BUILDING & CONSTRUCTION VERSION

REQUEST FOR TENDER

BY

METRO TASMANIA PTY LTD

SPRINGFIELD DEPOT

FOR

TENDER DESCRIPTION: ADMINISTRATION BUILDING THERMAL PLANT UPGRADE

TENDER NO.: J154048MM

ENQUIRIES ABOUT THIS REQUEST FOR TENDER SHOULD BE DIRECTED TO THE CONTACT OFFICER:

Name: Nathan Stevanovich (on behalf of Metro Tasmania)
Telephone: (03) 6231 2555
Email: nstevanovich@jmg.net.au
Facsimile: (03) 6231 1535
Address: 117 Harrington Street, Hobart, Tas 7000

PLACE FOR LODGEMENT OF TENDER:

Johnstone McGee and Gandy Pty Ltd
117 Harrington Street, Hobart, Tas 7000

CLOSING TIME:

2.00 p.m. (Tasmanian time) Monday 5TH November 2018

ISSUE DATE:

Thursday 11th October 2018

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PART ONE

CONDITIONS OF TENDER

1. DEFINITIONS

In this RFT, unless the context precludes it:

"Closing Time" means the closing time (Tasmanian time) and date for submission of Tenders shown on the cover page of this RFT or as extended under clause 13.2;

"Code of Practice" includes a code of practice approved under Part 14 of the *Work Health and Safety Act 2012*;

"Conditions of Contract" means the AS 2124-1992 general conditions of contract, as amended under Part Three of this RFT and including the annexures to those general conditions of contract set out in Part Three of this RFT;

"Contact Officer" means the person identified as Contact Officer on the cover page of this RFT;

"Department" Not Applicable;

"Formal Instrument of Agreement" has the meaning given to it in the Conditions of Contract;

"Legislative Requirements" means Acts, Regulations, local laws and by-laws, Codes of Practice and any other instruments made under any Act or subordinate legislation, whether State or Federal, which are in any way applicable to the delivery of the Principal's Requirements;

"Person" includes a natural person, a corporation, a partnership, a board, a joint venture, an incorporated association, a government, a local government authority and an agency;

"Principal" means Metro Tasmania Pty Ltd represented by the Department;

"Principal's Requirements" means the Principal's requirements for the works as described in the Specification;

"RFT" means this document inviting Tenderers to offer to deliver the Principal's Requirements by submitting a Tender as provided in this document;

"Specification" means the specifications contained in Part Four of this RFT;

"Standards" means all Australia Standards published by Standards Australia from time to time applicable to the Principal's Requirements;

"Tender" means the documents constituting an offer by the Tenderer to deliver the Principal's Requirements under this RFT;

"Tenderer" means a Person who offers to deliver the Principal's Requirements under this RFT.

2. STATUS OF DEPARTMENT

Not Applicable.

3. NATIONAL CODE OF PRACTICE FOR THE CONSTRUCTION INDUSTRY

A Tenderer must comply with the National Code of Practice for the Construction Industry, 1997 Edition ("the NCPCI"), the Tasmanian Annexure to the NCPCI and the Australian Standard Code of Tendering AS 4120-1994. Lodgement of a Tender constitutes the Tenderer's agreement to comply with the NCPCI for the duration of any subsequent contract that may be awarded to the Tenderer. If a Tenderer fails to comply, the failure may be taken into account by the Principal and may involve:

- a formal warning;
- partial exclusion from Tendering opportunities, that is a reduction in the number of Tendering opportunities; or
- preclusion from Tendering for any work for a specified period.

Compliance with the NCPCI and the Tasmanian Annexure to the National Code of Practice for the Construction Industry is to extend to all subcontractors, consultants and suppliers engaged by the successful Tenderer for the purposes of the delivery of the Principal's Requirements.

For copies of the Code and the Tasmanian Annexure, refer to *www.purchasing.tas.gov.au* > Buying for Government > Resources > Publications.

4. CODE OF TENDERING

The Code of Tendering AS 4120-1994 applies as part of the RFT provided that, to the extent of any inconsistency, the Conditions of Tender will prevail.

5. NATURE OF TENDER

The Tender sum in accordance with these Conditions of Tender must be a lump sum as specified on the Tender Form.

6. TENDER DOCUMENTS

The Tender documents forming part of the RFT are as follows:

- Conditions of Tender;
- Conditions of Contract;
- Specification;
- Drawings;
- Tender Form;
- Compliance Declaration; and
- any other document issued by the Principal for or in connection with the RFT.

7. ADDENDA

7.1 No explanation or amendment to the RFT will be valid unless it is in the form of a written addendum issued by the Principal.

7.2 All addenda to the RFT become part of the RFT.

8. DOCUMENT RETURN

The RFT documents remain the property of the Principal and must be returned to the Principal within seven days of the Closing Time.

