# SCOPE OF WORK

## Request For Tender for Eugowra STP Solar Farm Construction

| Revision | Date | Authorised by |
|---|---|---|
| V1 | 14/04/2025 | Matthew Christensen<br>Deputy GM |
| | | |
| | | |

# Contents

## 1. Purpose

This Request for Tender (RFT) seeks an Engineering Procurement Construction (EPC) company to construct a 2.2MW solar array for Cabonne Shire Council (CSC). The EPC company will be required to procure the balance of materials and complete construction of the 2.2MW solar farm and Battery Energy Storage System (BESS).

This tender is specifically focused on the construction and procurement of remaining materials (electrical and ground mount). Council has already engaged engineers to develop a Detailed Design and has procured the major project components, including PV modules, the central inverter/transformer, and the BESS.

The Detailed Design is attached to this tender, and pricing should be based on the construction of this design. Additionally, tenderers will have the opportunity to provide feedback through a Detailed Design review.

The successful tenderer will be responsible for all LV electrical works as well as DC field construction. Separate tenders will be released for High Voltage construction works and for the commissioning of the powerplant.

The tenderer will be responsible for electrical works up to and including the LV side of the inverter\transformer.

## 2. Background

In 2024, Cabonne Shire Council launched the 'Electrifying Cabonne' project, aiming to reduce carbon emissions and control costs effectively. This strategy includes significant investment in a 2.2 MWp fixed-mount solar field and a 2.2MW/5MWh DC-coupled Battery Energy Storage System (BESS) at the Eugowra Sewerage Treatment Plant (STP).

The Cabonne Council STP site, owned and operated by CSC, is located approximately 3km from the township of Eugowra in the Central West Region of NSW.

The 2.2MWp powerplant will generate electricity from an approximately 2ha solar field made up of photovoltaic modules, with a DC-coupled BESS storing and discharging electricity.

The project has received the required development approval DA*, including the use of the Jurchen Technologies PEG™ E/W ground mounting system for solar PV modules.

Additionally, Council has secured approval to connect the solar farm and BESS to the local Essential Energy network, with all the necessary connection agreements in place.

*Note: The Construction Certificate will be gained by Council once an EPC firm has been appointed.

## 3. Scope Overview

Cabonne Shire Council invites tenders from qualified and accredited EPC businesses for the supply of specified components (with partial supply from the Council) and the full installation of the DC field at the Eugowra Sewerage Treatment Plant, located at 255 Casuarina Drive, Eugowra, NSW 2806.

Cabonne Shire Council will be providing the following items:

- PV modules: Tongwei TWMNH-54HD500W solar modules (including ~1% spares).
- Inverter\transformer: Sungrow SG3400MV station.
- BESS: Sungrow Power Titan ST2752 liquid cooled containerised BESS.

The successful EPC contractor will need to supply the balance of materials, including: -

- Jurchen Tech PEG™ ground mount and all components.
- DC cabling; trunk and strings.
- DC cabling between BESS and central inverter.
- Cables between BESS and FACP (Fire Alarm Control Panel)
- DC cable management, cable trays etc.

Additionally, the EPC contractor will be required to manage logistics, which encompasses:

- Transporting equipment through customs (for internationally sourced items)
- Domestic freight to the site.
- Unloading equipment upon arrival.
- Safely storing equipment on-site prior to construction.

The contractor is also expected to liaise and coordinate with other suppliers working on the project, such as the HV constructor and consulting engineers engaged to perform the commissioning of the plant.

*Council understands that the final design may undergo minor changes based on feedback from the successful tenderer. For evaluation purposes, respondents are required to submit their tenders based on the defined scope provided.*

**Required**

The successful tenderer will be responsible for:

- Supply and installation of Jurchen Tech PEG™ ground mount.
- Mounting and securely fixing the solar modules to the ground mount.
- Assembly of the cable management system and: -
    - running DC string and trunk cabling including between the inverter\transformer and BESS.
    - Installing DC isolation\combiner boxes.
    - Trenching\excavation works required for cabling.
    - Wiring between the BESS and FACP.
- Installation of the footings for the: -
    - Central inverter\transformer
    - BESS units (and all components)
- Installation and assembly of LV station, including weather-proof structure.
- Site mobilisation and demobilisation, including equipment hire and facilities such as a site office, toilets, storage containers and other necessary facilities.
- Waste disposal and site cleanup.
- Providing a minimum 10-year warranty on ground-mount and a 5-year installation warranty.
- Compliance with Development Consent and Conditions (DA 2023\0077).

