Invitation to Tender

Project/Services: Norwest UPS and battery room air-conditioning replacement project
AEMO Reference: P152

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Closing Date: 18-March-2016

Validity Period: 90 days from the Closing Date
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SECTION A: INVITATION TO TENDER

A.1 Background

AEMO is a company limited by guarantee. It has statutory functions under the National Electricity Law, National Gas Law and Rules made under those Laws, including:

- Market and system operator and national transmission planner for the National Electricity Market
- Market and system operator of the Victorian wholesale gas market
- Market operator of gas short term trading markets, gas trading exchanges and retail gas markets in eastern and southern Australia.

With its broad national focus for the future, AEMO’s objectives are to promote efficient investment in and operation of Australia’s electricity and gas services for the long-term interests of consumers with respect to price, quality, safety, reliability and security of energy supply.

A.2 Invitation to Tender

AEMO operate a critical 24/7 data centre to support Market operations located at Norwest in Sydney. The data centre requires air conditioning to basement UPS equipment rooms. Air conditioning to the existing UPS and associated battery rooms was designed using split type ducted air conditioning. These units are 10 years old and AEMO is looking to replace two PAC units with CRAC units.

TENDERS ARE INVITED for the provision of the supply and installation of two CRAC units to replace two existing PAC air conditioning units as per design specifications in schedule 2 provided by AEMO consultants Waterman AHW Pty Ltd.

A.3 Glossary

In this document, capitalised words or phrases have the meanings set out below.

| Addendum | Any document issued after the date of this Invitation to Tender and labelled as an “Addendum” to this Invitation to Tender; collectively known as “Addenda”.
| AEMO | Australian Energy Market Operator Limited ABN 94 072 010 327. References to AEMO include, where the context requires, AEMO’s employees, officers, contractors, consultants, advisers and other persons authorised to act for AEMO.
| AEMO Project Manager | The person specified on the cover of this ITT.
| Business Days | A day other than Saturday, Sunday and any other day not taken to be a public holiday in Victoria.
| Closing Date | The date specified on the cover of this ITT.
| Invitation to Tender or ITT | This document, including its schedules, attachments and appendices.
| Services | The services and deliverables described in Schedule 2 of the Tender Form.
| Statement of Compliance | The schedule in Section E by that title.
<p>| Tender | The offer submitted by a Tenderer to provide the Services. |</p>
<table>
<thead>
<tr>
<th>Tenderer</th>
<th>A person to whom AEMO has sent this ITT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tender Form</td>
<td>The document contained in Section E.</td>
</tr>
<tr>
<td>Tender Period</td>
<td>The time commencing between a Tenderer’s receipt of this ITT and the closing time for receipt of Tenders by AEMO.</td>
</tr>
<tr>
<td>Validity Period</td>
<td>The period specified on the cover of this ITT.</td>
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</table>
SECTION B: ABOUT THIS ITT

B.1 Legal Status

This Invitation to Tender is an invitation to treat and does not create any contractual or promissory rights. AEMO is not obliged to accept any Tender or complete the process outlined in this ITT.

AEMO is not obliged to acquire all or any Services unless and until both AEMO and a selected Tenderer have duly executed a written contract in the form attached to this ITT, with any variations agreed between the parties.

AEMO may change the process or the description of the Services at any time by issuing an Addendum to Tenderers.

B.2 Confidentiality

This ITT may contain or be accompanied by confidential information about AEMO or its operations and markets, which is provided solely to enable Tenderers to submit Tenders. Tenderers must not use or disclose information in this document for any other purpose without AEMO’s prior written consent. Tenderers must take all reasonable steps (both physically and electronically) to protect the confidentiality of this document and all communications relating to it.

B.3 Intellectual Property

Unless otherwise indicated, AEMO owns any intellectual property rights in this ITT. Tenderers are permitted to use and copy this document for the sole purpose of preparing and submitting a Tender.

B.4 No Warranty

Except to the extent required by law:

- AEMO makes no warranties or representations on the accuracy, adequacy or completeness of the ITT or any other information provided to a Tenderer; and

- AEMO is not liable in any way for any loss or damage of whatever kind (whether foreseeable or not) however arising (including by reason of negligence), incurred by any person in connection with this ITT or any other information provided to a Tenderer.

B.5 Queries and Communications with AEMO

If Tenderers find any discrepancy, error, or have any doubt as to the meaning or completeness of this ITT, or require clarification on any aspect of it, they should notify the AEMO Project Manager in writing, not less than 14 days before the Closing Date. AEMO may issue an Addendum to all Tenderers clarifying the discrepancy, error, doubt, or query (as the case may be) and may extend the Closing Date if AEMO considers it appropriate in all the circumstances.

No representation or explanation to Tenderers in relation to this ITT is taken to be included in the ITT unless it is contained in an Addendum.

All communications by Tenderers to AEMO about matters connected with this ITT must be made to the AEMO Project Manager unless otherwise authorised by the AEMO Project Manager.