9. CONTACT OFFICER

9.1 *Requests for Information*

Requests for information or advice regarding the RFT must be referred only to the Contact Officer.

9.2 *Site Inspections*:

Information on dates, times and locations at which selected sites will be available for inspection can be obtained from the Contact Officer.

10. TENDERER TO ACQUIRE INFORMATION

10.1 A Tenderer, prior to submitting a Tender, must have, and will be deemed to have:

(a) reviewed all aspects of the RFT in detail;

(b) become acquainted with the Conditions of Contract, the Specification and the Principal's Requirements;

(c) assessed the risk and cost of performing the Principal's Requirements within any particular time, cost or quality constraints;

(d) made whatever enquiries it considered necessary in order for it to properly assess the risk and cost of performing the Principal's Requirements within any particular time, cost or quality constraints including appraised and informing itself of all applicable Legislative Requirements and Standards; and

(e) examined the site and its surroundings.

10.2 The Tenderer will be deemed to have satisfied itself as to the accuracy, sufficiency and completeness of its Tender.

10.3 Except to the extent that the amount payable to the successful Tenderer is calculated by reference to a Schedule of Rates, a Tenderer is responsible for determining the actual quantities required to perform the Principal's Requirements.

11. DISCREPANCIES, ERRORS AND OMISSIONS

The Tenderer must notify the Principal in writing on or before the Closing Time, if any discrepancy, error or omission is found in any document forming part of the RFT.

12. TENDER

The Tenderer must:

(a) complete and submit the Tender on the Tender Form provided;

(b) ensure the Tender is for the whole of the works unless otherwise stated in the Tender documents;

(c) if it is a company, enter the name of the company, ACN or ABN, and the address of its registered office;

(d) sign the Tender, or if the Tenderer is a company, affix its common seal and/or have appropriate officers of the company sign the Tender, in either case, in accordance with its Constitution;

(e) complete and submit all other documents required by the Tender Form; and

(f) not alter any Tender document except as required by these Conditions of Tender.

13. RESERVATIONS

13.1 The Principal does not warrant the accuracy of the content of the RFT and the Principal is not liable for any omission from the RFT.

13.2 The Principal may from time to time, by issuing written addenda to the RFT in accordance with clause 7, extend the Closing Time or otherwise add to or vary the RFT. When issuing written addenda, the Principal will ensure that:

(a) copies of all addenda to the RFT are sent to each person who has been issued with, or downloaded, the RFT, to the person's contact address provided to the Department; and

(b) where an addendum results in a substantial change to the RTF and is issued less than 5 working days before the Closing Time, the addendum also extends the Closing Time.

13.3 Where an addendum has been issued, Tenderers must include with their Tender an acknowledgement that the addendum has been received and accounted for in the Tender.

13.4 Quantities stated in the RFT are indicative and for Tendering purposes only unless otherwise specifically stated in the RFT. Where quantities are indicative, the Principal will be liable to accept only the quantities ordered, subject to contract.

13.5 The Principal may cease to proceed with, or suspend the process outlined in the RFT.

13.6 The RFT must not be construed as making any express or implied representation, undertaking or commitment by the Principal that it will enter into a binding contract with any person to supply the Principal's Requirements.

13.7 The Principal may reject a Tender which does not fully comply with the terms of the RFT.

13.8 The Principal reserves the right to accept all or part of a Tender at the price or prices Tendered unless the Tender states specifically to the contrary.

13.9 The Principal is not obliged to accept the lowest priced or any other Tender.

13.10 No representation made by or on behalf of the Principal in relation to the Tender or the RFT (or their subject matter) is binding on the Principal unless it is in writing and is incorporated into the Conditions of Contract entered into under clause 25.

13.11 If a Tender lodged using the Electronic Tender System cannot be read, or is corrupted, illegible, inadequate or incomplete because of encryption, transmission, storage or decryption, so that it is impossible to determine whether the essential requirements of the RFT have been met, the Principal, in its sole and absolute discretion, may reject the Tender.

14. UNAUTHORISED COMMUNICATION

Tenderers must direct all communications through the Contact Officer unless directed otherwise by the Contact Officer. Unauthorised communication with other staff of the Principal may lead to disqualification of the Tender.

15. CONFIDENTIALITY

15.1 The RFT remains the property of the Principal and may be used only to prepare a Tender in response.

15.2 Except for information available to the public generally (other than by breach of these Conditions of Tender), a person receiving the RFT must not publish, disclose or copy any of its content, except to prepare a Tender in response.

15.3 The Tenderer must keep confidential all information provided by the Principal as part of, or in connection with, the RFT.

15.4 All Tenders become the property of the Principal, which may reproduce all or any part of a Tender for Tender evaluation.

15.5 Despite any confidentiality or intellectual property right subsisting in the successful Tender that gives rise to a binding contract with the Principal:

(a) the Principal may reproduce all or any part of that Tender in a contract awarded to the Tenderer, without reference to the Tenderer;

(b) subject to paragraph (c) of this subclause, either party may publish all or any part of that Tender that is included in a contract, without reference to the other; and

(c) neither party may publish any part of that Tender that the Head of Agency has determined should be confidential, during the period determined by the Head of Agency.