During construction we expect the successful tenderer will: -

- Comply with WHS and environmental standards and procedures. Maintaining a safe working environment throughout construction.
    - Refer to Preliminaries document.
- Maintain current licenses relevant to the construction of the solar farm, e.g. forklift licenses, heavy vehicle licenses, etc.
- Maintain and demonstrate suitable insurances.
    - Refer to General Conditions of Contract.
- Build specific to the agreed\approved designs documentation.
- Track inventory and report and document any breakages.
- Maintain site security and access during construction time, including securing site and all equipment during out-of-hours.
- Source and supply all the necessary equipment required for construction. For instance, all-terrain forklift(s), Jurchen Technologies rod driving equipment, cranes and excavators etc.
- Provide regular project progress reports and communicate any issues encountered to Council's PM team in a timely manner.
    - Refer to the Regular Council updates section below.
- At Completion, the tenderer will be expected to provide Work as Executed Drawings and other necessary handover documentation.
    - Refer to Work as Executed Drawings section within Preliminaries document.
- Unloading solar modules at site and weather proofing prior to construction (including supply of tarpaulins).

## 4. DC Construction Detailed Requirements

The following list is provided for your reference and may not be exhaustive. When preparing your response, please prioritise the attached design and specification documents, as these take precedence over the list.

- Supply and installation of the Jurchen Tech PEG™ solar substructure, including: -
    - Liaise with Jurchen Technologies to procure the inventory (and necessary spares) for construction of the 2.2MW solar field, as per the attached Detailed Designs.
    - Accurate set out of each string, block, sub-array and array.
    - Install all components of the substructure: -
        - Rods
        - Ground plates
        - Top plates
        - Clamps
        - Bracing and fixings
        - Cable trays
        - Any other ancillary PEG™ items required for the installation not listed here.
    - Freight and unloading of PEG™ to site.
    - Track PEG™ inventory during freight to site and during installation.
- Installation of PV modules
    - Safely and carefully handling the PV modules, including removing and disposing of manufacturers packaging.
    - Securely install and attach the PV modules to the PEG™ substructure.
    - Track PV module inventory including tracking number of breakages and serial numbers.
- Supply and install of all DC cable management
    - Cable trays
    - Conduits (UV rated for any that will be exposed to sunlight)
    - Cable clips and clamps (weather resistant and durable)
    - Cable ties (weather resistant and durable)
- Supply and installation of DC string cabling
    - Supply DC string cable (refer to Detailed Design for gauge and distances required).
    - Installing DC leads from panel to panel ensuring correct polarity.
    - Supply and install of DC connectors.
    - Installing and terminating DC strings into combiner boxes.
    - Cable testing and supply of CCEW.
- Supply and installation of DC trunk cabling

