MR 246/2018

SUPPLY OF 33kV PROTECTION PANELS FOR PINEAPPLE CORNER SUBSTATION PROTECTION UPGRADE

ENERGY FIJI LIMITED

REVISION HISTORY & DOCUMENT CONTROL

Rev No.	Notes	Prepared By	Reviewed & Approved By	Date of Issue
1	Issued for tender	KDP (ULSSP)		

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1 INVITATION FOR TENDER

Energy Fiji Limited ("EFL") is responsible for generation, transmission and distribution of electricity in Viti Levu, Vanua Levu, Ovalau and Tavueni in Fiji. It owns over twenty (20) power stations and forty (4) substations and switching stations on the islands of Viti Levu, Vanua Levu, Taveuni and Ovalau. EFL owns, operates and maintains 147km of 132kV transmission lines, 524km of 33kV lines and over 9,200km of 11kV and 415V distribution lines.

carrying out protection upgrade works at Wailekutu Substation and Deuba Power Station in the Central Region of Viti Levu. It requires protection and control panels for these protection upgrade projects.

EFL is carrying out protection upgrade works at Pineapple Corner Substation in the Western Region of Viti Levu. EFL invites sealed bids from suitable switchboard and control panel manufacturers for the manufacture, test at manufacturer's work, packing and shipping of the following:

- 2x protection panels for 33/11kV transformer
- 2x protection panels for 33kV transmission line
- 1x protection and control panels for 33kV bus-section and busbar
- 1x SCADA and time synchronisation panel

All tenders for the contract shall be submitted on the appropriate forms provided and shall include the completed price schedule, technical schedule and schedules of experience etc. The bid shall be on the basis of a lump sum contract based on firm prices.

During evaluation of tenders EFL may invite a tenderer or tenderers for discussions, presentations and any necessary clarification before awarding of the contract.

The tender submissions close at 1600hrs on 11th July 2018, Fiji Time.

Further information for this tender may be acquired from:

Mr. Tuvitu Delairewa
General Manager Commercial
Energy Fiji Limited
2 Marlow Street, Suva, Fiji.
Phone: 679 3224 185
Email: TDelairewa@efl.com.fj

2 INSTRUCTIONS TO TENDERERS

2.1 Eligible Tenderers

This invitation is open to all Tenderers who have sound Financial Background, and have previous experience in supply of such panels.

Tenderers shall provide such evidence of their continued eligibility satisfactory to EFL as EFL shall reasonably request, using the forms provided in the Schedules.

Tenderers shall not be under a declaration of ineligibility for corrupt or fraudulent practice.

2.2 Eligible Materials, Equipment and Services

The materials, equipment, and services to be supplied under the Contract shall have their origin from reputable companies as specified by EFL and from various countries and all expenditures made under the Contract will be limited to such materials, equipment, and services. Tenderers shall be required to provide evidence of the origin of materials, equipment, and services in their bids.

For purposes of this Contract, "services" means the works and all project-related services including design services.

For purposes of this Contract, “origin" means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing or substantial or major assembling of components, a commercial recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

The materials, equipment and services to be supplied under the Contract shall not infringe or violate any industrial property or intellectual property rights or claim of any third party.

2.3 One Bid Per Tenderer

Each Tenderer shall submit only one bid. A Tenderer who submits or participates in more than one bid will cause all those bids to be rejected.

2.4 Cost of Bidding

The Tenderer shall bear all costs associated with the preparation and submission of its bid and EFL will in no case be responsible or liable for those costs.

2.5 Site Visits

No site visits are required for this project.

2.6 Contents of Bidding Documents

The Tenderer is expected to examine carefully the contents of this Bidding document. Failure to comply with the requirements of bid submission will be at the Tenderer's own risk. Bids which are not substantially responsive to the requirements of the bidding documents will be rejected.

2.7 Clarification of Bidding Documents

A prospective Tenderer requiring any clarification of the bidding documents may notify EFL in writing by fax (hereinafter the term "fax" is deemed to include electronic transmission such as facsimile, cable and telex), or email addressed to:

Tuvitu Delairewa
General Manager Corporate Services
2 Marlow Street, Suva, FIJI.
Phone: 679 3224 185
Facsimile: 679 331 1882
Email: TuvituD@efl.com.fj

EFL will respond to any request for clarification which it receives earlier than five (5) days prior to the deadline for submission of bids.

2.8 Amendment of Bidding Document

At any time prior to the deadline for submission of bids, EFL may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Tenderer, modify the bidding documents by issuing addenda.

2.9 Language of Bid

The bid, and all correspondence and documents related to the bid, exchanged between the Tenderer and the EFL shall be written in the English language.

2.10 Bid Prices

Unless specified otherwise, Tenderers shall quote for the entire facilities on a "single responsibility" basis such that the total bid price covers all the Supplier's obligations mentioned in or to be reasonably inferred from the bidding documents in respect of the design, manufacture, including procurement and subcontracting (if any), testing and delivery. Tenderers who are required to import materials for assembly of the panels shall be responsible for payment of all associated importation charges, duties and taxes in the country in which the panels will be assembled.

Tenderers shall give a breakdown of the prices in the manner and detail called for in the Schedules of this bidding document, or any issued addenda.

Bids shall be given on DDU basis. The point of delivery shall be EFL's Navutu Depot in Lautoka. The term DDU shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce, Paris.

2.11 Bid Currencies

Prices shall be quoted in a single currency only.

2.12 Bid Validity

Bids shall remain valid for a period of **90 days** from the date of Deadline for Submission of Bids specified in Sub-Clause 2.15.

2.13 Format and Signing of Bids

The Tenderer shall prepare one original and one (1) copies of the technical and financial proposals, clearly marking each one as: "ORIGINAL-TECHNICAL & PRICE PROPOSAL", "COPY NO. I - TECHNICAL & PRICE PROPOSAL", etc. as appropriate. In the event of discrepancy between the original and any copy, the original shall prevail.

