Eswatini Water and Agricultural Development Enterprise (EWADE)

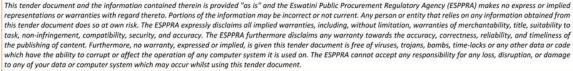


FEEDER CANAL CONCRETE PANELS REHABILITATION

PROJECT No. EWADE/0712

NAME OF TENDERER:	
TOTAL PRICE (INCL. VAT):	
EMPLOYER:	
EWADE	
P.O. Box 198	
SIPHOFANENI	
Tel No: 2411 8600	
Fax No: 2404 7954	

Disclaime





ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION CONTRACT NO.: EWADE/0712

INVITATION TO TENDER

Tenders are hereby invited from suitably qualified contractors, registered with the Construction Industry Council of Eswatini (CIC) under Category C4 Only, to submit tenders for the Feeder Canal Concrete Panels Rehabilitation in the Lubombo Region.

Preference will be given to local contractors, with at least 60% Swazi shareholding, and registered with the Construction Industry Council of Eswatini. Tender documents may be obtained after payment of a non-refundable tender fee of E350.00 to the Eswatini Water and Agricultural Development Enterprise (EWADE). Documents will be on sale at the EWADE Siphofaneni Offices from the 23rd September 2024, starting at 0830Hrs to 1600Hrs up to the compulsory site inspection date and time. The compulsory site inspection and clarification meeting be held on 04th October 2024 at the EWADE Damsite Office.

Tenderers attention is drawn to the table below which indicates the Contract No, Contract Title, Tender Bond, CIC category, Site Inspection date, and the closing date for submission of tenders. Late, incomplete, telephoned or telegraphic tenders will **not** be considered. **No documents will be sold after the site inspection.**

Contract No.	Contract Title	Tender	CIC	Site Inspection	Closing of
Contract No.	Contract Title	Bond	Category	Date/Time	Tender
EWADE/0712	FEEDER CANAL CONCRETE PANELS REHABILITATION	SZL 30,000.00	C4 only	04 th October 2024 at 1000hrs - EWADE Damsite Office	25 th October 2024 at 1400Hrs

Completed tenders should be delivered in a sealed envelope to the EWADE Head Office and the envelope should only show the Project Name, Project Number and addressed to:

Chairman of the Tender Board
Eswatini Water and Agricultural Development Enterprise (EWADE)
EWADE Building
Siphofaneni
Eswatini

Any actions or tendencies that will be interpreted as an attempt to interfere with or influence the tendering process will result in immediate disqualification of the Tenderer. Enquiries, administrative and technical, relating to the Tender listed in the table above may be addressed to the Procurement Manager. Tel No. 24118600 or 23441671/2/3 Fax No.23441665, E-mail: tenders@eswade.co.sz.

EWADE does not bind herself to accept the lowest or any tender

 $2 \mid P \text{ a g e}$



CONTENT LIST

1.1	BACKGROUND	
1.2	EXAMINATION OF DOCUMENTS	ε
1.3	COMPULSORY SITE INSPECTION	ε
1.4	PERSONS EXCLUDED FROM THIS TENDER	7
1.5	ENQUIRIES REGARDING TENDER DOCUMENTS	7
1.6	SUBMISSION OF TENDERS	7
1.7	DATE OF CLOSURE OF TENDERS	8
1.8	PERIOD OF IMPLEMENTATION OF TASKS	8
1.9	TYPE OF CONTRACT	8
1.10	LANGUAGE OF THE BID	8
1.11	LATE TENDERS	8
1.12	EXTENSION OF THE DEADLINE FOR SUBMITTING OF TENDERS	8
1.13	ONLY ONE TENDER PER TENDERER	8
1.14	COST OF PREPARATION OF TENDER	<u>c</u>
1.15	Notices to Tenderers	<u>c</u>
1.16	ERRORS AND DISCREPANCIES	<u>c</u>
1.17	VALIDITY OF TENDER	<u>c</u>
1.18	EMPLOYER'S RIGHT TO ADJUST ERRORS	10
	UNBALANCED RATES OR PRICES	
1.20	Alternatives	11
1.21	POWER OF ATTORNEY	11
	INFORMATION TO BE SUBMITTED WITH TENDER	
1.23	NON-DISCRIMINATION AND MEASURES TO PROMOTE SWAZI COMPANIES.	12
1.24	FINANCIAL STANDING	12
1.25	BILLS OF QUANTITIES	12
	ALTERATION OF TEXT	
	ACCEPTANCE OF TENDER	
1.28	RETURN OF EMPLOYER'S DRAWINGS	13
1.29	AWARD CRITERIA	13
1.30	INTENTION TO AWARD A CONTRACT	14
1.31	NOTIFICATION TO SUCCESSFUL TENDERER	14
1.32	TIME FOR COMPLETION AND PROGRAMME	15
1.33	CURRENCY OF TENDER	15
1.34	CONTRACT PRICE ADJUSTMENT	15
1.35	LABOUR FROM THE COMMUNITY	15
	SURETY IN LIEU OF RETENTION	
A RE	TENTION MONEY GUARANTEE IS NOT PERMITTED, ONLY CASH IS ALLOWED	16
1.37	TENDER GUARANTEES	1 6
1.38	ENVIRONMENTAL REQUIREMENTS	1 6
1.39	IRREGULAR TENDERS	1 6
1.40	TENDER OPENING	16
1.42	TENDER EVALUATION CRITERIA	18
1.43	TENDER EVALUATION CRITERIA	19
1.44	CHECKING DESIGNS AND BILLS OF QUANTITIES	23
1.45	As-Built Drawings	23
	WITHDRAWAL OF TENDERS	
	TENDER TIMETABLE	
	SUFFICIENCY OF TENDER PRICES	
1.50.	1 ABSENCE OF CONFLICT OF INTEREST	25
1.50.	2 Breach of obligations, irregularities or fraud	25

 $3 \mid P \ a \ g \ e$



		APPEALS	_
	1.52	PERFORMANCE SECURITY	25
2	R	ETURNABLE DOCUMENTS	27
	2.1	SCHEDULE 1A: ENTERPRISE QUESTIONNAIRE	29
	1.6	SCHEDULE 1B: AUTHORITY OF SIGNATORY	31
	2.2	SCHEDULE 1C: CERTIFICATE OF AUTHORITY FOR JOINT VENTURES	33
	2.3	SCHEDULE 1D: RECORD OF ADDENDA TO TENDER DOCUMENTS	34
	2.4	SCHEDULE 1E: REFERENCES	35
	2.5	SCHEDULE 1F: PERSONNEL SCHEDULE	
	2.6	SCHEDULE 1G: SCHEDULE OF PLANT AND EQUIPMENT AVAILABLE FOR THE CONTRACT	37
	2.7	SCHEDULE 1H: SCHEDULE OF RELEVANT WORK SATISFACTORILY CARRIED OUT BY THE	
	TEN	DERER	
	2.8	SCHEDULE 1I: SCHEDULE OF PROPOSED SUBCONTRACTORS	
	2.9	SCHEDULE 1J: CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING	
		SCHEDULE 1K: PROPOSED AMENDMENTS AND QUALIFICATIONS	
		SCHEDULE 2A: ORIGINAL AND VALID TAX COMPLIANCE CERTIFICATE (ORIGINAL COPY)	
		SCHEDULE 2B: VALID TRADING LICENSE (CERTIFIED COPY)	
		SCHEDULE 2C: JOINT VENTURE AGREEMENT (ONLY IF APPLICABLE)	44
	2.14	SCHEDULE 2D: FINANCIAL STATEMENTS NOT OLDER THAN 12 MONTHS ON THE DATE OF	
		MISSION OF THIS TENDER	_
	2.1	~ · · · · · · · · · · · · · · · · · · ·	
		SCHEDULE 2H: CERTIFICATE OF INCORPORATION (CERTIFIED COPY)	
		SCHEDULE 2I: VALID CERTIFICATE OF LABOUR COMPLIANCE (CERTIFIED COPY)	
	2.19	SCHEDULE 2J: DECLARATION OF ELIGIBILITY	51
3	\mathbf{A}	GREEMENT AND CONTRACT DATA	53
	3.1	C1.1: FORM OF OFFER AND ACCEPTANCE	54
	3.2	C1.2: CONTRACT DATA (PART 1)	
	2.1	C1.2: CONTRACT DATA (PART 2)	
	2.2	C1.3: FORM OF PERFOMANCE GUARANTEE	
	2.3	C1.4: PROTECTION OF THE ENVIRONMENT	63
3	B	ILL OF QUANTITIES	65
	3.1	PREAMBLES TO SCHEDULE OF QUANTITIES	65
	3.2	CONSTRUCTION INDUSTRY COUNCIL LEVY PAYMENT SCHEDULE	66
5.	0 P	ROJECT TECHNICAL SPECIFICATION AND PARTICULAR SPECIFICATIONS	75
	A.	PROJECT SPECIFICATION PART 1	75
6.	0 A	PPENDIX B: ENVIRONMENTAL SPECIFICATIONS	92

4 | P a g e



ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION CONTRACT NO.: EWADE/0712

1.0 INSTRUCTIONS TO TENDERS

FEEDER CANAL CONCRETE PANELS REHABILITATION

5 | P a g e



INSTRUCTIONS TO TENDERERS

1.1 BACKGROUND

The Government of the Kingdom of Eswatini through the Eswatini Water and Agricultural Development Enterprise (EWADE) intends to tender for the Feeder Canal Concrete Panels Rehabilitation in the Lubombo Region.

TENDER DOCUMENTS

The tender documents issued by the employer comprise:

- 1. Invitation to Tender
- 2. Tender Data
- 3. Returnable Documents
- 4. Special Conditions of Contract
- 5. Project Specifications and Particular Specifications
- 6. Bills of Quantities
- 7. Standard conditions of tender
- 8. Environmental Management Measures
- 9. Drawings

1.2 Examination of Documents

The Tenderer is to examine the Tender Documents and ascertain the matters on which he will be deemed to have satisfied himself and all the risks and obligations which the Contract will impose on the Tenderer and subsequently the Contractor.

1.3 Compulsory Site Inspection

A compulsory clarification meeting and site visit will be conducted by the Employer in consultation with the Authorized Representative for this Contract at the time and date specified in the invitation to tender and tender timetable (Item 1.47 Tender Timetable). *Failure of an authorized representative of the Tenderer to attend the site visit will disqualify the Tender.*

The site inspection shall be attended by a representative of the Tenderer, who is suitably qualified to comprehend the implications of the work involved and is in the direct employ of the Tenderer.

Each Tenderer may, at his own expense and on his own responsibility, visit and examine the site and its surroundings, or cause this to be done on his behalf by a competent and responsible person, and is to obtain for himself all the information that may be necessary for compiling this Tender.

The Tenderer shall acquaint himself with the conditions of the site and surrounding areas including but not limited to ground conditions, access to water, borrow pits and any legal requirements to access and undertake

 $6 \mid P \ a \ g \ e$



works on the site. The Tenderer shall include in his rates for all costs of access to the site and undertaking works at the site.

The Tenderer's representative is required to sign the site inspection register and Schedule 1J. in this document at the time of the visit as proof of his attendance at the inspection.

1.4 Persons Excluded from this Tender

Public officers and politicians shall not participate in all EWADE tenders.

1.5 Enquiries Regarding Tender Documents

All enquiries in connection with this Tender are to be directed to the Procurement Manager, Eswatini Water and Agricultural Development Enterprise (EWADE), by Email: tenders@eswade.co.sz.

1.6 Submission of Tenders

Completed Tender Documents are to be delivered by hand and placed in the Tender Box provided at Eswatini Water and Agricultural Development Enterprise, EWADE Building, Siphofaneni MR08, Eswatini by the set date for closure of Tenders:

The Tender Documents are to be enclosed in a plain wrapper, sealed and clearly endorsed.

CHAIRMAN OF THE TENDER BOARD

TENDER FOR FEEDER CANAL CONCRETE PANELS REHABILITATION

ESWATINI WATER AND AGRICULTURAL DEVELOPMENT ENTERPRISE

TENDER NO: EWADE/0712

The sealed wrapper in which the Tender Documents are submitted shall not bear the Tenderer's name or address and shall not contain any documents or drawings not applicable to the Tender.

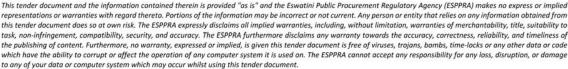
Posted, telegraphic, telexed, faxed, emailed or documents delivered in any other form will be rejected.

Tender documents will be opened in public immediately after the stated time of closure of the tender and the tender sum read out. Any interested party may attend the opening.

The complete tender must be submitted in one original, clearly marked 'original' and two (2) copies, also clearly marked 'copy''. In the event of any discrepancy between them, the original will prevail.

7 | P a g e







Any infringement of these rules (e.g., unsealed envelopes) constitutes an irregularity which will lead to rejection of the tender.

1.7 Date of Closure of Tenders

The Date and Time for closure of the Tenders is as specified in the invitation to tender timetable (1.47). Late tenders will not be accepted.

A Postponement of the closure of Tenders may be made by the Employer by issuing a Notice to Tenderers and sent by email or fax to the address given by the Tenderers.

1.8 Period of Implementation of Tasks

The period for the implementation of the tasks shall be two (2) Consecutive Calendar months.

1.9 Type of Contract

This is a Unit Price Contract.

1.10 Language of the bid

The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in English language.

1.11 Late Tenders

The Date and Time for closure of the Tenders is as specified in the invitation to tender and tender timetable (1.47). Late tenders will not be accepted.

- 1.11.1 All tenders received after the deadline for submission will not be accepted instead it will be labelled as late stating the date and time of actual receipt and return unopen to the tenderer. The guarantees will also be returned to the tenderers.
- 1.11.2 No liability can be accepted for late delivery of tenders. Late tenders will be rejected and will not be evaluated.

1.12 Extension of the deadline for submitting of tenders

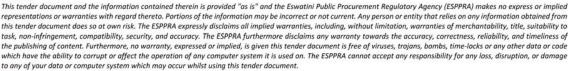
The Contracting Authority may, on its own discretion, extend the deadline for submitting tenders by issuing an amendment or notice to tenderers. In such cases, all rights and obligations of the Contracting Authority and the tenderer regarding the original date specified in the contract notice will be subject to the new date.

1.13 Only One Tender per Tenderer

A company may not tender for a given contract both individually and as a member of a joint venture/consortium. Participation by a tenderer in more than one tender for a contract will result in the disqualification of all those tenders for that contract in which the party is involved. The same company may only participate as subcontractor

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in different tenders if that is justified by the specific nature of the market and cleared by the Contracting Authority.

1.14 Cost of preparation of Tender

Neither the Employer, the Government of Eswatini, nor any of their agents will be responsible for, or pay for, any expense or loss which may be incurred by the Tenderer in the preparation of this Tender.

The tenderer will bear all costs associated with preparing and submitting the tender. The Contracting Authority will not be responsible or liable for such costs, whatever the conduct or outcome of the procedure.

1.15 Notices to Tenderers

If, during the period of tendering, the Employer issues any Notices to Tenderers setting forth the interpretation to be placed on any part of the Tender Documents, or to make any change in them, such Notices to Tenderers will form part of the Contract and it will be assumed that the Tenderer has taken account of them in preparing his Tender. The Tenderer shall promptly acknowledge receipt of any Notices to Tenderers which he may receive. Failure to acknowledge receipt of any notice issued by Employer will presuppose acknowledgement which cannot be denied afterwards.

No Notice to Tenderers will be issued within seven (7) days of the date of closure of the tender unless it contains a postponement of that date.

Neither the Employer, Government of Eswatini, nor any agent or servant of either of them, shall be bound by any statement made or delivered to any Tenderer unless such a statement shall have been confirmed by a Notice to Tenderers issued by the Authorised Representative acting on behalf of the Employer.

Any notice to tenderers will be sent by email or fax to the address given by the Tenderer when collecting the Tender Documents. Tenderers are to take special care to ensure that all contact details given are correct and accessible.

1.16 Errors and Discrepancies

On receipt of the tender documents, the Tenderer is to check to ensure that all pages of the document and all drawings are included and to report to the Authorised Representative any missing pages or drawings, any pages or drawings which are illegible or indistinct, any errors or ambiguities in the Specifications, Bill of Quantities or Drawings or any contradictions between the Specification, Bill of Quantities and Drawings, and to obtain rulings on any such errors, ambiguities or discrepancies. No claim for additional payment based on any such errors, ambiguities or discrepancies will be considered.

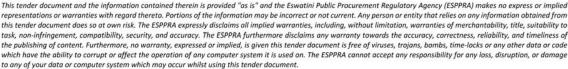
Attention is drawn from tenderers to pay attention to this particular clause.

1.17 Validity Of Tender

The Tender shall be held valid for a period of <u>Ninety (120) CONSECUTIVE CALENDAR DAYS</u> from the closing date of the tender.

9 | P a g e







In exceptional circumstances, the Contracting Authority may, before the validity period expires, request that tenderers extend the validity of tenders for a specific period, which may not exceed 45 days. Such requests and the responses to them must be made in writing. A tenderer may refuse to comply with such a request without forfeiting its tender guarantee. If the tenderer decides to accept the request, it may not amend its tender and it is bound to extend the validity of its tender guarantee for the revised period of validity of the tender.

1.18 Employer's Right to Adjust Errors

All items in the Bill of Quantities are to be priced.

In the event of the Tenderer failing to price any item it will be held that the Tenderer has made adequate allowance under other items for all labour, plant, material and costs required for the execution not only of the quantum of work covered by the unpriced item but also for any increase in the said quantum which may have to be undertaken during the course of the Contract.

If the Tenderer indicates that an item is included in the rate for another item, the Employer will have the right to distribute the total rate amongst the included items at his own discretion.

Where any discrepancy exists between the rate and the extended total against an item, the rate shown shall be accepted as correct and the discrepancy will be adjusted by altering the total amount filled in against such item and consequently the total tendered sum. Any mathematical errors will be corrected for the purpose of adjudicating tenders. The adjusted tender amount obtained after any such corrections will be deemed to be the Tendered Amount submitted by the Tenderer.

All monetary figures are to be rounded to and entered to two decimal places of Emalangeni.

If a zero amount is to be entered, the word 'NIL' is to be written in the Rate and Amount columns.

If a blank space is left by the Tenderer in Rate and Amount columns against any item, it will be assumed that the Tenderer intended the value to be zero and the word 'NIL' will be entered by the Employer. Tenderers are urged to take special care to ensure the mathematical correctness of their tender submissions.

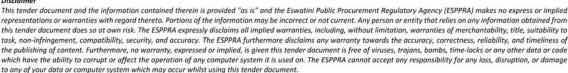
1.19 Unbalanced Rates or Prices

In the event of there being tendered rates or prices which are declared by the Employer to be unacceptable to him, because they are either excessively low or high or not in proper balance with other rates, the Tenderer may be required to produce evidence and advance arguments in support of the tendered rates or prices objected to. If after submission of such evidence and any further evidence requested, the Employer is still not satisfied with the tendered rates or prices objected to, he may request the Tenderer to amend these rates and prices along the lines indicated by the Employer.

The Tenderer may or may not thereupon alter and amend the rates and prices objected to and such other related prices as are agreed to by the Employer, but any such alteration shall be done without altering the final Tender Sum.

 $10\mid P\ a\ g\ e$







Should the Tenderer fail to amend his tender in a manner acceptable to the Employer, or at all, it may prejudice his tender.

1.20 Alternatives

In relation to the main Tender, the Tenderer shall not make any departures from or modifications to the Conditions of Contract, Specifications, Bill of Quantities, Data supplied by the Employer or drawings nor qualify his tender in any way.

Tenders may submit alternative designs but shall also complete the main tender.

Alternative offers are to be submitted in the form of a separate document included with or attached to the main tender.

No alternative will be considered unless the Tender Documents supplied are correctly and fully completed and returned.

The Bill of Quantities forming part of this document shall be completed in full notwithstanding any alternatives that the Tenderer may offer.

Tenderers are to ensure that all documents supplied by him are securely bound together and contain full details of the Tenderers Name and address and the number of the Main Tender to which they apply.

The Employer will not be responsible for loose documents that become separated from the Tenderer's Main or Alternative submission.

1.21 Power of Attorney

The Tender is to be signed by a person or persons authorised to do so. Signatories of Companies are to establish their authority by attaching a copy of the relevant Resolution of the Board of Directors, duly signed and dated, an example of which is contained in Schedule 1B.

Only the person duly authorized to do so may sign these Tender Documents.

The Tenderer is to sign each page or form where provision is so made.

The tenderer is to initial each page on which any entry has been made by him.

The tenderer is to initial any correction made by him.

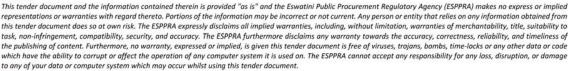
1.22 Information to be submitted with Tender

The Tender is to be made out on the forms provided in the Tender Documents, all the blanks in the relevant forms being duly completed in indelible ink. The Tender Documents are to be kept intact.

Tenderers are to submit the Tender Documents, Forms and Schedules completed in all respects with copies certified where applicable. The Tender must be submitted with the following documents and failure to submit any of these documents may result to disqualification of the tender.

11 | P a g e







- a) Declaration of Eligibility of Contractor
- b) Proof of Authority of Signatory
- c) SZL 30,000.00 Tender Bond
- d) Certificate of Attendance at Clarification Meeting
- e) Original and Valid Tax Compliance Certificate
- f) Certified copy of Valid Trading License
- g) Certified copy of Certificate of Incorporation
- h) Valid Labour Compliance Certificate
- i) Valid ENPF Certificate
- j) Certified copy of valid certificate with the CIC under Category C4 Only
- k) Police Clearance for all Company Directors including fingerprints.
- 1) Submission of a Company current Form J, endorsed by the Registrar of Companies
- m) Submission of a Company current Form C, endorsed by the Registrar of Companies
- n) Submission of certified copies of National Identity documents for the people listed in Form C
- o) Financial statements not older than 12 months on the date of submission of this tender

1.23 Non-Discrimination and Measures to Promote Swazi Companies

Tenders will only be accepted from a company which is registered in Eswatini and of which at least 60% of the controlling shares are owned by Swazi citizens and also registered with the Construction Industry Council of Eswatini. Tenderers are to adhere to all requirements of the Construction Industry Council including the levy Regulations of 2016.

1.24 Financial Standing

The Tenderer shall include in his Tender submission, a report from his banker or auditor of his financial standing.

The Employer reserves the right, after consultation with the Tenderer, to approach the Tenderer's bankers or auditor to verify any such reports.

1.25 Bills of Quantities

The Tenderer is to assess the accuracy of the quantities given in the Bill of Quantities.

Any apparent discrepancies or errors or omissions in the Bill of Quantities are to be brought to the attention of the Employer's Representative immediately they are discovered.

The Tenderer shall provide for all his obligations under the Contract in the rates and prices entered against the items provided.

The tenderer shall not make any additions, deletions or alterations to the Bill of Quantities.

The Tenderer shall pay due regard to the mathematical correctness of his entries and to the carrying forward and transference of page and section totals.

12 | P a g e



All monetary values are to be rounded to two decimal places of an Emalangeni in accordance with normal rules of rounding and all rounding errors are to be removed from the entered values.

The Bill of Quantities is not necessarily constructed in accordance with any specified format and no claim for extra payment will be entertained on the basis of any format used by other organizations.