15.6 Subject to the previous subclause, the Principal and the Tenderer must hold the Tender in confidence, so far as the law allows, except if:

(a) the information is available to the public generally, other than by breach of this obligation;

(b) a law requires a party to file, record or register something that includes information in the Tender;

(c) disclosure is necessary or advisable to get a consent, authorisation, approval or licence from a governmental or public body or authority;

(d) it is necessary or advisable to make disclosure to a taxation or fiscal authority;

(e) it is necessary to provide the information in the Tender in answer to a question asked of a Minister in the Parliament, or otherwise to comply with a Minister's obligations to Parliament; or

(f) it is disclosed confidentially to a party's professional advisers:

(i) to get professional advice about this tender process; or

(ii) otherwise to consult such professional advisers.

16. CONTENT AND FORMAT OF TENDER

16.1 Tenders must include all the information:

(a) requested in the Specification; and

(b) requested in the RFT generally.

16.2 All items, features and functions specified in the RFT are mandatory requirements unless expressly stated otherwise. Subject to the mandatory conditions for participation as described in clause 23, if a Tender does not comply with mandatory requirements, it may still be considered by the Principal, but the Principal, in its sole and absolute discretion, may reject it under clause 13.7.

16.3 The Tenderer must submit the Tender under cover of the Tender Form provided in Part Two of this RFT. The Tender Form must be completely filled in, and be accompanied by any other supplemental documents necessary to make the Tender complete. A Tenderer may reproduce the Tender Form in an expanded format to provide additional space for response.

16.4 Unnecessarily elaborate responses or other presentations beyond what is sufficient to present a complete and effective proposal are neither desired nor required. Elaborate artwork and bindings, expensive visual and other presentation aids are not necessary.

17. COMPLIANCE

17.1 A Tenderer will be taken to fully agree or comply with the Conditions of Tender, Specification and Conditions of Contract, unless the Tender specifies otherwise.

17.2 If a Tender does not fully comply with the Conditions of Tender, Specification and Conditions of Contract, the Tenderer must include a statement in the Tender specifying each condition or requirement with which the Tenderer does not agree or comply and indicating, for each condition or requirement, whether the offer:

Partially Complies

(This means:

- If a clause imposes a contractual condition, that the condition can only be met subject to certain qualifications. Those qualifications must be stated in full; and
- If a clause specifies a characteristic or performance standard, that the condition can only be met subject to certain conditions. Where this is the case, and the Tenderer is prepared to make good on the condition, characteristic or performance standard, the Tenderer must state or describe how the non-compliance is to be made good.)

Does Not Comply

(This means:

- That the complete contractual condition, or characteristic or performance standard of the clause is not met by the offer. Full details of the non-compliance must be stated.)

OR IS

Alternative

(This means that the Principal's Requirements either:

(a) do not require the feature; or

(b) will fully comply in a manner different from that described.

In either case a full explanation must be provided.)

17.3 The Tenderer must give prominence to statements of non-compliance (as described in clause 17.2) - it is not sufficient if the statement appears only as part of an attachment to the Tender, or is included in a general statement of the Tenderer's usual operating conditions.

18. ALTERNATIVE TENDER

18.1 The Tenderer may submit an alternative proposal if it is clearly identified as an "Alternative Tender" wherever it fails to comply with the specified requirements.

18.2 A Tenderer who submits a Tender which meets the Principal's Requirements in an alternative and practical manner, taking into account the totality of the requirements, must include any supplementary material, together with associated prices, which demonstrates, in detail, that the alternative will fully achieve all the requirements.

18.3 Tenderers are encouraged to offer options or solutions which, in a novel or innovative way, contribute to the Principal's ability to carry out its business in a more cost-effective manner. These may be related to the functional, performance and technical aspects of the requirements or to opportunities for more advantageous commercial arrangements.

18.4 The Principal reserves the right either to consider Alternative Tenders on their merits or not to consider them further.

19. PREPARATION OF TENDERS

The Principal will neither be responsible for, nor pay for, any expense or loss incurred by a Tenderer for:

(a) preparing or lodging a Tender; or

(b) providing additional information or clarification during the evaluation of a Tender.

20. VALIDITY

A Tender constitutes an irrevocable, unalterable offer by the Tenderer to the Principal which must remain valid and open to be accepted for 90 days from the Closing Time of the RFT and may be extended by written agreement.

21. LODGEMENT OF A TENDER

21.1 *Lodgement of tenders*

A Tender must be lodged in accordance with this clause 21.

