

TERMS OF REFERENCE

Supply, installation, commissioning and maintenance of rooftop solar generation and battery storage supporting electric vehicle charging at the CAAF premises, CAAF Drive, Namaka, Nadi

Issue date	05 th September 2026
Closing date and time	25 th September 2026 @ 5.00pm
Submission	Through the CAAF tender portal, https://procure.caaf.org.fj/openbids/list
Contact for clarifications	Via Procurement Portal
Site inspection	09 th , 16 th , 23 rd September 2026 (Btw 10.00am - 11.00am)

1. Introduction and purpose

The Civil Aviation Authority of Fiji (the Authority) is introducing electric vehicles into its operational fleet at its premises at CAAF Drive, Namaka, Nadi. The vehicle charging equipment is being procured separately with the vehicles. This tender covers the rooftop solar generation, battery storage and energy management system that will supply that charging duty, with the battery also buffering DC fast charging so that the site's billed maximum demand remains below the threshold at which a demand tariff applies. This document sets out the requirements for the supply, installation, commissioning and ongoing maintenance of that system.

Tenderers are asked to price a complete, working installation: equipment, electrical and civil works, protection, testing, certification, training, documentation and a maintenance and support arrangement for an initial period of three years. Partial bids covering equipment supply only will not be considered.

These requirements are intentionally vendor neutral. They are expressed as minimum performance and standards compliance, and any equipment that meets them will be considered on its merits. Where a capacity or rating is stated as a minimum, tenders offering materially higher ratings will not receive additional credit unless the tenderer can demonstrate a corresponding benefit at no additional cost to the Authority.

2. Scope summary

Item	Description	Quantity
1	Rooftop solar PV array, minimum 10 kWp, with inverter(s)	One system
2	Battery energy storage sized to the charging duty and the demand cap in section 5.4	One system
3	Energy management and controls integrating the array, the battery and the separately supplied charging equipment	One system
4	All associated electrical works, protection, cabling, earthing and switchboard modifications, including capacity and protection provision for the charging equipment	Lump sum
5	Roof mounting, weatherproofing and associated civil works	Lump sum

6	EFL grid interconnection application, approvals and connection works	Lump sum
7	Testing, commissioning, certification, training and documentation	Lump sum
8	Maintenance and support, years 1 to 3	Annual price

3. Site and supply conditions

- The premises are a commercial office site in Namaka, Nadi, occupied by the Authority under lease. The Authority will obtain any landlord consent required; the contractor is responsible for all other approvals related to the works.
- The site is supplied by Energy Fiji Limited at 415/240 V three phase. Two standby diesel generators serve the site through an automatic changeover arrangement. The system will be connected on the site side of the main switchboard.
- The environment is tropical, coastal and cyclone prone. All outdoor equipment and mounting must be suitable for high humidity, salt-laden air, driving rain and the wind loadings applicable to the region, and this must be evidenced in the tender.
- The battery and inverter location will be agreed at the site inspection. Tenderers should assume a cable route of up to **20** metres from the main switchboard and price per-metre rates for variation.
- The solar array will be installed on the existing roof. Roof access will be provided at the site inspection, and tenderers must satisfy themselves of the mounting arrangement. All roof fixings and penetrations must be cyclone rated and fully weatherproofed, and the structural adequacy of the proposed mounting must be evidenced in the tender.

4. Charging equipment to be integrated

The vehicle charging equipment is being supplied and installed under the Authority's vehicle procurement and does not form part of this tender. For design purposes tenderers should assume:

- One AC charge point of approximately 7 kW, with a DC fast charger of up to 60 kW as a likely addition, and provision for a further AC point later.
- The charging equipment will support OCPP 1.6J or later over Ethernet and software-configurable output power limits. Final equipment details will be provided to the successful tenderer before design sign-off.

The system tendered here must integrate with that equipment: the energy management system must control charger output via the interfaces in section 5.4, and the switchboard works must include the capacity and protection provision the charging circuits require, coordinated with the charging equipment installer.

5. Technical requirements

5.1 Solar PV array

Requirement	Minimum specification
Array capacity	10 kWp minimum. Tenderers must state the proposed capacity and annual yield estimate for the Nadi location
Modules	Current-production modules certified to IEC 61215 and IEC 61730, with product warranty of not less than 12 years and 25 year performance warranty

Inverter(s)	Certified to IEC 62109; grid connection compliant with AS/NZS 4777.2 or demonstrably equivalent, and with EFL grid connection requirements
Mounting	Roof mounted, cyclone rated for the region, corrosion resistant for a coastal environment, all penetrations weatherproofed
Export control	Self consumption priority. Export limitation must be configurable, including zero export, to suit the connection approval obtained from EFL
Monitoring	Generation metering and per-system monitoring available on the same management platform as the chargers