The original and all copies of the bid shall be typed or written in indelible ink (in the case of copies, Photostats are also acceptable) and shall be signed by a person or persons duly authorized to sign on behalf of the Tenderer. All pages of the bid where entries or amendments have been made shall be initialed by the person or persons signing the bid.

The Tenderer shall also provide one electronic copy of the Technical and Financial proposals on EFL's electronic tender hosting website, https://www.tenderlink.com/efl or on a portable storage device with the printed submissions.

The bid shall contain no alterations, omissions or additions, except those to comply with instructions issued by EFL, or as necessary to correct errors made by the Tenderer, in which case such corrections shall be initialed by the person or persons signing the bid.

2.14 Sealing and Marking of Bids

The Tenderer shall seal the original copy of the technical proposal and the original copy of the price proposal and each copy of the technical proposal and each copy of the price proposal in separate envelopes clearly marking each one as: "ORIGINAL-TECHNICAL & PRICE PROPOSAL", "COPY NO. I -TECHNICAL & PRICE PROPOSAL", etc. as appropriate.

The Tenderer shall seal the original bids and each copy of the bids in an inner and an outer envelope, duly marking the envelopes as "ORIGINAL", "COPY No. 1", etc.

The inner and outer envelopes shall

a) be addressed to EFL at the following address:

Tuvitu Delairewa
General Manager Corporate Services
Energy Fiji Limited
2 Marlow Street, Suva, FIJI.
Phone: 679 3224 185
Facsimile: 679 331 1882
Email: TuvituD@efl.com.fj

And

b) bear the following identification:

- Bid for: SUPPLY OF 33kV PROTECTION PANELS FOR PINEAPPLE CORNER SUBSTATION 33kV PROTECTION UPGRADES
- Bid Tender Number: MR 246/2018
- DO NOT OPEN BEFORE: 1600hrs on 11/07/2018

In addition to the identification required, the inner envelope shall indicate the name and address of the Tenderer to enable the bid to be returned unopened in case it is declared "late" pursuant to Deadline for Submission of Bids.

If the outer envelope is not sealed and marked as above, EFL will assume no responsibility for the misplacement or premature opening of the bid.

2.15 Deadline for Submission of Bids

Bids must be received by EFL at the address specified above no later than 1600 hours (Fiji Time) 11/07/2018.

EFL may, at its discretion, extend the deadline for submission of bids by issuing an addendum, in which case all rights and obligations of EFL and the Tenderers previously subject to the original deadline will thereafter be subject to the deadlines extended.

2.16 Late Bids

Any bid received by EFL after the deadline for submission of bids prescribed above will be rejected and returned unopened to the Tenderer.

2.17 Modification and Withdrawal of Bids

The Tenderer may modify or withdraw its bid after bid submission, provided that written notice of the modification or withdrawal is received by EFL prior to the deadline for submission of bids.

The Tenderer's modification or withdrawal notice shall be prepared, sealed, marked and delivered in accordance with Sealing and Marking of Bids, with the outer and inner envelopes additionally marked "MODIFICATION" or "WITHDRAWAL", as appropriate. A withdrawal notice may also be sent by fax but must be followed by a signed confirmation copy.

No bid may be modified by the Tenderer after the deadline for submission of bids.

2.18 Rejection of One or All Bids

EFL reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to 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 rejection.

2.19 Process to be Confidential

Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process.

Any effort by a Tenderer to influence EFL's processing of bids or award decisions may result in the rejection of the Tenderer's bid.

Lowest bid will not necessarily be accepted as successful bid.

2.20 Clarification of Bids

To assist in the examination, evaluation and comparison of bids, EFL may, at its discretion, ask any Tenderer for clarification of its bid. The request for clarification and the response shall be in writing or by fax, but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by EFL in the evaluation of the bids.

2.21 Compliance with Specifications

The tender shall be based on the equipment and work specified and shall be in accordance with the Technical Specification. It should be noted that unless departures from specifications are detailed in Schedule G of the Technical Specification, the tender would be taken as conforming to the Specification in its entirety. The Tenderer shall tender for the whole of the Works included in the Specification.

2.22 Signature of Tenderer

A tender submitted by a Partnership shall be signed by one of the members of the Partnership and shall be accompanied by a certified authorization of all the partners authorizing the individual partner to sign on behalf of the Partnership. A tender submitted by a Corporation to the Contract and shall be accompanied by a certified resolution of the Board of Directors authorizing the individual to sign on behalf of the Corporation.

2.23 Insurance

The Contractor is to confirm that they have in effect the insurance policies below:

1. Public and Products Liability Insurance
2. Insurance for Workmen’s Compensation

3 GENERAL CONDITIONS OF CONTRACT

The General Conditions of Contract shall be based upon AS 4911 – 2002 General Conditions of Contract for Supply of Equipment Without Installation.

The Conditions of Contract comprises two parts:

1. Part 1 – General Conditions; and
2. Part 2 – Conditions of Particular Application

4 CONDITIONS OF PARTICULAR APPLICATION

1. Interpretation and Construction of Contract

Add the following:

"Bid has the same meaning as tender."

Replace

"*qualifying cause of delay means*

a) any act, default or omission of the Purchaser, its consultants, agents or other contractors (not being employed by the Supplier); or

b) other than

i) a breach or omission by the Supplier;

ii) industrial conditions or inclement weather occurring after the due for delivery; and

iii) *stated in item 22*"

With

"*qualifying cause of delay means a cause of delay other than that caused by*

a) a breach or omission by Supplier;

b) industrial conditions or inclement weather occurring after the due for delivery; and

c) *a cause stated in item 22* "

5. Service of notices

Replace " *ii) confirmation of correct transmission of fax*"

With " *ii) confirmation of correct electronic transmission*"

6. Contract Documents

Under 6 Contract Documents, make the following change:

Replace "*6.1 Discrepancies*" and contents in subclause 6.1 Discrepancies with the following,

"6.1 Discrepancies and Priority of Documents

The following priority of documents applies if there is any ambiguity, discrepancy or inconsistency in the documents comprising the Contract:

a) Letter of Acceptance from Supplier
b) Conditional Award Letter from Purchaser
c) EFL Tender Addenda (if any issued, if not, remove this item from list)
d) EFL Tender Specifications, including drawings
e) Conditions of Particular Application to AS 4911-2003
f) General Conditions of Contract AS 4911-2003
g) Supplier's Tender Clarifications (if any provided by Supplier during tender evaluation, if not, remove this item from list)
h) Supplier's Bid Document

If either party discovers any inconsistency, ambiguity or discrepancy in any document prepared for the purpose of performing the Contract that party shall give the other party written notice of it. The Purchaser, thereupon, and upon otherwise becoming aware, shall direct the Supplier as to the interpretation and construction to be followed, with the priority order of documents above.

