b. Storage facilities for equipment and materials. The *Contractor* is to make arrangements with regard to storage facilities and laydown areas that are required to complete the *works*. All laydown areas on the site are as per the agreement with the *Project Manager*. All storage facilities (Plant, Material, and Equipment) will be within the boundaries of the Site in order not to affect the operations of Others.
   c. Temporary fencing or hoarding where required for security. Vehicles and equipment necessary to perform the *Works*. The *Contractor* is to ensure that his employees are transported in a vehicle that is approved to carry passengers. All vehicles must have safety belts for all passengers, airbags, and ABS.
   d. Ablution facility.
   e. Telephone/internet facilities. The *Contractor* is responsible for arranging telephone/internet facilities.
   f. Security of Works. The *Contractor* is entirely responsible for the security of all the Works, materials, equipment, lighting, and other precautions as necessary to ensure security against theft, loss, or damage. The *Contractor* is advised to visit the site to familiarize themselves with the nature and position of the site.

2) Upon completion, the *Contractor* removes all temporary facilities and reinstates affected areas to the *Employer*'s satisfaction

### 8.1.13 Existing premises, inspection of adjoining properties, and checking *Work* of Others

1) The *Contractor* inspects adjacent areas where *Work* may impact existing facilities.
2) The *Contractor* inspects the *Work* of Others to which its *Work* must interface and reports any issues to the *Project Manager* before proceeding.
3) *Within* the locality of the *works*, there are existing services (water pipes and electrical cables, etc.) which the *Contractor* shall take extreme care to prevent any damage during the execution of the *works.*
4) The *Contractor* must liaise with the *Supervisor* before work commences.

5) The *Contractor* is responsible for exposing and protecting all existing services where directed.

### 8.1.14 Survey control and setting out of the *Works*

1) The *Employer* will provide reference points and benchmarks where required.
2) The *Contractor* is responsible for all setting out necessary for the *Works*.
3) The *Employer's* Quality Inspection Plan (QIP) of the *Employer* must be adhered to at all times to ensure the job is performed to the *Employer's* satisfaction.
4) The *Contractor* must carry out a land survey to determine all existing levels.

### 8.1.15 Excavations and associated water control

The *Contractor* ensures that excavations are done safely and workers are trained to work at heights of more than 1.5 m. The *Contractor* ensures that cable detection is conducted for areas where excavation is taking place to avoid breaking live cables and water pipe bursts.

1) Detection, verification, and adjustment/diversion of existing services.
2) Site clearance and protection of existing services.

### 8.1.16 Underground services, other existing services, cable and pipe trenches and covers

Within the locality of the *works*, there are existing services (water pipes and electrical cables) which the *Contractor* must take extreme care to prevent any damage during the execution of the *works.*
The *Contractor* must liaise with the *Supervisor* before work commences.
The *Contractor* is responsible for exposing and protect all existing services where directed.
The *Contractor* ensures that all trenches, holes, and any other areas where there is a danger of falling, physical barricading is implemented and prohibitive signs are hung and are visible.

1) Known services will be indicated on *Employer*-supplied drawings.

2) The *Contractor* must:
   a. Verify actual service locations using appropriate detection equipment.
   b. Mark and protect services during the Works.
   c. Be liable for damage to known services if due care is not exercised.
   d. Notify the Project Manager immediately in case of service damage and follow agreed reinstatement procedures.
   e. Site clearance and protection of existing services.

### 8.1.17 Control of noise, dust, water and waste

a. The *Contractor* makes arrangements for the disposal of waste at a registered waste disposal facility. The records/disposal certificates are to be provided to the *Employer*.

b. Work is carried out in a Power Station environment. The *Contractor* keeps noise and dust to the minimum as practicably possible. The *Contractor* always ensures proper housekeeping.
c. The *Contractor* arranges for the disposal of waste generated from the works. The waste is to be disposed of off-site at an approved waste disposal facility. Records and proof of disposal certificates are provided to the *Project Manager* for record keeping.