21.2 *Lodgement using Tender Box*

The original Tender, marked accordingly, may be placed in an envelope clearly marked with the Tender Number, Tender Description, Closing Time and Tenderer's name, and be lodged at the address shown on the cover page by either:

(a) placing it in the Tender Box at
Johnstone McGee and Gandy Pty Ltd, 117 Harrington Street, Hobart; or

(b) posting it so that it is received by
Johnstone McGee and Gandy Pty Ltd, 117 Harrington Street, Hobart, TAS 7000

before the Closing Time.

21.3 *Lodgement by facsimile [Not Applicable[*

A Tender may be submitted by facsimile by faxing the Tender to the fax number for facsimile lodgement shown on the cover page so that it is received before the Closing Time.

Not Applicable

21.4 *Electronic lodgement [Not Applicable]*

A Tender may be submitted by lodging the Tender using the Electronic Tender System so that it is received before the Closing Time. The following provisions apply to the lodgement of a Tender using the Electronic Tender System:

(a) A Tenderer lodging a Tender using the Electronic Tender System must lodge the Tender using a format and the naming conventions set out in the following table. Failure to comply with the format or the naming conventions may result in the Tender not uploading successfully or being rejected.

Format requirements:	• Rich Text Format (RTF); • Adobe Acrobat - Portable Document Format (PDF); • Microsoft Word (DOC); • Microsoft Excel (XLS); or • Image Files (JPG, GIFF, TIFF).
Naming conventions:	• File names must be in English; • File names that contain a space, must have an underscore in the space's place (" _ ") • File names must contain the RFT Number, the name of the document and the Tenderer's name. For example: 'A123_Tender_Submission_ABC_Company.doc" would be a suitable file name.

Not Applicable

(b) A single submission of combined file sizes for a Tender lodged using the Electronic Tender System must not exceed 100 megabytes (100Mb). If a Tender exceeds the specified file size limit, the Tenderer must either:

(i) lodge the Tender in separate parts not exceeding the file size limit, each part to be clearly identified as part of the Tender; or

(ii) lodge the Tender as a compressed (zip) file not exceeding the file size limit; or

(iii) lodge the Tender in accordance with clauses 21.2 or 21.3.

(c) The relevant page for the Tender on the Electronic Tender System will not be accessible after the Closing Time. Lodging a Tender must, therefore, be completed by that time.

(d) If a Tenderer has problems using the Electronic Tender System, the Tenderer must notify the Contact Officer of this before the Closing Time. If the Tender is not successfully lodged using the Electronic Tender System by the Closing Time then the Tender will be a Late Tender and will be accepted, if at all, only under clause 22.

(e) A Tenderer using the Electronic Tender System agrees that, to ascertain the Closing Time, the date and time appearing on the Electronic Tender System website is the conclusive date and time for the lodgement. If that date and time is inconsistent with the date and time of the Tenderer's system, then the former prevails.

(f) A Tenderer using the Electronic Tender System acknowledges that:

(i) the Department does not warrant that unauthorised access to information and data transmitted via the Internet will not occur. A Tenderer releases the Department and its staff from, and indemnifies them against, all claims that arise because unauthorised access occurs during the transmission of information via the Internet; and

(ii) if the Electronic Tender System suffers System Failure, the Department does not warrant that it will be possible to successfully upload (i.e. lodge) a Tender into the Electronic Tender Box.

(g) Lodgement of a Tender, using the Electronic Tender System, is at the Tenderer's sole risk.

(h) A Tenderer lodging a Tender using the Electronic Tender System acknowledges that it has taken reasonable steps to ensure that the Tender is free of viruses, worms or other disabling features which may affect the Electronic Tender System. The Department, at its sole and absolute discretion, may reject a Tender found to contain a virus, worm or other disabling feature.

21.5 *Agreement to be bound*

By lodging a Tender in accordance with this clause 21 and in consideration of the Principal commencing evaluation of the Tender, the Tenderer agrees to be bound by the Conditions of Tender and in particular, clauses 13, 15, 19, 20, 21, 24 and 25 of the Conditions of Tender.

22. LATE TENDERS

22.1 Late Tenders will not be accepted unless the Principal is of the view (and its decision will be absolute and final) that:

(a) circumstances beyond the Tenderer's control were the cause of the lateness; and

(b) accepting a late Tender will not compromise the integrity of the Tendering process or provide any unfair advantage to the Tenderer lodging the late Tender.

PROVIDED HOWEVER clause 22.2 of the Conditions of Tender will apply and not this clause 22.1 in respect of late Tenders lodged in response to a procurement process that is covered by an international free trade agreement that is binding on the Principal.

22.2 A late Tender lodged in response to a procurement process that is covered by an international free trade agreement that is binding on the Principal, will not be accepted by the Principal (and its decision will be absolute and final) unless the delay is solely due to the mishandling by the Department.

22.3 Late Tenders which are not accepted will be marked on the envelope with the time and date of receipt, and be returned to the Tenderer. They will be returned unopened unless it has been necessary to open them to properly identify the Tenderer.

