



QUOTATION NO: E4356 / 2023

“CONSTRUCTION OF FUEL BUNDWALL AND ASSOCIATED CIVIL WORKS FOR THE NEW SMW POWER STATION AT DOBEL, WESTERN HIGHLANDS PROVINCE, MT. HAGEN”.

Prepared By: Team Leader Civil Generation Projects

Sign: *Bingso For* Dated: 14.05.23

Endorsed By: Manager Generation Projects

Sign: *[Signature]* Dated: 14-09-23

Approved By: Acting General Manager Asset Development

Sign: *[Signature]* Dated: 18/09/23

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FRONTISPIECE

BRIEF DESCRIPTION OF WORK

Works under this contract involves the construction of fuel bundwall and other associated civil works for the new 8MW Dobel Power Station, Western Highlands Province, Mountain Hagen.

Associated civil works include;

1. Construction of concrete blockwork bundwall for 2x fuel header tanks and fuel pump bay.
2. Construction of a small shed for the fuel pump bay.
3. Construction of reinforced concrete foundations for 2x 9,000L rainwater tanks currently on site for the office/workshop building including full installation and connection with water pump and accessories.
4. Construction of safety bollards for the fuel storage and power station area.
5. Construction of entry/exit slab for the office/workshop building.
6. Construction and connection of septic tank and absorption pit for the office/workshop building.
7. Construction of stonewall to slope at office/workshop hardfill area.



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PREFACE

INVITATION TO QUOTE

Quotations close with:

Quotation No: E4356 / 2023
PNG Power Limited,
P.O. Box 1105,
BOROKO, NCD
Papua New Guinea.

At ~~4:00~~ ^{4:30} pm on the ~~29~~ ²⁷ September, 2023.

The Quotation Submission shall consist of the original and one (1) copy of each of the following (Section 2), all duly completed;

- ❖ Form of Quotation.
- ❖ Quotation Data.
- ❖ Schedule of Rates for Variation.
- ❖ Any other information/document called for in the Specification or subsequent addenda.
- ❖ Additional information/documents offered by the Bidder to aid evaluation of the Quotation.

Enquiries during the Quotation period shall be addressed to:

PNG Power Limited,
P.O. Box 1105,
BOROKO, NCD
Papua New Guinea.

Attention:

Mr. Vincent Pilakvue
Manager Generation Projects
Asset Development Business Unit

Telephone: 324 3260
Fax: 325 0185
Email: VPilakvue@pngpower.com.pg

SECTION 1
DOCUMENTS TO BE SUBMITTED WHEN QUOTING

Quotation No: F4356/2023



QUOTATION NO: E4356 / 2023

(A) QUOTATION FORM

Bidders are required to complete the blank spaces in this Quotation Form and complete the Schedules included in this Document.

To: **PNG Power Limited,
P.O. Box 1105,
BOROKO P.N.G.**

Gentlemen;

1. Having examined the Drawings, Specification and Scope of Works for the execution of the above named Works, we, the undersigned, offer to execute, complete and remedy defects in the whole of the said Works in conformity with the said Drawings, Conditions of Contract, Specification and Schedules for the sum of (words & figures) (K.....) or such other sum as may be determined in accordance with the said conditions.
2. We undertake, if our Quotation is accepted, to complete and deliver the whole of the Works comprised in the Contract within Six (6) weeks subject to the said conditions.
3. If our Quotation is accepted we will, if required, obtain the guarantee of an Insurance Company or Bank or other sureties (to be approved by you) to be jointly and severally bound with us in a sum not exceeding five percent (5%) of the above-named sum for the due performance of the Contract.
4. We agree to abide by this Quotation for the period of **ninety (90)** days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before expiration of that period.
5. Unless and until a Formal Agreement is prepared and executed, this Quotation, together with your written acceptance thereof, shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Quotation you may receive.

Signed and sealed for and on behalf of :)

.....)
 by:).....
 the:.....)
 of the said Company thereunto)
 Authorized in the presence of:).....
 Address of Bidder:



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(B) QUOTATION DATA

(i) SUB-CONTRACTORS

Bidders shall list the sections of work and the names and address of sub-contractors nominated to carry out any portion of the works.

Portion of works ;

Sub-Contractor's Name and Address

(ii) CONTRACT SUPERVISION

Bidders shall list their proposed supervisory staff for this Contract. (Number and designation only).

(iii) STATEMENT OF EXPERIENCE

The Bidder shall state hereunder facts in detail describing previous experience and achievements in performing similar or comparable works together with the names of authorities for whom, and the dates when, such works was carried out.