If compliance with any such direction under this subclause causes the Supplier to incur more or less cost than otherwise would have been incurred had the direction not been given, the difference shall be assessed by the Purchaser and added to deducted from the contract sum."

9. Warranties

Replace "*9. Designated Items*" and its contents with the following

"*9. Warranties*

9.1 Ownership
The Supplier represents and warrants that:
a) It is the legal and beneficial owner of the goods; and
b) that upon payment of the contract sum no person other than the Purchaser will be entitled to hold any interests in, or hold any encumbrance over, the goods.

9.2 Supplier's Warranty
The Supplier represents and warrants that the goods will upon delivery:
a) comply in all respects with the Contract;
b) be suitable for the purpose stated in Item 5;
c) be of merchantable quality;
d) conform to any sample provided by the Supplier and approved by the Purchaser.
e) in the absence of any specific provision of the Contract, meet any relevant Australian Standard and industry best practice;
f) be free of design defects;
g) be, unless otherwise agreed, new.

If the Supplier is in breach of any of the warranties in this clause 9, the Purchaser may, in addition to the Purchaser's other rights and remedies, at any time give 7 days' written notice to the Supplier to rectify such breach, and if the Supplier fails to comply with such notice, the Purchaser may employ others to carry out works required to satisfy the warranty. The cost thereby incurred shall be moneys due and payable to the Purchaser.

The representation and warranties in this clause survive the completion or earlier termination of the Contract and each warranty in this clause is independent of, and is not limited by, reference to any other warranty.

The Supplier shall obtain all warranties relevant to the goods from manufacturer or suppliers or as otherwise specified in the Contract, including any warranties that are provided by any sub-contract and ensure that the Purchaser has the benefit of those warranties. "

14. Directions

Add the following to 14 Directions, at the end,

"*The Purchaser may appoint the individual stated in Item 1A to exercise delegated Purchaser's functions. The Purchaser may, from time to time, by notice in writing to the Supplier, substitute or appoint more than one such Purchaser's representative, provided that no aspect of any function shall at any time be the subject of delegation to more than one Purchaser's representative.*

Every reference in the Contract to the Purchaser's representative shall include the Purchaser and vice versa."

17. Time

Under 17.2 Claim, make the following change

Replace

" *a) delivery is or will be delayed by a qualifying cause of delay; and* "

With

" *a) delivery is or will be delayed by a qualifying cause of delay that includes but is not limited to any act, default or omission of the Purchaser, its consultants, agents or other contractors (not being employed by the Supplier; and "*

19. Delivery

Add the following to 19.1 Mode of and Date and Place for Delivery, at the end,

"The Supplier must ensure that all goods are properly, safely and securely packaged and labeled for identification and safety as follows:

a) the goods must be individually packaged for transport so that they are protected from all reasonably foreseeable condition which might cause corrosion, deterioration or physical or bearing damage during handlings and transport. All packaging and preservation materials must be supplied by the Supplier; and

b) each package must be clearly and indelibly inscribed with the Purchaser's name, the address of the delivery place, the Purchaser's contract number and any safety warnings for the contents."

21. Acceptance or Rejection of Equipment

Add the following to 21.1 Notification, at the end,

"*The Purchaser shall be under no obligation to give written notice to the Supplier that the Equipment is acceptable unless:*

a) the Purchaser is satisfied that the Equipment is satisfactory and complies with the "as manufactured" drawings approved by the Purchaser; and
b) *all drawings and manuals required to be supplied by the Supplier, have been duly supplied by the Supplier.* "

24. Payment

Replace "*24.1 Invoices and time for payment*" with "*24.1 Claim for Payment and time for payment*"

Under 24.1 Claim for Payment and Time for Payment, make the following change.

Replace all occurrences of *"an invoice"* with *"written claim for payment".*

26. Termination by frustration

Under 26 Termination by frustration, make the following change.

Replace all occurrences of *"an invoice"* with *"written claim for payment".*

27. Notification of claims

Under 27.1 Communication of claims, make the following change

Replace

"*As soon as practicable after a party becomes aware of any claim in connection with the subject matter of the Contract, that party shall give to the other party the prescribed notice of a notice of dispute under subclause 28.1*."

With

"*As soon as practicable and in any event not later than seven (7) consecutive days after a party becomes aware of any claim in connection with the subject matter of the Contract, that party shall give to the other party the prescribed notice of a notice of dispute under subclause 28.1.*"

28. Dispute Resolution

Replace "28.2 Conference" and contents with the following:

"28.2 Conference
Within 14 days after receiving a notice of dispute, the parties shall confer at least once to resolve the dispute or to agree on methods of doing so, including, but not limited to, mediation, conciliation, binding expert determination and arbitration, of the whole of any part of the dispute. Where arbitration is agreed method of resolution, the arbitration shall be conducted in accordance with the rules of Item 38(b) and the arbitrator, unless otherwise agreed, shall be nominated by the President of the Fiji Institute of Engineers.

At every such conference, each part shall be represented by a person having authority to agree to such resolution or methods. All aspects of every such conference except the fact of occurrence shall be privileged.