1.26 Alteration of Text

Any addition to or erasure of the text of any of the Tender Documents may result in the rejection of the Tender. Correction of entry errors may be made by clearly scribing through (crossing out) the erroneous words and or figures and writing the correct words and or figures near to the crossed out entries. Correction fluid shall not be used and its use may result in the rejection of the Tender. Each correction shall be initialled by the authorized signatory.

1.27 Acceptance of Tender

The Employer reserves the right not to accept the lowest or any tender nor to assign any reason for the rejection of any tender.

The Employer will inform the accepted tenderer (if any) in writing and furnish the accepted tenderer with a Letter of award of contract.

This Tender Document will only become a Contract Document upon an official signing ceremony taking place and all the necessary documents, including a "Possession of Site Certificate" being in place.

Under no circumstances may any Tenderer commence any work on site prior to the above conditions being fulfilled.

1.28 Return of Employer's Drawings

All drawings, whether bound into the Tender Documents or separate shall remain the property of the Employer and are to be returned to the Employer and shall not be copied or used for any other purpose without the express written permission of the Employer.

1.29 Award Criteria

- **1.29.1** The Employer shall award the Contract to the Tenderer whose tender has been determined to be substantially responsive and who has offered the lowest evaluated tender price, provided that such Tenderer has been determined to be (a) compliant with the tender requirements in accordance with the provisions of Clause 1.43.1, and (b) have adequate technical capacity to complete the work in accordance with the provisions of Clause 1.43.2.
- **1.29.2** Notwithstanding Clause 1.29.1, the Employer reserves the right to accept or reject any tender, and to cancel the tendering process and reject all tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the Employer's action.

13 | P a g e





- **1.29.3** Tenders shall be compared by ranking them according to their evaluated price and determining the tender with the lowest evaluated price, which shall be the best evaluated tender.
- **1.29.4** The Employer reserves the right not to award the tender to a Tenderer with an ongoing contract or contracts and/or recently awarded a tender or tenders by the Employer, without thereby incurring any liability to the affected Tenderer or Tenderers. In such an occurrence, the next ranked Tenderer shall be considered for award of the tender.
- **1.29.5** Where the tender document includes more than one lot and permits tenderers to offer discounts, which are conditional on the award of one or more lots, the evaluation committee shall conduct a further financial evaluation, to determine the lowest evaluated combination of tenders.
- **1.29.6** If the Tender, which results in the lowest Evaluated Tender Price, is seriously unbalanced or front loaded in relation to the Engineer's estimate of the items of work to be performed under the Contract, the Employer may require the Tenderer to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed.
- **1.29.7** Where a tender is uneconomically priced without justification, the evaluation committee may recommend the rejection of the tender. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security set forth in Clause 1.52 be increased at the expense of the Tenderer to a level sufficient to protect the Employer against financial loss in the event of default of the successful Tenderer under the Contract.
- **1.29.8** Where the tender document includes more than one lot then one Compliant Tenderer who is the lowest in each Lot will be awarded only one Lot. In the event the Tenderer is Lowest in all or two of the Lots then the lowest bidder will be awarded two Lots with the highest values. The other Lots will be awarded to the second lowest Tenderers.

1.30 Intention to Award a Contract

In accordance with section 45 (4), 46, and 47 of the Public Procurement Act, an award decision reached by the Employer will require a ten (10) working days no objection from the first publication of the notice. The intention to award a contract will be published in the ESPPRA website as per the requirements of the Public Procurement Act, 2011 within the tender validity period or applicable extension of the tender validity.

1.31 Notification to Successful Tenderer

The Employer will notify the successful Tenderer (if any) of the acceptance of his Tender within the period of Tender validity or any extended period of validity of Tender, if applicable. The Employer will ONLY notify the successful Tenderer after the expiry of the 10 working days no objection as per Section 45 of the Public Procurement Act.

14 | P a g e



1.32 Time for Completion and Programme

It is a requirement of the Employer that the Works be substantially complete and operational in the time stated for completion of works as shown in the tender document (subject to any extension of time that may be granted by the employer).

The Tenderer shall provide a programme in the form of the bar chart provided, which shall clearly indicate the period of time required for specific operations and for the overall Contract.

The time for completion is to be stated in consecutive calendar days and shall allow for all Statutory Holidays, Sundays or other non-working days, inclement weather, supply of materials, access to working areas and anything else that may affect his completion date.

The Tenderer is to note that penalties for late completion apply to this contract and will be applicable as stated in the Appendix to the Form of Agreement.

Should the Tenderer wish to offer alternative Dates for Completion, he must specify and in the evaluation of Tenders, due attention will be given to the ramifications of any such offers.

The time for completion is to be stated in calendar days and shall, where applicable, include all Statutory Holidays, allowances for inclement weather, etc.

1.33 Currency of Tender

The Tender Amounts shall be expressed in Eswatini Emalangeni and the Currency of Payment shall be the Eswatini Emalangeni.

1.34 Contract Price Adjustment

NO Contract Price Adjustment will apply to this Contract.

The Rates and Prices inserted in the Tender Document by the Tenderer shall remain fixed for the durations of the Tender Validity Period, the Contract Period, including any extension of time to the contract whether approved by the Employer or not and the Period for Notification of Defects.

The Tenderer is to allow in his rates for any increase in the price of any item or commodity taking place during the Period as stated above.

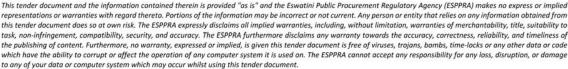
1.35 Labour from The Community

Contractors will be required to engage members from the Community to the maximum extent possible to execute the Works.

The Contractor is to actively assist in training and upgrading the skills level of personnel employed on the contract.

15 | P a g e







The Tenderer is to supply on the form provided or on a separate attached sheet, a statement indicating as to how they will implement the required policy of up-liftment and empowerment of employees.

1.36 Surety in lieu of Retention

A Retention Money Guarantee is not permitted, ONLY cash is allowed.

1.37 Tender Guarantees

The Tenderer is to provide a tender guarantee as follows:

- 1.1 The tenderer must provide, as a part of its tender, a tender guarantee. The tender guarantee must be for an amount of **E10,000.00**. The original guarantee must be included in the original tender.
- 1.2 It may be provided in the form of a bank guarantee, a banker's draft, a certified cheque, a guarantee provided by an insurance and/or guarantee company or an irrevocable letter of credit made out to the EWADE.
- 1.3 The tender guarantee must remain valid for 30 days beyond the period of validity of the tender.
- 1.4 The tender guarantees of unsuccessful tenderers will be returned.
- 1.5 The tender guarantee of the successful tenderer will be released when the tenderer has signed the contract and provided the requisite performance guarantee.

1.38 Environmental Requirements

Tenderers are to carefully note the contents of the Environmental Requirements and to allow in their rates for these and for all statutory Environmental requirements.

1.39 Irregular Tenders

Any tender that does not comply with the foregoing conditions of tender, will be deemed to be incomplete and will be liable to rejection without further consideration.

1.40 Tender Opening

The purpose of opening and examining tenders is to check whether the tenders are complete, whether the requisite tender guarantees have been furnished, whether the required documents are included and whether the tenders are generally in order.

Tenders will be opened in public session on the date and venue specified in the publication notice by the committee appointed for that purpose. The committee will draw up minutes of the meeting, which must be available to tenderers on request.

16 | P a g e





At the tender opening session, the tenderers' names, the tender prices, any discounts offered, written notifications of alteration and withdrawal, the presence of the tender guarantee (if required) and such other information the Contracting Authority may consider appropriate may be announced.

After the public opening of the tenders, no information relating to the examination, clarification, evaluation or comparison of tenders or recommendations concerning the award of contract can be disclosed until after the contract has been awarded.

Any attempt by a tenderer to influence the evaluation committee in the process of examination, clarification, evaluation and comparison of tenders, to obtain information on how the procedure is progressing or to influence the Contracting Authority in its decision concerning the award of the contract will result in the immediate rejection of its tender.

1.41 Responsiveness Determination

The Employer's determination of a Tender's responsiveness is to be based on the contents of the Tender. A substantially responsive Tender is one that meets the requirements of the Tender Document without material deviation, reservation, or omission.

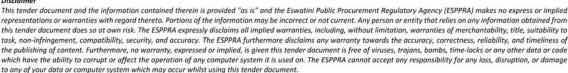
- (a) "Deviation" is a departure from the requirements specified in the Tender Document;
- (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Tender Document; and
- (c) "Omission" is the failure to submit part, or all of the information or documentation required in the Tender Document.

1.41.1 A material deviation, reservation, or omission is one that,

- (a) if accepted, would:
 - (i) affect in any substantial way the scope, quality, or performance of the Requirements as specified or
 - (ii) limit in any substantial way, inconsistent with the Tender Document, the Employer's rights or the Tenderer's obligations under the proposed Contract; or
- (b) if rectified, would unfairly affect the competitive position of other Tenderers presenting substantially responsive Tenders.
- (c) The Employer shall examine the technical aspects of the Tender to confirm that all requirements have been met without any material deviation, reservation, or omission.
- (d) If a Tender is not substantially responsive to the requirements of the Tender Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
- (e) Provided that a Tender is substantially responsive, the Employer may waive any quantifiable nonconformity in the Tender that does not constitute a material deviation, reservation or omission.

17 | Page







(f) Provided that a Tender is substantially responsive, the Employer may request that the Tenderer submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Tender related to documentation requirements.

1.41.2 A nonmaterial nonconformity is defined as an unimportant, insignificant and or minor difference or deviation from the Project Specifications that would not in any substantial way:

- (i) affect the scope, quality, or performance of the Requirements as specified or
- (ii) limit, or be inconsistent with the Tender Document, the Employer's rights or the Tenderer's obligations under the proposed Contract; or
- (iii) Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Tender. Failure of the Tenderer to comply with the request may result in the rejection of its Tender.

1.42 Tender Evaluation Criteria

The Contracting Authority reserves the right to ask a tenderer to clarify any part of its tender that the evaluation committee considers necessary to evaluate it. Such requests and the responses to them must be made in writing. They may in no circumstances alter or try to change the price or content of the tender, except to correct arithmetical errors discovered by the evaluation committee when analysing tenders. The Contracting Authority reserves the right to check information submitted by the tenderer if the evaluation committee considers it necessary.

1.42.1 Examination of the administrative compliance of tenders

The aim at this stage is to check that tenders comply with the requirements of the tender dossier. A tender is deemed to comply if it satisfies all the conditions, procedures and specifications in the tender dossier without substantially departing from or attaching restrictions to them.

Substantial departures or restrictions are those which affect the scope, quality or execution of the contract, differ widely from the terms of the tender dossier, limit the rights of the Contracting Authority or the tenderer's obligations under the contract or distort competition for tenderers whose tenders do comply. Decisions to the effect that a tender is not administratively compliant must be duly justified in the evaluation minutes.

The evaluation committee will check that each tender:

- has been properly signed;
- includes a correct tender guarantee (if required);
- meets the administration requirements as set out in the evaluation Criteria;
- has complete documentation and information;

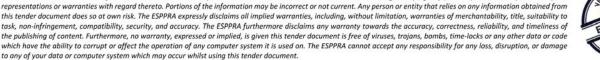
to any of your data or computer system which may occur whilst using this tender document.

Substantially complies with the requirements of these tender documents.

If a tender does not meet the requirements set out in the tender evaluation criteria, it may be rejected by the evaluation committee when checking admissibility.

18 | Page







1.42.2 Technical evaluation

The evaluation committee will evaluate only those tenders considered substantially compliant in accordance with evaluation criteria.

At this step of the evaluation procedure, the Committee will analyse the tenders' technical conformity in relation to the technical specifications, classifying them technically compliant or non-compliant as per the requirements of the tender.

Subsequently, the Committee will evaluate the technically compliant offers in accordance with the technical evaluation grid (setting out the technical criteria and weightings) attached to the tender dossier (technical capacity).

1.42.3 Financial evaluation

Once the technical evaluation has been completed, the evaluation committee checks that the financial offers contain no arithmetical errors. If the tender procedure contains several lots, financial offers are compared for each lot. The financial evaluation will have to identify the best financial offer for each lot, taking due account of any discounts offered.

When analysing the tender, the evaluation committee will calculate the final tender price after adjusting it for arithmetic errors. The Financial evaluation will be performed according to the evaluation criteria as set out in this document (Stage 3 – Bid price).

1.43 Tender Evaluation Criteria

The Tender evaluation will be done by the Employer.

There are three stages of evaluation of this tender. The procedure for the evaluation of responsive tenders is detailed below:

1.43.1 Stage 1: Compliance with tender requirements: (Administrative Compliance)

Check compliance of the bidders in completing the tender document. Qualification will be based on submission of certified copies of the following documents or returnable schedules regarding the legal status of the contractor. Failure to submit any of these documents may result to disqualification of the tender.

- a) Declaration of Eligibility of Contractor
- b) Proof of Authority of Signatory
- c) SZL 30.000.00 Tender Bond
- d) Certificate of Attendance at Clarification Meeting
- e) Original and Valid Tax Compliance Certificate
- f) Certified copy of Valid Trading License
- g) Certified copy of Certificate of Incorporation
- h) Valid Labour Compliance Certificate
- i) Valid ENPF Certificate

19 | Page





- j) Certified copy of valid certificate with the CIC under Category C4 Only
- k) Police Clearance for all Company Directors including fingerprints.
- 1) Submission of a Company current Form J, endorsed by the Registrar of Companies
- m) Submission of a Company current Form C, endorsed by the Registrar of Companies
- n) Submission of certified copies of National Identity documents for the people listed in Form C
- o) Financial statements not older than 12 months on the date of submission of this tender

1.43.2 Stage 2: Technical Capacity: (Technical Evaluation)

Checking the contractor's capacity to carry out the works as described in the tender document.

a. (i) Concrete Handling & Finishing Experience

General Construction or Rehabilitation/Repairs Experience involving concrete works – It must have successfully completed three (3) contracts/projects in the last ten (10) years from the submission deadline. The tenderer must submit copies of certificate of completion or Any evidence to prove performance of works.

The Procuring Entity reserves the right to verify information submitted by bidders for this tender procedure. (points 25/100).

Unit	Description	Verdict
3	Three or more Projects involving Hydraulic Structure concrete works/rehabilitation/repairs of at least SZL 1,500,000 in the last 6 years	PASS
2	Less than three or no project involving Hydraulic Structure concrete works/rehabilitation/repairs of at least SZL 1,500,000 in the last 6 years	FAIL

b. (iii) Personnel

The Tenderer must demonstrate that it has qualified personnel with the relevant recent past experience for the key positions that meet the following requirements/profiles, and that the nominated personnel confirm their availability to the Contract for its full duration.

Item #	Unit	Description	Verdict
1	1	Contracts Manager	PASS/FAIL
2	1	Construction Manager (Site Agent)	PASS/FAIL
3	1	Concrete Foreman	PASS/FAIL
4	1	Land Surveyor	PASS/FAIL
5	1	Environment Health and Safety Officer	PASS/FAIL

20 | P a g e



CVs and Academic Certificates to be attached as proof of qualification. The personnel mentioned above No. 1, 2, 3,4 must have a minimum of a diploma in Civil/Building with minimum 5 years working experience, and 5 must have a minimum of a diploma Health & Safety or related field with minimum 5 years' relevant experience. All other relevant artisans required for the proper execution of the job do not need to submit CVs. (Must be listed only).

(iv) Contractor's Equipment

The Tenderer must demonstrate that it owns or has the financial ability to hire the following.

key equipment listed and confirmed its availability to the Contract for its full duration:

Unit	Description	Verdict	
		Owned	Hired
2	20 Tonne Excavators	PASS/FAIL	
1	Tractor-Loader-Backhoe (TLB)/ Excavator	PASS/FAIL	
1	Roller	PASS/FAIL	
3	10m³ truck (minimum)	PASS/FAIL	
1	Light Delivery Vehicle (LDV)	PASS/FAIL	

The above listed Plant and Equipment for this Contract must be supported with proof of ownership documents or lease agreement. (*Proof of ownership / lease to be attached*). The Plant and Equipment shall be listed in section 2 of the document, 2.6 schedule 1G. Bidders who will not list the plant specifically available for this work will fail on plant and equipment.

d. (v) Economic and Financial Capacity

The average annual turnover of the tenderer in the past 2 years must be at least SZL 2,000,000.

The tenderer must have access to sufficient credit and other financial facilities to cover the required cash flow for the duration of the contract. In any case, the amount of credit available must exceed **SZL2,000,000**. A letter from a recognised financial Institution confirming this capacity is required. Latest financial statement of bidders should be attached. Financial statements not older than 12 months on the date of submission of this tender.

21 | P a g e

EWADE/0712

c.



Unit	Description	Verdict
1	Current ratio: The current ratio should be between 1 & 2 (or at least 1).	PASS/FAIL
1	Letter of credit from a recognised financial institution of at least SZL 2,000,000. A letter from a recognised financial Institution confirming this capacity is required. The letter must clearly state the amount of financing.	PASS/FAIL

e. (vi) Works Programme

A work plan (works programme) with brief descriptions of the main tasks, showing the sequence and proposed timetable for implementing the tasks. The tenderer must also submit a comprehensive method statement, with drawings if necessary, showing the methods by which it proposes to carry out the works. In particular, the tenderer must indicate the critical milestone bar chart showing all activities falling within the critical path. The work plan must indicate a maximum two (2) Consecutive Calendar Months.

Unit	Description	Verdict
1	Work plan indicating the maximum duration	PASS/FAIL
1	Critical Milestone Bar Chart detailing activities on the the critical path	PASS/FAIL
1	Method Statement	PASS/FAIL

a critical milestone bar chart showing times and duties allocated for employees for this contract.

Bids will be evaluated based on the weighted criteria shown below.

Technical Capacity		Verdict
a.	Concrete Handling & Finishing Experience	PASS
b.	Personnel	PASS
c.	Contractor's Equipment	PASS
d.	Financial & Economic Capacity	PASS
e.	Works Programme & method statement	PASS

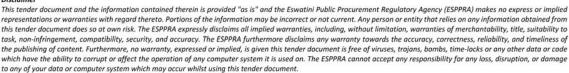
Tenderers obtained a FAIL in each of the items mentioned above do not qualify and will not have the technical capacity or competence to complete the work.

1.43.3 Stage 3: Bid Price: (Financial Evaluation)

The qualifying bidders will be ranked according to price. The most economically advantageous tender is the technically compliant tender with the lowest price.

22 | P a g e







1.44 Checking Designs and Bills of Quantities

While every effort has been made to have correct designs, drawings and bills of quantities, it is incumbent upon the winning contractor to check these soon after award of contract and satisfy themselves so that orders can be placed as soon as possible. It is expected that these verifications are done within two weeks of contract award and this time is within the time for completion of the contract.

1.45 As-Built Drawings

The Contractor shall produce as-built drawings and update his drawings during construction. The complete set of as-built drawings shall be submitted to the Employer before he will issue a Completion certificate. A sum is to be provided for in the bill of quantities.

All drawings shall be submitted to the Employer as both soft (DWG format) and hard copies.

1.46 Withdrawal of Tenders

- 1.46.1 Tenderers may alter or withdraw their tenders by written notification prior to the deadline indicated in the Invitation to tender. No tender may be altered after the deadline for submission. Withdrawals must be unconditional and will end all participation in the tender procedure.
- 1.46.2 Withdrawal of a tender in the period between the deadline for submission and the date of expiry of the validity of the tender will result in forfeiture of the tender guarantee.

1.47 **Tender Timetable**

	DATE	TIME*
Selling of tender start date	23 rd September 2024	08:30 – 16:00hrs
Site visit & clarification meeting	04 th October 2024	10:00hrs (LUSIP
		Damsite office)
Deadline for request for any additional	11 th October 2024	16:00hrs
information from the Contracting Authority		
Deadline for submission of tenders	25 th October 2024	14:00hrs
Tender opening session	25 th October 2024	14:15hrs
Notification of award to the successful	25 th November 2024	
tenderer (Provisional)		

23 | Page





Signature of the contract (Provisional)	02 nd December 2024	

1.48 Cancellation of Tender Procedure

In the event of cancellation of the tender procedure, the Contracting Authority will notify tenderers of the cancellation. If the tender procedure is cancelled before the outer envelope of any tender has been opened, the unopened and sealed envelopes will be returned to the tenderers.

Cancellation may occur, if:

- the tender procedure has been unsuccessful, namely where no suitable, qualitatively or financially acceptable tender has been received or there has been no valid response at all;
- the economic or technical parameters of the project have changed fundamentally;
- exceptional circumstances or *force majeure* render normal implementation of the project impossible;
- all technically acceptable tenders exceed the financial resources available;
- there have been breach of obligations, irregularities or frauds in the procedure, in particular where these have prevented fair competition;

the award is not in compliance with sound financial management, i.e. does not respect the principles of economy, efficiency and effectiveness (e.g. the price proposed by the tenderer to whom the contract is to be awarded is objectively disproportionate with regard to the price of the market

In no event shall the Contracting Authority be liable for any damages whatsoever including, without limitation, damages for loss of profits, in any way connected with the cancellation of a tender procedure, even if the Contracting Authority has been advised of the possibility of damages. The publication of a contract notice does not commit the Contracting Authority to implement the programme or project announced.

1.49 Sufficiency of Tender Prices

The Contractor shall be deemed to have satisfied itself before submitting its tender as to the correctness and sufficiency of the tender and of the rates and prices stated in the bills of quantities or price schedule which shall, except in so far as it is otherwise provided in the contract, cover all its obligations under the contract. Since the Contractor is deemed to have determined its prices on the basis of its own calculations, operations and estimates, it shall carry out without additional charge any work which is the subject of any item whatsoever in its tender for which it neither indicates a unit price nor a lump sum.

1.50 Ethics Clauses and Code of Conduct

Tenderers believing that they have been harmed by an error or irregularity during the award process may file a complaint. See Public Procurement Act for guidelines.

24 | P a g e





1.50.1 Absence of conflict of interest

The tenderer must not be affected by any conflict of interest and must have no equivalent relation in that respect with other tenderers or parties involved in the project. Any attempt by a tenderer to obtain confidential information, enter into unlawful agreements with competitors or influence the evaluation committee or the contracting authority during the process of examining, clarifying, evaluating and comparing tenders will lead to the rejection of its tender and may result in administrative penalties according to the Financial Regulation in force.

1.50.2 Breach of obligations, irregularities or fraud

The contracting authority reserves the right to suspend or cancel the procedure, where the award procedure proves to have been subject to breach of obligations, irregularities or fraud. If breach of obligations, irregularities or fraud are discovered after the award of the contract, the contracting authority may refrain from concluding the contract.

1.51 Appeals

Tenderers believing that they have been harmed by an error or irregularity during the award process may file a complaint in accordance with the Public Procurement Act, 2011.

1.52 Performance Security

1.52.1 Within fourteen (14) days of the receipt of notification of award from the Employer, the successful Tenderer shall furnish the performance security in accordance with the conditions of contract, using for that purpose the Performance Security Form included in this document, Contract Forms, or another form acceptable to the Employer. If the performance security furnished by the successful Tenderer is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Tenderer to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country.