(iv) STATEMENT OF RESOURCES

The Bidder shall state hereunder facts in detail sufficient to describe his resources, including technical, financial, manufacturing and constructional where applicable to indicate his ability to carry out the Contract.

(v) BIDDER'S ORGANIZATION

a. To be filled by a Corporation or Syndicate only

1. Name:

2. Business Address:

P.O. Box No:

.....

3. Date Organised/Registered:

4. Current Authorized Capital:

5. Current Subscribed Capital:

6. Current Paid-Up Capital:

7. Ownership of Company by Nationality:

8. Bank/Branch:

Phone:

Fax:

Email:

b. To be filled by a partnership only

1. Name:

2. Business Address:

P.O. Box No:

.....

3. Date Organised/Registered Capital:

4. Type of Partnership:

5. Names and Address of Partners:

a.

b.

c.

d.

e.

6. Current Total Capital showing contribution of individual partners:

Partner a: Partner b:

Partner c: Partner d:

Partner e:

Phone:

Fax:

Email:

c. To be filled by an Individual Licensed Contractor only.

1. Name: Nationality:
2. Business Address: Phone:
P.O. Box No: Fax:
..... Email:
3. Date Registered:
4. Capital:
5. Bank/Branch:

d. To be provided by all Bidders.

1. A declaration stating the proportion of National Ownership.
2. Documentation or evidence proving either NIDA Registration (or exemption) or IPA Certification of the Tender.
3. Certificate of compliance issued by the taxation office.
4. VAT Registration Number.

(vi) TECHNICAL INFORMATION

The Bidder shall provide, if considered necessary, the following information:

-
- | a. Clause or Schedule No. | Departures from the Requirement of this Specification with Details of Alternative Proposal |
|---------------------------|--|
|---------------------------|--|
-

b. Details of Specific Products when specifically called for in the Specification. (This should include Brand Names and Model Numbers

c. Method Statement: Full Details shall be given Detailing the Proposed Method of Construction of Works.



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(vii) CONSTRUCTION SCHEDULE

ITEM	ACTIVITY	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1	Mobilise to Site						
2	Construct Rainwater Tank Concrete Foundations, and Complete Installation and Connection of Tanks with all accessories.						
3	Construct Concrete Blockwork Burdwall for Header Tanks						
4	Construct Concrete Blockwork Burdwall & Shelter for Fuel Pump Bay						
5	Construct Safety Bollards to Fuel Storage Area						
6	Construct Safety Bollards to Power Station Area						
7	Construct Entry/Exit Slab to Office/Workshop Building						
8	Construct Septic Tank and Absorption Pit and connect to Office/Workshop Building						
9	Construct Stonewall at Office/Workshop Building Hardfill Area						
10	Clean up all around Construction Sites						
11	Demobilise from Site						

*** This is only a guide but you will be required to provide your own Project Schedule on MS Project or other based on your Work Plan**



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(C) PRICE SCHEDULE

(i) LUMP SUM BREAKDOWN

- 1. Site mobilisation & demobilisation K.....
- 2. Construct reinforced concrete foundations for 2x 9,000L water tanks, splash pads, pump slab and shed including complete installation and connection of tanks to the workshop/office with all necessary fittings and accessories to complete the work. K.....
- 3. Construct concrete blockwork bundwall for the fuel header tanks inclusive of all materials and painting works required to complete the work. K.....
- 4. Construct concrete blockwork bundwall and shelter for the fuel pump bay inclusive of all materials and painting works required to complete the work. K.....
- 5. Construct safety bollards for the fuel storage area inclusive of all materials and painting works required to complete the work. K.....
- 6. Construct safety bollards for the power station area inclusive of all materials and painting works to complete the work. K.....
- 7. Construct septic tank and absorption trench as shown on the drawings and connect to office/workshop with all necessary accessories and materials required to complete the work. K.....
- 8. Construct reinforced concrete entry/exit slab to the office / workshop building as shown on the drawings including all necessary materials required to complete the work. K.....
- 9. Construct stonewall all along hardfill slope at office/workshop area inclusive of all materials required to complete the work. K.....

SUB-TOTAL K.....
GST K.....
TOTAL LUMP SUM K.....