B.6 Conditions of Submitting a Tender

Tenderers wishing to submit a Tender must comply with Section C. Tenderers must ensure that their employees, contractors, agents and consultants involved in the preparation or submission of a Tender are aware of, and comply with, all requirements applicable to Tenderers.
SECTION C: TENDER REQUIREMENTS AND EVALUATION

C.1 Submitting a Tender

A Tender constitutes an offer by the Tenderer to provide the Services, which is capable of acceptance by AEMO. Tenders must meet the following requirements:

- All applicable sections of the Tender Form must be completed, including all relevant schedules.
- The Tender must be dated and signed (in the case of a body corporate, by a duly authorised officer).
- All supporting documentation evidencing the matters specified in Schedule 3 to the Tender Form must be included with the Tender, to the extent applicable to the proposed Service.
- If a Tenderer cannot comply with any element of the Tender Form or schedules, the Tenderer must specify in the Statement of Compliance the nature of, and reasons for, the non-compliance.
- Tenders must be lodged in electronic form to reach the following email address by 4:00 pm (Melbourne time) on the Closing Date: tenderbox@aemo.com.au.
- Additional documentation may be submitted with a Tender if, in the Tenderer’s opinion, it is necessary for a proper understanding of its Tender.

Please note: Drawings will be made available upon written request and subject to AEMO approval and signing of an AEMO confidentiality agreement.

AEMO may decide to accept late or non-conforming Tenders, but is not obliged to do so under any circumstances.

C.2 Tenderers to Perform own Due Diligence

By submitting a Tender, a Tenderer is taken to have:

- satisfied itself of the requirements of this ITT;
- made all reasonable enquiries, investigation and assessment of available information relevant to the risks, contingencies and other circumstances relating to the Services; and
- satisfied itself as to the correctness and sufficiency of its Tender.

C.3 Tenders Commercial-in-Confidence

Tenders will be treated as confidential and will not be disclosed outside AEMO except:

- as reasonably required for the purpose of assessing the proposed Services;
- required by law, or in the course of legal proceedings;
- requested by any regulatory or other government authority having jurisdiction over AEMO, or its activities; or
- to AEMO’s external advisers, consultants or insurers,
in which case the Tenderer is deemed to have consented to this disclosure by providing the Tender.

C.4 No Anti-Competitive Conduct

Tenderers must not:
C.5 No Improper Assistance or Inducements

Tenderers must not seek or accept the assistance of employees, contractors or consultants of AEMO in the preparation of their Tenders and must not make any offers or engage in any activities that are likely to be perceived as, or may have the effect of, influencing the outcomes of the ITT process. Tenderers must at all times comply with all applicable laws in relation to the offering of unlawful inducements in connection with their Tenders.

C.6 No Reimbursement for Costs of Tender

No Tenderer is entitled to be reimbursed for any expense or loss incurred in the preparation and submission of its Tender or for any costs incurred in attending meetings with AEMO during the Tender evaluation process.

C.7 No Publicity

Tenderers must not make any public or media announcement about this ITT or the outcome of this ITT without AEMO’s prior written permission.

C.8 Disqualification

AEMO may, at its absolute discretion, immediately disqualify a Tenderer from further participation in the tendering process if AEMO believes that Tenderer has contravened a requirement of Section B or Section C of this ITT.

C.9 Tender Evaluation Process and Timing

AEMO’s assessment of Tenders may include, but is not limited to, an evaluation of the following matters as relevant to the provision of the Services:

- Compliance with ITT requirements
- Proven ability and experience delivering similar services
- Proven ability, as evidenced by references, to deliver equivalent services to best practice standards
- Tenderer’s capacity and resources, including personnel, financial stability and facilities
- Implementation methodology
- Value for money having regard to total cost and benefits of the Services over time
- Evaluation of risk, potential liability and proposed contract terms and conditions.
- Qualitative and quantitative technical evaluation
- Tenderer’s proven compliance with safe work practices
- Any other factors AEMO considers to be relevant.
AEMO’s indicative timing for evaluation of Tenders and award of contracts is set out below. AEMO may change these times or steps, or stop or suspend the ITT process at any time.

<table>
<thead>
<tr>
<th>Description</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing Date</td>
<td>18-Mar-2016</td>
</tr>
<tr>
<td>Tender evaluation completed</td>
<td>1-Apr-2016</td>
</tr>
<tr>
<td>Contract execution and notification of unsuccessful Tenderers</td>
<td>15-Apr-2016</td>
</tr>
<tr>
<td>Completion of work</td>
<td>30-Jun-2016</td>
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</tbody>
</table>

C.10 Clarification

If AEMO considers that a Tender is unclear in any respect, it may seek clarification or further information from any or all Tenderers at any time during the evaluation process. Failure to supply clarification to AEMO’s satisfaction may result in the disqualification of a Tender.

AEMO has no obligation to seek clarification of any Tender, and reserves the right to disregard any information that it considers to be unclear.

C.11 Contract Execution

AEMO’s proposed form of contract for the Services is set out in the Attachment to this ITT.

Unless specifically requested in this ITT for one or more Services, Tenderers should not include their own standard or general conditions of contract with their Tenders. Tenderers who wish to seek changes to the proposed form of contract should provide a copy of the document showing the exact form of the requested change, tracked in Microsoft Word.

Tenderers will be taken to have accepted the contract in its current form in the Attachment unless they include a tracked copy of the contract marked in this way.