### 8.1.18 Sequences of construction or installation

The *Contractor's* programme must clearly show and sequence the activities of all the project work to be done by the *Contractor* and the other work covered by the contract that is being done by the subcontractors.

The following activities are to be included, as a minimum, in the programme:

#### 8.1.18.1 Preconstruction Documentation Submission:

- Final SHE File Submission to the Employer for review and acceptance.
- Site Establishment Method Statement Submission to the Employer for review and acceptance.
- Quality Control Plan submission to the *Employe*r for Review and Acceptance.
- All activity Method Statements Submission to the Employer for review and acceptance.

#### 8.1.18.2 Construction Activities:

- Site Establishment.
- Inspection & Assessment of existing infrastructure:
- Assessment of the existing services.
- Design Works.
- Construction and/or Refurbishment Works.
- Testing and Commissioning:

#### 8.1.18.3 Post-Construction Documentation Submission:

- SHE File Submission to the Employer for review and closure.
- Data Books Submission to the Employer for review and acceptance.

The *Contractor* is to further note that all quality documents and Method Statements require a 14-day review period.

### 8.1.19 Giving notice of *Work* to be covered up

*Contractor* must give notice before covering up works so the *Supervisor* can inspect.

### 8.1.20 Hook-ups to existing *Works*

To be performed as per Eskom requirements.

## 8.2 Completion, testing, commissioning and correction of Defects

### 8.2.1 *Work* to be done by the Completion Date

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

The following items may be completed within the stated periods after Completion:

| | Item of work | To be completed by |
|---|---|---|
| | Submission of as-built drawings and data pack | Within 21 days after Completion |
| | Performance testing of the *works* in use as specified in this Works Information and relevant national and international codes and standards. | See performance testing requirements. |
| | Training of Eskom operating personnel | Within 14 days after Completion |

### 8.2.2 *Use* of the *Works* before Completion has been certified

After successful commissioning of the *works*, the *Employer* takes over the *works* or section of the *works* by means of a Take-over certificate.

All roads are currently being used by Eskom and other *Contractors*. The *Contractor* must always ensure unrestricted access for all road users. Failure to do so will result in all third-party claims being passed onto the *Contractor*.

### 8.2.3 *Materials,* facilities and samples for tests and inspections

The *Contractor* must arrange facilities where appropriate, to allow for the provision of samples, to the acceptance of the *Supervisor*.

The *Supervisor* will carry out routine site inspections of finished work as well as of work in progress. The *Contractor* must allow access to the works for such routine inspections

### 8.2.4 *Commissioning*

Commissioning of the *works* as per the relevant codes and standards. This will be done as per the Commissioning Schedule developed by the *Contractor*, for acceptance by the *Project Manager*.

### 8.2.5 Start-up procedures required to put the *Works* into operation

The *Contractor* must assist the *Employer* in initial system start-up and transition to operation, including controlled filling of tanks, gradual pressurisation of pipelines, and validation of flow rates.

The *Contractor* remains on site during start-up to monitor performance and rectify any immediate defects observed during the first 48 hours of operations.

### 8.2.6 Takeover procedures

Acceptance of the system by the *Employer* will be based on the system being able to perform its function as per the quality requirements, and a handover certificate will be issued to the *Project Manager*.

### 8.2.7 Access given by the *Employer* for correction of Defects

Access is granted to the *Contractor* for defect correction as per Core Clause 43.4 in ECC3

### 8.2.8 Performance tests after Completion

The *Contractor* must conduct performance verification tests before completion to demonstrate that:

- Pressure Testing, Sterilizing & Bacteriological Test of Water Pipes.
- The pipeline delivers the specified flow rate under design head conditions.
- Water quality meets SANS 241 potable standards.
- The fibre optic cable transmits accurate level data.

Test procedures, acceptance criteria, and results shall be submitted to the *Supervisor* for approval.