5.2 Battery energy storage

The battery serves two duties: storing solar energy for vehicle charging, and buffering DC fast charge events so that site demand stays below the threshold. It must be sized by the tenderer to deliver the performance requirement in section 5.4 as a minimum, and in any case:

Requirement	Minimum specification
Usable capacity	Minimum usable capacity of 40 kWh at the manufacturer's recommended depth of discharge. The tenderer must confirm the proposed nominal and usable capacities and provide the battery-sizing calculations demonstrating compliance with Section 5.4.
Continuous discharge power	Minimum continuous discharge power of 30 kW, capable of supporting the anticipated DC fast-charging event while maintaining the grid demand limit specified in Section 5.4.
Chemistry and safety	Lithium iron phosphate or demonstrably equivalent technology. Battery cells and system must be certified to IEC 62619, and the installation must comply with AS/NZS 5139 or an approved equivalent.
Cycle life and warranty	Warranty of not less than seven years or 4,000 cycles to a minimum of 70% retained usable capacity, whichever occurs first. The tenderer must clearly state all warranty conditions, operating limits and exclusions.
Environment	Suitable for tropical ambient conditions. Any outdoor enclosure must have an ingress-protection rating of at least IP54 and include appropriate thermal management, corrosion protection and weatherproofing.
Controls	Local configuration of charging, discharging, reserve capacity and scheduling must be available without reliance on a cloud service. The system must interface with the energy management system and support the control requirements specified in Section 5.4.

5.3 Standards and compliance

All equipment and installation work must comply with the following, or demonstrably equivalent, standards. The tender must include a compliance statement addressing each line.

- IEC 61215 and IEC 61730 (PV modules), IEC 62109 (inverter safety), and AS/NZS 5033 for the PV array installation.

- AS/NZS 4777 for inverter grid connection, together with Energy Fiji Limited's grid connection requirements for embedded generation.
- IEC 62619 (battery cells and systems) and AS/NZS 5139 (battery installation).
- AS/NZS 3000 wiring rules, together with any requirements of the Fiji electrical regulatory authorities.
- IEC 61439 for any switchboard or distribution assemblies supplied.
- Surge protection to IEC 61643 appropriate to the site's lightning exposure.
- Electromagnetic compatibility requirements applicable to the equipment class.

5.4 Demand management and integration

The site's electricity tariff applies a maximum-demand charge when billed demand exceeds 75 kW. The integrated solar, battery and energy management system must therefore maintain a controlled margin below this threshold. The following are mandatory requirements:

- **Performance requirement:** The integrated system must ensure that total site demand drawn from the grid does not exceed **70 kW at any time**, including during a DC fast-charging event occurring concurrently with normal site load. This must be achieved through coordinated battery discharge and, where necessary, automatic moderation of charger output. The tenderer must explain the proposed control methodology, provide supporting battery-sizing calculations and demonstrate compliance during commissioning.
- The system must continuously monitor total grid demand at the point of connection and enforce a single, configurable site-demand limit locally, without dependence on an external cloud service.
- Battery dispatch must be prioritised to maintain the configured demand limit. Where available battery power or stored energy is insufficient, the system must automatically instruct the charging equipment to reduce its output to prevent the grid-demand limit from being exceeded.
- The site-demand limit, battery-dispatch parameters, reserve settings and charging schedules must be adjustable by the Authority's authorised staff without vendor intervention or additional licence fees.
- The energy management system must coordinate the solar array, battery and separately supplied charging equipment through OCPP smart-charging profiles or an equivalent documented local interface, such as Modbus TCP. The interface must be confirmed as compatible with the final charging equipment before design approval.
- The system must be capable of accommodating an additional AC charging point and the future expansion of the solar array and battery system without requiring complete replacement of the energy management platform.
- Charging schedules must be configurable locally, including the ability to prioritise daytime charging when solar generation is available.
- During commissioning, the contractor must demonstrate that the system maintains grid demand at or below 70 kW during a simulated or actual DC fast-charging event occurring concurrently with normal site load.

5.5 Management platform and cybersecurity

- The management interface must be operable entirely on the Authority's local network. A cloud service may be offered as an option but must not be a dependency for generation, storage dispatch, demand management or configuration.

- All network communications must support TLS 1.2 or later. Default credentials must be changeable, and administrative access must support individual named accounts with role separation.
- Firmware must be updateable in the field, with updates authenticated by the manufacturer. The tenderer must state the supported firmware maintenance period, which must be no less than the maintenance term.
- The equipment will be placed on a segregated network segment. The tender must list every inbound and outbound network flow the equipment requires, including destination hosts and ports for any optional cloud features.
- Session and energy data must be exportable by the Authority in an open format (CSV or equivalent) without additional licence cost.