If the dispute has not been resolved nor a method of resolution agreed within 56 days of service of the notice of dispute, that dispute shall be dealt with in accordance with subclause 28.3."

Replace "28.3 Arbitration" and contents with the following

"*28.3 Elevation of Disputes*

If the parties are unable to resolve the dispute or agree a method of resolution in accordance with sub clause 28.2:

- *a) the dispute shall be referred to the Chief Executive Officer, or a duly authorized representative, of the Purchaser and the Chief Executive Officer/Managing Director, or a duly authorized representative, of the Supplier to resolve the dispute or agree on a method of resolution;*
- *b) the individuals referred to in sub clause 28.3 (a) shall meet within 14 days after referral of the dispute in an effort to resolve the dispute or agree a method of resolution;*
- *c) if the individuals referred to in sub clause 28.3 (b) are unable to resolve the dispute but agree at that meeting on a method of resolution, they shall also nominate a timeframe for the commencement and conclusion of the method of resolution; and*
- *d) if the individuals so referred to in sub clause 28.3(b) are unable to resolve the dispute or agree a method of resolution, each within 14 days of the dispute being referred, either parts may give written notice to the other stating that the parties have been unable to resolve the dispute or agree a method of resolution.*

Where arbitration is the agreed method of resolution, the arbitration shall be conducted in accordance with the Rules stated in Item 38(b) and the arbitrator, unless otherwise agreed, shall be nominated by the President of the Fiji Institute of Engineers."

Replace "28.4 Summary Relief" and the contents with the following:

"28.4 Instituting Proceedings

Neither party shall proceed to resolve a dispute by instituting court proceedings until issuing to, or receiving from, the other party, a notice in accordance with sub clause 28.3(d)."

Add the following after 28.4 Institutional Proceedings

"*28.5 Summary Relief*

Nothing herein shall prejudice the right of a party to institute proceedings to enforce payment due under the Contract or to seek injunctive or urgent declaratory relief."

Annexure A

Replace Annexure A Part A with the form provided in Schedule C.

5 REFERENCES

5.1 Applicable Standards

The protection and control panels shall be manufactured and tested in accordance with the following Standards and all amendments issued prior to the date of closing of tenders except where varied by this Specifications.

AS 1319	Safety Signs for the Occupational Environment
AS 2067	Substations and High Voltage Installations Exceeding 1kV AC
AS 2650	Common specifications for high-voltage switchgear and controlgear standards
AS 2700	Colour Standards for General Purpose
AS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 9001	Quality Systems Model for Quality Assurance in Design, Development, Production, Installation and Servicing
IEC 60352	Solderless Connections – Part 2; Crimped Connections – General Requirements, Test Methods and Practical Guidance
IEC 60529	Degrees of Protection provided by Enclosures (IP Code)
IEC 60947	Low Voltage switchgear and controlgear assemblies
IEE C37.21	IEEE Standard for Control Switchboards
IEEE C37.2	IEEE Standard Electrical Power System Device Function Numbers and Contact Designations.
IEEE C37.90	IEEE Standard for Relays and Relay Systems Associated with Electric Power Apparatus
IEEE C37.90.1	IEEE Standard Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus.
IEEE C37.100	IEEE Standard Definitions for Power Switchgear.
IEEE C37.13.1	IEEE Standard for Definite-Purpose Switching Devices for Use in Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
IEEE C37.13	IEEE Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures
ISO 9001	Quality Systems Model for Quality Assurance in Design, Development, Production, Installation and Servicing

Should inconsistencies be defined between Standards and this Specifications, this Specification will take precedence. However, significant inconsistencies shall be referred to EFL for resolution.

5.2 Applicable Laws

The Tenderer warrants (without limiting any other warranties or conditions implied by law) that all Goods have been produced, sold and delivered to EFL in compliance with all applicable laws (including all workplace health and safety and electrical safety legislations and codes of conduct).

6 SERVICE CONDITIONS

6.1 Environmental Conditions

The panels and its components shall be manufactured to withstand the following service conditions of:

Atmosphere : Saliferous, corrosive and dusty

Ambient temperature	:	Peak : 40^{o}C
	:	24 Hour Average: 30^{o}C
	:	Annual Average: 22^{o}C
	:	Minimum: 10^{o}C
Relative Humidity (Average)	:	85%
Seismic	:	To a maximum of 7 on the open-ended Richter Scale
Low voltage Supply Ratings	:	Control/Alarm/Emergency – 89V to 132V, 110V nominal Supply voltage of auxiliary equipment – 415V/240V ±5% Supply voltage of auxiliary equipment - 89V to 132V, 110V nominal

Note: All plant and equipment shall be rust proof, vermin proof and weather proof and designed to be suitable for a damp, tropical climate, which may be experienced simultaneously.

7 TECHNICAL PERFORMANCE REQUIREMENTS

7.1 General

This part of the specification covers detailed technical requirement for control and protection panels complete with all necessary instruments, meters, switches, relays and other miscellaneous equipment, accessories and auxiliaries. Where required in the drawings, the Tenderer shall also procure and install all protection relays.

The various control and relay panels and other equipment specified under this section shall be complete in themselves, with all main and auxiliary relays, fuses, links, switches, instruments, meters, timers, annunciators, indicating lamps, illuminating lamps, test terminal blocks, space heater, MCBs, fuses, mimic diagrams, name plates and other devices completely wired and assembled as per the approved schematics including labels, terminal boards, Earthing terminals, foundation bolts etc. It is the Tenderer's responsibility to mark up and submit any amendments to the As-built drawings to reflect modifications which have been implemented on the panels after approval from the EFL representative.

The Tenderer is to also supply all the foundation bolts and channel nuts and washers required for securing the panels onto Unistrut P1000 Channels cast into the substation floor. Supply of the Unistrut channels is outside the scope of works.

Materials and components not specifically stated in this specification, but which are necessary for satisfactory operation of the equipment, and accessories shall be deemed to have been included in the scope of specification unless specifically excluded.