    - Supply and install of DC Trunk cable: (Refer to Cable Schedule DC Bus)
    - Installing DC trunk cables from the combiner\isolation boxes and terminating in the Sungrow SG3400MV inverter\transformer station.
    - Supply and Install of DC cables from the BESS units (Power Titan ST2752UX) and terminating into the Sungrow SG3400MV inverter\transformer station. Including the installation of the BESS isolation cabinets.
    - Perform any trenching or civil works near the inverter\transformer.
    - Perform trenching or civil works and cable installation from the BESS units to the inverter\transformer.
    - Cable testing and supply of CCEW.
- Supply and install of DC combiner\isolation boxes.
    - Supply DC combiner\isolation boxes (Refer to Detailed Design documents).
    - Securely install and mount combiner\isolation boxes specified locations.
    - Supply and installation of cable tray underneath combiner boxes.
- Installation of Sungrow inverter\transformer SG3400MV
    - Supply and install of inverter pier foundations as specified.
    - Conduct pre installation check of the inverter\transformer station, to ensure no damage during freight.
    - Place the SG3400MV inverter\transformer onto the piers and securely fix\bolt it into place: - providing a crane.
    - Installation of the transformer bunding tank, including oil\water separator.
    - Termination of the DC trunk cables into the inverter\transformer, including any trenching and laying conduit.
    - Provide testing and CCEW of the LV terminations at the SG3400MV inverter\transformer.
- Installation of two containerised Sungrow BESS (Power Titan ST2752UX)
    - Supply and install of BESS pier foundations as specified.
    - Conduct pre installation checks of each BESS container, to ensure no damage during freight.
    - Place each BESS onto piers and securely fix/bolt them in place: - providing a crane.
    - Installing and terminating DC cable from the BESS units to the SG3400MV inverter\transformer station (Refer to cable schedule)
    - Installation of the BESS switch isolation cabinets (one per BESS container – 2 total).
    - Perform civil\excavation or trenching work required for the DC cable installation for the BESS units.
    - Provide testing and CCEW of the cabling and terminations at the BESS and Isolation cabinets.
    - Installation of communications cabling between the fire panel (FACP) and BESS units.
    - Installation and assembly of BESS Local Controller (LC1000) unit(s) as per manufacturers specifications.
- Installation of the LV reticulation
    - Supply and installation of LV switchboards and associated wiring.
- Supply and installation earthing for the DC Field
    - Supply bare copper earth cable (refer to Detailed Design): -
    - Installation and termination of earth cable between inverter and DC array.
- Miscellaneous
    - Testing and commissioning of all DC connections, DC string and DC array cabling, earth cabling and combiner boxes including providing CCEW of electrical works including submission to Essential Energy.
    - Supply and install labelling of DC field and associated LV assets.
    - Inclusion of specific equipment hire, hand tools, mobilisation/demobilisation and staff accommodation.
    - Site clean-up and compliant disposal of waste, with the approved waste management plan.
    - Remove rocks or debris to create a mow-able surface post-construction.
    - Supply of fire-fighting equipment during construction compliant with the Development Application and Construction Certificate.
    - Development and submission of a Construction Environmental Management Plan (CEMP) prior to site mobilisation.

## 5. Out of Scope

- Supply of solar modules.
- Supply of BESS.

- Supply and install of High Voltage equipment.
- Supply and installation of Communications Equipment.
- Supply and installation earthing rings for: -
    - Inverter\transformer station.
    - BESS containers.
    - LV station.
    - Private recloser.
- System Energisation, HV switching and System Commissioning.
- Supply and Installation of site security fence.
- Civils works.
    - Construction of the all-weather access road.
    - Rolling and compacting the site prior to construction.
- Landscaping and erosion control prior to construction.

## 6. Timeline

| | |
|---|---|
| Monday 14th April | RFT Opens |
| Wednesday 30th April 11:00 AM | Mandatory Site Meeting |
| Monday 5th May 5:00 PM | RFI Closes |
| Monday 12th May 12:00 PM | RFT Closes |
| Tuesday 27th May | Recommendation on RFT discussed at May Council meeting. |
| June | Engagement of EPC |
| July/August | Construction commences |
| Thursday 4th December 2025 | Construction Completion |

Table 1. Timeline

## 7. Items Procured and Supplied by Council

The key system components that are being supplied by Council include: -

| **Component** | **Make\Model** | **QTY** |
|---|---|---|
| Solar PV modules | Tongwei TWMNH-54HD500W | 4392 |
| Central inverter\transformer | Sungrow SG3400MV | 1 |
| BESS and all associated integration pieces | Sungrow Power Titan ST2752UX<br>Liquid cooled containerised battery units | 2 |

Table 2. items procured and supplied by Cabonne Shire Council required for this tender.