152.2 Failure of the successful Tenderer to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender security, or execution of the Tender-Securing Declaration. In that event the Employer may award the Contract to the next lowest evaluated Tenderer whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

25 | Page



ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION CONTRACT NO.: EWADE/0712

2.0. RETURNABLE DOCUMENTS

FEEDER CANAL CONCRETE PANELS REHABILITATION

26 | P a g e



ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION CONTRACT NO.: EWADE/0712

2 <u>RETURNABLE DOCUMENTS</u>

The following documents are to be completed and returned as they constitute the tender. Whilst many of the returnable documents are required for the purpose of evaluating the tenders, some will form part of the subsequent contract, as they form the basis of the tender offer. For this reason, it is very important that tenderers return **all information requested.**

1. RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES (included hereafter for completion)

Schedule: 1A Enterprise Questionnaire
Schedule: 1B Authority of Signatory

Schedule: 1C Certificate of Authority for Joint Ventures (if applicable)

Schedule: 1D Record of Addenda to Tender Documents

Schedule: 1E References

Schedule: 1F Personnel Schedule (if applicable)

Schedule: 1G Schedule of Plant and Equipment available for the Contract Schedule: 1H Schedule of Work satisfactorily carried out by the Tenderer

Schedule: 11 Schedule of Proposed Subcontractors

Schedule: 1J Certificate of Attendance at Clarification Meeting

Schedule: 1K Proposed Amendments and Qualifications

2. OTHER DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES

Schedule: 2A Original Valid Tax Clearance Certificate
Schedule: 2B Valid Trading License (certified copy)
Schedule: 2C Joint Venture Agreement, if applicable

Schedule: 2D Financial statements not older than 12 months on the date of submission of this tender

Schedule: 2E Company Current form J, Stamped by the Registry of Companies
Schedule: 2F Company Current form C, Stamped by the Registry of Companies
Schedule: 2G Certified Copy of valid Registration Certificate with the CIC

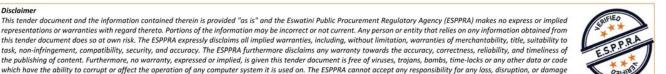
Schedule: 2H Certified Copy of Certificate of Incorporation Schedule: 2I Certified Copy of Labour Compliance Certificate

Schedule: 2J Declaration of Eligibility

to any of your data or computer system which may occur whilst using this tender document.

3. RETURNABLE SCHEDULES THAT WILL BE INCORPORATED INTO THE CONTRACT (to be attached with submission)

27 | P a g e



Schedule: 3A Environmental Requirements

4. OTHER SCHEDULES AND AFFIDAVITS THAT WILL BE INCORPORATED INTO THE CONTRACT (included hereafter for completion)

C1.1: The offer portion of the Form of Offer and Acceptance

C1.2: Contract Data (Part 2)

C1.3: Form of Performance Guarantee (to be supplied after award)

C1.4: Protection of the Environment

C2. 2: Bills of Quantities

ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION

CONTRACT NO.: EWADE/0712

2.1 SCHEDULE 1A: ENTERPRISE QUESTIONNAIRE

The following particulars must be furnished. In the case of a joint venture, separate enterprise questionnaires in respect of each partner must be completed and submitted.					
Section 1: Name of enterprise:	Section 1: Name of enterprise:				
Section 2: Tax registration number:		•••••			
Section 3: Construction grading cate	egory, if any:	•••••			
Section 4: Particulars of directors of	r sole proprietors and partners in	partnerships			
Name*	Identity number*	Nation	nality*		
* Attach separate page if more than 3	3 directors / partners				
Section 5: Particulars of companies					
Company registration number					
Trading Licence number					
Tax reference number					
Section 6: Record of service of the state					
Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months in the service of any of the following:					
☐ a member of Parliament ☐ an employee of any government Client, or l					
public entity or constitutional institution □ a member of the board of directors of any government statutory agency □ a member of the board of directors of any government statutory agency □ an employee of Parliament or government public enterprise					
an official of any government or parastatal					
Name of sole proprietor,					
partner, director, manager,	Name of institution, public office, board or organ of state		priate column)		
principal shareholder or stakeholder	and position held	current	Within last 12 months		
* Insert separate page if necessary					

29 | P a g e



Sec	tion 7: Record of	spouses, child	ren and parent	ts in the service of th	e state		
Indicate by marking the relevant boxes with a cross, if any spouse, child or parent of a sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months been in the service of any of the following:							
[□ a member of Parliament □ a member of the board of directors of any government or parastatal □ a member of the board of directors of any government statutory agency □ an employee of any government or parastatal □ an employee of Parliament or government public enterprise 						
	N	1 41 1	Name of in	nstitution, public		of service	
	Name of spouse paren		office, boar	d or organ of state position held	current	within last 12 months	
*]	Insert separate page	if necessary					
The i) ii)	tax matters are in order;						
iii)	corruption; iii) confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;					g	
iv)						-	
Signed Date							
Naı	ne			Position			
Ent	erprise name						_
	EWADE/0712					30 Page	 e

Disclaimer

ESP P.R.A

ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION

CONTRACT NO.: EWADE/0712

1.6	SCHEDULE 1B:	AUTHORITY	OF SIGNATORY
1.0	OCHEDUEL ID.		OF BIGHTION

Indicate the status of the tenderer by ticking the appropriate box hereunder. The tenderer must complete the certificate set out below for the relevant category.

	A	ט		l D		
	Company	Partnership	Joint Venture	Sole Prop	prietor	
A.	Certificate for	Company				
	I,, chairperson of the board of directors of, hereby confirm that by resolution of the board					
	(copy attached) taken on					
1.	As witnesses:		Chairman:			
2.	Date:					
	Tenderers must attach a copy of the Resolution of the Board - refer Schedule 2B.					
В.	Certificate for Partnership					
	We, the undersigned, being the key partners in the business trading as					
	acting in the capacity of					
	NAM	E ADI	DRESS SIC	SNATURE	DATE	

NOTE: This certificate is to be completed and signed by all of the key partners upon whom rests the direction of the affairs of the Partnership as a whole

31 | Page



	, acting in the capacity of lead	_
connection with the tender offer to our behalf.	for Contract and	any contract resulting from
This authorization is evidenced signatories of all the partners to the	•	rney signed by legally auth
NAME OF FIRM	ADDRESS	AUTHORISING SIGNATURE, NAME & CAPACI
Lead partner		
Certificate for Sole Proprietor		
I,	hereby confirm that I am the so	le owner of the business trad
	hereby confirm that I am the so	

32 | P a g e



ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION

CONTRACT NO.: EWADE/0712

2.2 SCHEDULE 1C: CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This returnable schedule is to be completed by joint ventures.

, authorised	signatory of the company, c	re and hereby authorise Mr/Mslose corporation or partnership
connection with the tender offer and a		acity of lead partner, to sign all documents in on our behalf.
NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner		Signature Name Designation
		Signature Name Designation
		Signature Name Designation
NOTE: A copy of the Joint Venture partner to the Joint Venture		the percentage contribution of each chedule.
EWADE/0712		33 P a g e

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ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION CONTRACT NO.: EWADE/0712

2.3 SCHEDULE 1D: RECORD OF ADDENDA TO TENDER DOCUMENTS

We confirm that the following communications received from the Employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:

No.	Date	Title or Details		ls
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Attach ado	litional pages if	more space is required.		
Signed			Date	
Name			Position	

34 | P a g e



ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION **CONTRACT NO.: EWADE/0712**

2.4 SCHEDULE 1E: REFERENCES

Technical References

The Tenderer shall provide the name and address of public or private organizations which are in a position to provide technical and financial references for his business and for all Sub-Contractors listed in the Pro-Forma - Subcontractors. The financial reference may be a bank, insurance company or similar institution which is willing to provide the Tenderer with necessary sureties or guarantees required for the contract.

1.	Name:		_
	Telephone No Fax.:		
	Address:		
	Specialisation:		
2.	Name:		_
	Telephone No Fax:		_
	Address:		
	Specialisation:		
Financ	cial Reference		
	Name:		
	Tel.: Fax:		
	Address:		
The Te	enderer hereby permits EWADE to obtain a Ban	ak Rating from the applicable financia	l institution.
Signed	I	Date	
Name		Position	
Tender	rer		
_	EWADE/0712		35 P a g e

This tender document and the information contained therein is provided "as is" and the Eswatini Public Procurement Regulatory Agency (ESPPRA) makes no express or implied representations or warranties with regard thereto. Portions of the information may be incorrect or not current. Any person or entity that relies on any information obtained from this tender document does so at own risk. The ESPPRA expressly disclaims all implied warranties, including, without limitation, warranties of merchantability, title, suitability to task, non-infringement, compatibility, security, and accuracy. The ESPPRA furthermore disclaims any warranty towards the accuracy, correctness, reliability, and timeliness of the publishing of content. Furthermore, no warranty, expressed or implied, is given this tender document is free of viruses, trojans, bombs, time-locks or any other data or code which have the ability to corrupt or affect the operation of any computer system it is used on. The ESPPRA cannot accept any responsibility for any loss, disruption, or damage to any of your data or computer system which may occur whilst using this tender document.



ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION CONTRACT NO.: EWADE/0712

2.5 SCHEDULE 1F: PERSONNEL SCHEDULE

Job Description	Names of Non-Local Personne	Names of Local personnel
Contracts Manager*		
Construction Manager*		
General Foreman*		
Land Surveyor*		
Environment and Safety Officer*		
Builders		
Clerks		
Carpenters		
Concrete Foreman		
Labourers		
* Other		
* Other		
To be filled in by Tenderer *Attoosition in this Contract	ached CV's and copies of academic	c certificates must state proposed
Signed	Date	
Name	Position	ı
Tenderer		

36 | P a g e



2.6SCHEDULE 1G: SCHEDULE OF PLANT AND EQUIPMENT AVAILABLE FOR THE CONTRACT

The following are lists of major items of relevant equipment that I/we **presently** own with attached **Proof of Ownership** will have available for this contract or will acquire or hire for this contract if my/our tender is accepted.

(a) Details of major equipment that is owned by and immediately available for this contract. Proof of ownership of the plant **must be attached** on this page.

Quantity	Description, Size, Capacity, etc
Attach additional pages i	f more space is required.

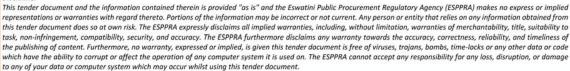
(b) Details of major equipment that will be hired with attached **Lease agreements** or acquired for this contract if my/our tender is acceptable.

Quantity	Description, Size, Capacity, etc.
Attach additional pages if	more space is required.

Signed	 Date	
Name	 Position	
Tenderer		

37 | Page





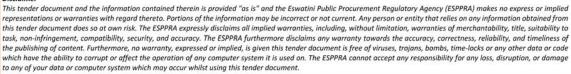


2.7 SCHEDULE 1H: SCHEDULE OF RELEVANT WORK SATISFACTORILY CARRIED OUT BY THE TENDERER

Employer, contact person and telephone number	Description of Contract		ie of Work sive of GST (E)	Date Completed
	5	No.4-0		
d		Oate Position		

38 | P a g e







SCHEDULE 1I: SCHEDULE OF PROPOSED SUBCONTRACTORS

We notify you that it is our intention to employ the following Subcontractors to work on this contract. If we are awarded the contract we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us

No.	Name and Address of Proposed Subcontractor	Nature and Exten	t of Work	Previous Experience with Subcontractor
1.				
2.				
3.				
4.				
5.				
6.				
7.				
Signed			Date	
Name			Position	

bighed	Bate	
Name	 Position	
Tenderer	 •••••	

39 | Page

EWADE/0712

2.8



ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION

CONTRACT NO.: EWADE/0712

2.9SCHEDULE 1J: CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING

This is to cert	tify that	(T	enderer)
of		•••••	(address)
was represent	ted by the person(s) named below at the compulsor	ry meeting held	for all tenderers at
	(Location) on	(date), starting at
matters incid	edge that the purpose of the meeting was to acquain tental to doing the work specified in the tender of ecessary when compiling our rates and prices included	documents in	order for us to take account of
Particulars of	person(s) attending the meeting:		
Name		Signature	
Capacity			
Name		Signature	
Capacity			
Attendance o	f the above persons at the meeting is confirmed by	the Employer'	s representative, namely:
Name		Signature	
Capacity		Date & Time	
EWADE ST	AMP		

40 | P a g e



2.10 SCHEDULE 1K: PROPOSED AMENDMENTS AND QUALIFICATIONS

The Tenderer should record any deviations or qualifications he may wish to make to the tender documents in this Returnable Schedule. Alternatively, a tenderer may state such deviations and qualifications in a covering letter to his tender and reference such letter in this schedule.

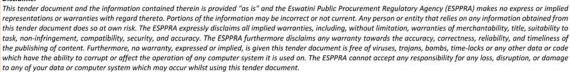
The Tenderer's attention is drawn to clause F.3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the employer's handling of material deviations and qualifications.

Page	Clause or Item	Propo	osal
igned		 Date	
-			

orginea .	Bute	
Name	 Position	
Гenderer	 	

41 | Page







2.11 SCHEDULE 2A: ORIGINAL AND VALID TAX COMPLIANCE CERTIFICATE (ORIGINAL COPY)

The Tenderer must attach to this page an original and Valid Tax Compliance Certificate in respect of his/her company or partnership. In the case of a joint venture between two or more firms, the tenderer shall attach an original and Valid Tax Compliance Certificate for each of the joint venture partners.

42 | P a g e



2.12 SCHEDULE 2B: VALID TRADING LICENSE (CERTIFIED COPY)

The Tenderer must attach to this page a copy of the valid Trading Licence. In the case of a joint venture between two or more firms, the tenderer shall attach copies of trading licensees for each of the joint venture partners.

43 | Page



2.13 SCHEDULE 2C: JOINT VENTURE AGREEMENT (Only if applicable)

44 | P a g e



2.14 SCHEDULE 2D: FINANCIAL STATEMENTS NOT OLDER THAN 12 MONTHS ON THE DATE OF SUBMISSION OF THIS TENDER

The tenderer must attach to this page his latest financial statement.

45 | Page



2.15 SCHEDULE 2E: COMPANY CURRENT FORM J, STAMPED BY THE REGISTRY OF COMPANIES

The tenderer must attach to this page his company current Form J, stamped by the registry of companies				

46 | P a g e



2.16 SCHEDULE 2F: COMPANY CURRENT FORM C, STAMPED BY THE REGISTRY OF COMPANIES

The tenderer must attach to this page his company current Form C, stamped by the registry of companies.

47 | Page



2.1 SCHEDULE 2G: VALID CIC REGISTRATION CERTIFICATE (CERTIFIED COPY)

The Tenderer must attach to this page a copy of the CIC registration certificate. In the case of a joint venture between two or more firms, the tenderer shall attach copies of CIC certificates for each of the joint venture partners.

48 | P a g e



2.17 SCHEDULE 2H: CERTIFICATE OF INCORPORATION (CERTIFIED COPY)

The Tenderer must attach to this page a copy of the Certificate of Incorporation. In the case of a joint venture between two or more firms, the tenderer shall attach copies of the certificate for each of the joint venture partners.

49 | P a g e



2.18 SCHEDULE 2I: VALID CERTIFICATE OF LABOUR COMPLIANCE (CERTIFIED COPY)

The Tenderer must attach to this page a copy of the Labour Compliance Certificate. In the case of a joint venture between two or more firms, the tenderer shall attach copies of the certificate for each of the joint venture partners.

50 | P a g e



2.19 SCHEDULE 2J: DECLARATION OF ELIGIBILITY

[All bidders must meet the following criteria, to be eligible to participate in public procurement. Suppliers must provide a signed declaration on their company letterhead in the following format. If the Tender is being presented by a joint venture or consortium all members must sign the declaration

[>>> Name of Tenderer, Address, and Date>>>]

To: The Chief Executive Officer Eswatini Water & Agriculture Development Enterprise (EWADE) **EWADE** Building P.O. Box 198 Siphofaneni

Dear Sir,

(1) Re: EWADE/0712: FEEDER CANAL CONCRETE PANELS REHABILITATION

In accordance with the eligibility requirements of the Procurement Regulations and the Tender document we hereby declare that:

- (a) We, are a legal entity and have the legal capacity to enter into the contract;
- (b) We, further declare that we are not insolvent, in receivership, bankrupt or being wound up, our affairs are not being administered by a court or a judicial officer, our business activities have not been suspended and we are not the subject of legal proceedings for any of the foregoing;
- (c) We, declare that we have fulfilled our obligations to pay taxes and social security contributions;
- (d) We, have not, and our directors or officers have not, been convicted of any criminal offence related to our/their professional conduct or the making of false statements or misrepresentations as to their qualifications to enter into a contract within a period of five years preceding the commencement of the procurement proceedings; and
- (e) We, do not have a conflict of interest in relation to the procurement requirement.

Authorized Signature:

Date	×	
	EWADE/0712	51 P a g e



3.0 AGREEMENTS AND CONTRACT DATA

FEEDER CANAL CONCRETE PANELS REHABILITATION

52 | P a g e



3 AGREEMENT AND CONTRACT DATA

C1.1	Form	of	Offer	and	Acce	ptance

- C1.2 Contract Data
- C1.3 Form of Performance Guarantee
- C1.4 Form of Tender (Guarantee)
- C1.4 Protection of the Environment



3.1 C1.1: FORM OF OFFER AND ACCEPTANCE

1. OFFER			
The employer, identified in the acceptant procurement of:	ce signature block, has solicit	ed offers to enter into a contra	act for the
The tenderer, identified in the offer signal addenda thereto as listed in the tender so tender.			
By the representative of the tenderer, decacceptance, the tenderer offers to perform contract including compliance with all it an amount to be determined in accordance.	rm all of the obligations and s terms and conditions accord	liabilities of the Contractor ling to their true intent and me	under the eaning for
The offered total of the prices inclusive	e of Value Added Tax (VAT) is	••••
		Emalangeni (in words);	
E	(in figures)		
This offer may be accepted by the employ and returning one copy of this document tender data, whereupon the tenderer become contract identified in the contract data.	t to the tenderer before the er	nd of the period of validity sta	ited in the
Signature(s)			
Name(s)			
Capacity			
for the Tenderer (Name and address of o			
Name and signature			
of witness		Date	
EWADE/0712			54 P a g e



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3.2C1.2: CONTRACT DATA (PART 1)

PART 1: DATA PROVIDED BY THE EMPLOYER

CONDITIONS OF CONTRACT

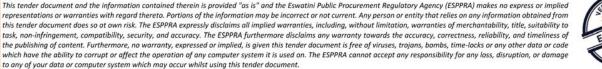
The General Conditions of Contract for Construction Works, Third Edition, 2015, published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and is obtainable from www.saice.org.za.

56 | Page

EWADE/0712

to any of your data or computer system which may occur whilst using this tender document.







CONTRACT SPECIFIC DATA

The following contract specific data, referring to the General Conditions of Contract for Construction Works, Third Edition, 2015, are applicable to this Contract:

PART 1: DATA PROVIDED BY THE EMPLOYER

The following contract specific data are applicable to this Contract:

GCC Clause	Information
Clause 1.1.1.15 The name of the Employer is Eswatini Water & Agricultural Develop Enterprise (EWADE)	
	The Employer's Agent is:
	Name:
	The address of the Employer is:
	Postal
	P.O. Box 198
	Siphofaneni
Clause 1.1.1.17 and	Eswatini
1.2.1.2	Tel: 00 268 2411 8600
	Email: eswade@eswade.co.sz
	Physical Address
	EWADE Building
	Siphofaneni MR08
	Siphofaneni
	ESWATINI
Clause 1.1.14:	100% of the works is financed by the Government of Eswatini. The Project will be managed by EWADE. The name of the Employer is Eswatini Water and Agricultural Development Enterprise (EWADE).
Clause 1.1.1.13	The Defects Liability Period is 12 Months from the date of the Certificate of Completion.
Clause 1.1.1.16	The name of the Employer's Agent Representative is
	The address of the Employers Agent Representative is:
Clause 1.2.1	LUSIP Damsite Offices PO Box 198 Siphofaneni

57 | P a g e





GCC Clause	Information		
	fax: 00 268 2344-1665/1953 Tel: 00 268 2411 8600		
Clause 1.3.2	The law which is to apply to the Contract and according to which the Contract is to be interpreted, shall be the law of Eswatini.		
Clause 1.1.1.26	The Pricing Strategy is the Bill of Quantities		
Clause 2.1.2.2	The Contractor shall be deemed knowledgeable in respect of environmental, hydrological and climatic conditions, particularly for the planning of the Temporary Works.		
Clause 4.5.2	Temporary Works shall be discussed by the Employer, the Contractor and the Engineer before obtaining approval for implementation		
Clause 5.2.1	The commencement date shall be the date included in the letter of award contract issued by the Employer and or Date of signature of Contract.		
Clause 5.8.1	The special non-working days are Sundays and all Public Holidays in terms of The Public Holidays Act 1938 as amended		
Clause 6.2	The time to deliver the Deed of Guarantee is within 14 days from the Commencement Date.		
Clause 6.2	The liability of the guarantee shall be for 10% of the Tender Sum.		
Clause 6.2.1	The security to be provided by the Contractor shall be in the form of a Performance Guarantee and will comply with the requirements of Clause 6.2.3.		
Clause 5.3	The Contractor shall commence with executing the Works upon the Employers		
Clause 5.3.1	The documentation required before commencement of Works execution are: > Health and Safety Plan > Environmental Management Plan > Initial Program (refer to clause 5.6) > Performance Security (refer to clause 6.2) > Insurance (refer to clause 8.6)		
Clause 5.3.2	The time required to submitting the required documentation before commencement of works is 14 days after receipt of Letter of Award.		
Clause 5.4.2 The access and possession of Site shall not be exclusive to the Contractor but as out in the Site information			
Clause 5.5.1	The whole of the Works shall be completed within two (2) Calendar Months.		
Clause 5.13.1	The Contractor shall be liable for the penalty at SZL10 000.00 per day for every calendar day that elapses between the Completion Date and the actual date of Practical Completion.		
Clause 5.14.1	Practical Completion Certificate will be issued after the following has been completed; (i) Completion and Approval of canal panels repairs.		
Clause 5.16.3	The latent defect period is 5 years		



GCC Clause	Information	
Clause 6.6.1.2.1	The maximum percentage allowance to cover overhead charges is 5%	
Clause 6.8.2	No price adjustment is allowed for in this contract.	
Clause 6.8.3	Price adjustments for variations in the costs of special materials are not allowed.	
Clause 6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80% (To be supported by Original Invoices)	
Clause 6.10.3	The total amount of retention money shall not exceed 10% of the Contract price.	
Clause 6.10.3 The limit of retention money is 10% of the contract price. Guarantee in lieu of retention is not permitted.		
Clause 6.10.6.2 Monies due to the Contractor which are not paid within 45 days shall incur interaction at the prime overdraft rate, as charged by the Contractor's Bank.		
Clause 8.1.1 The Contractor shall maintain sufficient Temporary Works to ensure the least possible inconvenience to other roads users or operators within the facility.		
Clause 8.4.1.1 Add to the end of Clause 33.1.1 the following text: "hereby indemnifies the Employer against any liability in respect of damage physical loss of property of any person or injury or death of any person due compliance with the Occupational Safety and Health Act of 2001, and"		
Clause 10.4.2 Dispute resolution shall be by amicable settlement, failing which dispute shall resolved by way of Adjudication Board.		
Clause 10.5.3	The number of Adjudication Board members to be appointed is one.	