The protection and control panels are to be of the Rittal make as specified in the drawings, together with the required parts to form a complete panel.

7.2 Construction of Cubicles and Panels

The cubicles shall be of the self-standing, floor-mounted type and shall be provided with adequate means for floor fixing in seismically active areas. They shall be supplied complete with their fixing and lifting frames and eye bolts. Equipment and terminals shall be readily accessible and shall require a minimum of disturbance of associated adjacent equipment for access.

The arrangement of panel wiring and multi-core cable terminal boards shall be in accordance with the relevant drawings. Enclosures shall provide for bottom entry of power and multi core cables via gland plates. Removable gland plates shall be located within the cubicles so as to provide adequate working clearance for terminating the cables. No equipment whatsoever shall be mounted on rear access doors.

Each protection relay panel shall be of the rack type including 19" frame and a front cover door equipped with a glass window and each control panel shall be of the enclosed type. Indoor cubicles and panels shall have minimum IP 41 protection class, and all outdoor local control cubicles shall be of IP54 with sun/rain shades of adequate size.

Each door shall be equipped with suitable earth straps of at least 16mm^2 highly flexible stranded copper wire with insulation in green-yellow colour. Doors are to be arranged so that every individual door or frame can be opened without moving doors of adjacent cubicles. Doors shall be of 2 mm thick sheet steel, equipped with 120° concealed hinges, with foamed-in seal and shall be provided with a

stable, bolted, rectangular tube frame, with pre-punched holes at 25 mm pitch for fixing channels, covers, cable harnesses, wiring plan pockets and etc. In each outdoor cubicle at least one door shall be equipped with a sheet steel wiring plan pocket. If required, cross rails shall be fixed additionally.

All cubicles shall have rear doors, for easy maintenance and repair of the main- and auxiliary equipment accommodated in the interior. Flexible earthing straps for personnel safety shall be mounted on frames of the front and rear doors and shall not obstruct access when working on and inside panel. The Tenderer shall perform a calculation for the heat dissipation for enclosures with the maximum installed heat-losses and shall propose a suitable temperature control method which shall be subject to the approval of the Purchaser's Representative.

All enclosures and accessories shall be of stainless steel or corrosion protected by electrophoresis-dip-coat primers and final coats by an approved procedure as to suit the surrounding conditions at Site. The arrangement and mounting of all indicating devices, control switches, relays and other apparatus shall be to the approval of the Purchaser's Representative. The exterior and interior finish and colour of all cubicles shall be to the approval of the Purchaser's Representative.

Components in the panel shall be arranged to be easily accessible for future mounting, wiring, maintenance and replacement. Easy access shall be provided without the danger of electric shock.

7.3 Panel Wiring

Panels shall be supplied complete with interconnecting wiring provided between all electrical devices mounted and wired in the panels and between the devices and terminal blocks for the devices to be connected to equipment outside the panels.

All internal panel wiring shall be carried out with 600V/1000V grade, single core, stranded copper conductor wires with PVC insulation and shall be Fire retardant. In selecting cable and wire sizes, due regard shall be paid to the appropriate de-rating factors in relation to the climatic conditions at site.

All cables and wires shall continuously carry their rated currents under the worst temperature conditions, and shall also withstand maximum fault currents without damage or deterioration. The minimum cross sections of the conductors are to be:

a. $2.5mm^2$ for Current Transformer and Voltage Transformer Circuits and all power consumers such as motors, heaters, lighting, etc up to 10A.
b. $2.5mm^2$ for all instrumentation and control wiring, however, the maximum permissible voltage drop is 5% for the furthest point at load.
c. $4mm^2$ for heavy power consumers up to 20A.

All internal wiring shall be securely supported, neatly arranged, readily accessible and connected to equipment terminals and terminal blocks. The wiring shall be neatly run in PVC rigid base ducting. Both ends of every wire core and all secondary panel wiring (at the screwed terminal side for external connection as well as at the screwed device sides in the panel) shall be fitted with numbered slip-on ferrules of moisture and oil-resisting insulation material having a glossy finish, and with their identification numbers clearly engraved, each being the same as for the relevant terminal. Ferrules, of white color with black letters (printed on wire markers and placed inside plastic sleeves), shall be fitted in such a way that they cannot become detached when the wire is removed from the terminal. (i.e. end crimps shall be provided). All secondary wiring for external plant and interpanel wiring shall enter the terminal blocks at one side only.

The individual wires shall not be pulled tight at the termination as a small amount of slack wire shall be provided so that the termination can be relocated to an adjacent terminal, or so that the lug can be replaced, if required. The slack wire shall be accommodated neatly within the wiring duct.

Inline joints in any panel wiring are not permitted under any circumstances. All terminations shall be crimped with a tool designed specifically for this purpose. All crimped terminations shall comply with the tensile strength and contact resistance type test requirements of AS/NZS 4437.

The crimp jaw shall be suitable for both single and double grip lugs. The tool shall ensure that the correct crimping pressure has been achieved before the tool can be released from the crimp. The crimping tool must not cause any damage to the lug.

When crimping cables for the terminations, the cable ends shall be precisely stripped to suit the conducting and insulating parts of the terminals, as set out in the manufacturer's instructions. The two-stage pre-insulation, together with the bottom copper conducting material holding the cable end, shall be crimped firmly and correctly. Correct crimping tools shall be used at all times when making terminations.

7.4 Terminal Blocks

All internal wiring to be connected to the external equipment shall terminate on terminal blocks, preferably vertically mounted on the side of each panel, as indicated in the General arrangement drawings. Terminal blocks shall be numbered consecutively in both sides, preferably beginning with 1, from left to right or top to bottom. Terminal blocks shall consist of single "insertion" type terminals of non-tracking, non-inflammable synthetic plastic, or ceramic of an approved type, lined up in one row.