#### 8.2.8.1.1 Scope of Performance Tests after Completion

Performance tests after Completion shall include, as a minimum, operational verification.

#### 8.2.8.1.2 Take Over Procedures

Acceptance of the system by the *Employer* will be based on the system being able to perform its function as per the quality requirements, and a handover certificate will be issued to the *Project Manager*.

#### 8.2.8.1.3 Acceptance Criteria

The *Works* will be deemed to have passed Performance Tests after Completion when:

1) The system demonstrates that it meets or exceeds the functional and performance requirements stated in the Technical Specification.
2) No unresolved performance-related Defects remain.
3) The system is accepted by the *Project Manager* and the *Employer's* Operations and Safety teams as fit for operational use.

#### 8.2.8.1.4 Timing

1) Performance tests after Completion must be carried out within 30 days of the issue of the Completion Certificate, unless otherwise agreed in writing with the *Project Manager*.
2) The *Contractor* must provide reasonable notice to the *Project Manager* and the *Employer* of test readiness.

### 8.2.9 Training and technology transfer.

During Phase 1, the *Contractor* will be required to have training and frequent engagement sessions with *Employer* personnel throughout the design process for skills transfer and design review purposes.

Before Completion, the *Contractor* must conduct comprehensive training of the *Employer's* operating personnel covering:

a) System operation and control,

b) Routine and preventive maintenance, and

c) Emergency response procedures, where required.

Training must include, but not be limited to, manuals, presentations, and practical demonstrations. Attendance registers and training certificates shall form part of the Completion Data Pack (if applicable).

### 8.2.10 Operational maintenance after Completion

The *Contractor* is required to provide Operation and Maintenance Manuals for all of the *works* for acceptance by the *Project Manager.*

#### 8.2.10.1.1 Planning and coordination

1) The *Contractor* submits an Operational Maintenance Plan covering this period for acceptance by the *Project Manager* prior to Completion.
2) The *Contractor* coordinate the timing of such activities with the *Project Manager* and *Employer* Operations teams to minimise disruption to plant operations.

#### 8.2.10.1.2 Records

The *Contractor* maintains detailed records of all operational maintenance activities carried out post-Completion and submits these records to the *Project Manager* for inclusion in the system's maintenance history.

## 9 Plant and Materials

The *Contractor* provides all labour, gear and tools, vehicles, temporary works/ scaffolding, consumables, bulk mixing plant, equipment, and cleaning materials required to provide the Works. The *Contractor* supplies/ procures all Plant and Material, fabrication, manufacturing, handling, storage, testing, delivery, off-loading, and erection/construction, disposal of debris and finishing in every detail of works. The *Contractor* constructs any works that can be reasonably inferred from this *Employer's* specifications.

During the erection period, the *Contractor,* as a builder and/or user of machinery, performs 'building work' in terms of the OHS Act. The *Contractor*, before taking occupation on a Site, obtains a permit to work from the *Project Manager*. No unauthorised person(s) are to enter into any prohibited/restricted area. Daily dairies/logs/data books are kept and signed by the *Contractor* and are also signed off daily by the *Supervisor.*

The following is to be recorded (as a minimum) in the daily diaries:

a) Manpower and Equipment used.

b) Weather conditions.

c) Description of any unique occurrences, incidents, or accidents.

d) Delays and reasons for the delays.

e) Industrial relations abnormalities.

f) Description of activities to be performed.

g) Recording of on-site tests, for example, slump tests.

In addition to the, the *Contractor* adheres to the following:

h) The *Contractor* is restricted to the Site.

i) The *Contractor* is not to enter any other areas and must ensure that his employees abide by the regulations.

j) The *Contractor's* Equipment does not impair the operation or access to the plant.

k) The *Contractor* provides any temporary or expendable materials required for the storage of material.

l) The *Contractor* safeguards and secures all items whilst in the Contractor's custody and control, until completion of the works.

m) The adjacent plant and equipment are not modified without written permission from the Project Manager. Modification in this sense includes, but is not limited to, the following:

- Welding onto existing plant.
- Drilling into structural steel or concrete.
- Cutting or removing.
- Loading adjacent structures.