23. CONDITIONS OF PARTICIPATION AND EVALUATION OF TENDERS

23.1 Tenderers will be assessed against the following mandatory conditions of participation. Subject to the conditions of participation being complied with, the evaluation process will then be undertaken with the aim of determining which Tender represents best value for money. In determining value for money, Tenders will be assessed against the following evaluation criteria and weightings:

Conditions of Participation

Only Persons that meet the following mandatory conditions for participation in the RFT process are eligible to submit a Tender:

- Persons that hold all necessary accreditations, certifications, registrations or licences required at law and necessary to undertake work on the Principal's Requirements (reference Tender Condition 27);

- Pre-qualification with the Department of Treasury and Finance (DOTAF) for the tendered value of the contract works (Mechanical Services);
- Apprentices, trainees, labourers are to be supervised by a person fully accredited, registered or licenced to supervise the Services.

Tenders will not be considered from Persons that do not meet the mandatory conditions for participation.

Compliance Criteria

Tenders will then be assessed for compliance against the requirements set out in the RFT document and for an appropriate level of compliance with and acceptance of the Conditions of Contract.

Compliance with the RFT document is taken to mean:

- submission of the Tender by the Closing Date and in accordance with all other lodgement instructions;
- provision of all of the information requested in the RFT; and
- demonstrated ability to meet all Conditions of Tender and Specification requirements.

Qualitative Criteria (60% of the overall evaluation weighting)

- Appreciation of task; including staging, reduction of down-time which will affect the normal operation of the Principal; refer section 2.5 of the mechanical specification for further details; 15%.
- Capability of the Tenderer to fulfil the Principal's Requirements, including relevant skills, experience and availability of personnel, past performance on similar contracts; 10%.
- Local SME Industry Impact Statement; 20%.
- Qualifications, accreditations, certifications, licences and management skills; 15%.

Price (40% of the overall evaluation weighting)

- Tender price including whole-of-life costs, such as on-going maintenance, support and running costs. (40%).

23.2 During the evaluation process, the Tenderer may be required to provide additional information or clarification. The Tenderer must comply with any such requests within the timeframe specified.

24. RIGHT TO NEGOTIATE

24.1 During the period of the evaluation process, the Principal may negotiate with Tenderers to vary their Tenders either on the grounds of technical capability, cost, effectiveness, or matters relating to the combination of one part of the Tender with another part of the Tender.

24.2 The Principal also reserves the right to negotiate with several Tenderers to finalise the commercial terms to form a contract.

New clause added

24A. METRO'S RIGHTS

Metro reserves the right, in its absolute discretion, to:

(a) vary the terms of this RFT, or the structure, requirements or process referred to in this RFT;

(b) seek clarification from any Tenderer if any aspect of their Tender is ambiguous or unclear;

(c) provide additional information to all Registered Tenderers;

(d) notify all Registered Tenderers of any changes to Metro's requirements or to this RFT generally;

(e) extend the Closing Date and Time;

(f) call for new Tenders;

(g) not accept the Tender offering the lowest price;

(h) not accept a Tender lodged by a Tenderer who is not a Registered Tenderer;

(i) consider or accept, or refuse to consider or accept, non-conforming Tenders at its absolute discretion;

(j) not consider any Tender lodged after the Closing Date and Time;

(k) not accept any Tender in its absolute discretion; and

(l) cancel or suspend this RFT, or any processes outlined in this RFT, in its absolute discretion.

Metro will not be liable or in any way responsible for any loss, damage, cost or expense incurred by a Tenderer in the event that Metro exercises any rights referred to in this clause 24A.

25. FORMATION OF CONTRACT

25.1 The successful Tenderer will be required to sign a formal agreement containing the terms and conditions in the Conditions of Contract supplemented by the addition of relevant information, requirements or variations:

(a) contained in the Specification;

(b) contained in the successful Tender;

(c) arising during the Tender evaluation; and

(d) arising out of negotiations after the Tender evaluation.

25.2 Subject to clause 21.5, no contractual relationship or other obligation arises between the Principal and a Tenderer, for the supply of the Principal's Requirements, until the Principal and the successful Tenderer formally exchange signed counterparts of a Formal Instrument of Agreement in respect of the Conditions of Contract. This clause applies despite any oral or written advice to the Tenderer that a Tender is successful or has been, or will be, accepted.

26. PREREQUISITES TO ACCEPTANCE

Notwithstanding any other requirements of the Tender documents the Principal may, before any Tender is accepted, or nominated, require a Tenderer to submit any or all of the following:-

(a) details of previous experience and achievements in performing similar or comparable work;

(b) details of the resources, including construction plant, proposed to be used and ability to carry out the works;

(c) an estimated monthly cash flow schedule;

(d) names of subcontractors other than those to be submitted with the Tender Form to whom it is intended to subcontract part of the works;

(e) names of any other subcontractors invited to provide the Tenderer with submissions in relation to the works; and

(f) details of all priced submissions obtained by the Tenderer in relation to the works.