2 1	01.0	CONTED	ACTEDATE	(DADEA)
2.1	C1.2:	CONTR	ACT DATA	(PART 2)

PART 2: DATA PROVIDED BY THE CONTRACTOR

GCC Clause	Information		
Clause 1.8	The Name of the Contractor is		
	The address of the Contractor is:		
	Postal	Tel:	
		Fax:	
Clause 1.2.1.2			
		Email:	
	Physical		

60 | P a g e



2.2 C1.3: FORM OF PERFOMANCE GUARANTEE

WHER	CONTRACT NO. EWADE/0712 – FEEDER CANAL CONCRETE PANELS REHABILITATION WHEREAS EWADE hereinafter referred to as "the Employer") entered into, a Contract with		
(hereina	after called "the Contractor") on the		
	construction of		
	WHEREAS it is provided by such Contract that the Contractor shall provide the Employer with securit of a guarantee for the due and faithful fulfilment of such Contract by the Contractor;	ty	
AND W	VHEREAS		
has/hav	e at the request of the Contractor, agreed to give such guarantee;		
NOW T	THEREFORE WE,		
Employ	by guarantee and bind ourselves jointly and severally as Guarantor and Co-principal Debtors to the renunciation of the benefits of division and exclusion for the due and faithful performance betractor of all the terms and conditions of the said Contract, subject to the following conditions:		
1.	The Employer shall, without reference and/or notice to us, have complete liberty of action to act any manner authorized and/or contemplated by the terms of the said Contract, and/or to agree to ar modifications, variations, alterations, directions or extensions of the Completion Date of the Worl under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor or liability hereunder be affected by reason of any steps which the Employer may take under suc Contract, or of any modification, variation, alterations of the Completion Date which the Employer may make, give, concede or agree to under the said Contract.	iy ks ur ch	
2.	This guarantee shall be limited to the payment of a sum of money		
3.	The Employer shall be entitled, without reference to us, to release any guarantee held by it, and give time to or compound or make any other arrangement with the Contractor.	to	
_	61 P a g	e	



4.	in terms of the Contract, unless we are advise said Certificate of his intention to institute cla	This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the Contract, unless we are advised in writing by the Employer before the issue of the said Certificate of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated.		
5.	Our total liability hereunder shall not exceed the Guaranteed Sum of			
		(E)	
6.	The Guarantor reserves the right to withdraw f Sum with the beneficiary, whereupon our liabi		ranteed	
7.	7. We hereby choose our address for the serving of all notices for all purposes arising			
	VITNESS WHEREOF this guarantee has been execut his	•		
As w	vitnesses:			
1.		Signature		
2.		Duly authorized to sign on behalf of		
		Address		



2.3 C1.4: PROTECTION OF THE ENVIRONMENT

	The contractor will not be given access to the site unless this form has been signed	
 I/We the undersigned, do hereby declare that I/we are aware of the increasing requirement by society and environmental legislation, that development activities of any kind shall be carried out with duregard to their impact on the environment. In view of this requirement of society and legislation, and a corresponding requirement by the employe with regard to this contract, I/we shall comply with the terms of the contract dealing with environment amanagement. In the spirit of such requirements, I/we shall, in selecting appropriate employees, plant, materials an methods of construction, is so far as I/we have the choice, include in the analysis not only the technica an economic aspects, but also the impact on the environment of the options. In this regard, I/w recognize and accept the need to abide by the 'precautionary principle', which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive approach to development in the face of uncertainty. I/We acknowledge and accept the right of the employer to deduct from any amounts due to me/us, as result of my failure to protect the environment Officer shall certify as being warranted in view of my/our failure to comply with the terms of the contract dealing with the protection of the environment, subject to the following: The Environmental Compliance Officer (ECO), in determining the amount of such a fine, shal take into account inter alia, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance, one-compliance, the extent of the contractor' overall compliance with environmental conservation requirements, and in particular, the extent to which he considers it necessary to impose a fine in order to eliminate/reduce future occurrences. The ECO shall, with respect to any fine imposed, provide me/us with a written statement giving details of the offence, the facts		
 I/We the undersigned, do hereby declare that I/we are aware of the increasing requirement by society and environmental legislation, that development activities of any kind shall be carried out with duregard to their impact on the environment. In view of this requirement of society and legislation, and a corresponding requirement by the employee with regard to this contract, I/we shall comply with the terms of the contract dealing with environmental management. In the spirit of such requirements, I/we shall, in selecting appropriate employees, plant, materials an methods of construction, is so far as I/we have the choice, include in the analysis not only the technica an economic aspects, but also the impact on the environment of the options. In this regard, I/we recognize and accept the need to abide by the 'precautionary principle', which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive approach to development in the face of uncertainty. I/We acknowledge and accept the right of the employer to deduct from any amounts due to me/us, as result of my failure to protect the environment Officer shall certify as being warranted in view of my/our failure to comply with the terms of the contract dealing with the protection of the environment, subject to the following: The Environmental Compliance Officer (ECO), in determining the amount of such a fine, shal take into account inter alia, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance/non-compliance, the extent of the contractor' overall compliance with environmental conservation requirements, and in particular, the extent to which he considers it necessary to impose a fine in order to eliminate/reduce future occurrences. The ECO shall, with respect to any fine imposed, provide me/us with a written statement giving details of the offence, the spe	I/We(contractor), record as	
 and environmental legislation, that development activities of any kind shall be carried out with duregard to their impact on the environment. In view of this requirement of society and legislation, and a corresponding requirement by the employe with regard to this contract, I/we shall comply with the terms of the contract dealing with environmenta management. In the spirit of such requirements, I/we shall, in selecting appropriate employees, plant, materials and methods of construction, is so far as I/we have the choice, include in the analysis not only the technica an economic aspects, but also the impact on the environment of the options. In this regard, I/we recognize and accept the need to abide by the 'precautionary principle', which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive approach to development in the face of uncertainty. I/We acknowledge and accept the right of the employer to deduct from any amounts due to me/us, as result of my failure to protect the environment Officer shall certify as being warranted in view of my/our failure to comply with the terms of the contract dealing with the protection of the environment, subject to the following: The Environmental Compliance Officer (ECO), in determining the amount of such a fine, shall take into account inter alia, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance/non-compliance, the extent of the contractor' overall compliance with environmental conservation requirements, and in particular, the extent to which he considers it necessary to impose a fine in order to eliminate/reduce future occurrences. The ECO shall, with respect to any fine imposed, provide me/us with a written statement giving details of the offence, the facts on which he has based his assessment and the terms of the contract (by reference to the specific clause) which has been contravened. 	follows:	
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DATE SIGNATURE OF TENDERER	 contract dealing with the protection of the environment, subject to the following: The Environmental Compliance Officer (ECO), in determining the amount of such a fine, take into account <i>inter alia</i>, the nature of the offence, the seriousness of its impact of environment, the degree of prior compliance/non-compliance, the extent of the contract overall compliance with environmental conservation requirements, and in particular, the eto which he considers it necessary to impose a fine in order to eliminate/reduce for occurrences. The ECO shall, with respect to any fine imposed, provide me/us with a written statement good details of the offence, the facts on which he has based his assessment and the terms of 	shall on the ctor's extent future
63 P a g e		



4.0 PRICING DATA

FEEDER CANAL CONCRETE PANELS REHABILITATION

64 | P a g e



3 BILL OF QUANTITIES

3.1 PREAMBLES TO SCHEDULE OF QUANTITIES

- 1. The General Conditions of Contract together with the Specifications, Special Provisions and the Drawings shall be read in conjunction with the Schedule of Quantities and in so far as they have any bearing shall be referred to for details of the description, quality, test and strength of material used and the workmanship, conditions, obligations, liabilities and instructions generally which shall be complied with in carrying out the Contract.
- 2. The cost of complying with all conditions, obligations and liabilities described in the General Conditions of Contract, Specification and Project requirements and Particular requirements and Particular Specifications and in the Schedule of Quantities, including all overhead charges and profit, costs and expenses that may be required in and for carrying out the work as shown on the drawings shall be deemed to be spread over and included in the prices or sums stated by the Contractor in the Schedule of Quantities.
- 3. Each item shall be priced and extended to the Amount column by the Contractor with the exception of the items for which a rate only is required, or which already have Provisional Sums attached thereto. If the Contractor omits to price any items in the Schedule of Quantities, then the cost of the work of such items shall be held to be spread over and included in the prices given on other items of work.
- 4. The quantities of work and materials set forth in the Schedule of Quantities are estimates only and are not to be considered as limiting nor as extending the amount of work to be done and material to be supplied by the Contractor. The works as completed in accordance with the Contract shall be measured and paid for as described in the Schedule of Quantities and in accordance with the General Conditions of Contract, Specification, Project Requirements and Particular Specifications.
- 5. The units of measurement described in the Schedules of Quantities are metric units. Abbreviations used in the Schedule are as follows:-

km = kilometre

m = metre

 m^2 = square metre

 $m^3 = \text{cubic metre}$

No. = number

kg = kilogram

t = ton = 1000 kg

1 = litre

ha = hectare

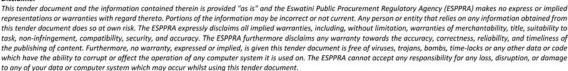
hr = hour

All rates and sums of money quoted in the Schedule of Quantities shall be in Emalangeni.

6. In the event of errors of extension or addition in the priced schedule of Quantities, the rates quoted will be taken as correct.

65 | P a g e







3.2 CONSTRUCTION INDUSTRY COUNCIL LEVY PAYMENT SCHEDULE

1. Reference is made to the CIC Levy Regulation of 2016, procedure, rules, terms and conditions for levy payment obtainable at the CIC website at www.cic.co.sz. The table below informs bidders on the levy payment schedules.

Levy Payment Schedules as gazetted by the Minister of Public Works and Transport as of 10 October 2016.

Minimum Project Cost (E)	Maximum Project Cost (E)	Levy Payable (%)
0	2 000 000.00	1
2 000 001	5 000 000.00	0.8
5 00 001	10 000 000.00	0.75
10 000 001	15 000 000.00	0.6
15 000 001	No Limit	0.5

2. Tenderers are advised to consult with the CIC and EWADE will not be held accountable for the accuracy of the information provided in the table above for levy payment schedules.

66 | P a g e



REHABILITATION OF A SECTION OF FEEDER CANAL - CHAINAGE 8.3KM

ITEM NO	DESCRIPTION	AMOUNT
1	SECTION 1: PRELIMINARY AND GENERAL ITEMS	
2	SECTION 2: WORKS	
3	SECTION 3: SUBSOIL DRAINS	
4	SECTION 4: CONCRETE PANELS	
5	SECTION 5: GABIONS & STONE PITCHING	
6	SUB - TOTAL (A)	
7	ADD CONSTRUCTION LEVY @%	
8	SUB - TOTAL (B)	
	ADD 15% VAT	
11	TOTAL PROJECT COST CARRIED TO FORM OF OFFER	

67 | P a g e



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
NO				SZL	SZL
	SECTION A: PRELIMINARY AND				
	GENERAL ITEMS				
A1	Fixed Charge Items				
A1.1	Contractual requirements	Sum	1.0		
111.1	Contractan requirements	Sum	1.0		
A1.2	Site establishment.	Sum	1.0		
A1.3	Facilities for Sub-Contractors	Sum	1.0		
A1.4	All other fixed charge obligations	Sum	1.0		
A1.4	All other fixed charge obligations	Sum	1.0		
A1.5	Removal of site establishment	Sum	1.0		
A2.0	Time Related Items (Time related items				
	will be paid for over the duration of the				
	Contract in the ratio of work done to				
	date to the total value of work to be				
	executed in the sections excluding				
	Section A. The final amount to be paid to be equal to 100%)				
	to be equal to 100 /0)				
A2.1	Contractual requirements	Sum	1.0		
A2.2	Facilities for Sub-Contractors	Sum	1.0		
A2.3	Supervision for the duration of	Months	2.0		
112.3	construction	Wionins	2.0		
A2.4	Company and office overhead costs for the	Sum	1.0		
	duration of the Contract				
A2.5	Any other value-related obligations	Sum	1.0		
A3.0	Sums Stated Provisionally by the				
A3.0	Employer				
A3.1	Provisional Sum: For testing ordered by	Prov.			
	the Employer and carried out by an	Sum	1.0	5,000.00	5,000.00
	independent laboratory or facility. (Note:				
	All costs in connection with the sampling				
	and testing of concrete shall be included in				
	the Tenderer's rate for Concrete)				



A3.2	Overhead charges and profit on Item A3.1 above	%		
Total C				



	REHABILITATION OF A SECTION OF FEEDER CANAL - CHAINAGE 8.3KM							
SECTION	N 2: WORKS							
ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT			
В	DEMOLITION OF 2 CANAL PANELS							
	BREAKING OUT OF CONCRETE							
B2.1	Saw cut through existing surface (type of surface and depth not exceeding 200mm	m	22					
B2.2	Demolishing of two existing concrete panels	sum	1					
<u> </u>	Zemenshing of two existing concrete panels	33111	1					
	EARTHWORKS							
B2.3	Excavations - Cut to Spoil the bulk or restricted excavation of materials which is not suitable for placement in fill, the loading and transport and disposal. Free haul distance not exceeding 6km.	m³	540					
B2.4	Excavations - Importation of G6 gravel from designated borrow pits located within 6km	m³	540					
B2.5	BACKFILLING - Compaction of G6 gravel material in 150mm thick layers and compact to 93% Modified AASHTO density.	m ³	540					
	EARTHWORKS - PIPE TRENCHES							
	Evacuate by hand in all materials to varify by lifting							
B2.6	Excavate by hand in all materials to verify by lifting and reinstating/replacing 600mm stormwater drain and backfill	m³	20					
	TOTAL CARRIED FORWARD TO SUM	MARY						



REHABILITATION OF A SECTION OF FEEDER CANAL - CHAINAGE 8.3KM

0.51111						
SECTION 3: SUBSOIL DRAINS						
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
3	SUB SOIL DRAINS Carry out operation as applicable: Manufacture, supply, deliver, install, excavate, construct, backfill, finish, test and commission and attend to defects the following items: Excavation for subsoil drainage system; Trench excavation for subsoil drainage system;	m	40			
3.1	Natural permeable material in subsoil drainage systems (crushed stone): Supply, deliver and instal crushed stone obtained from commercial sources: Coarse grade 19mm Aggregates	m^3	20			
3.2	Pipes in subsoil drainage systems: Supply deliver and install Unplasticized PVC pipes and fittings, normal duty, complete with couplings:110 X 6m HDPE slotted subsoil drainpipe (black coupling)	m	40			
TOTAL CARRIED FORWARD TO SUMMARY						

71 | Page



	REHABILITATION OF A SECTION OF FEE CHAINAGE 8.3KM	DER CA	NAL -		
SECTION 4:	CONCRETE PANELS				
ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
D	CANAL PANELS				
D	REINFORCEMENT				
D4.1	Welded Mesh Fabric ref. 395	m2	27.5		
	CONCRETE WORKS				
D4.1.2	Cast-in-situ concrete grade 35MPa for panels, including curing & protection and float surface finish.	m3	23		
D2.	FORMWORK				
D2.1	Formwork to narrow width n.e 200mm hight to sides of concrete panels	m	100		
TOTAL CARRIED FORWARD TO SUMMARY					

72 | Page



	REHABILITATION OF A SECTION OF I CHAINAGE 8.3KM	FEEDE	R CANAL -		
SECTION 5	: GABIONS & STONE PITCHING				
ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
Е	GABION INSTALLATION				
E5.10	Carry out operation as applicable: install, excavate, construct, backfill, finish and commission and attend to defects the following items:				
E5.1.1	Installation of 2 x 1 x 1m Gabion baskets and fill with gabion 100mm stones baskets on 2 sides slopes.	_	48		
TOTAL CA	DDIED EODWADD TO SUMMADV				
TOTAL CARRIED FORWARD TO SUMMARY					

73 | P a g e



ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION CONTRACT NO.: EWADE/0712

5.0 PROJECT TECHNICAL SPECIFICATIONS

FEEDER CANAL CONCRETE PANELS REHABILITATION

74 | Page

EWADE/0712



5.0 PROJECT TECHNICAL SPECIFICATION AND PARTICULAR SPECIFICATIONS

a. PROJECT SPECIFICATION PART 1

STATUS.

Should any requirement of the Project Specifications conflict with any requirements of the Standard Specifications listed in PS 18, the requirements of the Project Specifications shall prevail.

PS 1. GENERAL REQUIREMENTS.

This Project Specification supplements the attached General and Special Conditions, Specifications and Drawings. However, in the case of conflict with any part or parts of the said Specifications or Drawings, the said Project Specification shall take precedence and shall govern.

PS 2. **SCOPE OF CONTRACT**.

The contract is for the FEEDER CANAL CONCRETE PANELS REHABILITATION. The works include but not limited to:

- i) Demolish two (2) Concrete Panel of the Canal Conveyance system.
- ii) Excavate material not suitable for fill as per quantities stated on BoQ loading, transport and disposal thereof.
- iii) Repair / replace two (2) stormwater drains 600mm Diameter.
- iv) Insert two (2) perforated subsoil drains 110mm each
- v) Backfill & Compact imported material to specified density.
- vi) Laying of Mesh wire, Ready mix 35Mpa concrete placing and finishing.
- vii) Backfill & compact driveway & slope embankments of Canal
- i. Mounting of Gabion Baskets on embankments as specified

PS 3. **DESCRIPTION OF SITE AND ACCESS.**

The site is located in Mpumakudze Chiefdom under Siphofaneni Inkhundla.

- i. The site is accessed through Siphofaneni Sithobelweni Road
- ii. Take a turn to the Right direction before crossing the Canal.
- iii. Drive along the Canal 7 kilometers (seven) to Chainage 8.1
- iv. Location is below the RFG Farm,

PS 4. NATURE OF GROUND AND SUB-SOIL CONDITIONS.

There is no geotechnical report available for the sites. Hence, contractors are required to familiarise themselves with ground conditions during the site inspection and during the tendering period.

PS 5. **DETAILS OF CONTRACT.**

The contract includes but is not limited to the construction of the items outlined below:





- a. Dewatering of small earth dams
- b. Clear site of all protrusions
- c. Clear vegetation
- d. Earthworks.
- e. Supply and Installation of A6 Geotextile Bidim
- f. Installation of 1.5mm HDPE Flexible Membrane Lining

PS 6. **DRAWINGS.**

The works shall be carried out in accordance with the drawings issued by the Engineer, and any amendments or additions thereto which may from time to time be ordered in writing by the Engineer.

PS 7. FACILITIES FOR OTHER CONTRACTORS AND RELEVANT AUTHORITIES.

The Contractor shall in accordance with the requirements of the Engineer afford all reasonable facilities to any other contractors employed by the Employer and their workmen and to the workmen of the Employer and of any properly authorised person, authority or statutory body who may be employed in the execution on or near the Site, of any work not included in the Contract, or of any Contract which the Employer may enter into in connection with or ancillary to the works.

PS 8. **OFFICIAL WORKING HOURS.**

Normal working hours for EWADE shall be from 0730 to 1630 hours on Monday to Fridays inclusive.

Should the Contractor wish to work overtime during the working week or on Saturday, he shall notify the engineer at least 48 hours in advance for approval.

PS 9. **SITE FACILITIES AVAILABLE.**

The contractor must make his own arrangements for the supply of water and electricity.

PS 10. LOCATION OF CAMP AND DEPOT.

The site set aside as a camp and depot site for the Contractor will be agreed by the successful Tenderer and the Engineer. Possible sites can be indicated during the site inspection.

PS 11. SITE FACILITIES.

An engineer's site office will not be required.

PS 12. NAME BOARDS.



Details of the information to be given on the name boards will be shown on a drawing to be issued to the successful Tenderer. The following information will be in the name board: Name of the project Feeder Canal Concrete Panels Rehabilitation, name of the contractor, name of the employer (Eswatini Water and Agricultural Development Enterprise), name of the financer (GoS) and description of the Project.

PS 13. **SURVEY REQUIREMENTS.**

The contractor shall check all survey information provided to them and carry out required survey for proper checks and setting out of structures.

PS14. **CONSTRUCTION PROGRAMME.**

The time allowed for this contract is two (2) calendar months ONLY. The Contractor shall ensure that the works including testing and commissioning is completed within the time stated above.

PS 15. **SITE DIARY.**

The Contractor shall keep a site diary at his office on the site. Entries shall be made each day concerning progress, delays, numbers of employees and plant on site and any other item that is relevant to the works. Each day's entry shall be signed by the Contractor or his agent and the Engineer. This diary shall constitute the permanent record of the works.

PS 16. TEMPORARY DRAINAGE WORKS.

Temporal drainage works will be required in this contract.

PS 17. **BEDDING MATERIALS (for all piping and services)**

Materials used for bedding shall comply with SABS 1200-LB 3.1 or 3.2.

PS 18. APPLICABLE STANDARDISED AND OTHER SPECIFICATIONS.

Unless otherwise specified in the supplementary specification, the following standard specifications (including amendments) of the organisations indicated shall form part of this specification.

The following standardised specifications shall form part of the contract:

SANS 10409 Installation of Geomembrane

SABS 1200 A General

SABS 1200 AA Civil Engineering Construction. General (Small Works).

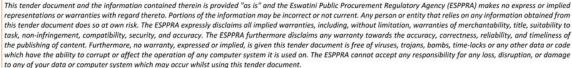
SABS 1200 AB Civil Engineering Construction

Engineer's offices.

SABS 1200 C Civil Engineering Construction

Site Clearance.





SABS 1200	D Civil Engineering Construction Earthworks.
SABS 1200	DB Civil Engineering Construction Earthworks (Pipe Trenches).
SABS 1200	DM Civil Engineering Construction Earthwoks (Road /Subgrade)
SABS 1200	DK Gabions and Pitching
SABS 1200	GA Civil Engineering Construction Concrete (Small Works).
SABS 1200	GB Civil Engineering Construction Concrete (Ordinary Buildings).
SABS 1200	L Civil Engineering Construction Medium pressure pipelines.
SABS 1200	LB Civil Engineering Construction Bedding (Pipes)
SABS 1200	LC Civil Engineering Construction Cable Ducts
SABS 1200	LD Civil Engineering Construction Sewers
SABS 1200	LE Civil Engineering Stormwater Drainage.
SABS 1200	M Civil Engineering Construction Roads (General).
SABS 1200	ME Civil Engineering Construction Sub-base.
SABS 1200	MF Civil Engineering Construction Base.
SABS 1200	MG Civil Engineering Construction Bitumen Surfacing
SABS 1200	MH Civil Engineering Construction Asphalt base and Surfacing.
SABS 1200	MM Civil Engineering Construction Ancillary Roadworks.

It is the contractors responsibility to find Copies of these documents **DM Civil Engineering Construction SANS 1200**

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SANS 1200	DK Gabions and Pitching
SANS 1200	GA Civil Engineering Construction Concrete (Small Works).
SANS 1200	GB Civil Engineering Construction Concrete (Ordinary Buildings).
SANS 1200	L Civil Engineering Construction Medium pressure pipelines.
SANS 1200	LB Civil Engineering Construction Bedding (Pipes)
SANS 1200	LC Civil Engineering Construction Cable Ducts
SANS 1200	LE Civil Engineering Stormwater

Drainage.

Earthworks (Road /Subgrade)

It is the contractor's responsibility to find Copies of these documents.

PS 21. MANUFACTURER'S RATINGS

All equipment such as fans, compressors, cooling towers, pumps, etc., shall be selected to operate well within the manufacturer's ratings. Equipment offered for use beyond these limits will not be considered.

Tenderers must submit manufacturer's ratings of all equipment offered. Ratings shall be given in the SI system.

PS 22. NOTICES

The Contractor shall supply and install all notices and warning signs that are required by the appropriate laws or regulations and by these documents.

PS 23. **GUARANTEE**

The 12-month guarantee called for in the Supplementary Specification, shall apply to all items of plant such as chillers, etc., delivered to site and/or erected. It is the responsibility of the Contractor to negotiate with his suppliers in order to secure their equipment guarantee on this basis.