AEMO requires the terms of the contract to be concluded and the document signed by the successful Tenderer within 14 days of AEMO’s notification of acceptance of the relevant Tender. AEMO reserves the right to reconsider rejected Tenders if the contract is not finalised within that period.

AEMO is not bound by the terms of any contract document and has no obligation to acquire the services unless and until the contract is signed by an authorised officer of AEMO.

C.12 No Obligation to Debrief

AEMO is under no obligation to debrief any Tenderer as to AEMO’s evaluation of Tenders, or give any reason for the acceptance of or non-acceptance of any Tender.
SECTION D: REQUIREMENTS FOR SERVICES

D.1 Well established air-condition company with current refrigerant handling license
D.2 Certified Safety & Quality Management and practice
D.3 Well established OH&S and environmental policies and practice
D.4 Proven ability to install CRAC units in critical high available data centres
D.5 Proven ability to maintain CRAC units in critical high available data centres
D.6 Well established 24/7 availability including on-call support for the warranty services
D.7 Security clearance / police clearance
D.8 Experience of large installation / maintenance in Australian federal agencies or government buildings
D.9 Experience in large installation in critical facilities
D.10 Proven track record in project completion on time
SECTION E: TENDER FORM

To: Australian Energy Market Operator Ltd
Level 22, 530 Collins Street
MELBOURNE VIC 3000

(AEMO)

Tender for replacement of Norwest basement air-conditioner.

From:

<table>
<thead>
<tr>
<th>Tenderer (full company name):</th>
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<tbody>
<tr>
<td>ABN:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
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<tr>
<td>Website:</td>
<td></td>
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<tr>
<td>Contact Person:</td>
<td>Name:</td>
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<td>Title:</td>
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<td>Telephone No:</td>
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<td></td>
<td>Fax No:</td>
</tr>
<tr>
<td></td>
<td>E-mail:</td>
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</tbody>
</table>

1. **Offer**

The Tenderer offers to provide to AEMO the Services described in Schedule 2:

- in accordance with the requirements of the ITT, subject only to any variations specified in the Statement of Compliance in Schedule 1; and
- at the price or prices specified or determined in accordance with Schedule 3.

2. **Agency/Joint Tender**

The Tenderer is/is not acting as agent or trustee for another person, or lodging a Tender jointly with other persons.

(If the Tender is acting as an agent or trustee, full details must be provided in this section.)

5. **Supporting Information**

The Tenderer provides in Schedule 4 details of its capability to provide the Services, as required by AEMO to support this Tender.

6. **Conflicts of Interest**

The Tenderer provides in Schedule 5 a conflict declaration for the Tenderer’s personnel nominated to provide the Services, and details of how any conflicts are to be addressed.

7. **Validity Period**

This Tender constitutes an offer to provide the Services that remains open for acceptance by AEMO for the Validity Period.

8. **Contract (optional)**

The Tenderer provides in Schedule 6 a copy of AEMO’s proposed contract with the Tenderer’s requested changes tracked in the document.

1 Delete as appropriate.
Tender Form

9. Addenda to ITT (include only if Addenda received)

In the preparation of its Tender, the Tenderer acknowledges having received the following Addenda to the ITT:

Addendum No. Dated
Addendum No. Dated
Addendum No. Dated

NOTE: Capitalised terms in this Tender Form and Schedules are defined in the ITT.

Dated this day of 20

EXECUTED by [NAME OF TENDERER] by its duly appointed representative in the presence of:

Witness

Name of witness (print)

Authorised Officer

Name of Authorised Officer (print)

Title of Authorised Officer (print)
[Delete whichever is not applicable]

[Name of Tenderer] confirms that this Tender conforms in every respect with the Invitation to Tender.

OR

[Name of Tenderer] confirms that this Tender conforms in every respect with the Invitation to Tender other than in the following respects:

•

•
1.1 PROJECT OVERVIEW

The existing AEMO building is located at 2-4 Elizabeth McArthur Drive, Bella Vista NSW. Currently there are two split type air conditioning units cooling each basement UPS and associated battery rooms. A two stage replacement program is being undertaken to replace the existing air conditioners. This ITT is for Stage 1 comprising the removal and replacement of one of the split type air conditioning units with new computer room air conditioning (CRAC) units serving each of the UPS and associated battery rooms.

2.1 DRAWINGS

This specification shall be read in conjunction with the drawings 25580-M001, M101 and M201. Drawings will be made available upon written request and subject to AEMO approval and signing of an AEMO confidentiality agreement.

3.1 EXTENT OF WORK

The work shall include supply, installation, commissioning and warranty of 12 months from the practical completion date of the following:

1. Provide a detailed programme of works for approval by the client or their nominated representative prior to works. Include staging of works to ensure minimal interruption to existing services prior to work on site. Availability and reliability of the UPS, batteries and associated systems shall be maintained at all times. It is noted that the existing site is considered to be a critical facility:

   Stage 1 – Replacement of the first split system in each room
   • Shutdowns of air conditioning shall be minimised and all works agreed in writing with by client or their nominated representative prior to works.
   • Preliminary works shall be undertaken including purchase of equipment, installation of outdoor plinths, condensers and associated refrigerant pipework to allow a quick change over from the old units to the new.
   • One UPS/battery room cooling system shall be replaced at a time (total two AC units are to be replaced in Stage 1 works). Temporary air conditioning shall be provided during the works to provide cooling to all rooms served from the units.
   • Only once the first UPS/battery room CRAC cooling systems are fully operational and commissioned shall the second UPS/battery room cooling system be replaced.
   • Hiring of a temporary package units and allow all temporary ductwork connection to the space.
   • No works shall be undertaken without specific written approval by the client or their nominated representative.
   • Installation of refrigerant pipes, inclusive of the future pipes for Stage 2 works. Refrigerant pipes for future connection shall be vacuum sealed and extended to the allocated position of the future units.
   • Provision of plant (condensers) space, inclusive of the future condensers (2 off).
Tender Form

- Electrical upgrade of existing board, inclusive of the future units (2 off).