Should the Tenderer fail to submit any of the information required in the time stipulated, the Principal may treat the Tender as informal.

27. ELIGIBILITY OF TENDERERS

Only contractors pre-qualified to Tender for civic or civil projects that meet the requirements of the RFT are eligible to Tender.

The Principal contracts only with recognised and acceptable legal entities having appropriate financial assets. Tenders will not be considered from entities unless the legal status and suitability of the entity is clear.

Tenderers may be required to provide evidence of their legal status either by giving a copy of an official document such as company registration and names of office bearers issued by the Australian Securities and Investments Commission or a statement confirming the legal entity signed by a practicing solicitor.

Compliance with the Occupational Licensing Act (2005) *and Building Act 2016*

The *Occupational Licensing Act 2005* now addresses the:

- licensing of building practitioners, now referred to as “Building Service Providers” (“**Builders**”); and
- the mandatory insurance of Building Service Providers for the protection of consumers.

The Principal will only contract with Tenderers who comply with the requirements of the *Occupational Licensing Act 2005*.

The *Building Act 2016* along with the *Building Regulations 2016* are laws that commenced from 1 January 2017. The *Building Act* and its Regulations regulate the standards and processes that apply to building work within Tasmania. The Department of Justice’s Website provides information on the building requirements in Tasmania at www.justice.tas.gov.au/building.

The *Building Act 2016* references the National Construction Code (NCC) for technical building standards and plumbing standards.

The Building Act:

- requires all building and plumbing work to be undertaken at a National standard;
- creates the certification process for ensuring the standards are applied; and
- defines who can do the work of a Builder.

The National technical standards for design, construction and installation are contained in the National Construction Code which creates the:

- Building Code of Australia
- Plumbing Code of Australia

These laws and codes and some permits apply to everyone who undertakes building and plumbing work..

The *Building Act* requires that categories of building work, including, the design, construction (or demolition) and assessment of any building work and plumbing work, must be undertaken in accordance with the requirements applying to the relevant type of work as set out in the *Building Act*.

Tenderers must fully inform themselves of all fees, charges or other costs payable by Builders (or their equivalent) under the *Occupational Licensing Act 2005*, the *Building Act 2016* or pursuant to any other Legislative Requirement ("Statutory Payments"). The Contractor must, and is fully liable for meeting, all Statutory Payments unless otherwise specified in the Contract.

Tenderers must complete the "Declaration with Respect to Licences and Registrations" attached to the Tender Form. Failure to complete the Declaration with Respect to Licences and Registrations may exclude the Tenderer's Tender from being considered. Tenderers must hold and must ensure that all employees and subcontractors undertaking any part of the Principal's Requirements hold at all times when undertaking any work on the Principal's Requirements all required accreditations, certifications, registrations or licences relevant to the work that they are undertaking. The reference to accreditations, certifications, registrations and licences is a reference to those things that the Tenderer, its employees or subcontractors must hold in order to undertake the type of work required of them under the Principal's Requirements. This requirement does not refer to specific permits such as building or plumbing permits required to undertake the Principal's Requirements.

28. GOVERNMENT BUILDING AND CONSTRUCTION TRAINING POLICY

Tenderers must comply with the Government Building and Construction Training Policy (the Policy), a copy of which is available from Skills Tasmania at *www.skills.tas.gov.au*.

The Policy provides that contractors engaged on Tasmanian Government building and construction works, including maintenance works, valued at or in excess of $250 000 are required to employ building and construction apprentices and trainees in approved vocational pathways equal to a minimum of 20% of the total hours worked by the labour force (including subcontractors).

Tenderers are required to complete the Compliance Declaration attached to the Tender Form and any failure to complete the Compliance Declaration may exclude the relevant Tender from being considered. The completed Compliance Declaration must be submitted as part of the Tender documents and the Compliance Plan must be forwarded to the Principal within fourteen (14) days of the contract being awarded to the Tenderer.

The Principal will not be liable for any costs incurred by the Tenderer in complying with the Policy.

29. CONTRACTOR PERFORMANCE REPORTS

By lodging a Tender, the Tenderer acknowledges:

(a) that the performance of the Principal's Requirements by the successful Tenderer will be monitored and evaluated by the Principal;

(b) that the successful Tenderer will be required to provide such assistance as is required by the Principal in relation to the above-mentioned monitoring and evaluation;

(c) that all information provided to the Principal for the purpose of the above-mentioned monitoring and evaluation will not be regarded as confidential; and

(d) that all the information gathered by the Principal for the purpose of the above mentioned monitoring and evaluation may be used by all areas of the Tasmanian Government for the purpose of evaluating future Tenders or offers by the successful Tenderer to perform other works.