### 9.1.2 Applicable Statutory Requirements

The *Contractor* must comply with all the relevant South African statutory requirements in terms of the employment of people on site. Site specific requirement shall not take precedence over any statutory requirements.

These include, but are not limited to, the following:

| Code | Title |
|---|---|
| SANS 1200 | SANS Series Standardized Specifications for Civil Engineering |
| SANS 1200A | General |
| SANS 1200G | Concrete |
| SANS 10162 | The Structural Use of Steel |
| SANS 10400 | The application of the National Building Regulations |
| SANS 10400A | General principles and requirements |
| SANS 10400B | Structural design |
| SANS 10400C | Dimensions |
| SANS 10400D | Public safety |
| SANS 10400F | Site operations |
| SANS 10400G | Excavations |
| SANS 10400H | Foundations |
| SANS 1123 | Pipe Flanges |
| OHSA No 85 of 1993 | Occupational Health and Safety Act, 1993, Driven Machinery Regulations, 1988 |
| NEMA | National Environmental Management Act of 1988 |
| | National Building Regulations and Building Standards Act |
| | Local Authority By-laws |
| SANS 10100 | Structural Use of Concrete |
| SANS 10162 | Design of Structural Steel |
| SANS 10160 | Basis of Structural Design |

### 9.1.3 Applicable Eskom Standards

The *Contractor* must comply with all the relevant South African statutory requirements in terms of the employment of people on site. Site specific requirement shall not take precedence over any statutory requirements.

In addition to statutory requirements, the *Contractor* is to comply with the relevant Eskom Standards, and these include but are not limited to the following:

| Code | Title |
|---|---|
| QM 58 | Supplier Contract Quality Requirements Specification |
| 36-681 | Generation Plant Safety Regulations |
| 240-71432150 | Plant Labelling and Equipment Description Standard |

| | |
|---|---|
| 167A/49 | Drawing and documentation standard for Contractors |
| 167A/143 | Drawing Office Standard |
| 167A/49 | Documentation Process Procedure |
| 32-136 | Contractor Health and Safety Requirements |
| 240-62196227 | Eskom Life-Saving Rules |
| 240-56364542 | Standard for Reinforced Concrete Foundations and Structures |
| 240-56364545 | Structural Design and Engineering Standard |
| 240-43156827 | Introduction to The Welding Rulebook |
| 240-123801640 | Specification for Low Pressure Pipelines Standard |

### 9.2 Investigation, survey, and Site clearance

Before commencement of the works, the *Contractor* must carry out all necessary investigations and site verifications to confirm existing conditions and constraints.

The *Employer* has completed preliminary investigations and surveys during the Basic Design Phase; however, the *Contractor* must:

- Verify all levels, alignments, and reference points provided by the *Employer*.
- Confirm locations of underground and overhead services.
- Conduct topographical and utility checks before finalising detailed design and construction.
- Submit a Site Clearance and Access Plan detailing vegetation removal, spoil areas, and protection measures for adjacent wetlands.

No site clearance to commence until environmental authorisations, method statements, and permits have been accepted by the *Project Manager*.

Vegetation and topsoil must be removed only within the approved working corridor, stockpiled separately, and reused for reinstatement.

All survey work must be executed by a qualified engineering surveyor, and results shall be recorded in the as-built documentation.

### 9.3 Building *Works*

This subsection covers any building-related works required for supporting infrastructure associated with the potable water system (e.g., small valve chamber enclosures, access slabs, equipment bases, or instrumentation housing), if it will be applicable.

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

Where a SANS standard referenced has been replaced by a newer standard, the *Contractor* is required to adhere to the latest revision of the newer standard. Where a SANS standard referenced is composed of several parts, all applicable parts are to be adhered to.
The following specifications, as a minimum, are required to be complied with:

- SANS 10400 - The Application of the National Building Regulations.