(Carried to Form of Quotation)

Name of Contractor:

Signature:

Date:

Witness:

(ii) SCHEDULE OF RATES FOR VARIATIONS

The Bidder shall list the rates for performance of the type of work listed in the Bill of Quantities below. These rates shall be used for calculating the Lump Sum Total and the amount of any variation to the contract involving that type of work. All time related overhead costs are to be included in these rates.

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Rate</u>
1.	Excavation and disposal of unsuitable material.	m ³	K.....
2.	Supply, place and compact hardfill materials.	m ³	K.....
3.	Supply and Placing of 19 mm Aggregates	m ³	K.....
4.	Construct Masonry Retaining Stone Wall	m ³	K.....
5.	Construct Concrete Blockwork	m ³	K.....
6.	Construct Type 2 Open Lined Drain	m ³	K.....
7.	Supply and Placing of 28 MPa Concrete inclusive of formwork	m ³	K.....
8.	Reinforcements;		
	(a) N16 Reinforcing steel bars.	tonne	K.....
	(b) N12 Reinforcing steel bars.	tonne	K.....
	(c) SL72 Mesh.	each	K.....

Name of Contractor:

Signature:

Date:

Witness:

SECTION 2
JOB SPECIFICATION AND SCOPE OF WORKS

(1) SCHEDULE OF PRELIMINARIES

1.1 General

The contractor shall carry out the work to be undertaken under this contract as detailed in the drawings and or inferred in this specification.

This specification describes the quality standards and functions required but is not to be considered as a detailed and exhaustive specification. Therefore the requirements are not solely limited to the descriptions hereafter. Items not explicitly mentioned shall be supplied and executed to the same quality standards as for the entire works for the project.

1.2 Standards and Workmanship

All works shall be carried out to the accepted standard trade practices, building codes and local authority regulations and the relevant PNG and Australian standards. The contractor shall be wholly responsible for the setting out, the accuracy and quality of his works. Superintendent's inspection of the work shall not be deemed as acceptance of the error. Corrections relating to such defects shall be at the contractor's own expense.

1.3 Work Permits & Approvals

The Contractor is responsible for obtaining all approvals in relation to any work carried out from the appropriate authority.

The Contractor must make all arrangements and obtain all other permits that are necessary to undertake the works under the Contract. Copies of documentary pertaining to all approvals, permits or certificates must be provided prior to commencement of the works.

1.4 Nature of Contract

This work shall be carried out in the form of a "Lump Sum Contract" with any approved variations paid for at the rates listed in the schedule of rates for variations where the type of work listed is the same or similar.

1.5 Location of Site / Place of Work

The site of the works is located at the new 8MW Dobel Power Station Site, Western Highlands Province, Mountain Hagen.

1.6 Scope of Works

The works covered in this specification includes:

- Construction of 2x rainwater tank foundations and installation and connection of tanks (supplied by PNG Power);
- Construction of 2x header tank foundations;
- Construction of safety bollards for fuel tanks and Power Station area;
- Construction of entry/exit slabs for office/workshop;
- Construction of septic tank and absorption pit for office/workshop;
- Construction of stone wall works to hardfill slope;

1.7 Site Inspection

Prior to lodging bids, bidders must inspect the site to fully inform themselves of the conditions.

During the site visit, the Bidder shall collect clear information so that a correct price for the works is provided, without the need for later alterations.

1.8 Safety Requirement

The Contractor shall ensure that all Work Place Safety Standards and requirements are adhered to when carrying out his works. All required safety wear to be used throughout the duration of the works. Any accidents shall be reported to the superintendent immediately. PNG Power shall bear no liability for any accidents due to contractor's negligence.

1.9 Use of Second-Hand Materials

No second-hand material shall be used in the works except where indicated in the specification or shown on the drawings, or until they have been inspected and approved by the superintendent. Any materials reused shall be finished to "as new" condition.

1.10 Boundary Limits

The Contractor shall ensure that he and all his personnel shall refrain from entering premises beyond the works area. PNG Power shall bear no liability for any damage or such to other properties due to the contractor's negligence.

1.11 Transport to Site

The contractor is responsible for the transport of all materials and manpower to and from site.

1.12 Site Security

The contractor shall be responsible for providing security for his work personnel and equipment/machineries on site. PNG Power shall not be held responsible for any damage or harm to any work personnel or any properties, equipment or machinery on site.

1.13 Time for Completion

All required works shall be completed within Six (6) weeks from the Date of Possession of Site given in the Letter of Acceptance.

1.14 Terms of Payment

The terms of payment shall be specified in the Letter of Acceptance.