30. GENERAL WORKPLACE HEALTH & SAFETY REQUIREMENTS

The Tenderer, if appointed, must at all times, identify, comply with and exercise all necessary, duties and precautions for the health and safety of all persons including the Tenderer's employees, subcontractors, subcontractor's employees, employees of the Principal and other persons who may be affected by the delivery of the Principal's Requirements. In this regard, the Tenderer must at all times be aware of and discharge its obligations under the *Work Health and Safety Act 2012* and the *Work Health and Safety Regulations 2012* and all other Legislative Requirements.

The Tenderer will inform itself of all workplace health and safety duties, Codes of Practice, policies, procedures or measures required under the *Work Health and Safety Act 2012* and the *Work Health and Safety Regulations 2012*, any other Legislative Requirement and otherwise by the Principal and/or the occupiers of any premises at or within which the successful Tenderer will perform the Principal's Requirements. The Tenderer will comply with all such duties, Codes of Practice, Standards, policies, procedures or measures; and in the event of any inconsistency, will comply with such duties, Codes of Practice, policies, procedures or measures that produce the highest level of safety. The Tenderer must comply with any and all directions by or on behalf of the Principal relating to workplace health and safety.

31. LEGISLATIVE COMPLIANCE AND STANDARDS

The Tenderer, if appointed, must comply with and ensure that all of its employees, subcontractors and agents comply with the provisions of all Acts, Regulations, local laws and by-laws, Codes of Practice, Standards and the Principal's Health and Safety policy and procedures, which are in any way applicable to the Conditions of Contract or the delivery of the Principal's Requirements.

32. METRO POLICY ON CONFIDENTIALITY

32.1 Non-Disclosure

Both parties agree, in respect of any Confidential Information:

(a) subject to clause 32.2 (Representatives), not to disclose such information to any person, without the prior written consent of the disclosing party, unless and until:

  (i) such information becomes generally available to the public in printed publications in general circulation in Australia, through no action, default or other breach by the recipient party; or

  (ii) the recipient party is required by law to make disclosure, and then only to such extent; and

(b) to keep such documents and any other material containing or incorporating any Confidential Information, in safe custody.

32.2 Representatives

Each party may, notwithstanding clause 32.1 (Non-Disclosure), disclose Confidential Information to such of its representatives who may need such information and only to the extent so needed and permitted by any applicable Legislative Requirements, to enable such party to fulfil its obligations under this document.

32.3 Survival

This clause 32 (Confidentiality) survives the expiry or termination (for any reason) of this Agreement.

33. DEBRIEFING

33.1 Request for debriefing

Unsuccessful Tenderers are encouraged to request a debriefing from the Department to discuss the reasons for their non-selection. A Tenderer who would like a debriefing should contact the Contact Officer.

33.2 Timing for debriefing

If requested to do so, the Department will provide a debriefing for an unsuccessful Tenderer after either:

(a) a contract has been exchanged for the supply of the Principal's Requirements; or

(b) the Department decides not to award a contract for the supply of the Principal's Requirements.

34. COMPLAINTS PROCESS

A Tenderer may lodge a complaint if the Tenderer believes the Department's tender process has not complied with the Tasmanian Government's procurement policies. Further information on the formal complaints process is available from the Tasmanian Government Purchasing website at *www.purchasing.tas.gov.au*, or may be obtained in hard copy from the Contact Officer.

35. SECURITY OF PAYMENT – IMPORTANT INFORMATION FOR CONTRACTORS AND SUB-CONTRACTORS

The Tasmanian Government has enacted the *Building and Construction Industry Security of Payment Act 2009* to assist in providing security of payment and timely payments for contractors and sub-contractors in the building and construction industry.

Further information on this Act can be located on the Workplace Standards Tasmania website at www.wst.tas.gov.au>Safety and Compliance>Legislation and Codes of Practice.

36 PROPORTIONATE LIABILITY

(a) In this clause, "Proportionate Liability Legislation" means Part 9A of the *Civil Liability Act 2002* (Tas) (and any equivalent statutory provisions in any other state or territory).

(b) To the extent permitted by law, it is the Principal's intention that the operation of the Proportionate Liability Legislation is excluded in relation to all and any rights, obligations and liabilities under the contract entered into with the successful Tenderer and whether such rights, obligations or liabilities are sought to be enforced by a claim in contract, tort or otherwise.

37 TRAINING LEVY – *BUILDING AND CONSTRUCTION INDUSTRY TRAINING FUND ACT 1990*

The work described in this tender document may be subject to a Training Levy payment as required under the *Building and Construction Industry Training Fund Act 1990*. It is the successful tenderer's responsibility to establish whether the levy applies and, if so, to pay the levy prior to commencement of work. Any queries relating to the Training Levy should be directed to the Tasmanian Building and Construction Industry Training Board (TBCITB) by phone, (03) 6223 7804, by email, email@tbcitb.com.au, or in writing to CEO, TBCITB, PO Box 105, Sandy Bay TAS.