6. Electrical and civil works

- Supply and installation of all cabling, containment, protection and switchgear for the array, battery and energy management system, sized to the full rating of the installed equipment.
- Any required switchboard modification, coordinated with the site's existing protection scheme, including capacity and protection provision for the separately supplied charging equipment. The contractor must survey the existing switchboard during the site inspection and satisfy itself of the works required.
- Earthing and bonding in accordance with AS/NZS 3000, verified by test.
- Mounting pads, enclosures and protective measures for the battery and inverter equipment as the proposed design requires.
- Roof mounting structures, cable routes from the roof to the switchboard, and DC and AC isolation for the PV array in accordance with AS/NZS 5033.
- Preparation and lodgement of the grid interconnection application to Energy Fiji Limited for the PV and battery system, and completion of any inspection, protection settings and connection works EFL requires. The Authority will execute documents as the account holder.
- Reinstatement of all surfaces disturbed by the works.
- All works to be performed by electricians licensed to carry out the work in Fiji. A certificate of compliance for the electrical installation must be provided at handover, together with any notification to the supply authority that the connected load requires.

7. Testing, commissioning, training and documentation

- Factory or bench test certificates for the supplied equipment, and on-site commissioning tests demonstrating full rated output, protection operation, metering accuracy and demand cap enforcement. A commissioning test plan must be submitted for approval before energisation.
- A demonstration, in coordination with the charging equipment installer, that site demand remains below the 70 kW cap in section 5.4 during a DC fast charge event coinciding with normal site load.
- PV array performance verification against the stated yield basis, and battery charge and discharge tests at rated power.
- Training for up to **3** of the Authority's staff covering routine operation, user administration, load cap adjustment, first-line fault response and safe isolation. Training material to remain with the Authority.
- As-built drawings, single line diagram, equipment manuals, configuration records including network settings, and a recommended preventive maintenance schedule, all provided in electronic form at handover.

8. Warranty, maintenance and support

- Warranty on all supplied equipment of not less than 24 months from commissioning acceptance, parts and labour, on site. Tenderers are encouraged to offer longer terms and must state the warranty on power electronics separately.
- PV modules: product warranty of not less than 12 years and performance warranty of 25 years. Inverters: not less than 5 years. Battery: as specified in section 5.4.
- A priced maintenance and support agreement for years 1 to 3, covering the preventive maintenance schedule, all consumables, firmware updates, remote diagnosis and on-site corrective maintenance.
- Response times of not more than one business day for remote response and two business days for on-site attendance, with the tenderer's standard terms stated in the response.
- Confirmation of spare parts availability in or deliverable to Fiji, with indicative lead times for the major assemblies: power modules, charging cables and connectors, control boards.
- The tender must state where support is provided from, in what hours, and in which time zone.

9. Tenderer requirements

- Evidence of at least **3** comparable grid connected solar and battery installations completed, with referees the Authority may contact.
- Details of the tenderer's presence in Fiji or arrangements for local delivery of installation and maintenance obligations, including the licensed electrical contractor who will perform the works and the personnel accredited for grid connected PV and battery installation.
- Manufacturer authorisation or an equivalent statement of the tenderer's relationship with the equipment manufacturer, and the manufacturer's warranty terms passed through to the Authority.
- A completed compliance statement against sections 4 to 8 of this document, stating comply, partially comply with explanation, or do not comply, line by line.
- Proposed programme from award to commissioning acceptance, including equipment lead time.
- Certificates of insurance for public liability and workers compensation appropriate to the works.

10. Pricing schedule

Prices must be stated in Fiji Dollars, exclusive of VAT, itemised as follows. Lump sums must be fixed for the validity period stated in the tender conditions.

Item	Description	Price basis
1	Rooftop solar PV array and inverter(s), supplied and installed	Lump sum
2	Battery energy storage system, supplied and installed	Lump sum
3	Energy management and controls, including charger integration	Lump sum
4	Electrical works including switchboard modification and protection	Lump sum
5	Roof and civil works: mounting, weatherproofing, pads and protection	Lump sum
6	EFL interconnection application, approvals and connection works	Lump sum
7	Testing, commissioning, training and documentation	Lump sum
8	Maintenance and support, per year, years 1 to 3	Annual
9	Schedule of rates for variations: cabling per metre, labour per hour, call-out	Rates

11. Evaluation

Tenders will be evaluated on a best-value basis against the following weighted criteria.

Evaluation criterion	Weighting	Assessed via
Technical solution and compliance with these Terms of Reference	30%	TOR response
Vendor experience, capability and references	15%	TOR response
Implementation approach and timeline	10%	TOR response
Support model, maintenance and SLAs	15%	TOR response
Price, total cost over the contract term including three years maintenance	30%	Commercial schedule
Total	100%	

The assessment of the technical criteria will have particular regard to suitability for the coastal tropical environment, local support capability and response times, delivery programme, the stated solar yield and battery sizing basis, and the quality of the demand management and integration capability described in section 5.4. The Authority is not bound to accept the lowest priced or any tender.