All terminals shall have two separate pressure clamping plates suitable for connection of incoming or outgoing stranded or solid conductors, respectively. However, only one wire per terminal will be accepted. Terminals with clamping screws in direct contact with the conductor are not acceptable. The standard terminals are to be of type Phoenix Contact UT6. The measuring disconnect terminals for CT, VT and Protection trip circuits are to be of type Weidmuller 6/1/STB.

Insulating barriers shall be provided between each group of power circuit terminals and between the terminal categories, the height and the spacing being such as to give adequate protection to the terminals. Control and relay circuits, current and voltage transformer secondary circuits, battery and auxiliary power supply wiring, supervisory, alarm and communication circuits shall be protected against conductive, electrostatic and electromagnetic influences. Terminals for 240V AC wiring shall be shrouded and marked by a warning label.

At least 20% spare terminals shall be provided on each panel and these spare terminals shall be uniformly distributed on all terminal blocks. There shall be minimum clearance of 250 mm between the first row of terminal blocks and the associated cable gland plate or panel side wall. Also, the clearance between two rows of terminal blocks shall be a minimum of 150 mm. Arrangement of the terminal block assemblies and the wiring channel within the enclosure shall be such that a row of terminal blocks is run in parallel and in close proximity along each side of the wiring duct to provide for convenient attachment of internal panel wiring.

The terminal assignments shall be as specified in the design drawings. However, the contractor is to review the terminal assignment and suggest improvements to the terminal assignments which would result in reduced wiring and complication.

7.5 Equipment and Accessories

7.5.1 Protection Relays

The protection relays shall be of SEL make, with designated part numbers. Where supply of protection relays are in Tenderer's scope, the Tenderer shall ensure that a printed copy of the relay manual for each protection relay, factory test certificates and all associated documentation from the factory for all protection relays is furnished with the equipment at time of supply.

7.5.2 Test Blocks

The test blocks are to be of type Areva MMLG02**.** Rows of test blocks shall have nameplates as per the design drawings.

7.5.3 Miniature Circuit Breakers

The electrical control and protection circuits shall be protected by Miniature Circuit Breakers (MCBs) as per the design drawings. The MCBs shall have the C Curve tripping characteristic.

7.5.4 Control and Selector Switches

Control and instrument switches shall be rotary operated type preferably with silver to silver contacts of adequate making, carrying and breaking current ratings. They shall be provided with easily removable protective terminal covers and escutcheon plates clearly marked to show operating position and circuit designation plates and suitable for flush mounting with only switch front plate and operating handle projecting out. The control and selector switches shall be of type Kraus & Naimer as specified in the bill of materials.

7.5.5 Indication Lamps

Indicating lamps shall be cluster LED type suitable for panel mounting with rear terminal connections. Lamps shall be provided with series connected resistors preferably built in the lamp assembly. Lamps shall have translucent lamp cover to diffuse lights colored red, green, amber, clear white or blue as specified. The lamp cover shall be preferably of screwed type, unbreakable and molded from heat resisting material. The supply for these lamps shall be from DC station batteries unless stated otherwise. Lamps and lenses shall be interchangeable and easily replaceable from the front of the panel.

Tools, if required for replacing the Lamps and lenses shall also be included in the scope of supply. Lamps shall be furnished 20% in excess of the actual numbers required and caps shall be furnished 10% in excess of actual numbers used for each colour. The indication lamps shall be of types as specified, complete with pilot light heads and fixing collars.

7.5.6 Space Heaters

Space heaters of adequate capacity and suitable for connection to single phase, 240V, 50 Hz supply shall be provided inside each panel to prevent condensation of moisture on the wiring and panel mounted equipment. These shall not be mounted close to the wiring or any panel mounted equipment. Heaters shall be complete with thermostat and switch.

7.5.7 Interior Lighting

Each panel shall be provided with a LED light for the interior illumination of the panel during maintenance. The fittings shall be complete with switch-fuse unit and switching on the lighting shall be controlled by the respective panel door switch.

7.5.8 Plug Point

Any GPO required is shown in the detailed design drawing. Where required, the GPO shall be a 240 Volts, Single Phase, 50 Hz, AC of HPM type GPO socket with switch suitable to accept 10 Amps pin shall be provided in the interior of each cubicle with an ON-OFF switch.

7.5.9 Other Accessories

Any and all other accessories normally required for testing, operation and maintenance of these panels shall be furnished by the contractor.

A document pocket shall be provided on the inside of the rear door for the storage of documentation.

7.6 Panel Earthing

All panels shall be equipped with an earth bus securely fixed. Location of earth bus shall ensure no radio interference for effectively earthed systems under various switching conditions of isolators and breakers. The material and the sizes of the bus bar shall be at least 80mm^2 perforated copper with threaded holes at a gap of 50 mm with the provision of bolts and nuts for connection with cable armors and mounted equipment etc. for effective earthing.

All current free metallic parts of all mounted equipment (i.e. metallic cases of relays, instruments and other panel mounted equipment including gland plate and panel door top and bottom) shall be looped by PVC insulated 2.5mm^2 stranded copper wire and connected to the earth bus.

7.7 Nameplates and Markings

Labels written in English shall be provided for all instruments, relays, control switches, push-buttons, indication lights, breakers, etc. In the case of instruments, switches and control switches where the function is indicated on the dial plate or on the switch escutcheon plate, no label is required.

Relays shall be clearly labeled according to their function in the circuits, and to their related equipment, which shall be identical to the designations as used in the circuit manuals. For equipment that projects through the panel or rack front, two labels shall be fitted one on the relay front and one on the rear of the equipment. Instruction plates in English language showing the sequence diagrams or cautions for maintenance shall be fitted inside of the front door of the electrical switchboards.

Samples of label wording shall be submitted for EFL approval. The labels shall be traffolyte type with beveled edges and black lettering on white background.

7.8 Bill of Materials and Drawings

The bill of materials is provided in the drawings as attached in Schedules of this specifications.