- Provision of all wiring (power & comms/BMCS), inclusive of the future units (2 off). The wiring for the future units connection shall be installed to the nominated location of the future units. Cable shall be coiled up with minimum 5m length.

- Supply and install a refrigerant vent pipe from the pressure relief valve (PRV) on each CRAC unit. Contractor shall make allowance to replace the current PRV to a 90° bend PRV (in order to allow clearance for vent pipe installation).

  Vent pipe shall be reticulated horizontally from the room to external of building, 6m away from any outside air or natural ventilation intake. The PRV shall be selected and set to open as per manufacturer’s recommendation and shall not exceed the maximum design pressure.

  The vent pipe shall be sized to the manufacturer’s requirement. Vent pipe shall be insulated.

  Contractor shall ensure the circuit breaker serving the condenser unit sized sufficiently to prevent premature tripping of the condenser resulting in high pressure issue within the compressor.

  Contractor shall also provide interface between the operation of the condenser and the indoor unit (compressor), i.e. should the condenser fan fails, the associated compressor shall be tripped off. This can be done either via local relay interlock or through BMCS. This mechanism shall be in place in conjunction with the HP monitoring & control built-in to the CRAC unit.

  BMCS shall also monitor the Hi/Lo pressure within each CRAC unit and generate alarm on headend.

2. Prior to works, carry out the following ‘dilapidation report’ works:

- Measure existing system airflow at all diffusers served by the existing four (4) Temperzone units serving the UPS and Battery rooms.

- Provide all results to the client or their representative, highlighting any shortfalls to the original design air figures.

3. Prior to works, the following documentation incorporating site specific processes and hazards shall be provided to the client for approval by the client or their representative. No works shall be undertaken without specific written approval by the client or their representative.

- Site specific safe work method (SWM) statements.

- Site specific method of procedure (MOP) statements.

4. Provide dust mitigation and protection of existing rooms and all existing equipment. Coordinate with the client or their representative prior to works to agree on an acceptable method.

5. In order to avoid spurious alarms, isolate VESDA and any other fire and/or alarm systems in the work area/room prior to works each day. Re-instate at the end of each day or when works are complete in that area (whichever comes first). Liaise with the client so that they are fully aware of the status of systems (operational or isolated) at all times. This contactor shall engage the base building fire contractor to carry this out.

6. Allow for relocation of sprinklers and associated pipework to suit the new ductwork and pipework routes. This contactor shall engage the base building fire contractor to carry this out.

7. Provide inspection and test plans (ITP’s) for approval by the client or their representative.
8. Isolate, make safe, disconnect, remove and dispose of two (2) existing Temperzone split ducted unit systems serving the two UPS and Battery rooms on Basement level. Recover all refrigerant in accordance with regulations.

9. Remove redundant condensers, all associated refrigerant pipework and all redundant controls and electrical. Note that the refrigerant pipework located within the risers from the basement to the roof may be left in place, provided that they are capped off at both ends.

10. Remove existing ductwork manifolds above the units and modify existing ductwork systems to suit reconnection to the new CRAC units complete with motorised dampers.

11. Replace the above units with Two (2) new air cooled DX computer room air conditioning (CRAC) units complete (Stage 1 works) with condensate drain pumps, wet floor sensor and air cooled condensers serving the two UPS and Battery rooms on Basement level. Mechanical contractor shall select the appropriate CRAC and submit the details for approval. Mechanical contractor shall also confirm the condition of each of the existing system. Only the system in worse condition shall be replaced in each room.

12. Provide new insulated refrigerant pipework in accordance with the manufacturers requirements. Provide sheathing for all insulated pipework comprising painted metallic-coated sheet steel, 0.55mm minimum thickness coating class Z275 or Colourbond cladding. Provide hot galvanised Unistrut (or equal to be approved) hanging systems for pipework within the building. Colour of sheathing and Unistrut to match building façade.

13. Trench and bury the pipework in the upper grassed area adjacent to the condensers. Provide stainless steel cladding for this portion of pipework.

14. Provide new secure enclosure around the new condensers and remove portion of existing bicycle shad wall as indicated on the drawings. The secure enclosure shall comprise 2m high chevron louvres made of Colourbond (or equal to be approved). Provide a double door within the louvre for maintenance access. Colour to match building façade.

15. Electrical work and wiring of the new air cooled CRAC units:

   - Replace existing four (4) circuit breakers in the two (2) mechanical services switchboards with 40A breakers. (Stage 1 works and make provision for Stage 2 future units connection).