The solar modules provided by the Council will be supplied by the solar module tender winner. Council has procured approximately 1% more than the required amount for the installation to ensure coverage in case of breakages and for spares. The successful EPC tenderer will be liable for breakages beyond this allowance.

Familiarity with the Sungrow inverter and BESS will be viewed favourably. The Sungrow installation guidelines and manuals will be supplied are part of this RFT.

The selected mounting system is the Jurchen Technologies PEG™ East/West system, and prior installation experience is highly desirable. Tenderers are required to approach Jurchen Technologies for a complete inventory list, confirm pricing and supply, and liaise with them to finalise a Bill of Materials and procure the required parts. The mounting system is proprietary, and Council will not accept any proposals with substituted components. Refer to proprietary section of the Preliminaries document.

## 8. Site Conditions and Set Out

The Tenderer is responsible for thoroughly familiarising themselves with the site, the Detailed Designs, the project scope, and any other relevant information necessary for preparing a commercial offer.

***Attendance at the mandatory site visit is a requirement of the tender process. Only submissions from Tenderers (or their representatives) who attend the site visit will be considered.***

The Tenderer must verify the existing site conditions during their visit. It will be assumed that the Tenderer's representatives have inspected the site and accounted for all factors, including overall site conditions, accessibility, unloading, storage, removal and disposal of materials. These considerations must be incorporated into the submitted tender price.

Claims for additional costs due to lack of knowledge or document errors will not be accepted after tender submission.

Price variations or time extensions during construction will not be permitted based on unfamiliarity with site conditions or lack of understanding of the project documentation.

It is also the Tenderer's responsibility to thoroughly check all dimensions and ensure correct set out on-site. Issues and costs relating to incorrect placement of works shall be deemed the responsibility of the successful tenderer.

## 9. Site Access, Site Security and Safety Inductions

The Tenderer shall nominate a person who will be responsible for on-site supervision and who will be available on site during the construction works and shall coordinate access for all labour, contractors, suppliers, as necessary.

The tenderer will take control of the site as Person Conducting Business or Undertaking (PCBU) and as such should comply with standard legislative requirements including signage, site safety inductions, records of access and departure (date and time) and incident reporting. CSC requires the EPC's WHS policy, plan and procedures to be consistent with local government standards and Safety will form a standard item in reports to Council.

The Council and its representatives reserve the right to restrict or deny the Tenderer's staff access to the site if the Tenderers staff do not comply with required safety standards. The Council shall not be responsible for any additional costs associated with the tenderers inability to comply with safety requirements or return costs for the Tenderers staff or any specific safety equipment or machinery in the event of the Tenderer being denied entry due to non-compliance with a WH&S matter.

## 10. Detailed Design Review

The tenderer is required to allow sufficient time and expertise to review the final Detailed Design supplied by Council. The review opportunity is provided for the purposes of: -

- Identifying any 'buildability' issues.
- Suggesting alternative configurations or components provided they are consistent with the design, site requirements and Council's objectives.
- Ensuring the capacity for future expansion of the powerplant.
- Identifying any unexpected/avoidable potential operation and maintenance issues.

The consulting engineers are responsible for the Detailed Design. The Council may choose to adopt any suggested changes at their discretion. If any changes are adopted, the Council will update the plans and design documentation and share them with the successful tenderer.

## 11. Electrical Installation and Cabling Requirements

The Tenderer is responsible for the complete installation of the solar array, DC field, and all associated LV and DC cabling in accordance with relevant Australian standards, including AS/NZS 3000, Clean Energy Council

(CEC) installation guidelines, and Essential Energy network requirements. While the Council will coordinate network connection approvals, the Tenderer must satisfy all Distribution Network Service Provider (DNSP) connection requirements related to the construction of the DC field and DC electrical installation.

All LV electrical work must be carried out and/or supervised by appropriately qualified electricians. This includes:

- Installation of enclosures and combiner boxes rated to design specifications.
- Testing of combiner boxes for leaks and loose connections, ensuring all pre-wired terminations are secure.
- Inclusion of isolators and fuses in combiner boxes as detailed in the DC SLD.
- Installation of the inverter (SG3400MV) in accordance with the Detailed Design, ensuring:
    - Cables and conduit to, around, and from the inverter are laid out neatly, avoiding crossovers.
    - All cable terminations are safe and secure.