### 9.4 Materials and Workmanship

Only new and undamaged materials are to be used in the works. Materials to be permanently installed in the works are not to be used for any temporary purposes on site. Work is required to be for the acceptance of the *Supervisor* and is executed in accordance with the relevant manufacturer's written recommendations and instructions.

### 9.5 Proprietary Products

For submission of tenders, rates for items described in the bills of quantities by trade names, catalogue references, etc., are for the type and manufacturer specified.
Once the Contract has been signed, the acceptance of the *Project Manager* is required to be obtained before any substitution, and where products or materials, etc., other than those specified are used.

## 9.6 Civil engineering and structural *Works*

This section covers all civil and structural works associated with the replacement of the Jagersrust potable water pipeline and surface water storage tanks at the Drakensberg Pumped Storage Scheme
All works must comply with the latest relevant SANS standards, Eskom Civil Engineering Specifications, and project-specific design requirements defined in the Works Information.

## 9.7 Applicable standards and codes

During the construction of the *Works*, there are numerous standards and specifications to which the *Contractor* must adhere. The documents listed below, and indicated on the drawings, including normative references within, are not bound in this document but are obtained by the *Contractor* at his own expense and must be adhered to during the implementation of the works.
Where a SANS standard referenced has been replaced by a newer standard, the *Contractor* is required to adhere to the latest revision of the newer standard. Where a SANS standard referenced is composed of several parts, all applicable parts are to be adhered to.
The following specifications are required to be complied with:

a) SANS 1200 A – General Requirements and Procedures.
b) SANS 1200 DB – Earthworks (Pipelines).
c) SANS 1200 LB – Bedding (Pipelines).

d) SANS 1200 GA/GQ – Concrete Works.
e) SANS 10100-1 & -2 – Structural Use of Concrete.
f) SANS 10160 – Basis of Structural Design.
g) SANS 4427 Parts 1–4 – HDPE Pipe Systems for Water Supply.
h) SANS 241 – Drinking Water Quality.
i) Eskom Standard 240-51000048 – Civil Works Specification.
j) Occupational Health and Safety Act 85 of 1993 and all applicable regulations.
k) The Guidelines for Human Settlement Planning & Design (Red Book).

### 9.8 Design and verifications

a) The *Contractor* to verify all Basic Design Report assumptions on site and is responsible for producing the detailed civil and structural design drawings and calculations for review and approval by the *Employer's* Project Manager. Key items to verify include pipe alignment and depth, trench details, structural adequacy of bridge crossings, soil/ground conditions at tank foundations, and locations for thrust/anchor blocks.
b) The *Contracto*r must appoint a competent geotechnical engineer to inspect excavations and confirm the founding materials for the SWT platform and major structures before construction. The Basic Design Report notes that a site geotechnical check for the tank location is required and that soils are expected to vary; the Contractor must confirm bearing capacity and any need for deeper foundations or ground improvement.
c) The *Contractor's* detailed structural designs shall demonstrate compliance with SANS 10100 and SANS 10160 and must include checks for serviceability and ULS (bending, shear, and uplift). The raft foundation design for two 15 000 L tanks in the Basic Design Report assumes a 300 mm slab, 30 MPa concrete, and Y12 top and bottom bars at 200 mm centres — the Contractor must confirm or revise these and provide calculations.

### 9.9 Civil works scope

The civil scope includes, but is not limited to:

I. Trenching, bedding, and backfilling for the HDPE transfer main (Ø160 mm OD preferred in basic design) and distribution reticulation replacement to the village. The Basic Design Report selected Ø160 mm for the main transfer pipe from the WTP to the reservoirs (design flow 7.01 L/s).
II. Construction of reinforced concrete foundations/raft for new Surface Water Tanks. The Basic Design Report provides preliminary raft dimensions and material notes — Contractor to produce final design.
III. Pipeline connection to the Visitor's Centre from the SWTs.
IV. Construction of valve chambers, air-valve and scour valve chambers, thrust and anchor blocks, manholes and access structures (where applicable).