1.15 Possession of Site

The date of possession of Site will be stated in the Letter of Acceptance. The contractor shall be given such possession of the site as is considered necessary to carry out these works but such possession shall not be deemed to mean exclusive possession.

(2) GENERAL

2.1 Excavation

The contractor shall carry out all excavation work accurately to the lines, levels and dimensions as shown on the drawings.

All hard fill material shall be compacted to 95 % of Maximum Dry Density (MDD) conforming to AS1289 E2.1.

2.2 Backfill and Fill Materials

The contractor shall supply, place and compact hardcore fill material and road base materials to the lines, finished levels and dimensions as shown on the drawings.

Fills shall be placed in loose layers not exceeding 200mm and compacted to 100% of standard dry density complying to AS 1289 Test E1.1

(3) CONCRETE WORKS

3.1 Concrete Requirements

All concrete works shall be in accordance with AS3600 and shall include all concrete materials and accessories required.

The contractor shall ensure that all equipment required for concrete work are on site and in working order before concrete pouring. Concrete placed without the Superintendent's authorization shall be removed at the contractor's own cost.

Concrete work shall have a minimum target strength of 28 MPa. after 28 days. All concrete shall be batched under controlled and supervised conditions. Where concrete is mixed on site, the Contractor shall use the mix proportions as shown in the Standard Specification or as per standard trade practices. Reinforcing steel to be Y16 'U' Deformed or as specified in the drawings.

Sampling will be in accordance with PNG 1002 and all costs associated with testing shall be borne by the Contractor. All concrete tests to be carried out and witnessed by the employer's representative and test results issued.

Concrete curing and all other concrete work applications shall be compliant to PPL's Standard Specification under Clause 3.

3.2 Moisture Barriers

A layer of 0.2mm thick polythene moisture barrier shall be laid over all hardfills under the concrete structures where shown or directed by the Superintendent. The sheetings shall be lapped 300mm and taped at all joints. The sheetings shall be raised up the sides of all footings, footing beams and slabs as shown in the drawings and or as directed by the Superintendent.

(4) RAINWATER TANK FOUNDATIONS

4.1 General

The rainwater tanks (2x 9,000L Warrior Tanks) are currently stored at the rear of the control building inside Dobel Sub-station. Tank dimensions shall be verified on site prior to setting out profile for the foundation works. The tanks shall also be installed and connected to the office/workshop building upon completion of the foundations. All necessary materials and accessories including piping works and fittings shall be supplied for installation and connection of the water tanks.

4.2 Water Tank Foundations

Two (2x) water tank foundations shall be constructed according to the details and dimensions as shown on the drawing. Any minor alterations to the dimensions shall be confirmed and amended on site as directed by the superintendent.

The foundation works shall be scheduled ahead of all other required tasks under this contract to allow adequate curing of the foundations. Upon completion of all other necessary tasks and after the concrete foundations have cured adequately, the contractor can proceed to mounting the tanks onto the foundations and connecting to the office/workshop building.

Splash pads for the water tank overflow and water tap area shall also be constructed or as directed by the superintendent.

4.3 Water Pump

A high-pressure Davey water pump shall be installed and hooked up to both tanks to supply the office/workshop building. The pump shall be housed on a concrete pad with a small shed enclosing the water pump. The shed shall have a front opening or gate with latch which can be locked with a chain and pad lock. The concrete pad and shed dimensions shall be dependent on the size of the water pump that will be installed. Water pump specification and details shall be approved by the superintendent for installation.

4.4 Water Tap & Fittings

An outdoor tap shall be installed at a desired location near the office/workshop building with a water catchment area to drain excess water out to the nearby open lined drain. The Contractor shall be deemed to have included in his tender price all associated costs for all materials required to complete the work.

All necessary materials and accessories shall be supplied including piping works and fittings.

(5) BUNDWALL

5.1 Foundation

The Contractor shall be deemed to have included in his tender price the total cost of the foundation works for excavation including all concrete materials and accessories, and reinforcement materials required as shown on the drawings.

5.2 Concrete Blocks

Concrete blocks shall have a characteristic compressive strength of 12 MPa as determined for 'lot' of blocks in accordance with Appendix C of AS 1500. Blocks which have been damaged during manufacture or subsequent handling shall not be used.

5.3 Reinforcement

All reinforcement shall be grade 410 conforming to AS 1302. All horizontal and vertical reinforcement in walls and all other principal reinforcement shall be deformed bar. All ligatures shall be plain bar.