The DC field must incorporate a compliant earthing system, meeting AS/NZS 3000, CEC, and Essential Energy requirements. All electrical signage on switches, isolators, distribution boards, and switchboards must conform to the NSW Electrical Safety Rules.

**Labelling Requirements:**

- All electrical cables must be labelled using UV-resistant, industry-standard labels.
- Labels must face outward where possible and be typed—handwritten labels are not acceptable.
- DC string numbering and naming conventions must match the approved Detailed Design.
- Labels must clearly indicate control and circuit equipment ratings, functional units, operational and maintenance notices, and circuit origins.
- Switchboards, combiner boxes, and inverters must be clearly labelled, with signage placed in prominent, visible locations.

**Commissioning Coordination**

A commissioning engineering firm will be appointed as the primary point of contact with Essential Energy during the plant commissioning phase. The EPC must provide full cooperation, including timely responses to any queries from the commissioning engineer(s) and the prompt provision of all relevant installation documentation, such as:

- Work-As-Executed drawings.
- DC cable test reports
- Certificate of Compliance for Electrical Work (CCEW).

## 12. Regular Council Updates

During the construction phase, the tenderer is expected to provide regular updates to Council. While the meeting frequency will follow an agreed schedule, it is anticipated that communications will occur weekly during construction, with meetings held at least every fortnight. Outside of the construction period, meetings may be scheduled less frequently.

The successful tenderer will be expected to maintain several registers including: -

- Risk Register (as per CEMP): Identifies potential risks, their impact, likelihood, and mitigation strategies.
- Issue Register: Tracks project issues, their resolution status, and responsible parties.
- Safety Register: Documents safety incidents, near misses, and safety inspections to ensure compliance with WHS regulations.
- A photo record.

## 13. Construction and Environmental Management Plan

Successful tenderers will be required to draft and submit a site-specific Construction and Environmental Management Plan (CEMP) prior to construction. Part of the Tender response submission should include a sample CEMP with the following minimum anticipated sections.

Work Health and Safety (WHS):

- Implement measures to identify, assess, and control health and safety risks on-site.
- Provide safety training and inductions for all personnel.
- Ensure the use of personal protective equipment (PPE) as required.
- Maintain ongoing monitoring and reporting of safety performance.
- Establish emergency response procedures and first aid measures.

Site Access, Including Safety Induction:

- Ensure all personnel undergo safety induction before accessing the site.
- Implement controlled site access to enhance security and safety.

Erosion Control:

- Implement strategies to prevent soil erosion and control runoff.

Fire Risk Management:

- Implement fire prevention measures, including maintaining clear access routes, removing flammable materials, and maintaining fire extinguishers with construction crews.
- Conduct fire risk assessments both prior to the commencement of works and periodically throughout the construction phase.

Incidents and Emergency Procedures:

- Establish protocols for reporting and responding to incidents and emergencies.
- Ensure all personnel are familiar with emergency procedures and have access to necessary equipment.

Construction Waste Management:

- Implement a system for handling and disposing of construction waste and non-recyclable products in accordance with the with Development Consent and Conditions (DA 2023\0077).
- Recycle eligible waste materials appropriately.

## 14. Post Completion Period

When construction of the DC Field has been completed and Completion agreed, the contractor will enter a 12-month Post Completion Period (PCP).

Completion shall be defined as the correct installation of all items specified in the Detailed Designs, and in the manner consistent with regulations, manufacturer warranty requirements, and industry best practice.

During this time, the successful tenderer will be obligated to return to the site to rectify defects identified by the Council and/or complete unfinished work.

If any rectification works cause additional defects, the Council reserves the right to update the defect register, where the Tenderer notes that the PCP period is the minimum amount of time the contractor will remain exposed to the risk and cost of rectifying defects, and may extend beyond 12-months until all defects are rectified.