The date of acceptance shall be that appearing in the acceptance certificate issued by the

Client and shall define the start of the guarantee period and free maintenance period (where applicable). No Claims for extended guarantee or otherwise from Suppliers, Principals etc., will be considered even if equipment is required on site long before acceptance date.

PS 24. **LUBRICATION**

All bearings must be packed with approved grease or filled with the correct oil, and all gearboxes and sumps must be filled with the lubricant specified by the manufacturer. The Contractor will be responsible for the supply of all lubricants required for the initial fill. All lubricants must be new and supplied in sealed drums or containers.

PS 25. COMMISSIONING AND TESTING

Commissioning Engineers

The Tenderer shall allow in his tender price for the services of approved and expert Commissioning Engineers, as may be appropriate for the individual specialized sections of his contract, as well as a competent Engineer in overall control of the installation. Testing and commissioning shall be carried out by these Engineers. Should undue problems be encountered at any time, the Contractor may be requested by the CLIENT to obtain the services of a representative of the manufacturer of specified items of equipment, at no cost to the Client.

Notice of Testing and Commissioning

The Client shall receive not less than two weeks advance notice of any tests to be witnessed by the Client.

Failure of Works, Site or Commissioning Tests

Should the Client be notified to attend official tests as laid down, and should the equipment fail the test for any reason whatsoever, such that the Client is required to re-witness the test, the time, transport and disbursement by the Client in so doing will be for the Contractor's account, which amount may be deducted, at the option of the Client, from monies due to the Contractor.

Quality Testing of Equipment

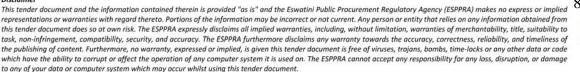
The Client reserves the right to arrange for testing of any piece of equipment at will, to check on compliance with the relevant specifications. Should the particular piece of equipment pass the test, the cost of such testing will be borne by the Client. However, should it fail the test, the cost of the test, rectification of the shortcomings, re-testing and repetition of the same test on the remaining like items will be for the Contractor's account.

Inspection during Manufacture

The Contractor will advise the Client when the items to be supplied are in the course of manufacture. The Client reserves the right to inspect any items during the course of manufacture, and witness any performance tests that may be required thereon. The Contractor shall give the Client at least two weeks advance notice of works tests.

Testing







The Contractor shall be responsible for carrying out all tests laid down in the specific sections elsewhere in this document, in addition to those listed hereafter and in the Supplementary Specification.

Testing and balancing shall not begin until the system has been completed and is in full working order. The plant shall be tested and operated to meet the performance figures and duties specified. All safety features and interlocks will be tested.

The Contractor will be responsible for all costs incurred in the testing, including the supply, calibration and use of all instruments and tools, but not the supply of water or power on site. All instruments and test equipment used shall be provided by the Contractor, and shall be accurately calibrated and maintained in good working order.

All test instruments used for tests to be witnessed by the Client's Representative shall be provided with calibration certificates, which must be available to the client's Representative. Specific attention is drawn to the fact that calibration certificates will be required for the following: Watt meters, ammeters, voltmeters, frequency meters, pressure gauges, flow meters, orifices plates, temperature gauges and dynamometers. All instruments shall be of above standard grade, and test pressure gauges shall not be less than 150mm in diameter. The maximum scale of the instrument shall not exceed 1,5 times the full test requirement. It is essential that the Contractor inspects and tests all equipment before requesting the Client to inspect or witness acceptance tests thereon.

All acceptance tests, whether in the manufacturer's works or on site, must be carried out in the presence of the Client's Representative. Should the Client wish to verify the calibration of any instruments, the Contractor shall make the necessary arrangements for the instrument to be re-calibrated by a recognized authority. Should the instrument prove to be correctly calibrated, the cost of the re-calibration test will be borne by the Client. Should the instrument prove to be in error, the cost of the tests will be borne by the Contractor.

Two copies of the complete test reports shall be submitted to the Client, prior to the first delivery of the project. Reports shall cover all tests carried out on individual sections, including such works tests as may have been conducted. All reports shall be neatly typed.

PS 26. **COMMISSIONING**

The Contractor shall carry out all tests and commissioning of the systems installed by him, in a coordinated and properly organized manner.

Should the tests be carried out over an area outside the range of normal speech, it is required that the Contractor make available at least four battery powered, two-way radio sets, to facilitate communications. The testing procedures shall be sufficiently comprehensive to prove the correct functioning of each and every piece of equipment, and its suitability for the application.

After all systems and equipment have been tested and commissioned to the satisfaction of the Client, a detailed demonstration of all functions of the system shall be carried out in the presence of the Client's Representative, so as to allow him to become fully acquainted with the operation of the system.



The commissioning tests shall include the tests laid down under the specific sections hereafter, and a full operational test of all pumps, compressors, fans and control gear in all modes of operation.

The Contractor shall allow for the replacement and cost of any materials and fuel used for testing purposes, as part of the contract.

The demonstration to the users shall include a repeat of the operational tests above.

The planning of this demonstration shall take place in collaboration with the Client A certificate of completion will not be issued until all tests have been satisfactorily completed, and the plant has operated successfully, to the complete satisfaction of the Client.

PS 27. **PERFORMANCE TOLERANCE**

All performance figures obtained during testing and commissioning must be within -5% and +5% of the specified performance figures given in the supplementary specification. Should the plant fail to comply with these figures after it has been tested and operated for a period of seven days, then the Contractor shall have a further four weeks to meet the requirements of the specification, after which the Client shall have the right to reject the plant and recover all monies paid to the Contractor for the rejected plant.

PS 28. TEST CERTIFICATES

The Contractor shall ensure that copies of all relevant test certificates, inspection reports, materials analysis certificates and similar data as may be required under various sections of this specification, or by Government Licensing and Inspection Authorities or Local Authorities, shall be provided before handing over the plant. Acceptance of the plant will be delayed if such certificates are not available. In particular, attention is drawn to pressure vessel and boiler construction and materials test certificates.

PS 29. APPLICATION FOR INSTALLATION

The Contractor shall allow for the submission of the necessary forms, fees and drawings to the Inspector of Machinery or other relevant Authorities to obtain permission to install equipment where this is required. He shall also, in co-operation with the Client make any arrangements that may be required for Government Inspectors or other relevant Inspectors to carry out prescribed tests.

PS 30. **POWER, WATER AND DRAIN CONNECTIONS**

Power, water and drain points in the plant room will be provided by and at the expense of the Client. All plumbing between equipment and water and drain points shall form part of the contract. The exact details of terminal points will be set out in the Supplementary Specification.



PS 31. **QUALITY OF MATERIALS**

Only new materials of high quality shall be used throughout and shall be subject to the approval of the Client. All materials, where applicable, shall conform in respect of quality, manufacture, tests and performance, with the requirements of the SABS standards or, where no such standards exist, they shall conform with the appropriate current specification of the British Standard Institution. Materials manufactured in South Africa shall be used wherever possible. Imported materials shall comply with the requirements of the relevant SABS or British Standard Specifications, although these materials need not necessarily bear the SABS mark. All materials shall be suitable for the particular site conditions. These conditions shall include weather conditions as well as prevailing conditions during installation and subsequent permanent use. Should the materials or components not be suitable for use under temporary site conditions, where applicable, the Contractor shall provide at his own cost, suitable protection until these unfavorable site conditions cease to exist.

PS 32. SERVICE ACCESS

The Contractor shall make good of all access provided until the end of the contract.

PROJECT SPECIFICATION PART 2: VARIATIONS AND ADDITIONS

Contents

PSA	General
PSC	Site Clearance
PSD	Earthworks
PSE	Geotextile Bidim
PSF	HDPE Liner

1.6.1 PSA GENERAL

PSA1 TESTING LABORATORY

The Contractor shall make arrangements to carry out all necessary and specified tests as detailed throughout the standard specifications. He shall either set up his own laboratory or shall make arrangements for testing by an approved laboratory. The costs of this shall be included in normal rates for the work.

i. PSC SITE CLEARANCE

PSC1

The areas to be occupied by the works shall be cleared through an instruction from the engineer, of all brush, trees and shrubs, with the exception of various trees which will be identified by the Engineer.

The topsoil removed will be stockpiled in areas designated by the Engineer for later use. Payment will only be made once for each area cleared, notwithstanding the number of services in that area.

ii. PSD EARTHWORKS

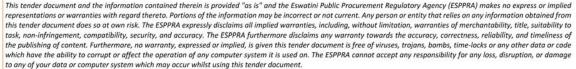
PSDM1

- 1.1.b) Areas to be topsoiled will be as directed by the Engineer.
- 1.1.c) Areas to be grassed will be the areas that are topsoiled, unless otherwise instructed.

PSDM2

- 2.1.b) Areas for disposal of surplus material will be designated by the Engineer.
- 2.1.c) Borrow pits: The decision as to which source of gravel materials the Contractor shall use at any time shall rest with the Engineer. Payment will not be made for moving the Contractor's plant from one location to another.

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Should the Contractor elect to obtain materials from sources other than those shown, he shall excavate the necessary trial holes, take samples and have the tests conducted as deemed necessary by the Engineer, all to the Contractor's expense.

Compensation to owners, royalties and any other arrangements shall be to the Contractor' expense.

iii. PSDB EARTHWORKS

The following variations are applicable to the standard specification SABS 1200 DB:

PSDB1.1 To ensure the integrity of the flexible membrane lining, earthworks should generally be done in accordance with SABS 1200, D: Earthworks. The following requirements are, however, highlighted:

- a) The area to be lined must be free of all protrusions, stones, roots, vegetation and other materials which may be detrimental to the performance of the liner. A maximum particle size of 3mm is required and if the excavated soil is unsuitable, a stabilised sand blinding of at least 75mm thick should be applied. Alternatively, a non-woven geotextile may be used on the slopes, while sand only on the floors will suffice.
- b) The base and embankment slopes must be compacted (as per SABS 1200D Clause 5.2.3.1 Embankments). The embankment slopes must not exceed a slope of 1:2,5 (v to h), i.e. approximately a 22 degree incline.
- c) To prevent the formation of gas under the liner, all vegetation must be removed and a suitable weed killer applied, if necessary. The base of the earthworks or structure must be clean and dry. Should ground-water be present, a suitable drainage system must be provided for and our client should provide for the continuous removal of water from the operational area if necessary. The design of a drainage system should be done in conjunction with our design office to accommodate the lining system.
- d) Excavation and subsequent backfilling of suitable perimeter lining anchor trenches situated a suitable distance from the upstream crest of the structure, is to be provided for by the client. The backfilling should only be carried out once the structure has been filled, air entrapped thereunder has been vented out and the liner has settled. Suitable backfill material must be used, which must be free of rocks, stones and other sharp objects and have a maximum particle size of 10mm.
- e) Earthworks Tolerances Tolerances for the excavation and backfilling of embankments will be in accordance with Clause 6.1.B) 3 of SABS 1200D Degree of Accuracy II i.e. the work shall be finished to a permissible deviation from designated levels with reference to the nearest transferred bench mark of ± 50 mm. The flatness of the finished surface (i.e. the maximum deviation of the surface from any straight line of length 3,0m) shall be ± 50 mm. Abrupt changes in a continuous surface are to be limited to a maximum of 3mm.
- f) Where the liner is to be sealed to a concrete surface the permissible deviation of the concrete should be in accordance with SABS 1200 G 1982 Concrete (Structural) clause 6.1.1 Degree of Accuracy I, 6.2.3.C7 i.e. 2mm. All concrete work should be executed in accordance with SABS 1200 G-1982. All structures should be of sufficient strength, density and integrity so as to allow satisfactory and secure attachment of mechanical anchor bolts wherever such details are required.





PSDB2.1 Excavation Equipment (sub-clause 4.1)

Excavations on gradients too steep for normal excavating equipment (greater than 1:3) may have to be done by hand.

PSE Geotextile Bidim and HDPE Liner

Scope

The work shall consist of installing a High Density Polyethylene (HDPE) liner and the necessary mechanical attachments as shown in the drawings or as specified herein. Unless otherwise specified, complete HDPE liner systems constructed in strict accordance to manufacturer's specifications and recommendations will be accepted as an equivalent substitute to this specification.

2. Material

The liner, welding rod, gaskets, metal battens, clamps, embed channel, and sealant shall conform to the requirements shown on the drawings.

Sub grade soils and their surface conditions shall conform to the requirements in this specification and as shown in the drawings.

Cover soils, if applicable, shall conform to this specification and as shown on the drawings.

A. Gaskets, Metal Battens, Clamps, Embedded Channels, and Sealants

Gasket material shall be neoprene, closed cell medium, 0.25 inch thick, with adhesive on one side, or other gasket material as approved by the liner manufacturer. Metal battens shall be 0.25 inch thick by 2 inches wide stainless steel. Clamps shall be 0.5-inch-wide stainless steel. Embedded channel shall have the same properties as the liner. Sealant shall be General Electric Silicone, RTV 103, or equivalent.

B. HDPE liner properties

The Employer shall provide the HDPE liner.

3. Shipping and storage

Liner rolls shall be shipped to the job site in a manner not to damage the rolls. The rolls shall be stored and protected from puncture, dirt, grease, excessive heat, or other damage. They shall be stored on a prepared smooth surface (not wooden pallets) and shall be stacked no more than two rolls high.

4. Sub grade preparation

Sub grade soil shall be compacted to provide a firm, unyielding foundation for the liner. All surfaces shall be smooth, free of foreign and organic material, rocks larger than 3/8 inch, any angular rocks, and any sharp objects. Standing water or excessive moisture shall not be allowed.



5. Anchor trench

The anchor trench shall provide permanent anchoring for the liner and shall be in accordance with the drawings. The trench shall be excavated according to a daily schedule for liner installation. It shall be backfilled incrementally as needed. Backfill soil shall be compacted by rolling with rubber-tired equipment or a manually directed power tamper to provide a stable anchor trench for the liner.

6. Liner placement

Liner rolls shall be deployed using a spreader bar assembly attached to a front-end loader bucket or by other methods approved for installing liner. The liner shall be placed in the general direction of maximum slope. All of the placed liner shall be adequately ballasted by sandbags to protect it from wind uplift forces. The liner shall be placed on a daily basis and seamed and secured by the end of the workday. No construction equipment shall be allowed directly on the liner except for light ATVs and generators to power the seaming machines

The liner shall not be placed during fog, precipitation, in the presence of excessive winds, or in temperatures less than 50 degrees Fahrenheit. The liner shall be loosely laid over the foundation with sufficient slack (about 2 percent) to accommodate thermal expansion and contraction encountered during construction. Each panel shall be laid out and positioned to minimize the number and length of the geomembrane field joints and to be consistent with accepted installation practice. The methods used to place panels shall minimize wrinkles especially along field Seams. When necessary, a geosynthetic rub sheet will be used under the membrane to prevent damage when dragging or moving the panels.

7. Seaming

The primary method of seaming shall be hot shoe fusion welding. Fillet extrusion welding shall be used for repairs, T-seams, and detail work. Before fusion welding or extrusion welding, all areas that are to become seam interfaces shall be cleaned of dust and dirt. Seam joining shall not take place unless the sheet is dry and shall not be attempted when the ambient sheet temperature is below 45 degrees Fahrenheit or above 90 degrees Fahrenheit.

Hot shoe welding—Hot shoe welding shall be accomplished by a double-wedge fusion welder that produces a double track weld. All accessories shall be approved by the liner manufacturer. To produce acceptable seams for the site-specific condition, the welder shall be calibrated at the beginning of each seaming period. Seaming procedures shall be in accordance with liner manufacturer specifications.

Fillet extrusion welding—Extrusion welding equipment and accessories shall be approved by liner manufacturer. To produce acceptable seams for the site-specific condition, the extrusion welder shall be calibrated once per day at the beginning of each seaming period. Seaming procedures shall be in accordance with liner manufacturer specifications.

Seam overlap—Liner panels shall have a minimum overlap of 4 inches for hot shoe welding and 3 inches for extrusion welding. Upslope panels shall overlap downslope to provide a shingle effect for drainage.

Seaming equipment and accessories:

• Hot shoe welder, 110 or 220 volts



- Extrusion welder, 220 volts
- Grinder, 10,000 rpm, 4.5-inch side grinder with 80-grit discs
- Generator, 6.5 kW, 110/220-volt output
- Power cord, OSHA approved cords and twist-type plugs and connections
- Vacuum box test equipment, approved by the liner manufacturer
- Air pressure test equipment, approved by the liner manufacturer
- Tensiometer, capable of performing quantitative shear and peel tests

8. Seam testing

Seams shall be tested under field conditions at the beginning of each seaming period and once in the morning and once in the afternoon. Three specimens shall be tested by a tensiometer in shear and peel modes. Test seams shall meet the requirements of Section 2 above. Each specimen shall be 1 inch wide with the grip separation rate of 2 inches per minute. All peel tests shall result in film tear bond (FTB) value. The FTB is defined as a failure of one of the bonded sheets before compete separation in the bonded area.

Non-destructive seam testing—Air pressure tests shall be performed on all double- wedge fusion seams. The air pressure test equipment and procedures shall conform to this specification and the liner manufacturer's specifications. Seal both ends of the seam to be tested. Insert the pressure needle into the seam's air channel.

Pressurize the air channel through the needle to 25 to 30 pounds per square inch.

Monitor any pressure drops for 5 minutes. A loss of pressure in excess of 4 pounds per square inch or a continuous loss of pressure is an indication of a leak. Terminate the test by relieving the pressure from the opposing end of the seam. The pressure shall immediately drop to zero upon opening the opposing end of the seam. If this does not occur, the seam channel shall be checked for obstructions and retested. All defects shall be marked for repair.

Vacuum box tests shall be performed on all extrusion welds. The vacuum box equipment and test procedure shall conform to this specification and the liner manufacturer's specifications. Apply soapy water solution to the seam area to be tested. The vacuum box, equipped with a transparent viewing window, shall be centered over the seam area and a vacuum of 3 pounds per square inch shall be drawn. The seam area shall be visually monitored for any soap bubbles for 15 seconds. Seam testing shall continue by overlapping a minimum of 3 inches between each test interval. All defects shall be marked for repair.

Destructive seam testing—If required, seam samples shall be cut at no more than one sample per 500 feet of weld for destructive seam testing. All destructive seam samples shall be tested by a tensiometer in shear and peel modes to verify seams meet the requirements of Material Specification 594.

9. Repairs

All defective liner areas and bad seams shall be repaired and tested before the installation is completed.

Tears, punctures, material defects—All tears, punctures, and material defects in liner shall be repaired by installing a patch over the defective area. Surfaces of the liner to be patched shall be cleaned before the repair. To ensure proper bonding of the extrusion weld, edges of the patch material and the adjacent liner shall be properly abraded by a light grinding. This operation shall be done no more than 15 minutes before the welding operation. The abrasion shall remove no more than 10 percent of the material thickness. All patches shall be of the same liner material and extend a minimum of 6 inches beyond the edges of the defect area. All patches shall have rounded corners and shall be extrusion welded to the liner. Alternatively, a bead of extrudate shall be placed over all holes that are less than 0.25 inch in diameter.

Seam repair—All failed seams shall be repaired by installing a cap strip over the entire length of failed seam. The cap strip shall be of the same liner material and shall extend the failed seam a minimum of 6 inches in all directions. Alternatively, the seam along the upper flap can be extrusion welded to the liner along the entire length of the failed seam.

10. Mechanical attachments

The liner shall be mechanically attached to pipe, concrete, or steel structure as shown in the drawings and according to the liner manufacturer's specification.

Pipe boots—Pipe boots shall be fabricated in the field from the same liner as that shown in the drawings. The boots shall be welded and clamped to polyethylene pipe. They shall be clamped to nonpolyethylene pipe as shown in the drawing to provide a leak-free attachment.

Metal battens—Metal battens shall meet the requirements of Section 2 above and shall be installed according to the drawings and the liner manufacturer's specifications. The battens shall be bolted to structure concrete by epoxy coated bolts on 6-inch intervals to create a leak-free connection under submerged conditions. Bolt spacing shall be increased to 12 inches for connections above the fluid level.

Embed channel—HDPE embed channel shall meet Section 2 above and be installed according to drawings and the liner manufacturer's specification. The embed channel shall be prefabricated to the dimensions as shown in the drawings. All sections of the channel shall be welded to the next section continuously to prevent gaps between sections or pieces of the embed channel before their installation in the concrete forms. All corners shall be miter cut and welded all around.

11. Gas vents and drainage

When specified, gas vent flaps or vent pipes shall be installed in accordance with the drawings to provide adequate venting for the liner system. Drainage systems will be installed as specified and as shown on the drawings.

12. Placement of cover soil (optional)

Cover soil and its placement method shall be in accordance to the drawings and shall conform to this specification and liner manufacturer's specification. Cover soil material shall not consist of any angular rocks or sharp objects that could damage liner. Placement shall be by a loader or bulldozer. No construction equipment or machinery shall be allowed to drive directly on the liner. A minimum of 12 inches of cover soil is required under the tracks or tires of construction equipment, with ground pressures of less than 5 pounds per square inch, before operating on the liner. The depth of cover soil shall be proportionally higher for heavier equipment. Cover material shall be placed during the cool times of the day or at night to prevent liner folds.

13. Placement of concrete

Concrete placement for ramps and other appurtenances shall be in accordance to the drawings and specifications. All reinforcement steel shall be placed on flat-footed plastic rebar chairs. All rebar splices shall be fully tied to avoid loose ends. On slopes, concrete shall be placed from the bottom of the slope to the top and have a low slump to prevent sloughing down slope during placement. Only plastic shovels and internal vibrators shall be used to place concrete. Metal shovels and rodding are not allowed. Concrete forms shall be held in place by methods that avoid damaging the liner.