   - New power cabling from the two boards to the two (2) new CRAC units in the same configuration as per existing. Mechanical contractor shall also install new cable with 5m coiled up at both end for the two (2) future CRAC units installation.

16. Automatic control work will include:

   - CRAC units shall be self-contained and equipped with all the necessary controls supplied by the manufacturer for correct operation.

   - Temperature control for the CRAC units.

   - Central control/network switch(s) to control the two (2) CRAC units in two (2) zones – one for UPS Battery Room A and one for UPS Battery Room B. The switch shall be able to control the new CRAC units and existing Temperzone unit in each zone in duty/standby mode or in shared load mode (both units operating at part fan and part compressor capacity). The central controller shall be provided with sufficient terminal for the accommodating the two (2) new CRAC units in the future Stage 2 works.
CRAC unit systems shall operate 24 hours a day, 7 days a week. Initial setup for each zone shall be duty/standby operation.

The control shall have no single point of failure. Any failure of the controls shall not affect the continued operation of the units.

All necessary network and other control cabling.

Connect the CRAC units to the Client’s EMS system for general alarm/failure. Includes all wiring and terminations to the EMS system from the CRAC units. Liaise with the client to set up and test each alarm.

Full training shall be provided to the client’s nominated person/people on operation of the CRAC units and network switch(s).

17. All penetrations and make good of same. Fire rating and stopping of penetrations.

18. Removal and disposal of all waste, rubbish and redundant/superfluous materials.

19. Clean all work areas at the end of every day on site.

20. Provide safe work method (SWM) statements for all work on site. No works shall be undertaken without specific written approval by the client or their representative.

21. Provide inspection and test plans (ITP’s) for approval by the client or their representative.

22. Testing, commissioning and air balancing of all diffusers served by the two (2) new CRAC units and the remaining existing units to achieve the specified flow rates (on drawing) to a tolerance of +10 or –0%.

23. Operating and maintenance manuals (3 copies) including as-built drawings on CAD.

24. Issue of certificates for the installation works as required by the Council.

4.1 "AS INSTALLED" DRAWINGS

The "As Installed" drawings shall faithfully show precise details of all services exactly as installed and shall record any variations or modifications made during testing and commissioning.

"As Installed" drawings shall be to scales not less than 1:50 for equipment areas and 1:100 for other areas. They shall clearly indicate the position and sizes of ducts, dampers, heaters, access hatches, air terminals, pipes, valves, equipment, electrics and controls and shall show no less detail than the design drawing.

5.1 INSTRUCTION MANUALS

Prior to Practical Completion prepare and issue instructions for operating and maintaining the services.

The Instruction Manuals shall be prepared and submitted for inspection thirty (30) working days before the date set for Practical Completion. All alterations required shall be made and the manuals resubmitted before Practical Completion is achieved.

The manuals, to be supplied in hard backed binders, shall comprise one (1) set of record drawings and three (3) complete sets of instructions for operation and maintaining the service.
Binders shall be 3 post hinged 250 mm x 320 mm hard vinyl covers of adequate thickness, lettered in a contrasting colour on the face with the name of the project and titled “Mechanical Services - Operation and Maintenance”.

Record drawings shall be "As Installed" full size prints folded to binder size and heavily reinforced at the retaining posts.

The instruction for operating and maintaining the services shall detail:

- The installed services and describe the interrelated operation and use of the systems in the various parts of the building.
- Safety features of equipment and controls.
- "As Installed" drawings.

6.1 CODES AND AUTHORITIES

The works shall comply in every way with the requirements of any Authority having jurisdiction over them.

The services shall include all equipment necessary for their satisfactory operation, control, maintenance and safety.

Work not covered by the requirements of statutory authorities shall comply with the appropriate publication from the Standards Association of Australia.

In cases where Standards Association of Australia has not yet issued Specifications or Codes, the relevant publication issued by the British Standards Institution shall apply.

All materials, fittings, accessories and apparatus shall be new (unless the reuse of existing items is specified) and of first grade design and manufacture, and shall comply with relevant Australian Standards Association specifications.

7.1 SAMPLES

Samples of all fittings, accessories and apparatus proposed for use in the works shall be submitted for acceptance by the Project Manager prior to construction. Only such items which are accepted shall be installed. Failure to comply with this provision may result in the unconditional rejection of such items when inspected on site. Any rejected material, accessories, fittings or apparatus shall be removed from the site within 24 hours of such rejection.

8.1 WORKMANSHIP

All workmanship shall be of a high standard throughout as accepted by the respective specialist trades. Only first class competent tradesmen shall employed on the work in their respective trades.

Only suitably licensed tradesmen shall be employed on work which any authority having jurisdiction requires to be carried out by licensed tradesmen.

Work which by good trade practice is normally carried out by tradesmen shall only be carried out by suitably qualified tradesmen.

Where the Project Manager considers workmanship is not consistent with good trade practice or standards or that any plant is inferior in quality or deficient in quantity to that specified, notwithstanding that a progress payment may have been made in respect thereof, the Project Manager may give notice in writing setting forth the defect or deficiency and such condemnation or refusal shall be conclusive. Rejected work or materials shall be removed from the site within 24 hours of such rejection. Defective work shall be reconstructed to conform to the specified requirements.
9.1 CO-ORDINATION
Where the works are to be installed in close proximity to the work of other Sub-Contracts, every effort shall be made to co-operate with the Sub-Contractor concerned to ensure that all equipment is installed to the best advantage.