7.9 Quality of Materials and Workmanship

All materials supplied and used by the contractor under this contract shall be new and of the high quality and class most suitable for working under the conditions specified and shall withstand the variations of temperature, atmospheric conditions arising under working conditions without distortion or deterioration or the setting up of undue stresses in any part and also without affecting the strength and suitability of the various parts of the work which they have to perform. All work shall be carried out and completed in a neat and professional manner to the approval of the Purchaser's Representative.

7.10 Risk of Fire

All apparatus, connections and cabling shall be designed and arranged to minimize the risk of fire and any damage, which might be caused in the event of fire. All cabling entry openings shall be covered with fire pillows or foam to prevent fire entry.

7.11 Tools and Equipment

Certain spares and tools and equipment shall be provided by the Tenderer. These are as follows:

- 100 x terminals – Phoenix Contact UT6
- 2x panel light (LED, White) as per specifications in the drawing
- 2x illuminated pushbutton (green) – as per specifications in the drawing
- 2x illuminated pushbutton (red) – as per specifications in the drawing

In addition to this, the Tenderer shall forward a list of tools and equipment required for safe operation and maintenance of the installation and the cost of supplying such tools and equipment shall be part of the tender submission. The Tenderer may include any items in the list of tools and spares as is deemed necessary. The cost of supply of these essential spare parts should form part of the contract but should be shown in the price schedule.

7.12 Programme and Progress of Work

The Tenderer shall provide a work program with its bid in the format as given in the Schedules of this specification. Within seven days of the receipt of the official EFL purchase order, the Tenderer shall submit a confirmed programme of work for the entire project upto the delivery. The programme is to conform to the timelines as stipulated in this tender.

The Tenderer shall also be required to submit monthly reports on the status of various activities. Such reports shall be submitted within five (5) calendar days of start of the month.

7.13 As-building of Drawings

The Tenderer shall be required to submit marked-up as-built drawings of the panels, as it is shipped. Tenderer is not required to make any modification to CAD drawings. Tenderer shall ensure all changes, such change in wiring or quantities, are clearly marked.

8 INSPECTION AND TESTING

The panels shall be tested according to IEEE Std C37.21. The tests outlined below shall be performed as a minimum on each panel as part of the routine testing:

1. Control Wiring Insulation Test - A power frequency test voltage of 1500V for 1 min shall be applied after all circuit grounds have been disconnected.
2. Control Wiring Continuity – The correctness of the control wiring of the control panel shall be verified by both of the following methods:
    a. Actual electrical operation of the component control devices
    b. Individual circuit continuity checks by electrical circuit testers
3. Polarity and Phase Verification - Tests shall be made to ensure that connections to meters or relays, etc., are correctly made to the proper phase and with proper polarity.
4. General Mechanical Checks –
    a. Cubicle is constructed as per the specifications.

b. Nameplates and Labels are correctly installed.
c. Earthing provisions and connections are as per the specifications.
d. All equipment has been installed correctly and neatly.
e. Panel wiring has been neatly arranged.
f. Wires have been crimped properly and all connections are tightened correctly.
g. MCBs are of the correct ratings.
h. Panel Heater and light is operational
i. Spares have been accounted for as per the list

Upon completion of the routine tests at factory the contractor is to submit the test certificates for EFL's review and approval. The Tenderer is to only commence with shipment of the goods once EFL provides approval of the routine test results.

The Tenderer shall submit a copy of Inspection and Test Plan (ITP) for the Equipment with its Bid.

9 PACKAGING AND MARKING

Equipment shall be carefully packed for transport and shipment in such a manner that it is protected from all dust and climatic conditions during loading, transport, unloading and subsequent storage in the open.

Equipment shall be suitably packed and protected against vibration, movement and shock which may occur during loading and transport. Particular care in packing shall be taken when the apparatus is transported by road.

Instruments and fragile items shall be packed separately. All items, which include delicate equipment, shall be sealed in polythene sheeting and silica gel desiccant or vapour corrosion preventive shall be inserted within the polythene packing. Straw shall not be used as packing material.

Each functional section on the same panel (such as Protection 1 and Protection 2) shall be clearly segregated from any other section by means of a black line (typically 12mm wide) or a completely separate panel shall be installed.

All exposed terminals shall be fully shrouded to prevent inadvertent shorting of a conductor by human or rodent activity. Each panel shall be self-supporting and shall not rely upon other panels to remain rigid.

10 QUALITY REQUIREMENTS

Tenderers are required to submit evidence of a Quality Management System that complies with AS/NZS 9001.

Documentary evidence shall be provided concerning the level of Quality System Certification associated with the supplier and or manufacturer. This documentation shall include the Capability Statement associated with the Quality System Certification.

Tenderers shall be required to submit copies of ISO certification of the workshops or laboratories where the panels will be assembled.

All work undertaken shall be undertaken within the QMS framework.

11 PRODUCT WARRANTY PERIOD

The Tenderer shall provide warranty for equipment supplied and workmanship for the Works for a Period of twelve [12] months after delivery of the equipment. For all equipment supplied by third-parties, the contractor is to ensure that the warranties of these equipment are transferred to EFL as the beneficiary, particularly the protection relays.

The Tenderer warrants to the Purchaser that all Works performed and completed in respect of the Warranted Works are in accordance with the standards and quality specified in the Contract or if not otherwise specified, the work is according to good trade practice expected in the energy industry.

SCHEDULE A: LIST OF EXPERIENCE, PERSONNEL & FINANCIAL STATEMENTS

A.1 Previous Experience

The Tenderer is to submit a list of Projects worked under with a similar scope, involving the design and manufacture of protection and control panels for outdoor switchgear 33kV and above, in chronological order of year completed.

Client	Project Scope and Description	Approx. Project Value	Year Completed

Authorized Signatory of Tenderer:

Signature: ……..

Name: ……..

Date: ……..

A.2 Project Personnel

The Tenderer is to submit list of personnel who will work on this project and also provide their resumes in its bid.

Name	Designation	Duration of Employment with Company	Years of Experience

Authorized Signatory of Tenderer:

Signature: ……..

Name: ……..

Date: ……..