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ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION **CONTRACT NO.: EWADE/0712**

ENVIRONMENTAL SPECIFICATIONS 6.0

FEEDER CANAL CONCRETE PANELS REHABILITATION



6.0 APPENDIX B: ENVIRONMENTAL SPECIFICATIONS



LOWER USUTHU SMALLHOLDER IRRIGATION PROJECT

Environmental, Health and Safety Specifications for Project Construction

Document Control

Rev.	Date	Revision Details	Prepared by	Verifier	Approver
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Contents

1.1	BACKGROUND	6
1.2	EXAMINATION OF DOCUMENTS	6
1.3	COMPULSORY SITE INSPECTION	6
1.4	PERSONS EXCLUDED FROM THIS TENDER	7
1.5	ENQUIRIES REGARDING TENDER DOCUMENTS	7
1.6	SUBMISSION OF TENDERS	7
1.7	DATE OF CLOSURE OF TENDERS	8
1.8	PERIOD OF IMPLEMENTATION OF TASKS	8
1.9	TYPE OF CONTRACT	8
1.10	LANGUAGE OF THE BID	8
1.11	LATE TENDERS	8
1	11.1 All tenders received after the deadline for submission specified in the tender notice or these	
ins	structions will be kept by the Contracting Authority. The guarantees will be returned to the tenderers.	8
1	11.2 No liability can be accepted for late delivery of tenders. Late tenders will be rejected and will not	be
ev	aluated	8
1.12	EXTENSION OF THE DEADLINE FOR SUBMITTING OF TENDERS	8
1.13	ONLY ONE TENDER PER TENDERER	8
1.14	COST OF PREPARATION OF TENDER.	9
1.15	Notices to Tenderers	9
1.16	ERRORS AND DISCREPANCIES	9
1.17	VALIDITY OF TENDER	9
1.18	EMPLOYER'S RIGHT TO ADJUST ERRORS	10
1.19	UNBALANCED RATES OR PRICES	10
1.20	Alternatives	11
1.21	POWER OF ATTORNEY	11
1.22	INFORMATION TO BE SUBMITTED WITH TENDER	11
1.23	NON-DISCRIMINATION AND MEASURES TO PROMOTE SWAZI COMPANIES	12
1.24	FINANCIAL STANDING	12
1.25	BILLS OF QUANTITIES	12
	ALTERATION OF TEXT	
1.27	ACCEPTANCE OF TENDER	13
1.28	RETURN OF EMPLOYER'S DRAWINGS	13
1.29	AWARD CRITERIA	13
1.30	INTENTION TO AWARD A CONTRACT	14
1.31	NOTIFICATION TO SUCCESSFUL TENDERER	14
1.32	TIME FOR COMPLETION AND PROGRAMME	15
1.33	CURRENCY OF TENDER	15
1.34	CONTRACT PRICE ADJUSTMENT	15
1.35	LABOUR FROM THE COMMUNITY	15
1.36	SURETY IN LIEU OF RETENTION	16
A RE	TENTION MONEY GUARANTEE IS NOT PERMITTED, ONLY CASH IS ALLOWED	16
1.37	TENDER GUARANTEES	16
1.	The tenderer must provide, as a part of its tender, a tender guarantee. The tender guarantee	
m	ust be for an amount of E7,000.00. The original guarantee must be included in the original tender	16
1	It may be provided in the form of a bank guarantee, a banker's draft, a certified cheque, a	
gu	arantee provided by an insurance and/or guarantee company or an irrevocable letter of credit made	
οι	rt to the EWADE	16
1		
	16	
1.	The tender guarantees of unsuccessful tenderers will be returned	16
1	The tender guarantee of the successful tenderer will be released when the tenderer has signed	
th	e contract and provided the requisite performance guarantee	16
1.38	ENVIRONMENTAL REQUIREMENTS	16

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This tender document and the information contained therein is provided "as is" and the Eswatini Public Procurement Regulatory Agency (ESPPRA) makes no express or implied representations or warranties with regard thereto. Portions of the information may be incorrect or not current. Any person or entity that relies on any information obtained from this tender document does so at own risk. The ESPPRA expressly disclaims all implied warranties, including, without limitation, warranties of merchantability, title, suitability to task, non-infringement, compatibility, security, and accuracy. The ESPPRA furthermore disclaims any warranty towards the accuracy, correctness, reliability, and timeliners of the publishing of content. Furthermore, no warranty, expressed or implied, is given this tender document is free of viruses, trojans, bombs, time-locks or any other data or code which have the ability to corrupt or affect the operation of any computer system it is used on. The ESPPRA cannot accept any responsibility for any loss, disruption, or damage to any of your data or computer system which may occur whilst using this tender document.



		IRREGULAR TENDERS	
		TENDER OPENING	_
		TENDER EVALUATION CRITERIA	
	1.4	42.1 Examination of the administrative compliance of tenders	. 18
		42.2 Technical evaluation	
		42.3 Financial evaluation	
		TENDER EVALUATION CRITERIA	
		CHECKING DESIGNS AND BILLS OF QUANTITIES	
		As-Built Drawings	
		WITHDRAWAL OF TENDERS	. 23
		46.1 Tenderers may alter or withdraw their tenders by written notification prior to the deadline	
		dicated in the Invitation to tender. No tender may be altered after the deadline for submission.	
		(ithdrawals must be unconditional and will end all participation in the tender procedure	
		46.2 Withdrawal of a tender in the period between the deadline for submission and the date of	
		piry of the validity of the tender will result in forfeiture of the tender guarantee	
		TENDER TIMETABLE	
		SUFFICIENCY OF TENDER PRICES.	
	1.50.		
	1.50.		
		APPEALS PERFORMANCE SECURITY	
2	R	ETURNABLE DOCUMENTS	.27
	2.1	SCHEDULE 1A: ENTERPRISE QUESTIONNAIRE	20
	1.6	SCHEDULE 1B: AUTHORITY OF SIGNATORY	
	2.2	SCHEDULE 1C: CERTIFICATE OF AUTHORITY FOR JOINT VENTURES	
	2.3	SCHEDULE 1D: RECORD OF ADDENDA TO TENDER DOCUMENTS	
	2.4	SCHEDULE 1E: REFERENCES	
	2.5	SCHEDULE 1F: PERSONNEL SCHEDULE	
	2.6	SCHEDULE 1G: SCHEDULE OF PLANT AND EQUIPMENT AVAILABLE FOR THE CONTRAC	СТ
		37	
	2.7	SCHEDULE 1H: SCHEDULE OF RELEVANT WORK SATISFACTORILY CARRIED OUT BY	
	THE	TENDERER	
	2.8	SCHEDULE 1I: SCHEDULE OF PROPOSED SUBCONTRACTORS	
	2.9	SCHEDULE 1J: CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING	
		SCHEDULE 1K: PROPOSED AMENDMENTS AND QUALIFICATIONS	. 41
		SCHEDULE 2A: ORIGINAL AND VALID TAX COMPLIANCE CERTIFICATE (ORIGINAL	
	COP	,	
		SCHEDULE 2B: VALID TRADING LICENSE (CERTIFIED COPY)	
		SCHEDULE 2C: JOINT VENTURE AGREEMENT (ONLY IF APPLICABLE)	
		UBMISSION OF THIS TENDER	
	2.1	SCHEDULE 2G: VALID CIC REGISTRATION CERTIFICATE (CERTIFIED COPY)	
		SCHEDULE 2H: CERTIFICATE OF INCORPORATION (CERTIFIED COPY)	
		SCHEDULE 2I: VALID CERTIFICATE OF LABOUR COMPLIANCE (CERTIFIED COPY)	
		SCHEDULE 2J: DECLARATION OF ELIGIBILITY	
_			
3	A	GREEMENT AND CONTRACT DATA	.53
	3.1	C1.1: FORM OF OFFER AND ACCEPTANCE	
	3.2	C1.2: CONTRACT DATA (PART 1)	. 56
D/	\RT 1·	DATA PROVIDED BY THE EMPLOYER	57
r F			
	2.1	C1.2: CONTRACT DATA (PART 2)	
	2.2	C1.3: FORM OF PERFOMANCE GUARANTEE	
	2.3	C1.4: PROTECTION OF THE ENVIRONMENT	. 63
3	DI	ILL OF QUANTITIES	65

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3.1 PREAMBLES TO SCHEDULE OF QUANTITIES	
3.2 CONSTRUCTION INDUSTRY COUNCIL LEVY PAYMENT SCHEDULE	66
5.0 PROJECT TECHNICAL SPECIFICATION AND PARTICULAR SPECIFICATIONS	75
A. PROJECT SPECIFICATION PART 1	75
1.6.1 PSA GENERAL	
i. PSC SITE CLEARANCE	84
ii. PSD EARTHWORKS	84
iii. PSDB EARTHWORKS	85
PSE Geotextile Bidim and HDPE Liner	86
6.0 APPENDIX B: ENVIRONMENTAL SPECIFICATIONS	92
LIST OF ACRONYMS AND ABBREVIATIONS	CXIX
PART 1. PREAMBLE	120
1.1. Introduction	120
1.2. COMPREHENSIVE MITIGATION PLAN	120
1.1 ENVIRONMENTAL SUPERVISION	120
1.4 Environmental Management of Construction	121
1.5. COMMUNITY LIAISON	121
1.6. APPROVALS	
1.7. MONITORING AND AUDITING	
1.8. Non-Compliance	122
PART 2. ENVIRONMENTAL MANAGEMENT SPECIFICATIONS FOR CONSTRUCTION	123
2.1. ENVIRONMENTAL PLANNING	123
2.2. NATURAL ENVIRONMENT	123
2.2.1. Vegetation	123
2.2.2. Fish & Wildlife Disturbance	
2.3. SITE DEVELOPMENT & OCCUPATION	
2.3.1. Site Access	
2.3.2. Site Clearing	
2.3.3. Haul Roads	
2.3.4. Boreholes	
2.4. Borrow Pits and Quarries	
2.5. Spoil Dumps	
2.6. STORM- AND WASTEWATER MANAGEMENT	
2.6.1. Water Flows Across Construction Sites	
2.6.2. Water Removal from Construction Sites	
2.6.3. Waste Water	
2.6.4. Work in Waterways	
2.6.5. Contingency Planning	
2.7. SEDIMENT CONTROL	
2.9. FUEL & CHEMICAL STORAGE	_
2.10. REFUSE AND WASTE DISPOSAL	
2.10. Refuse AND Waste disfusal	
2.12. AIR QUALITY	
2.13. DUST CONTROL	
2.14. PLANT REPAIR, MAINTENANCE & CLEANING	
2.15. Noise & Blasting	
2.15.1. Blasting	_
2.15.2. Noise	
2.16. CULTURAL RESOURCES	
2.16.1 Graves	
2.16.2 Artefacts	

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2.17. LAND RECLAMATION	134
2.17.1. Timing & Scheduling of Reclamation	134
2.17.2. Landscaping	135
2.17.3. Area Preparation	135
2.17.4. Topsoil	135
2.17.5. Manures, Mulches & Anti-Erosion Compounds	136
2.17.6. Fertilizers, Herbicides & Pesticides	
2.17.7. Vegetation Establishment	
2.17.8. Method of Planting	
2.17.9. Follow-Up	139
2.17.10. Other	139
1.43 2.18 Public Health Issues	139
2.19 FIRE CONTROL	
2.20. EMPLOYMENT	
2.20.1. Local Preference	
2.20.2. Training	
2.20.3. Employment Conditions	
• •	
PART 3: HEALTH AND SAFETY SPECIFICATIONS FOR CONSTRUCTION	142
3.1 RISK ASSESSMENTS	142
3.1.1 Review of Risk Assessments	
3.2 LEGAL REQUIREMENTS	
3.3 STRUCTURE AND RESPONSIBILITIES	
3.3.1 Overall Supervision and Responsibility for Health and Safety	
3.3.2 Further (Specific) Supervision Responsibilities for Health and Safety	
3.3.3 Designation of Occupational Health & Safety Representatives	
3.3.4 Health & Safety Goals & Objectives & Arrangements for Monitoring & Review of	
Safety Performance	
3.4 TRAINING, AWARENESS AND COMPETENCE	
3.4.1 General Induction Training	
3.4.2 Other Training	
3.4.3 Awareness & Promotion	
3.4.4 Competence	
3.5 CHECKING, REPORTING AND CORRECTIVE ACTIONS	
3.5.1 Bi-weekly Audits by EWADE	
3.6 INCIDENT REPORTING AND INVESTIGATION	
3.6.1 Reporting of Accidents and Incidents	
3.6.2 Accident and Incident Investigation	
3.7 OPERATIONAL CONTROL	
3.7.1 Emergency Preparedness, Contingency Planning and Response	
3.7.2 First Aid	
3.7.3 Security	
3.7.4 Construction Vehicles & Mobile Plant (CV &MP)	
3.7.5 Housekeeping	
3.7.6 Eating, Changing, Toilet Facilities	
3.7.7 Personal & Other Protective Equipment	
3.7.8 Public Health & Safety	
• •	
ANNEXES	147
1.44 ANNEX 1. LIST OF ESWATINI ENVIRONMENTAL AND RELATED LEGISLATION WITH CLA	
CONDITIONS APPLICABLE TO CONSTRUCTION SITES AND ACTIVITIES	
1.45 ANNEX 2. ESWATINI EFFLUENT STANDARDS (FROM SCHEDULE TWO OF REGULATION THE WATER POLLUTION CONTROL REGULATIONS (1999).	
1.46 ANNEX 3. ESWATINI WATER QUALITY STANDARDS (FROM SCHEDULE ONE OF REGUL	
OF THE WATER POLLUTION CONTROL REGULATIONS (1999)	

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LIST OF ACRONYMS AND ABBREVIATIONS

CMP - Comprehensive Mitigation PlanEIA - Environmental Impact Assessment

EM - Environmental Monitor

EMO - Environmental Monitoring Officer

EMP - Environmental Management Plan

EPO - environmental performance objective

LUSIP - Lower Usuthu Smallholder Irrigation

Project

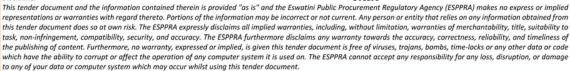
PMU - Project Manager Unit

EEA - Eswatini Environmental Authority

EWADE - Eswatini Water and Agricultural

Development Enterprise

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PART 1. PREAMBLE

1.1. Introduction

- 1. This document describes in detail the environmental specifications and health and safety specifications which have to be met by tenders for construction of all components of the Lower Usuthu Smallholder Irrigation Project (LUSIP).
- 2. The document will form part of the Project Specifications for each specific contract tendered under the overall project.
- 3. Part 1 provides background information for the tenderer. Part 2 contains the detailed contractual specifications for environmental management of the construction projects, Part 3 contains detailed contractual specification for health and safety of the construction projects, which will provide for prevention and avoidance of specific impacts at the construction sites, as well as those away from the site(s) but caused by site-specific construction activities.

1.2. Comprehensive Mitigation Plan

- 1. The environmental issues of the LUSIP have been studied and assessed in a number of documents, including a feasibility study, an environmental impact assessment (EIA), and a series of appraisal reports. These have dealt with the impacts of the LUSIP in a comprehensive and regional context.
- 2. The EIA has been accepted by the Eswatini Environmental Authority (EEA), who have issued an environmental compliance certificate for the LUSIP as an entity. A requirement of the compliance certificate is the submission of a comprehensive mitigation plan (CMP) for the LUSIP and the undertaking of specific measures related to environmental management and resettlement.
- 3. Detailed CMP's were prepared which dealt with the environmental impacts predicted to occur from development of the major project components. These described the actions related to project location, design, development and management considered necessary to reduce environmental and social impacts to an acceptable level. They provided the rationale for project planning decisions of importance to construction activities, e.g.
- locations and routes of project components;
- areas to be avoided by construction;
- seasonal restrictions on construction activities;
- requirements for community cooperation; and
- labour management practices.

1.1 Environmental Supervision

The Contractor is expected to co-operate fully with all supervisory staff assigned to the contract site, in particular:

120



- the Resident Engineer ("the Engineer") who retains full authority for all site activities;
- the Environmental Monitor (EM) who falls under the Project Management Unit (PMU) and is responsible for overall environmental concerns; and
- the on-site Environmental, Health and Safety Monitoring Officer (EMO) who reports directly to the Engineer and through him to the PMU.

1.4 Environmental Management of Construction

- 1. An environmental performance objective is associated with each construction activity. This is the target for each activity and forms the baseline against which compliance and progress are measured.
- 2. The purpose of specifying and complying with environmental objectives during the construction process is to minimise the many and varied types of environmental and social impacts which can occur. Avoidance is far preferable to the less cost-effective options of undertaking remedial actions or controlling or treating deleterious discharges to the environment.
- 3. Contractors are expected to utilize best practice methods and management to meet the environmental performance objectives.
- 4. The basis for effective mitigation of construction-related environmental impacts is an <u>environmental management plan</u> and a <u>Health and Safety plan</u> for the tendered work. This will form part of the Contractor's proposal and will be subject to review during tender evaluation. A detailed management plan must also be submitted to the Engineer for approval prior to Contractor site mobilization (Section 2.1).
- 5. The Contractor is expected to be familiar with the relevant clauses and conditions of all environmental and other legislation which may relate to construction site activities and which may impose limitations on actions and procedures. Annex 1 lists the most important current Eswatini acts and regulations which deal with environmental items.

1.5. Community Liaison

- 1. Contractors are required to maintain a high level of communication and cooperation with local communities in order that communities may derive as much benefit as possible from the construction activities, and also provide the Contractor with local services.
- 2. Overall community liaison with project development is maintained through the Lubovane Planning Committee (LPC) which is representative of all the chiefdoms in the project area. A number of sub-committees have been established which deal with specific aspects of the project, e.g. local employment. The Contractor is expected to establish and maintain communication with the LPC and its relevant sub-committees.
- 3. The term "Community Committee" is used in this document to indicate the LPC, its designated sub-committees, or any other community group which enters into liaison with the Contractor.

1.6. Approvals

121



- 1. The Contractor will be required to make submissions for approvals required from the Engineer for activities indicated in Section 2 in good time to allow for any necessary investigations and consultations.
- 2. The Contractor should note that certain construction activities require the prior approval of the Board of the Eswatini Water and Agricultural Development Enterprise (EWADE) and/or of Government of Eswatini ministries and departments. In particular, the locations and designs of all borrow pits and spoil dumps must be submitted (through the Engineer) for approval from the Eswatini Environment Authority (SEA).

1.7. Monitoring and Auditing

- 1. Frequent and regular environmental monitoring is an integral component of sound construction site environmental, health and safety management. Periodic environmental audits of construction sites are a legal requirement. The Contractor is required to provide full cooperation to environmental monitors and environmental, health and safety auditors during the course of inspections and audits.
- 2. During site mobilization and prior to construction commencement the Contractor will be expected to assist the EMO in preparing a detailed construction monitoring plan which, amongst other things, will:
- identify all construction activities, outline the stages of activity and proposed schedule for each, and assign a monitoring frequency to each;
- be of a standard format which will allow for recording of the environmental status of each activity, any problems or issues occurring, and the status of remedial actions;
- be the basis for reporting by the EMO to the Engineer and the PMU on a weekly or monthly basis (depending on the items under review), with copies provided to the Contractor.
- 3. The specifications in Part 2 require the Contractor to take prompt and appropriate remedial action for all problems reported by the EMO and environmental, health and safety auditors.

1.8. Non-Compliance

- 1. In the event of significant environmental management non-compliance and health and safety non-compliance, as so deemed by the Engineer, the Contractor will be ordered to halt work until the specific conditions have been met or the contravening conditions removed. The costs of the work stoppage will be borne by the Contractor.
- 2. In cases where the Contactor does not rectify the situation to the approval of the Engineer, the latter is empowered to take steps to remedy the situation and to recover the costs of so doing from the Contractor.
- 3. Failure to show adequate consideration for the environmental, health and safety aspects of the Contract will be deemed sufficient cause for the Contractor's representative and/or any other Contactor's employee to be removed from the site in terms of the General Conditions of Contract.
- 4. Any dispute arising from application of the environmental, health and safety requirements will be resolved by the Engineer, whose decision will be final.



PART 2. ENVIRONMENTAL MANAGEMENT SPECIFICATIONS FOR CONSTRUCTION

2.1. Environmental Planning

- 1. Before any construction work commences, the Contractor shall draw up an environmental management plan (EMP) and submit it to the Engineer for approval.
- 2. The Contractor shall note all construction-specific requirements of the CMP which has been drawn up for the relevant project components and ensure that these are fully addressed in the EMP.
- 3. The EMP shall identify all construction activities and components which have potential environmental impacts. The EMP shall specify (but not be limited to):
 - (a) types, locations and scheduling of construction activity;
 - (b) size and locations of areas to be cleared, including those for spoil dumps, waste dumps and temporary access roads;
 - (c) scheduling of land and site reclamation work;
 - (d) types, locations and scheduling of plant to be brought in and installed;
 - (e) types, locations and scheduling of waste management systems to be deployed;
 - (f) types, locations and scheduling of sanitation systems to be deployed;
 - (g) numbers and types of personnel to be deployed on and off site; and
 - (h) proposed labour management practices, including housing, transportation and safety care.
- 4. The EMP shall indicate the environmental risks of each construction activity, and indicate contingency actions to be taken in the event of a risk event occurring.
- 5. The EMP shall indicate the activities and steps proposed by the Contractor to meet the environmental specifications outlined below in Part 2 of this document.

2.2. Natural Environment

2.2.1. Vegetation

- 1. The Contractors' personnel shall not inflict any damage through cutting, burning or defacing to vegetation which is not required to be cleared for construction purposes.
- 2. The Contractor shall not introduce any alien vegetation in the form of seed or plants to the site for beautification of office or housing areas or for any other purposes. The use of indigenous trees and shrubs for such purposes is encouraged.



- 3. Wood retrieved from clearing operations may be used for cooking and heating purposes on construction sites, consistent with fire control requirements (Section 2.19).
- 4. The clearing of sight lines outside of the road reserve shall be done by hand and kept to a minimum necessary to obtain readings. Trees and other natural features may not be defaced, painted or otherwise damaged.

2.2.2. Fish & Wildlife Disturbance

- 1. There shall be no hunting, shooting, snaring, harassment, nest-raiding or egg-collecting of any wild animal or bird by construction personnel.
- 2. The Contractor shall ensure that no construction personnel enter areas designated as sensitive for any purpose without prior approval from the Engineer.
- 3. Construction personnel shall not be permitted to fish in rivers and streams traversing or adjoining the project development area.

2.3. Site Development & Occupation

2.3.1. Site Access

- 1. All areas of construction activity shall be fenced by the Contractor prior to construction, unless authorization to the contrary is given by the Engineer. Fencing shall be done at individual areas of construction and around the full perimeter of the site.
- 2. Construction activity shall take place only in areas which are deemed to be safe. All sites that are identified by the Engineer as being unsafe shall be indicated as such with warning signs in all relevant languages.
- 3. Livestock shall be not be permitted access to construction sites.

2.3.2. Site Clearing

- 1. The size of areas subjected to land clearance shall be kept to a minimum.
- 2. Areas selected for clearing shall avoid wherever possible locations of agriculturally productive soils, highly erodible soils, steep slopes which are prone to water and wind erosion, important habitats for fauna and flora, forested areas, and locations close to homesteads or settlements which are not going to be resettled.
- 3. The Contactor shall advise the Community Committee of construction site locations in good time so that local communities can collect wood and plant materials prior to site construction activities.
- 4. Initial felling of all trees with basal stem diameters of 10cm and more shall be done manually so that local communities can retrieve the wood.
- 5. Cleared vegetation debris which has not been utilized or collected by local communities shall be collected and disposed of as backfill in excavations. It shall not be burned on site.
- 6. No clearing of vegetation shall be done other than in areas that have been delineated for construction.
- 7. No vegetation shall be cut or collected off construction sites for burning or for any other purpose without the prior permission of the Engineer.



- 8. All vegetation not required to be removed shall be protected against damage.
- 9. Special conditions apply to the clearing of the land to be flooded by the Lubovane Reservoir – see the relevant CMP.

2.3.3. Haul Roads

- 1. The Contractor shall include in the EMP and submit for the approval of the Engineer full details of any haul roads proposed for construction. Sections of any existing or abandoned roads shall be considered for upgrading and rehabilitation before new construction is proposed.
- 2. All vehicle traffic shall be confined to well-defined haul roads.
- 3. Haul roads shall wherever practical not be routed across sloping terrain.
- 4. Road cut slopes shall be designed and constructed so as to minimise the angle of incline.
- 5. Where practical, road cut surfaces shall be roughened and seeded to increase infiltration of rainfall and decrease the velocity of water across the slope during rainfall events. Section 2.17 provides specifications for seeding of exposed surfaces.
- 6. The Contractor shall ensure that safe crossing points for pedestrians within the construction site are well-marked.

2.3.4. Boreholes

- 1. The siting of boreholes to be drilled on site shall be approved in advance by the Engineer as well as by the Department of Water Resources.
- 2. Wherever possible, boreholes shall be located close to existing or proposed settlements.

Borrow Pits and Quarries 2.4.