10.1 PROTECTION
During the progress of the work, all parts shall be covered up and protected to avoid injury by exposure to the weather, as a precaution against accidental damage, or damage due to any other cause. The site and precincts shall be kept clean and tidy and all rubbish shall be removed regularly.

11.1 CLEANING
The site and precincts shall be kept clean and tidy throughout the course of the work and all rubbish shall be removed regularly.

Prior to Practical Completion and at the conclusion of the work, all debris and rubbish shall be cleared away and removed from the site and the completed installation shall be left thoroughly clean.

12.1 WARRANTY
The complete works carried out under this sub-contract shall be warranted against defective workmanship and materials (fair wear and tear accepted) and against non compliance of equipment or systems with specified performance of operation as outlined in this Specification.

During the whole of the warranty period (twelve months after practical completion) warranty and breakdown maintenance in connection with work of this sub-contract shall be performed. Refer to Conditions of Contract for general defect liability.

Equipment supplied as part of the contract which is covered by a lesser manufacturer's warranty, shall be warranted by the Sub-contractor to comply with the above paragraph.

Any materials, equipment or complete systems which prove to be defective shall be renewed at the Sub-contractor expense.

Replacement parts on equipment shall carry a warranty covering a period equal in duration to the Defects Liability Period and dating from the time of replacement.

13.1 OPERATOR INSTRUCTION
At Practical Completion the Sub-contractor shall operate the plant adequately and instruct the Purchaser's delegate in the operation and maintenance of the installed services and in the use of the Instruction Manuals.

14.1 VISIT THE SITE
By virtue of his tendering, it shall be understood that the tenderer has visited the site and satisfied himself on the building limitations to installing the work and removing existing plant and has included allowances to cover this contingency.

The successful tenderer shall not be entitled to extra payment for any necessary work not foreseen or through not having visited the site.
SECTION 2 - EQUIPMENT

2.1 PACKAGED COMPUTER ROOM AIR CONDITIONING UNITS

2.1.1 General

Each Computer Room air conditioning unit shall be a self-contained factory assembled unit with a front return and top discharge as nominated in the Table of Performance. Mechanical contractor shall submit the selection of the CRAC for approval. The units shall have the minimum capacity as specified in the Tables of Performance.

The units shall be complete with casings, insulation, fans, refrigeration compressors, motors, DX valves, refrigerant high pressure relief vent pipe, cooling coils, air cooled condenser, condensate pan and air filters, operating and safety controls and all other components necessary for essential operation of the unit.

The units shall be completely pre-piped, pre-wired and ready for final pipe and electrical connections only on the site.

The units shall be commissioned on site by the manufacturer or factory trained manufacturing agent.

Only 1 of the system shall be replaced in each of the room. Mechanical contractor shall verify the condition of each of the existing system. Only the system in worse condition shall be selected to be replaced in each room during Stage 1 works.

Mechanical contractor shall also make provision on the refrigerant pipes, wiring, cable, and control for both Stage 1 and Stage 2. The refrigerant pipes installed for the future Stage 2 works shall be brought to the nominated position of the future unit in each of the rooms and to the outdoor condenser proposed location. Refrigerant pipes shall be vacuum sealed.

Mechanical contractor shall also allow all associated wiring, cable, and control, and terminal, electrical upgrade for both Stage 1 and Stage 2 works. All wiring provision for future Stage 2 shall be coiled up (minimum 5m) at the nominated position inside each rooms and at the proposed condenser unit's location.

The condensers plant space shall be sufficient for the installation of both Stage 1 and Stage 2 units (therefore total of 4 condensers). Provision of plinth for both Stage 1 and Stage 2 works.

2.1.2 Cabinet Construction

The frame and panels shall be constructed of heavy gauge zinc-anneal corrosion resistant sheet steel. The fan section shall be insulated with a minimum 25mm thick insulation to Australian Standard AS1530.

The cabinet shall be powder coated.

The unit shall be serviceable from the front only with a minimum service space required of 600mm.

2.1.3 Evaporator Fan

The fans shall be of the backward curved plug type, statically and dynamically balanced. Each fan shall be driven by a high efficiency EC motor.

2.1.4 Refrigeration Circuit

The refrigeration system shall be of the direct expansion type and incorporate scroll hermetic compressors with crankcase heaters. The system shall include a manual reset HP control and an auto reset LP switch, filter drier and charging port. An expansion valve, sight glass and filter drier shall be provided. The unit shall have one (1) or two (2) separate refrigeration circuits as scheduled.
2.1.5 Long Line Pipe Kit
A factory fitted liquid line solenoid valve and discharge check valve (supplied loose) shall be provided for each refrigerant circuit to prevent liquid refrigerant migration to the evaporator / compressor during off cycles. Mandatory for pipe runs in excess of 30 metres.

2.1.6 Evaporator Coil
The evaporator coil shall be constructed of copper tubes and aluminium fins, with the frame and drip tray fabricated from heavy gauge aluminium. The drip trays must be easily removable for cleaning.

2.1.7 Supply Air Temperature Control
Include in each unit a remote temperature sensor to be connected to the unit microprocessor controller so to enable supply air temperature control.