A.3 Financial Statements

The Tenderer shall also submit past three years audited financial statements and records showing its financial ability to undertake this project.

SCHEDULE B: PRICE AND PAYMENT SCHEDULE

Currency of Tendered Price: ……

Component	Unit Price	Quantity	Total Price
Supply of 33/11kV Transformer P&C Panel		2	
Supply of 33kV Busbar Protection Panel		1	
Supply of 33kV Feeder Protection Panel		2	
Supply of SCADA Panel		1	
Supply of protection relays		1 Lot	
Supply of Tools & Spares as Listed in Tender		1 Lot	
(Tenderer to add other items as required)			
Total			

The Payment Schedule shall be as per the table below:

Milestone	Percentage	Amount in Dollars
Receipt of Goods by EFL	95%	
Expiry of Warranty period (12 months after receipt of Goods)	5%	

Total Contract Price (in Words):

……

……

Authorized Signatory of Tenderer:

Signature: ……..

Name: ……..

Date: ……..

SCHEDULE C: AS 4911 ANNEX A (TO BE SUBMITTED BY TENDERER)

All Tenderers are required to complete and submit a copy of this form with their bid submissions.

Item		
1	Purchaser (Clause 1)	Energy Fiji Limited (EFL)
1A	Purchaser's Representative (Clause 1A)	To be nominated by EFL at time of contract.
2	Purchaser's Address	2 Marlow Street, Suva
3	Supplier (clause 1)	Supplier to provide
4	Supplier's Address	Supplier to provide
5	Stated purpose for equipment (clause 1 definition of acceptable)	As stated in tender specifications and/or purchase order
6	Period of time for delivery (Clause 1 and Sub-clause 19.1)	Supplier to provide
7	Delivery Place (Clause 1 and Sub-clause 19.1)	EFL's Navutu Depot, Lautoka, Fiji
8	Mode of Delivery (Sub-clause 19.1)	Supplier to provide
9	Governing Law (Clause 1(h))	Laws of Fiji
10	a) Currency (clause 1(g))	Supplier to provide
	b) Place for payments (clause 1 (g))	Supplier to provide
	c) Place of Business of bank (clause 1(d))	Supplier to provide
11	Limits of Quantities to be supplied and delivered (clause 2.2)	As stated in tender specifications and/or purchase order
12	Suppliers security	Not applicable
13	Purchaser's security	Not applicable
14	Purchaser supplied documents (sub-clause 6.2)	Tender specifications and addenda (where issued).
15	Supplier Supplied documents (sub-clause 6.3)	Supplier to provide
16	Time for Purchaser's direction about documents (sub-clause 6.3(c))	14 calendar days
17	Sub-contract work requiring approval (sub-clause 7.2)	All work.
18	Legislative Requirements, those excepted (sub-clause 10.1)	Not applicable
19	Reference date (clause 1, sub-clause 10.2(b))	Deadline for Submission of Bids, as defined in tender specifications
20	Time by which insurance cover for the Equipment is to be effected (sub-clause 13.1)	Prior to tender award.

21	Public and product liability insurance (sub-clause 13.2)	Supplier to provide
22	Qualifying cause of delay, causes for which EOTs will not be granted (page 3, subparagraph (b) (iii) of Clause 1 and sub-clause 17.2)	None.
23	Liquidated damages, rate (subclause 17.5)	0.5% per day upto 10% of the purchase order value
24	Delay Damages	As assessed by EFL
25	Date for completion of acceptance testing (subclause 18.1 and 21.1)	As stated in tender specification
26	Party responsible for unloading the *Equipment (subclause 19.1)*	Supplier
27	When risk in the *Equipment* passes (subclause 20.1)	At time of acceptance by Purchaser.
28	Time at which ownership of the *Equipment passes* to the Purchaser (subclause 20.2)	At time of acceptance by Purchaser.
29	Period for *Purchaser's* notice that *Equipment* are rejected (subclause 21.1)	14 calendar days
30	Period for *Purchaser's* notice accepting or rejecting *Supplier's* proposal (subclause 21.4)	14 calendar days
31	Defects liability period (clause 22)	12 months
32	Claim for Payment (subclause 24.1)	Within 5 days of delivery
33	Period for Payment (subclause 24.1)	30 calendar days from time of acceptance by Purchaser
34	Equipment for which prepayment may be claimed (subclause 24.2)	Nil.
35	Interest rate on overdue payments (subclause 24.5)	Nil.
36	Arbitration (subclause 28.3) a) Person to nominate an arbitrator	President of Fiji Institute of Engineers
	b) Rules for arbitration	Laws of Fiji
37	The Supplier's liability is limited as follows (clause 29)	The contract sum as adjusted pursuant to the Contract
38	The Purchaser's liability is limited as follows (clause 29)	The contract sum as adjusted pursuant to the Contract

Authorized Signatory of Tenderer:

Signature: ……..

Name: ……..

Date: ……..

SCHEDULE D: DRAWINGS AND BILL OF MATERIALS

The materials required are provided in the necessary drawings attached to this specifications.

SCHEDULE E: PROGRAMME OF WORK

The Tenderer is required to state the commencement and completion dates for different components of the project schedule given below. The Tenderer is required to also submit a Gantt chart showing the timelines in weeks for supply of all protection and control panels.

Component or Work	Commencement Date	Completion Date
1. Receipt of Official Purchase Order		
2. Submit marked up Design Drawings		
3. Procurement of Materials		
4. Build of Panels		
5. Factory Testing of Panels		
6. Packaging and Shipping		
7. Submission of Marked-up As-builts		
Total Duration of Project (from time Purchase Order is issued)		

Authorized Signatory of Tenderer:

Signature: ……..

Name: ……..

Date: ……..

SCHEDULE F: DEPARTURE FROM SPECIFICATIONS

The Tenderer shall nominate the Clause or relevant section of the tender specification and describe the departure.

Tender Specification Reference[i]	**Departure**

[i] The Tenderer shall refer to the specific clause of the tender specification.