- 1. Borrow pit, quarry and other excavations outside of the inundation zones and canal alignments shall be undertaken with rehabilitation in mind and shall be planned to ensure that rehabilitation of disturbed land can be done in a cost-effective way.
- 2. Preferred locations for borrow pits and quarries are within the reservoir inundation zone below the future minimum operating level. All borrow pits and quarries located within the reservoir inundation zone shall be shaped to be self-draining during periods of drawdown when the reservoir is operational.
- 3. Inner slopes of borrow pits shall be graded so as not to exceed 1:3.
- 4. Borrow pits and other excavations shall be backfilled to the maximum extent possible with overburden and/or materials obtained from earthworks, clearing and grubbing.
- 5. Suspended solids in runoff from the borrow pits and quarries shall be removed by means of settlement ponds before the runoff is discharged to the environment.
- 6. Sluicing of rockfill must be monitored and a return water/ settling pond constructed downstream of the area to prevent fines entering the watercourses.
- 7. All water discharged from the borrow pits and quarries shall comply with national effluent standards (see Annex 2).



8. Relevant sections in this document on stormwater management, erosion control and land reclamation shall be deemed to apply to all borrow pits and quarries.

2.5. Spoil Dumps

- 1. Spoil dumps shall be located at least 10m away from natural drainage lines. Spoil dumps shall not be placed in natural drainage lines even if located within the reservoir inundation zone.
- 2. Spoil dumps shall be placed wherever practical in topographically sheltered locations to obtain maximum protection from wind exposure.
- 3. Spoil dumps shall be placed in areas where there are barriers to flow from the upstream catchment. These barriers could include catch-water drains or fills. Where there are no barriers, bunded canals designed for 1:5 year rainfall events shall be constructed upstream of the spoil dumps. Where the size of spoil dumps and dumps exceeds 500 m³, bunded canals shall be constructed downstream to capture runoff from 1:5 year rainfall events.
- 4. Spoil dumps located on floodplains shall be finished and contoured to minimise loss of material in a flood or rainfall event.
- 5. All spoil dumps assessed as being unstable shall be encircled with silt fences or drainage systems that will collect and dispose of contaminated water.
- 6. Spoil dumps shall have slopes not greater than 1:2 (vertical to horizontal). Less steep slopes shall be applied in conditions where erosion risks are indicated to be high.
- 7. Spoil dumps shall be smoothed and contoured and compacted to prevent ponding.
- 8. Topsoil shall be stored separately from underburden and other materials (see Section 2.17.4)
- 9. Any topsoil dump which is to be maintained for longer than 28 days shall be treated with mulch, roughened and seeded with an approved grass mixture (see Section 2.17.7).
- 10. Any underburden spoil dump which is to be maintained for longer than 28 days shall be covered with a layer of topsoil at least 250mm thick, treated with mulch, roughened and seeded with an approved grass mixture (see Section 2.17.7).
- 11. Unstabilised spoil dumps shall be treated appropriately against dust by hand watering or the installation of temporary sprinklers.

2.6. Storm- and Wastewater Management

2.6.1. Water Flows Across Construction Sites

- 1. This section shall be read together with that dealing with erosion control (Section 2.8).
- 2. Adequate measures shall be put into place to control surface water flows across and around all construction sites.
- 3. The quantity of uncontaminated stormwater entering cleared areas shall be minimized by appropriate site design and by installation of control structures and drains which direct such



flows away from cleared areas and slopes to stable (vegetated) areas or effective treatment installations.

- 4. Site drainage lines shall be identified and control measures installed to handle predicted stormwater and sediment loads generated in the minicatchment.
- 5. The extent of continuous slopes in zones where flowing water is anticipated shall be minimized by appropriate design and the installation of control structures.
- 6. The velocity of storm water flows and associated scouring across construction sites shall be controlled though the installation of geotextiles, rock- or other structures.
- 7. All drains constructed on site must discharge into natural drainage lines.
- 8. Any natural drainage lines that discharge water on to the top of a slope shall be directed to grassed areas by intercept drains. Perimeter banks or sediment fences shall be constructed at the toe(s) of slope(s) to contain sediment run-off.
- 9. Cross drains shall be put in place for every stream that is traversed by temporary access roads.

2.6.2. Water Removal from Construction Sites

- 1. Water and sediment control measures, including storm water drainage systems, shall be installed before construction commences.
- 2. Dewatering shall be effected wherever practical by pumping water:
 - (a) preferably onto vegetated areas of sufficient width to remove suspended sediments;
 - (b) as a secondary option to sediment control devices; or
 - (c) as a last option into natural waterways.

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- 3. All pumping shall be supervised and all precautions taken to ensure that turbidity of pumped water is minimised. Pumping operations shall be monitored at least once every hour.
- 4. Water pumped into the storm water system or a natural waterway shall be subjected to sediment removal if the turbidity exceeds 30 NTU. Contaminated water removed from construction sites shall not be pumped into the storm water system or natural waterways unless the quality of such water complies with national effluent standards (Annex 2).
- 5. Precautions shall be taken ensure that vegetated areas receiving pumped water do not become waterlogged and have adequate capacity to effectively remove suspended solids.

2.6.3. Waste Water

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- 1. The Contractor shall submit a site design of wastewater management systems as part of the environmental management plan for prior approval by Engineer. The design shall include at least one site designed and certified in accordance with the Eswatini Waste Regulation (2000).
- 2. All water discharged from the works including effluent from sewage treatment, wash water and stormwater from workshops and refuelling areas, as well as all runoff from areas with pollution potential shall comply with national effluent standards (see Annex 2).



3. Settlement and retaining ponds shall be installed to allow for the removal of oil, sand silt, cement and other suspended solids in discharged wastewater. Where necessary, the water shall be treated prior to release.

2.6.4. Work in Waterways

Where it is not possible to avoid working in a stream the following additional precautions shall be taken.

- 1. The extent of works and the time during which work in a waterway is carried out shall be minimized.
- 2. Works shall be scheduled wherever practical for the driest months of the year and for the lowest flow of the waterway.
- 3. Protocols to minimise downstream damage shall be drawn up and applied.
- 4. Any disturbance to a levee or stream bank shall be repaired as quickly as possible to avoid erosion.
- 5. Turbidity shall be monitored immediately downstream from the areas in which work is occurring. Where continuous monitoring shows degraded water quality, the work procedures must be modified or halted.
- 6. When working in a concrete channel, appropriate machinery must be used to avoid damage to structures.
- 7. If in-stream activities require construction of a stream crossing, it shall be installed during low-water flows with downstream weirs in place to trap any released sediment.
- 8. The type of access crossing used shall comprise:
 - (a) preferably a bridge: this type of crossing must be used for major waterways and for waterways with high flows;
 - a culvert as a second option; or
 - a ford: this type of crossing may only be used during periods of low flow and shall (c) not be used if construction will continue during wet periods of the year.
- 9. Any crossing required shall be positioned perpendicular to the flow and located at the narrowest part of the stream. Damage to the stream bed and banks shall be avoided. The crossing shall be engineered to be stable under expected vehicle loads. Drainage over the surface of the crossing and access road shall have adequate controls to ensure that sediment run-off to the stream is minimised. Crossings shall be protected against erosion to prevent excessive sedimentation to prevent washout of the crossing;
- 10. If a cofferdam is placed in a stream, minimum downstream flows shall be maintained that will sustain aquatic ecosystems.

2.6.5. Contingency Planning

Contingency plans shall be in place to deal with site flooding, and shall address the following.

- 1. Methods to limit large quantities of storm water entering excavation areas.
- 2. Enhancement of existing measures and installation of additional controls when an intense storm event is forecast.

128

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- 3. Siting of construction facilities.
- 4. Clean-up procedures, including disposal of excess water.
- 5. Flood warning systems.
- 6. Procedures for preventing the loss through flooding of spoil, fuel, chemicals or other materials that could adversely affect the environment.
- 7. Notification of the relevant authorities, including the Engineer, if unplanned incidents occur that could pose a risk to the environment.

Sediment Control 2.7.

- 1. Erosion and sediment control measures, including storm water drainage systems, shall be installed before construction commences.
- 2. Installed sediment detention dams, ponds or basins shall have sufficient capacity for sediment-contaminated run-off to enable retention long enough for suspended sediments to settle out.
- 3. Installed erosion and sediment run-off control measures shall be appropriate to site conditions to handle a one-in-two-year storm event for temporary structures, and a onein-fifty year storm event for permanent structures which provide ongoing sediment control after a site has been rehabilitated.
- 4. Sufficient area shall be provided within the confines of the cleared sites to allow for dumping of silt cleared from the settlement ponds. Settlement ponds shall be cleared and maintained as regularly as is necessary to ensure that they can contain at least a 1:5 year storm event.
- 5. Silt loads shall be treated as close to their source as possible using effective sediment traps such as geotextile fences and straw bales.
- 6. An adequate inspection, maintenance and cleaning program shall be maintained for sediment run-off control structures.
- 7. Contingency plans shall be in place for extreme storm events.

Erosion Control 2.8.

- 1. The specifications in this section shall be read and interpreted along with those in Section 2.6 (storm- and wastewater management)
- 2. Site activities shall take overall recognition of the importance of measures to avoid and reduce erosion by phasing the work program to minimise land disturbance in the planning and design stage, by keeping the areas of land cleared to a minimum, and by ensuring that the period of time for which areas remain cleared are kept to a minimum.
- 3. Energy dissipaters such as gabion mattresses shall be placed at the outlets from diversion canals and silt traps.
- 4. Concrete verges shall be developed at the main road crossing points which are developed as part of dam construction activities.



- 5. Erosion of footpaths linked to these main road crossings shall be prevented by paving the stretches which are susceptible to erosion. The Engineer shall confirm the extent of paving required.
- 6. All cleared areas shall be promptly rehabilitated and in accordance with specific instructions from the Engineer.

2.9. Fuel & Chemical Storage

- 1. The amounts of fuel and chemicals stored on site shall be minimized.
- 2. Storage sites shall be provided with bunds to contain any spilled liquids and materials.
- 3. Regular inspections shall be carried out to detect leaks and spillages. All storage facilities shall be maintained as regularly as is necessary to ensure they meet the original specification.
- 4. Fuel tanks shall be established on impervious bunded concrete slabs and equipped with a leak proof sump. Fuel tanks and similar storage facilities with a high pollution potential shall be bunded to 110% of their storage capacity.
- 5. Dedicated buildings and/or containment areas shall be established to contain or store hazardous substances. These facilities shall be located in excess of 30m from any watercourse or drainage line.
- 6. Contingency plans shall be put in place for dealing with emergency spills and hazard events.
- 7. All spillages shall be cleaned up by the Contractor immediately after they take place. Steps shall be taken to prevent a recurrence of a spillage.
- 8. Areas which have been contaminated by minor or accidental spillages shall be excavated and the contaminated material moved to a waste site designed and certified in accordance with the Eswatini Waste Regulation (2000). The costs involved for the excavation of contaminated areas, the replacement with clean and uncontaminated soil, as well as the disposal of the contaminated soil, shall be borne by the Contractor.

2.10. Refuse And Waste Disposal

- 1. The Contractor shall submit a site design of waste management systems as part of the environmental management plan for prior approval by Engineer. The design shall include at least one waste site designed and certified in accordance with the Eswatini Waste Regulation (2000).
- 2. Waste management on site shall be carried out by applying, in order of preference, waste avoidance, reuse, recycling and disposal.
- 3. Burning of waste material shall not be permitted except under special circumstances and with prior approval of the Engineer.
- 4. The following materials may not be spilled or disposed of on site or within the region:
 - (a) oil, whether used or unused.;
 - (b) batteries;
 - (c) bulk bituminous products; and/or

130



(d) other materials identified for removal by the Engineer.

Such materials shall be removed from site to the original suppliers. The arrangement with suppliers to accept these materials shall be part of the tender.

- 5. The Contractor shall provide and maintain adequate facilities for litter collection (e.g. bins) at strategic locations around office, garage, parking, housing facilities and locations where food is consumed.
- 6. Litter collection at all construction sites shall be undertaken at least once per working day. Work teams shall be supplied with refuse bags which can be disposed of daily in skips at centralised locations.
- 7. A high quality of housekeeping shall be maintained on all construction sites to ensure that materials are not left where they can be washed or blown away to become litter.
- 8. The contractor's staff shall be made fully aware of the need to avoid littering.

2.11. Sanitation

- 1. Suitable toilets shall be provided for the staff at all points at which workmen are carrying out duties under the contract.
- 2. The Contractor shall monitor that toilet facilities are used by personnel and that use of non-designated areas is actively discouraged.
- 3. Latrines and ablution facilities shall not be situated within 150 m of any borehole, well or river.
- 4. The Contractor shall ensure that sewerage is removed and disposed of in an adequate and approved septic tank and soakaway system.
- 5. The Factories, Machinery and Construction Works Regulation (1974) of The Factories, Machinery and Construction Works Act, 1972 (No 17 of 1972), and any amendment thereof shall apply in terms of sanitary accommodation.
- 6. The Building Operations Regulation, 1969 of The Building Act, 1968 (No 34 of 1968) and any amendment thereof shall also apply in terms of latrine and chemical closet requirements.

2.12. Air Quality

- 1. The Contractor shall ensure that all vehicles and machinery are fitted with appropriate emission control equipment, are maintained frequently and serviced to the manufacturers' specifications.
- 2. Smoke emitted from internal combustion engines running on site shall not be visible for more than ten seconds.
- 3. Burning of materials including wood, grass and refuse which emit visible smoke shall not be permitted on construction sites.

2.13. Dust Control

1. A dust prevention strategy shall be included in the environmental management plan.



- 2. Dust dispersion from construction activities, unsurfaced roads, spoil dumps and other construction locations shall be limited and suppressed to the maximum extent practical.
- Spoil dumps shall be positioned such that they are not vulnerable to wind erosion. 3.
- 4. Smooth exposed surfaces which generate dust shall be deep ripped and left rough and cloddy to reduce the wind velocity at the soil surface.
- Wind fences shall be deployed at problematic dust-generating sites if this is appropriate for 5. the site.
- Spoil and other dust-generating dumps which are left unused for 28 days or longer shall be 6. sprayed with water or chemically inert stabilisers to control dust, and treated with mulch and seeded as per Section 2.17.
- Untarred roads shall be sprayed with water from a water cart to limit dust generation by 7. construction vehicles. Where spraying of water on roads is not adequate for dust control, environmentally benign binding agents shall be used to limit dust generation by construction vehicles.
- 8. An appropriate freeboard shall be maintained in trucks hauling dirt, sand, soil and other loose material when leaving the road reserve.

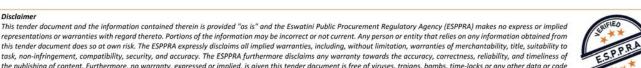
2.14. Plant Repair, Maintenance & Cleaning

- Any vehicle maintenance and repairs shall not be undertaken within a 30m radius of any water 1. courses and drainage lines. Any facilities susceptible to oil, petrol and diesel spillage shall be located a minimum of 30m and preferably 50m from all water course.
- Repair yards, batching plants and stationary machines shall be provided with sumps, and 2. spilled fluids and runoff shall be kept in a conservancy tank until removed from the site in terms of the Eswatini Waste Regulation (2000).
- 3. Adequate collection facilities such as diversion mounds, ditches, drains, oil separation sumps and sedimentation ponds shall be constructed at each location with a pollution potential.
- All repair work away from bunded areas shall make use of drip trays. 4.
- Regular inspections shall be carried out to detect leaks and spillages. These facilities shall be 5. maintained as regularly as is necessary to ensure they meet the original specification.
- All construction plant required for use on the works shall be thoroughly cleaned before 6. dispatch to the site, and shall be cleaned before removal from the site. Washing of incoming or outgoing plant at or near rivers and local streams will not be permitted.

2.15. Noise & Blasting

2.15.1. Blasting

- The Contractor shall obtain the required blasting permit(s) from the Inspector of Explosives 1. and shall comply with specified conditions at all times.
- 2. The Contractor shall prepare and submit to the Engineer for prior approval a map and description of blast hazard areas.



- 3. The Contractor shall prepare and submit to the Engineer a monthly schedule of proposed blasting operations which set out locations, dates, times, charge size, frequency and sequencing of blasting.
- 4. Twenty-one (21) days in advance of blasting operations, people living or working in or near the blast-hazard zone shall be notified of the intention to blast and shall be advised on the location, date and times of the blasts, and given a description of the sounds of the warning sirens.
- 5. Blasting within 500m of any dwelling or building shall be restricted to between 06:00 and 18:00 daily with the exception of Sundays when no blasting shall be permitted. In the event that blasting is required after 18:00, it shall specifically be authorised by the Engineer.
- 6. Personnel must be cleared in good time from an area within a 500m radius of a proposed blasting location prior to any blasting operations. One hour before blasting, a distinctive siren shall be sounded. Five minutes before blasting, a second distinctive siren (different from the first) shall be sounded.
- 7. The Contractor shall assess whether construction-generated noise is disturbing to schools and clinics within 2km of the construction sites, and shall take steps to reduce or otherwise minimize such disturbance.
- 8. In the event of any reported blasting damage to non-construction structures or facilities, the Contractor shall compile a written report supported by a photographic record and submit same to the Engineer within 24 hours. All blasting operations shall be immediately suspended until resumption is authorized by the Engineer.
- 9. All damage to non-construction structures or facilities shall be repaired as quickly as possible at the Contractors' expense in accordance with written authorization provided by the Engineer and following agreement by the owner(s) to receive repairs.

2.15.2. Noise

- 1. Construction-site generated noise shall not be above background levels inside any homestead adjacent to the construction areas between 10 pm and 7 am.
- 2. The Community Committee shall be advised in advance when unavoidable out-of-hours work will occur.
- 3. Appropriate and effective mufflers will be fitted to earth-moving and other vehicles on the site.
- 4. Noise from vehicles and on-site powered machinery and equipment shall not exceed the manufacturer's specifications, based on the installation of silencers.
- 5. Depending on the location of the facility, suitable noise suppression or abatement measures may be required, such as the provision of earthen embankments or other noise screens.
- 6. Silencers on construction equipment shall be maintained to ensure no deterioration in noise-dampening capacity.

7. The Contractor shall respond timeously in the event of any complaints by local residents or others about disturbing noise. The noise source shall be identified and appropriate noise mitigatory measures instituted in consultation with the affected party(ies).

2.16. Cultural Resources

2.16.1 Graves

Identification and removal of all graves within the construction site(s) will be undertaken under the resettlement programme (see CMP's). There is a slight possibility that unmarked graves may be encountered during construction excavations and other site activities. In such an event, the Contractor shall immediately halt the disturbance and inform the Engineer, who shall take the necessary steps to contact the Community Committee and effect the necessary removal of the graves from the construction area.

2.16.2 Artefacts

There is a slight possibility that historic artefacts (e.g. iron implements, pottery shards) may be unearthed by construction excavations and other site activities. In such an event, the Contractor shall immediately halt the disturbance and inform the Engineer, who shall take the necessary steps to contact archaeologists and cultural historians and effect the necessary collection of the material from the construction area.

2.17. Land Reclamation

- 1. Disturbed areas outside of the reservoir inundation zone and specific canal alignments shall be rehabilitated through landscaping, topsoil replacement and the establishment of vegetation.
- 2. Wherever possible, rehabilitation shall take place during the construction phase as soon as the disturbing force is removed from the area to be rehabilitated.
- 3. All construction activities, specifically borrow-pit development and additional disturbances outside of the inundation zones and canal alignments shall be undertaken with rehabilitation in mind and shall be planned to ensure that rehabilitation of disturbed land can be done in a cost-effective way.

2.17.1. Timing & Scheduling of Reclamation

- 1. Where the revegetation of disturbed areas is delayed by construction or growing season constraints, appropriate intermediate measures shall be taken to control erosion, including the use of energy dissipaters, the use of berms and storm-water-diversion canals, and the application of straw mulches or soil binders to exposed soils.
- 2. Vegetation establishment in disturbed areas outside the reservoir inundation zone shall be undertaken as early as possible, with growing season and water availability being the primary time constraints.
- 3. Revegetation and mulching shall be carried out progressively as each section of works is completed; the interval between clearing and revegetation shall be kept to a minimum.
- 4. If more than one contractor is working on a site the work schedules shall be coordinated so that there are no delays in construction activities resulting in disturbed land remaining unstabilised.
- 5. Construction activities shall be programmed so that the areas of exposed soil are minimised during times of the year when the potential for erosion is high (e.g. summer).

- 6. Sites shall be stabilized and erosion controls installed so that they remain effective during any pause in construction, especially during the wetter months.
- 7. Any cultivated and/or grazing land disturbed outside the inundation zone of the Lubovane Reservoir, including areas impacted by borrow pits and spoil dumps, shall be rehabilitated as soon as the disturbing force is removed, within the constraints of the growing seasons.

2.17.2. Landscaping

- 1. Landscaping shall be undertaken to restore the natural topography of the areas that have been disturbed or else to reduce slopes to stable gradients (no more than 1:3 and preferably flatter).
- 2. Spoil from dam construction activities shall be used for landscaping purposes where possible. Additional material which may be required for landscaping shall be sourced with the Engineer's approval only from areas within the reservoir inundation zone.
- 3. Borrow pits and other excavations shall be backfilled with overburden and/or materials obtained from clearing and grubbing. The borrow pits and quarries located within the reservoir inundation zone shall be self-draining.
- 4. All slopes which do not form part of an engineering structure shall be graded so that no slope exceeds a maximum gradient of 1:3. Where required by the Engineer, agricultural type drains shall be provided to control erosion.
- 5. Spoil dumps shall be formed in such a manner that the final profile shall appear as a natural extension of the adjacent undisturbed ground profiles.
- 6. Contoured surfaces shall be left rough to facilitate binding with topsoil and vegetation.

2.17.3. Area Preparation

- 1. Manual preparation of the reclamation beds shall be given priority consideration in order to create employment opportunities for the local communities.
- 2. Mechanical preparation of the seed bed shall not be carried out on slope gradients exceeding 1:4.

2.17.4. Topsoil

- 1. Topsoil¹ shall be sourced from areas which are cleared for construction and spoil dumps, conserved and used judiciously in the rehabilitation of disturbed land.
- 2. Topsoil shall be stripped, stored and respreads with as little compaction as possible.
- 3. Topsoil stripping shall be scheduled for the dry season.
- 4. Where practical, topsoil spoil dumps shall not exceed 2m in height to prevent compaction and limit dispersion of dust from the spoil dumps.



¹ topsoil is defined as the top layer of soil that can be mechanically removed to a depth of about 400mm without blasting.

- 5. Single handling of topsoil shall be practised where possible.
- 6. Stored topsoil shall be free of deleterious matter such as large roots, stones, refuse, stiff or heavy clay and noxious weeds which would adversely affect its suitability for planting.
- 7. Any topsoil dump which is to be maintained for longer than 28 days shall be treated with mulch, roughened and seeded with an approved grass mixture (see Section 2.17.7).
- 8. Land to which topsoil has been applied shall be vegetated as soon as possible after application.
- 9. Topsoil shall not be required on slopes with gradients steeper than 1:2 as it may be washed away by erosion or caused to slip off by gravity. On slopes with a gradient of 1:2 or less, the layer of topsoil spread over the landscaped surface shall be at least 200 mm. Topsoil shall be spread manually on slopes with a gradient of less than 1:4. Topsoil shall be spread with as little compaction as possible.
- 10. To restore the crop-producing potential of fields, a topsoil layer at least 250mm in depth shall be spread across the surface. Topsoil used shall be of the same or better quality than that stripped from pre-disturbance arable lands. Additional material required may be sourced from areas below the reservoir full supply level. Care shall be taken to ensure there are no stones or boulders in the topsoil layer that shall be a mechanical limitation to future cultivation.
- 11. To restore the grazing potential of lands, a topsoil layer at least 200mm in depth shall be spread across the surface during rehabilitation. Topsoil used shall be of the same or better quality than that stripped from pre-disturbance grazing lands. Additional material required may be sourced from areas below the reservoir full supply level.