The units shall have the ability to modulate fan speed based on return, supply* or remote* (rack) temperature sensing to match IT heat load

2.1.8 Compressor
Each unit shall incorporate Digital type scroll compressor(s) capable of modulating capacity to 20% of full load capacity. Each compressor shall have internal motor protection and be mounted on vibration isolators.

Other similar variable cooling compressor technologies is acceptable but shall not introduce any harmonic current distortion or RFI

2.1.9 Filter
Filtration shall be provided by dry media disposable filters capable of filtering air to G4 efficiency (AS1132) and withdrawable from the front.

2.1.10 Water Sensors
CRAC units shall be supplied with a single ‘water under floor’ detector, as provided standard by the CRAC unit manufacturer. Sensors shall be connected to the CRAC unit controllers and shall be configured to signal a water under floor alarm signal to the CRAC unit controllers upon detecting water.

2.1.11 Outdoor Condensing Units
The condenser is to be of draw-through type. The fans shall be of variable speed, EC type, head pressure controller, and capable of handling up to 100Pa External Static Pressure, adjustable to suit site condition.

Unit selected shall be capable of remote air cooled operation to a minimum of 50m pipe run and shall not require oil return components.

2.1.12 Controls
The standard controls shall be of a micro-processor based, programmable logic controller. The controls shall have separate indication of operating modes (cooling and heating), alarm conditions (temperature high, compressor HP and LP, wet floor and no air flow), and numerical displays for temperature and relative humidity. The display and indication shall be visible on the front without removing any external panels. Local and remote alarms will be triggered if an alarm condition is reached.

The controls shall have unit number display and communication capabilities with external BMS systems via Modbus or BACnet protocol. The control unit shall include alarms for low temperature, reset buttons for compressor HP alarms, manual override switches and selectable alarms.

2.1.13 Wiring
Wiring to conform to ACTPLA requirements and AS3000.
2.2 NOISE AND VIBRATION

Rotating equipment shall be statically and dynamically balanced and installed on bases designed to accommodate vibration isolators. Inertia bases shall be used where specified, or shown on drawings.

The inertia base shall be adequately reinforced 180 mm thick concrete in which foundation bolts with pipe sleeve type holders are positioned before the concrete pour.

The unit (pump or fan) shall be levelled approximately 25 mm above the inertia base and grouted to finish. Vibration isolators shall be selected with regard to the weight distribution of the unit assembly and the rotating speed of the equipment.
### 3.1 COMPUTER ROOM AIR CONDITIONING UNITS

<table>
<thead>
<tr>
<th>Item No:</th>
<th>CRAC-5 (Stage 1 works, in this Contract)</th>
<th>CRAC-6 (Stage 1 works, in this Contract)</th>
<th>CRAC-7 (Future Stage 2, Not in this Contract)</th>
<th>CRAC-8 (Future Stage 2, Not in this Contract)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area Served</td>
<td>UPS Battery Room A</td>
<td>UPS Battery Room B</td>
<td>UPS Battery Room A</td>
<td>UPS Battery Room B</td>
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<tr>
<td>Total Capacity (kW)</td>
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<td>32.4</td>
<td>32.4</td>
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</tr>
<tr>
<td>Sensible Capacity (kW)</td>
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<td>30.6</td>
<td>30.6</td>
<td>30.6</td>
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<td>Supply Air Flow (L/s)</td>
<td>2780</td>
<td>2780</td>
<td>2780</td>
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<tr>
<td>External Air Static (Pa)</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Air On (°CDB / RH%)</td>
<td>24.0 / 50</td>
<td>24.0 / 50</td>
<td>24.0 / 50</td>
<td>24.0 / 50</td>
</tr>
<tr>
<td>Humidifier</td>
<td>Not Required</td>
<td>Not Required</td>
<td>Not Required</td>
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<tr>
<td>Electric Heater Total</td>
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<td>Not Required</td>
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<tr>
<td>Air On Condenser (°CDB)</td>
<td>45</td>
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<tr>
<td>Nominal Full Current (A)</td>
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<td>Air Discharge</td>
<td>Vertical Discharge</td>
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<td>Vertical Discharge</td>
<td>Vertical Discharge</td>
</tr>
<tr>
<td>Type</td>
<td>Air Cooled DX</td>
<td>Air Cooled DX</td>
<td>Air Cooled DX</td>
<td>Air Cooled DX</td>
</tr>
</tbody>
</table>

Other Requirements:

1. The units shall be capable of continuous operation at up to 50°CDB ambient.
2. Each CRAC unit shall have a discreet alarm output card. Provide a dry contact at each CRAC unit for a unit Fault which is normally closed – open on alarm or unit failure/loss of power.

**TENDER PRICE BREAK UP**

**Specification No:** 25580-30-200

**Title:** Mechanical Systems – AEMO UPS Room AC Replacement

This is the Schedule of Prices Break-up. A copy of this Schedule/s is to be completed by the Tenderer and lodged with his Tender.
Prices for all items listed are to be inserted by the Tenderer. The Prices shall include all Sub-Contractor’s cost, including overhead and profit, but exclude the cost of any material or service to be provided free of charge to the Contractor by the Principal.