In conjunction with the PCP period, the Tenderer shall provide 12-months post project monitoring and maintenance returning to the site quarterly to inspect. The Tenderer shall provide a maintenance schedule as part of their response, which shall include as a minimum, but is not limited to:

| Item | Task | Due |
|---|---|---|
| DC field | • Visual inspections of all installed modules for cracks, moisture penetration or other damage that may impact on power output or safety.<br>• Visual inspection of the DC field wiring including cable trays, cable fastening and terminations. | Quarterly |

| | | |
|---|---|---|
| | • Visual inspection of the DC isolators and verify they are operating correctly, including their isolation and protection functions.<br>• Check all PEG™ mounting components and their structural integrity.<br>• Weed or vermin control, including managing vegetation that may be shading the array.<br>• Damage from excessive rainfall, including any erosion control and\or debris removal. | |
| Central inverter SG3400MV<br>& BESS Power Titan ST2752UX | • Check inverter and BESS waterproofing.<br>• Security of cabling and cable management systems including visual inspection of cable trays, cable fastening and terminations.<br>• Visual check of the DC BUS and cable terminations. | Quarterly |
| Reporting | • Provide Council with quarterly report on site visits, including details of any issues, and any remediation works (coordinated with Council) | Quarterly |

Table 3. 12-month post project monitoring and maintenance

## 15. Work as Executed Drawing and Documentation Handover

The following documentation must be delivered to CSC or its representative at the specified milestones below.

| | Item\Document | Due |
|---|---|---|
| 1 | Work as Executed drawings | Within 20 days of after Completion |
| 2 | DC cabling test sheets | Completion |
| 3 | Certificate of Compliance of Electrical Work | Completion |
| 4 | Receipt of Certificate of Compliance of Electrical Work Lodgement with DNSP | Completion |
| 5 | Photos of Installed System showing all main components and system labelling. | Completion |
| 6 | Issues register with resolved issues closed. | Completion |
| 7 | Broken module register, including module serial numbers and photos. | Prior to Completion |
| 8 | Completion certificate. | Completion |

Table 4. Documentation requirements

The tenderer is expected to make sufficient allowance for thorough handover processes including face-to-face briefing of key staff and contractors.

The documents must be provided in the formats as outlined in the Work as Executed drawings section of the Preliminaries document.

In addition to those items listed in the Conditions of Contract, all the following items must, without exception, be completed prior to requesting the Consulting Engineers to make the final inspections for Completion:

- Test the complete installation works and leave the worksite in a clean condition.
- Thoroughly clean all equipment and parts.
- Provide all specified testing documentation.

## 16. Standards and Guidelines

The following Standards, codes and guidelines apply to the construction and installation.

Electrical Standards:

AS/NZS 3000: Electrical Wiring Rules

AS/NZS 3017: Electrical Installations – Testing Guidelines

AS/NZS 3100: Approval and Test Specification – General Requirements for Electrical Equipment

Structural Standards:

AS/NZS 1170.2: Structural Design Actions: Wind Actions

AS/NZS 2053: Conduits and Fittings for Electrical Installations

National Construction Code 2022

Safety and Compliance:

NSW Work Health and Safety Act 2011 and the NSW Work Health and Safety Regulation 2017, including amendments.

Essential Energy Network Standards

NSW Service and Installation Rules

Other Guidelines:

Comply with all current and additional standards and best practices. The Tenderer must ensure installations meet these standards and provide evidence of compliance if requested.

## 17. Supporting Documents

To ensure a complete and accurate tender response, this document must be reviewed in conjunction with the following supporting documents. In the event of any discrepancies, the design documentation shall take precedence over the content of this document.

- A1 – Development Approval and Development conditions (DA 2023\0077).
- A2 – Sungrow SG3400MV installation manual and technical drawings
- A3 – Sungrow ST2752UX installation manual and technical drawings
- A4 – Geotechnical report
- A5 – Geophysical Resistance (Pull Out) Testing
- A6 – Feature survey information

- D1 – DC Design (95% completed)
- D2 – LV and Comms Design (95% completed)