V. Localised protection/encasement at road crossings, bridge attachments/clamp supports, and where the pipeline is exposed. Bridge supports shall be structurally checked before mounting pipework, as assumed in the Basic Design Report.

VI. Erosion protection, drainage measures, slope stabilisation, and site reinstatement to match the Basic Design Report environmental requirements.

### 9.10 Material and workmanship

I. All materials must be new and accepted by the *Project Manager* before use.

II. The *Contractor* must ensure proper storage, handling, and protection of all materials to prevent damage or contamination.

III. Workmanship must be in accordance with good civil engineering practice and SANS 1200 requirements.

IV. Defective or non-conforming work shall be removed and replaced at the Contractor's cost.

### 9.11 Trenching, bedding and backfill

I. Typical trench base width for Ø160 mm OD pipe is 760 mm (with fibre cable accommodated, the recommended width is 860 mm). Bedding is a minimum of 100 mm of selected granular material. Blanket above the crown is 300 mm of selected fill. Compaction targets in general areas ≥ 90% Modified AASHTO MDD, thrust/reception pits ≥ 95%.

II. The *Contractor* must ensure that the trench cover is a minimum of 750 mm above the pipe crown, and for road crossings, a minimum of 800 mm or encasement. Keep trenches dry; provide dewatering where perched water is encountered. Shore/batter trenches deeper than 1.5 m per SANS guidance.

III. The *Contractor* to ensure that bedding material grading is free-draining granular, 0.6 mm – 19 mm, free of organics and stones > 19 mm, and placed and compacted in ≤100 mm lifts.

## 9.12 Electrical & mechanical engineering *Works*

### 9.12.1 Electrical Works

N/A

### 9.13 Process Control and IT Works

N/A

### 9.14 OTHER

None.

# 10 List of drawings

## 10.1 Drawings issued by the *Employer*

No construction drawings have been issued by the *Employer* at the time of tender.

The *Contractor* must verify all dimensions and site conditions before commencing work and is responsible for preparing and submitting all necessary detailed construction drawings for approval.

## 11 Authorisation

These documents have been seen and accepted by:

| Name | Designation | Signature | Date |
|---|---|---|---|
| Richard Marr | Chief Engineer – Asset Management (Hydro) | | |
| Johannes Feilies | Chief Technologist – Asset Management | | |
| Taariq Armien | Senior Technician | | |
| Mashudu Makhado | Engineer - Mechanical | | |
| Maremane Tsotetsi | Plant Manager | | |
| Romeo Moila | Configuration Technician | | |

# C3.2 *CONTRACTOR*'S *WORKS* INFORMATION

# PART 4: SITE INFORMATION

| Document reference | Title | No of pages |
|---|---|---|
| | This cover page | 1 |
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| | Total number of pages | 2 |

## PART 4: SITE INFORMATION

### General description

Drakensberg is a 1000MW Pumped Storage Scheme comprising four reversible turbines rated each at 250MW. The station is located in the Drakensberg Mountains in KwaZulu-Natal, close to the town of Bergville. Construction and commissioning of the last units were accomplished in 1981. A special feature of the station is that it is constructed entirely underground, with only a dam wall, lift shaft buildings, and transmission lines visible at the surface. The Drakensberg Pumped Storage Scheme is reached from Harrismith via the R49 to Kestel. Take the R74 turn-off to Bergville some 2.8 km along the R49. Turn left after 8.7 km and travel 23.5 km to the KwaZulu-Natal / Free State boundary at the top of the Oliviershoek Pass. From there, travel 13.1 kms down the pass and turn left. Follow the signposted directions to the power station for approximately 9.5 km. The total distance from Harrismith is approximately 60 km.

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

As viewed at the Site Meeting.