The Principal reserves the right to reject any tender if the prices submitted are considered unreasonable.

**Contractor shall submit the pricing for both Stage 1 and Stage 2 works separately.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Removal of redundant plant</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>New Air Cooled DX CRAC units</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Ductwork modification</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Pipework systems</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Electrical work</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Controls</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Secure enclosure</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Commissioning, balancing and maintenance</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Shop/as-built drawings</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Operating and Maintenance Manuals</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Miscellaneous Work not included above</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Hiring of Temporary Unit (Stage 1 works only)</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL TENDER PRICE (EXCLUDING GST)** $  

This schedule is part of our Tender and shall become Part of the Sub-Contract.

Tenderer:____________________________________________ Telephone:____________

Name:________________________________________________ Facsimile:____________
SCHEDULE 4 – SUPPORTING INFORMATION

In support of its Tender, the Tenderer must provide the following information:

**Overview**

1. Provide a brief introduction to your organisation.
   a. Provide brief background of your organisation, and the business unit (if applicable) responsible for work such as that outlined here.
   b. Describe a typical project team that would likely be set-up, identifying those roles that you would typically play, and those that would be provided by others.
   c. Describe what you see as the key drivers of a successful implementation.
2. Detail the nature and ownership of all elements of your proposed solution, including:
   a. The nature of your relationship with the organisation (if the solution is not owned by the Tenderer).
   b. Any organisation involved with managing / controlling the solution or receiving fees related to its marketing.
   c. Any third party products integral to your solution

**Relevant Experience**

3. State your experience implementing solutions similar to the Services.
4. Provide details of relevant examples, specifying:
   a. Who was the client?
   b. What were your specific responsibilities? Did they include:
      i. Project management
      ii. System specification
      iii. System technical and detailed design
      iv. System training
      v. Ongoing support and maintenance
   c. What structure did you adopt for the delivery of your services (e.g. sole provider, prime contractor with sub-contractors, sub-contractor to another organisation, etc.)?
   d. Which other vendor/service provider organisations were involved in the delivery of the project?
   e. What were the project milestones for implementation and total time for project delivery?
   f. Is the solution presently operational? If not, when it is expected to become so?
   g. How many resources did you have deployed at various times throughout the project?
5. Provide client reference contact details for relevant engagements, including contact name, telephone number and email address.

**Your Approach**

6. Describe how you would work with AEMO to deliver the Services to meet the requirements in section D of the ITT.
7. List any requirements for AEMO systems and facilities that would be required for installation and interface (where applicable).
8. Discuss any other issues or requirements not outlined in the ITT.
9. Provide a work plan for delivery, testing and installation, including estimated hours/days.
10. Give details of personnel (including names and experience) to be employed, including any sub-contractors you propose to use, and the component(s) of the solution and/or services they would provide.
11. Provide details of post-implementation maintenance and support services you will offer, and demonstrate how they meet the relevant requirements referred to in section D of the ITT.

**Work Locations and WHSE**
12. For Services to be performed at AEMO sites, identify and assess the level of risks of foreseeable hazards associated with that work and describe the methods you will implement to control any risks. Depending on the nature and extent of identified risks at AEMO sites, the successful vendor may be required to provide AEMO with a workplace health and safety (WHS) management plan or safe work method statement (SWMS) before commencing work.

Commercial Information

13. Supply the following information relevant to financial standing and performance:
   - details of your overall turnover, and turnover with respect to the type of services and systems being offered, for the last three financial years;
   - details of any instances of failure by your organisation to complete the contract, or claims for breach of contract (including liquidated damages claims), within the last five years.

Additional Information

14. Provide a high level overview of your Systems Development/Delivery, Project Management and Quality Assurance methodologies. This should be limited to two pages.

15. Provide any other information you feel is relevant. This should be limited to two pages in total.
SCHEDULE 5 – CONFLICTS OF INTEREST

PART A: CONFLICT DECLARATION
Except as identified below, none of the personnel presently identified by [Name of Tenderer] to work on the provision of the Services to AEMO:

1. is, or has a close relative\(^2\) who is, a member, director, employee or contractor of AEMO;
2. is, or has a close relative who is, a director, employee or contractor of a registered participant in a market that AEMO operates or of any business likely to be affected by the Services;
3. has, or has a close relative who has, a material financial interest in a registered participant in a market that AEMO operates or in any business likely to be affected by the Services;
4. has any other affiliation, position, engagement or interest that could reasonably be seen as a conflict of interest with that person’s involvement in the provision of the Services.

Identified Conflicts:

<table>
<thead>
<tr>
<th>Person Affected</th>
<th>Nature of Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART B: HOW EACH CONFLICT IS TO BE ADDRESSED
[The Tenderer must outline how any conflicts of interest identified in Part A are to be addressed.]

\(^{2}\) Spouse, de facto partner, parent, sibling or child.
SCHEDULE 6 – PROPOSED CONTRACT CHANGES

[Delete whichever is not applicable]

[Name of Tenderer] does not propose any changes to the form of contract proposed by AEMO with the Invitation to Tender.

OR

[Name of Tenderer] has included a Word version of AEMO’s form of contract with the Tenderer’s requested changes tracked.
ATTACHMENT: CONTRACT TO BE EXECUTED

See attached.