2.17.5. Manures, Mulches & Anti-Erosion Compounds

- 1. Manure used for land reclamation shall be free from soil, weed seed and other contaminants.
- 2. Mulch used for land reclamation shall be natural, dried fibres of hay, chaff or tall grass clippings of 50mm and 400mm in length, with seed heads intact.
- 3. Mulch shall be applied by hand immediately after seeding or mixed with water as part of a hydroseeding mix.
- 4. Where anti-erosion compounds are used they shall be applied simultaneously with hydroseeding, at the rate specified by the manufacturer.

2.17.6. Fertilizers, Herbicides & Pesticides

- 1. Samples of different types of topsoil shall be tested to determine the quantity and type of fertiliser required for vigorous grass growth.
- 2. The type of fertiliser to be used shall be one or more of the following²
- agricultural lime (1 tonne/ha)
- super phosphate (250 kg/ha)



² application rates indicated here are estimates and actual application rates shall be determined from site specific soil sampling

- limestone ammonium-nitrate (250 kg/ha)
- 2:3:2 (22) (250 kg/ha) monophosphate (250 kg/ha)
- 3:2:1 (22) (250 kg/ha)
- 3:2:1 (25) (250 kg/ha)
- 2:3:4 (30) (250 kg/ha).
- 3. The spread of invader and alien species on disturbed land shall be controlled without the use of herbicides (unless otherwise instructed by the Engineer) until the vegetation cover is capable of providing sufficient natural weed control.
- 4. The Contractor shall not make use of any pesticide or insecticide unless so specified by the Engineer.

2.17.7. Vegetation Establishment

- 1. Runners of Cynodon dactylon (star or couch Grass) shall be used for reclamation in grassland areas (areas which have not been disturbed by cultivation).
- 2. Seed mixes shall contain a rapidly germinating annual commercial species³ which can act as a "nurse crop" to stabilise the soil rapidly and then die out, allowing for colonisation by indigenous species.
- 3. Seed mixes shall contain perennial commercial species with a high viability. These species shall not be invasive. The following species are recommended:
- Cynodon dactylon (10kg/ha)
- Chloris gayana (10kg/ha)
- Digitaria eriantha (6kg/ha)
- Eragrostis curvula (2kg/ha) Dactylis glomerata (4kg/ha)
- Paspalum notatum (8kg/ha).

2.17.8. Method of Planting

- 2.17.8.1. Manual Option (Grass Runners) on Gradients less than 1:3
 - 1. Runners of a grass with a stoloniferous and rhizomatous growth form⁴ shall be hand planted into drills on the slopes to facilitate rapid stabilisation.
 - 2. The plants must be well watered 24 hours before removal from the supply site and must be planted within 8 hours of removal.
 - 3. A topsoil layer of at least 250 mm shall be provided prior to planting.
 - 4. Areas where hand sowing of runners shall take place shall be well watered before planting.



³ Eragrostis teff (teff) applied at a rate of 1. 0 kg/ha. is preferred for this purpose.

⁴ Cynodon dactylon (star- or couch grass) is preferred for this purpose.

- 5. Trenches for the runners shall be cut approximately 80 mm deep along the contour at a spacing of approximately 150 mm. These shall be parallel to the contours of the finished surface.
- 6. The plants shall be placed at 150 mm intervals with roots well covered and leaves exposed.
- 7. A mulch of grass cut from the surrounding vegetation when the grass is in seed shall also be used the mulch application rate shall be 1.5 tonnes/ha.
- 8. The mulch may need to be secured on slopes with a gradient greater than 1:2, particularly during the rainy season (October to March), with pegged netting (temporary plastic bird netting or permanent biodegradable geonetting).
- 9. Seeds can be added to the mulch if deemed necessary.

1.42.1.12.17.8.2. Mechanical Option (Hydroseeding) on Gradients less than 1:3

- 1. The grass and fertiliser slurry shall include a mulch of grass cut from the surrounding areas when the grass is in seed. The mulch application rate shall be 1.5 tonnes/ha.
- 2. An adhesive shall be included in the mixture to prevent the seed and fertiliser from blowing, washing or slipping.
- 3. Only good-quality fresh seed shall be used.

1.42.1.22.17.8.3. Manual Option (Hand Sowing) on Gradients more than 1:3.

- 1. Trenches for the seeds shall be cut approximately 80mm deep along the contour at a spacing of approximately 150mm.
- 2. Seeds and fertiliser shall be broadcast into the trenches by hand and soil shall be gently compacted using a garden rake or similar implement.
- 3. A mulch of grass cut from the surrounding vegetation when the grass is in seed shall also be used the mulch application rate shall be 1.5 tonnes/ha.
- 4. Only good-quality fresh seed shall be used.

2.17.8.4. Mechanical Option on Gradients more than 1:3.

- 1. Fertiliser shall be spread over the surface and ploughed or disked into the soil.
- 2. The surfaces shall be harrowed until a fine seed bed has been prepared.
- 3. Seed shall be broadcast mechanically and then rolled with an agricultural roller.
- 4. A mulch of grass cut from the surrounding vegetation when the grass is in seed shall also be used the mulch application rate shall be 1.5 tonnes/ha.
- 5. Only good-quality fresh seed shall be used.

1.42.1.3<u>2.17.8.5</u>. Irrigation

1. Micro spray irrigation shall be used and the irrigation system supplied from a water cart.



- 2. Planted areas shall be irrigated on a daily basis until firm establishment of the seedlings and/or runners.
- 3. Following successful vegetation establishment, planted areas shall be irrigated on a weekly basis until vegetation cover effective in resisting erosion has been established.
- 4. Irrigation of established vegetation shall be applied if rainfall is inadequate to maintain growth and/or if vegetation dieback occurs.

1.42.1.42.17.8.6. Maintenance

- 1. Monitoring of plant growth shall be conducted on a weekly basis during initial phases and on a monthly basis when plants have become firmly established.
- 2. Vegetation will be replanted in areas where vegetation cover has decreased due to dieback, or has failed otherwise to successfully establish.
- 3. Noxious weeds, invasive and alien species shall be controlled by pulling, cutting or any other means approved by the Engineer. The use of herbicides shall not be allowed unless specified by the Engineer. Bare patches shall be replanted.
- 4. Acceptable cover shall be construed as not less than 75% of the area being covered in the case of hydro seeding and sowing, and 50% in the case of hand planted runners. There shall be no bare patches greater than 750mm in diameter.

2.17.9. Follow-Up

- 1. For one full growing season after the vegetation has been planted on the disturbed land, access to rehabilitated areas, especially by livestock, shall be prevented by means of fencing.
- 2. Rehabilitated areas shall be monitored and maintained until a self-sustaining plant community that protects soil against erosion has been established.
- 3. It shall be the Contractor's responsibility to eradicate all invasive and alien plant species introduced to the cultivated land in the topsoil within the first two years following site reclamation.

2.17.10. Other

- 1. The Contractor shall be responsible for the repair of erosion or drift sands caused by his activities.
- 2. Temporarily disturbed land shall be rehabilitated to its pre-disturbance potential.

1.43 2.18 Public Health Issues

In the event of an outbreak of illness of a contagious or epidemic disease amongst construction personnel, the Contractor shall comply with and carry out such regulation, orders and requirements as may be made by the Government of Eswatini, or the local medical or sanitation authorities for the purposes of dealing with and overcoming the same.

2.19 Fire Control

to any of your data or computer system which may occur whilst using this tender document.

1. All construction personnel shall receive training on fire hazards and techniques to extinguish any fire that may be initiated on the site.



which have the ability to corrupt or affect the operation of any computer system it is used on. The ESPPRA cannot accept any responsibility for any loss, disruption, or damage

- 2. The equipment required to extinguish any fires that may be initiated by construction activities must be installed on the site.
- 3. Flammable materials shall be stored under conditions that must limit the potential for ignition and the spread of fires.
- 4. Staff shall not be permitted to light fires on the site or on surrounding land, in areas other than those designated as safe by the Engineer.
- 5. There shall be a 5m firebreak around the construction site. This area shall be kept clear of vegetation and refuse for the duration of the contract.
- 6. The Factories, Machinery and Construction Works Regulation, 1974 of the Factories, Machinery and Construction Works Act, 1972 (No 17 of 1972) and any amendment thereof shall apply in terms of general safety and fire precautions.

2.20. Employment

2.20.1. Local Preference

- 1. The Contractor shall give employment preference to residents of the Project Area in accordance with approved agreements and procedures adopted by the Community Committee, and shall use the database provided by the Committee as a basis for identifying potential job candidates.
- 2. The Contractor's core of employees shall comprise no more than 15 % of the staff employed on the job during normal production periods. Where skilled workmen, artisans and operators are not available locally, they shall be employed from non-local sources.
- 3. The Contractor shall make available to the Community Committee specific and relevant information on the available employment; this shall include number and type of jobs, skill requirements for the jobs, duration of the jobs, remuneration scales, hours of work, conditions of work, procedures for the application of jobs, procedures for selecting job applicants, and training and certification available on the job.
- 4. The Contractor shall consider personnel from the applicants put forward by the Community Committee and shall consider aptitude, health, previous training and expertise. The Contractor shall as far as possible ensure that the distribution of hired personnel is proportional to the numbers of local applicants from the respective chiefdoms. Shall it not be possible to ensure equal distribution at one selection, the Contractor shall endeavour to correct for the difference at the next selection.
- 5. No casual job seekers outside the construction site shall be selected, unless they are selected by means of the correct process.
- 6. The Contractor shall maintain and submit records of all hirings, including dates of hiring and work commencement, the names and details of the applicants hired, and the chiefdom origins of the hired.
- 7. The Contractor shall maintain written records of all discussions with the Community Committee and its sub-committees.



2.20.2. Training

- 1. The Contractor shall set up a system of certification and/or accreditation related to training, to ensure all the workers have proof of work performed for future job application.
- 2. The Contractor shall be responsible for the training and supervision of inexperienced workers in accordance with Legal Notice No 67 of 1974 of The Factories, Machinery and Construction Works Act, 1972.

2.20.3. Employment Conditions

- 1. The Contractor is required to adhere to the wage rates and conditions set out in the Eswatini Regulation of Wages (Building and Construction Industry) Order 1989 (Legal notice No 79 of 1989) and the Wages Act, 1964 (No 16 of 1964) or any superseding legal notice, or the Contractor shall negotiate wage rates, hours of work and conditions with the Commissioner of Labour.
- 2. The Contractor shall maintain records of time worked, wages paid and training to show compliance.
- 3. The Contractor shall clearly display on notice boards (on site) the general rates of wages, work hours and conditions of labour.

PART 3: HEALTH AND SAFETY SPECIFICATIONS FOR CONSTRUCTION

3.1 Risk Assessments

Every contractor shall appoint a competent person in writing to perform a Risk Assessment before the commencement of any Construction work. This risk assessment shall form part of the Health and Safety Plan and be implemented and maintained.

The Risk Assessment shall include at least the following:

- The identification of the risks and hazards to which persons may be exposed to
- The analysis and evaluation of the identified risks and hazards
- A documented plan of safe work procedures to mitigate, reduce or control the risks and hazards that have been identified
- A monitoring plan, and
- A review plan

Based on the Risk Assessment, the Contractor must develop a set of site specific Health and Safety rules that will be applied to regulate Health and Safety aspects of the constructions. The Risk Assessments, together with the site-specific Health and Safety Rules shall be submitted to EWADE before mobilization on site commences.

3.1.1 Review of Risk Assessments

The contractor is to review the Hazard Identification, Risk Assessments and Safe Work Procedure's at each Production Planning and Progress Report meeting as the Contract work develops and progresses and each time changes are made to the designs, plans and construction methods and processes (monthly)

The contractor shall provide EWADE, and all concerned parties with copies of any changes, alterations or amendments brought about by the above.

3.2 Legal Requirements

All contractors entering into a Contract with EWADE shall as a minimum comply with the:

- Occupational Health and Safety Act and Regulations (Act 9 of 2001)
- EWADE must determine the competency of Contractors/persons he allows (authorize) to enter the work area by studying the required Portfolio of Evidence
- The portfolio of evidence submitted with the tender shall include:
 - o Qualifications and relevant experience of the responsible person
 - o Last 5 similar projects
 - Valid First Aid certificate
 - Valid Responsible Person Certificate
 - Valid certificate of training for fire fighting

3.3 Structure and Responsibilities

3.3.1 Overall Supervision and Responsibility for Health and Safety

EWADE shall ensure that the Contractor, appointed implements and maintains the agreed and approved Health and Safety Plan.



3.3.2 Further (Specific) Supervision Responsibilities for Health and Safety

The contractor shall appoint designated competent employees and/or other competent persons as per requirement. The appointments shall be in writing and the responsibilities clearly stated together with the period for which the appointment is made.

3.3.3 Designation of Occupational Health & Safety Representatives

The contractor shall ensure Health and Safety representatives are appointed for every workplace where employees are exposed at risk.

Occupational Health and Safety Representatives have to be designated in writing and the designation must include the area of responsibility of the person and term of the designation.

The Contractor shall ensure that the designated OH&S Representatives conduct an inspection of their respective areas of responsibility using a checklist and report thereon.

3.3.4 Health & Safety Goals & Objectives & Arrangements for Monitoring & Review of Health and Safety Performance

The Contractor is required to report all incidents to EWADE. The project manager/SHEQ officer must submit an up to date report regarding all incidents to EWADE.

3.4 Training, Awareness and Competence

3.4.1 General Induction Training

All persons on site are to attend a general induction session presented by the Contractor.

All persons on the site shall be in possession of documentation/proof that they have undergone general induction training.

The Contractor will be required to develop project specific induction training based on the Risk Assessments for the Contract work and train all employees and visitors.

3.4.2 Other Training

All operators, drivers and users of construction vehicles, mobile plant and other equipment shall be in possession of documentation proving that they have undergone training to operate said vehicles, plant and equipment.

3.4.3 Awareness & Promotion

The Contractor is required to have scheme in place to promote Health and Safety Awareness and culture. The following are some of the methods that may be used:

- Toolbox Talks
- Posters
- Competitions
- Videos etc



3.4.4 Competence

The Contractor shall ensure that all appointed staff is competent and that all training required to do the work safely and without risk to health, has been completed before work commences.

The Contractor shall ensure that follow-up and refresher training is conducted as the contract work progresses and the work situation change. Records of all training shall be kept on the Health & Safety file for auditing purposes.

3.5 Checking, Reporting and Corrective Actions

3.5.1 Bi-weekly Audits by EWADE

EWADE through its agent the Environmental Health Officer will conduct Audits to comply with relevant legislation to ensure that the Contractor has implemented and is maintaining the agreed and approved Health & Safety Plan.

The Contractor is to conduct his own internal audits to verify compliance with his own Health and Safety Plan.

The Occupational Health & Safety Representative is to conduct inspections of their areas of responsibility and report thereon to their supervisor.

All the results of the above mentioned inspections shall be in writing, reviewed, endorsed and placed in the Health & Safety File.

3.6 Incident Reporting and Investigation

3.6.1 Reporting of Accidents and Incidents

The Contractor shall report all incidents where:

- A major incident occurred
- The health or safety of any person was endangered
- Where a dangerous substance was spilled
- The uncontrolled release of any substance under pressure took place
- Machinery or any part of machinery fractured or failed resulting in flying, falling or uncontrolled moving objects
- Machinery ran out of control

To EWADE within two days. The Contractor is required to provide all internal and external accident/incident investigations.

3.6.2 Accident and Incident Investigation

The Contractor is responsible for the investigation of all accidents/incidents where employees and non-employees were injured to the extent that he/she/they had to be referred for medical treatment doctor, hospital or clinic and the results of the investigation shall be entered into accident/incident Register.



The Contractor is responsible for the investigation of all minor, non-injury incidents and near misses e.g. oil spillages.

EWADE reserves the right to hold its own investigation into an incident or call for an independent external investigation.

3.7 Operational Control

3.7.1 Emergency Preparedness, Contingency Planning and Response

The Contractor shall appoint a competent person to act as Emergency Coordinator.

The Contractor shall conduct an emergency identification exercise and establish what emergencies could possibly develop. The Contractor must then develop detailed contingency plans and emergency procedures.

3.7.2 First Aid

The Contractor shall provide relevant First Aid equipment and have qualified First Aider/s on site as required by the Occupational Health & Safety Act.

3.7.3 Security

The Contractor shall develop, implement and maintain Security and Site Access Control Rules and procedures throughout the construction period. Access control shall include the rule that non-employees will not be allowed on site unaccompanied.

3.7.4 Construction Vehicles & Mobile Plant (CV &MP)

All Construction Vehicles and Mobile Plant shall be inspected by the Contractor prior to being allowed on a project site and suppliers of hired vehicles, plant and equipment will be required to comply with this specification as well as the Occupational Health and Safety Act and Regulations.

3.7.5 Housekeeping

The contractor shall ensure that good housekeeping practices are implemented so that:

- Every workplace is kept clean, orderly and free of tools and materials that is not required for the work being done.
- Materials and equipment are stored properly
- Scrap, waste and debris is removed regularly and in a safe manner.
- Construction sites are fenced off to prevent entry by unauthorized persons.

3.7.6 Eating, Changing, Toilet Facilities

- Eating facilities should be provided in a location that is sheltered from the elements.
- Adequate changing, and toilet facilities shall be provided for both sexes. At least 1 shower per 15 workers and 1 toilet per 30 workers shall be provided. Chemical toilets may be used.

3.7.7 Personal & Other Protective Equipment



The Contractor shall identify the hazards in the workplace and endeavour to eliminate them. Where this is not possible, suitable steps shall be to protect workers from these hazards.

The Contractor is required to inform employees of health and safety hazards and issue them with suitable equipment to protect them from these hazards. It is a further requirement that the Contractor maintains the equipment and instructs and train employees in the use of the equipment. Employees do not have the right to refuse to use/wear safety equipment.

3.7.8 Public Health & Safety

The Contractor is responsible for ensuring that non-employees affected by the Construction work, such as, visitors, the benefitting and surrounding community and passersby, are made aware of dangers likely to arise from the construction work as well as the precautionary measures to be observed to avoid or minimize these dangers. Appropriate signage must be posted to this effect and all employees on site shall be instructed to ensure that non-employees are protected at all times. All non-employees entering the site must receive induction into the hazards and risks and the control measures.

ANNEXES

1.44 Annex 1. List of Eswatini environmental and related legislation with clauses and conditions applicable to construction sites and activities

- 1. The Water Act, 2003 (Act No.5 of 2003)
- 2. The Environmental Management Act, 2002
- 3. The Flora Protection Act, 2000
- 4. The Environmental Audit, Assessment and Review Regulations, 2000
- 5. The Waste Regulations, 2000
- 6. The Water Pollution Control Regulations, 1999 (draft)
- 7. The Air Pollution Control Regulations, 1999 (draft)
- 8. Eswatini Environment Authority Act, 1992
- 9. The Human Settlements Authority Act, 1988 as amended in 1992 (Act No. 13 OF 1992)
- 10. The Game Act (Amended), 1991
- 11. The Protection of Fresh Water Fish Act, 1938
- 12. The Wild Birds Protection Act, 1914
- 13. The Natural Resources Act, 1951 (No. 71 of 1951)
- 14. The Draft Eswatini Public Health Bill, 1999

1.45 Annex 2. Eswatini effluent standards (from Schedule Two of Regulations 2 and 4 of the Water Pollution Control Regulations (1999).

Parameter/Substance	Units of Measurement	Limit	
Colour	mg/ℓ Pt Scale	20 maximum	
Odour/Taste		not detectable after being diluted 3 fold	
pH	pH units	minimum of 5.5 and a maximum of 9.5	
Conductivity	ms/m	2 0 maximum	
Dissolved oxygen	% saturation	minimum of 75	
Temperature	degrees C	maximum of 35	
Chemical oxygen demand	$mgO2/\ell$	75 maximum	
Biological oxygen demand	$mgO2/\ell$	10 maximum	
Total dissolved solids	mg/ℓ	maximum of 500 above intake water	
Suspended solids	mg/ℓ	25 maximum	
Sodium content	mg/ℓ	maximum of 50 above intake water	
Soap, oil or grease	mg/ℓ	100 maximum	
Residual chlorine	mg/ℓ	0.1 maximum	
Free and saline ammonia	mg/ℓ	10.0 maximum	
Arsenic	mg/ℓ	0.5 maximum	
Boron	mg/ℓ	1.0 maximum	
Total chromium	mg/ℓ	0.5 maximum	
Copper	mg/ℓ	1.0 maximum	
Phenolic compounds (as phenol)	mg/ℓ	0.1 maximum	
Phosphates	mg/ℓ	2.0 maximum	
Lead	mg/ℓ	0.1 maximum	
Cyanides	mg/ℓ	0.5 maximum	
Sulphides	mg/ℓ	1.0 maximum	



Fluorides	mg/ℓ	1.0 maximum
Zinc	mg/ℓ	5.0 maximum
Cadmium	mg/ℓ	0.05 maximum
Mercury	mg/ℓ	0.02 maximum
Total faecal coliforms	per $100~\text{m}\ell$	10 maximum



1.46 Annex 3. Eswatini water quality standards (from Schedule One of Regulations 2 and 3 of the Water Pollution Control Regulations (1999)

Physic-chemical parameters Standard		
Dissolved oxygen	minimum of 4 mg/\(\ell\) (surface water only)	
pH	minimum 6.5 and maximum 8.5	
EC	1800 μ/cm maximum	
Turbidity	5 Nephelometric units maximum	
Hardness	$1000 \text{ mg/}\ell$ maximum (as calcium carbonate)	
Chemical oxygen demand	10 mg oxygen/ℓ maximum	
Biological oxygen demand	5 mg oxygen/ℓ maximum	
Anions		
Nitrate	$10 \text{ mg N/}\ell$ (as nitrogen) maximum	
Nitrite	$0.23 \text{ mg N/}\ell$ (as nitrogen) maximum	
Ammonia	0.6 mg N/ℓ maximum	
Fluoride	1.0 mg/ℓ maximum	
Cations		
Iron	1 mg/ℓ maximum	
Manganese	0.5 mg/ℓ maximum	
Mercury	$0.001~\text{mg/}\ell$ maximum	
Cadmium	$0.003 \text{ mg/}\ell$ maximum	
Aluminium	$0.2 \text{ mg/}\ell$ maximum	
Microbiological Parameters		
Total Coliforms	1 - 1 0 per 100 mℓ maximum	
Faecal Coliforms	1 - 1 0 per 100 mℓ maximum	

ESWATINI WATER & AGRICULTURAL DEVELOPMENT ENTERPRISE LTD FEEDER CANAL CONCRETE PANELS REHABILITATION CONTRACT NO.: EWADE/0712

7.0 TENDER DRAWINGS

FEEDER CANAL CONCRETE PANELS REHABILITATION



7.0 TENDER DRAWINGS

7.1 List of Specific Drawings

No	Title	Drawing No.
1	FC1-4	Plan View and Details ASB-TDS-05/07
		Dam Embarkment Detail ASB-TDS-03/01

END OF TENDER DOCUMENT