5.4 Core Filling Grout

Grout used to fill cores shall consist of cementitious materials and aggregate to which sufficient water has been added to produce a pouring consistency without segregation of the constituents. Top layer of blockwork shall be finished off in a crown shaped layer of cement grout bonded with lockrete as shown on the drawings.

5.5 Laying of Blocks

Block laying shall be carried out by experienced tradesmen in the best workmanlike manner. Cutting of blocks shall be reduced to an absolute minimum by setting out to avoid irregular or broken bond. The bond pattern shall be as indicated on the drawings except that where no bond pattern is indicated, the walls shall be laid in straight uniform courses in running bond.

5.6 Painting

Completed blockwork surface shall be cleaned and free from any excess cement mortar before applying painting works both inside and outside. Paint shall be in two coats, undercoat applied before the final coat bearing yellow and black pattern in layers or as directed by the superintendent on site.

(6) SEPTIC TANK & ABSORPTION TRENCH

The contractor shall excavate and construct a septic tank and absorption pit to the details, dimensions and levels as shown in the drawings. Site location of septic tank and absorption pit shall be confirmed on site with the superintendent for construction.

All necessary materials including piping materials and fittings for connecting the office/workshop toilet waste outlet pipe to the septic tanks shall be supplied and shall be deemed to have been included in the tender price.

The width of excavation for the sewerage lines shall be to a minimum of 300mm and pipe layout shall be as shown on the drawings.

(7) BOLLARDS

7.1 Bollards

The contractor shall supply and construct 1.1m high 100dia. galvanised pipes at every 1.5m intervals to the locations as shown on the drawings for both the fuel storage and power station areas. The top of concrete foundation shall be crown-shaped to allow water to drain freely from the surface.

7.2 Core Filling Grout

Grout used to fill cores shall consist of cementitious materials and aggregate to which sufficient water has been added to produce a pouring consistency without segregation of the constituents. Top layer of blockwork shall be finished off in a crown shaped layer of cement grout bonded with lockcrete as shown on the drawings.

7.3 Rails

The contractor shall supply and install 50mm galvanised tube rails at top and bottom of bollards. Both ends of tube railing shall be flattened and welded onto the bollards. Spacing and height of top and bottom tubes shall be determined on site before attaching rails.

7.4 Painting

The surface of bollards and rails shall be cleaned and free from any access cement mortar before applying painting works. Paint shall be in two coats, undercoat applied before the final coat bearing yellow and black pattern in layers or as directed by the superintendent on site.

(8) ENTRY/EXIT SLAB FOR OFFICE/WORKSHOP

8.1 Slab Dimensions

The entry/exit slab shall be constructed directly in front of the existing office/workshop building as shown on the site layout plan. Length of slab shall suit existing office/workshop slab with 2m width and 150mm slab thickness and edge beams shall be 200mm at the top and tapering to 150mm at the bottom with total depth of 300mm.

8.2 Reinforcement

Main slab shall be reinforced by F72 reinforcing mesh tied to Y12 starter bars at the ends. The end perimeter of the mesh shall be bent downwards into the edge beams. Thickening reinforcement shall be 2xY16 bars at the bottom tied to mesh by bending Y12 ties at 400 centres.

8.3 Moisture Barrier

A layer of 0.2mm thick polythene moisture barrier shall be laid over the compacted hardfill under the slabs and edge beams. The sheetings shall be lapped 300mm and taped at all joints.

8.4 Dowels

16mm diameter steel dowels shall be installed at all construction joints denoted at 300 centres. One end of the dowel to which new concrete is to be poured shall be drilled and inserted into existing slab.

8.5 Construction Joint

Approved construction joint foam and compressible joint fillers together with backing rod shall be installed on the existing concrete slab face prior to pouring of the new slab.

(9) STONEWALL WORKS

The Contractor shall carryout stone pitching work for the hardfill slope surfaces, batters and retaining walls where shown in the drawings or where directed. Rocks used for stone pitching shall be sound durable rocks. Rocks used shall not be less than 150mm thick and shall be properly bedded to a uniform surface on an approved bedding material. Exposed surface of each stone shall be approximately flat and of an area not less than 0.03m².

Surface to be stone pitched shall be trimmed and shaped where necessary and the rocks set in mortar consisting of 3 parts clean fine aggregate to 1-part cement by volume.

(10) CLEANING UP

Upon completion, the work area shall be left clean of all unused materials, surplus excavated materials to be evenly spread and any other materials or scrap shall be removed and disposed off from site.

**SECTION 3
DRAWINGS**