38 ZERO TOLERANCE TOWARDS VIOLENCE AGAINST WOMEN

(a) Violence against women is defined by the United Nations as “any act of gender based violence that results in or is likely to result in physical, sexual or physiological harm or suffering to women”.

(b) The Principal upholds a zero tolerance policy towards violence against any person in the workplace. The Contractor acknowledges and undertakes to uphold a zero tolerance policy towards violence against any person in the workplace in its interaction with employees, agents and subcontractors of the Principal and in delivery of the Principal’s Requirements.

(c) The Contractor must and will ensure that its employees, agents and subcontractors will at all times in delivery of the Principal’s Requirements act in a manner that is non-threatening, courteous and respectful.

(d) If the Principal reasonably believes that any of the Contractor’s employees, agents or subcontractors are failing to comply with the behavioural standards specified in this clause then the Principal may in its absolute discretion:

  (i) prohibit access by the relevant employees, agents or subcontractors to the Principal’s premises; and

  (ii) direct the Contractor to withdraw the relevant employees, agents or subcontractors from providing the Principal’s Requirements.

PART TWO

TENDER FORM

TENDER FORM

BUILDING AND CONSTRUCTION

Tenderer:
(Use block letters) . . . . . .

Address: of. . . . . .
(For notices)
. . . . . .

1. I/We hereby tender to perform the work required under:

   Tender Description Metro Tasmania – Springfield Depot – Administration Building Thermal Plant Upgrade

   Tender No. J154048MM

2. This Tender is lodged in accordance with the following listed documents:

   (a) Tender Form

   (b) Conditions of Tender

   (c) General conditions of contract AS 2124-1992 as amended under Part Three of the RFT and including the annexures to those general conditions of contract set out in Part Three of the RFT

   (d) Specification

   (e) Drawings

   (f) Government Building and Construction Training Policy Compliance Declaration

   (g) all addenda (if any) to the RFT, issued under clause 13.2 of the Conditions of Tender

   (h) the further documents required under section 3 of this Tender Form

   (i) WHS Contractor Management System Questionnaire

   (j) Declaration with respect to licences and registrations.

3. I/We confirm the following supplementary documentation has been submitted with the Tender as required under the RFT:

Document Description	**Number of Pages Submitted**

4. I/We offer to deliver the Principal's Requirements for the tender sum of (Exclusive of GST)

……..

……

Tender Sum (Exclusive of GST) $.....

5. By signing this Tender Form, the Tenderer declares that:

(a) the Conditions of Tender are agreed;

(b) the information and particulars provided as part of the tender are accurate and correct;

(c) it complies with and ensures that all employees, subcontractors and agents comply with the provisions of the *Work Health and Safety Act 2012*, the *Building and Construction Industry Security of Payment Act 2009* and all other Legislative Requirements;

(d) it meets the requirements of the Workplace Health and Safety Contractor Management System Questionnaire;

(e) it meets any site-specific Workplace Health and Safety issues detailed in the Specification; and

(f) it has received and accounted for the following addenda (if any) to the RFT:

The Tenderer must list below all addenda to the RFT that it has received.

Signed by the Tenderer or for and on behalf of the Tenderer by a person who by his/her signature duly warrants his/her authority to sign ……

Name of Signatory (please print) …….

Name of Tenderer: ……

Address of Tenderer: …….

……

(Include facsimile number. and telephone number) ……..

ABN of Tenderer: ……..

Accredited Building Practitioner No. (*Building Act 2016*) ……

Dated the day of 20

TENDER PRICE BREAKDOWN

Tenderers must provide a detailed dissection of their Tender Price in the following format with their Tender Submission.

Component	Proposed Contractors	Price $
New air/water heat pump chillers		
New thermal storage tanks/primary pumps and primary pipework		
New secondary pipework and modifications to existing pipework		
Supply & installation of New heating water coils HC-1 and HC-2, including demo of existing and modifications to AHU's to accommodate each		
New circulating pump P-1		
Dunbar works to blast clean coils		
Existing Switchboard Works		
New Switchboard MSSB-THERMAL		
Electrical and Control Cabling		
Controls and BMS Upgrade		
System Commissioning		
Air Balancing		
Associated Building Works, including Steelwork		
Maintenance of all Equipment listed in the Maintenance Schedules		
Cranage and Hoistage		
Ancillary Items		
	Total Tender Price (excluding GST)	**$**

SCHEDULE OF SPECIALIST SUBCONTRACTORS

The Tenderer is required to nominate subcontractors for all subcontracts with a value of $250 000 or more for each of the specific work categories listed below. The Tenderer may nominate one or more subcontractors in any of these work categories, providing that they nominate only subcontractors that are prequalified with the Department of Treasury and Finance in the relevant work category, to a level at least equal to the value of the proposed subcontract.

For confirmation of subcontractor prequalification status telephone Chris Robertson, Department of Treasury and Finance on (03) 6166 4220 or email: chris.robertson@treasury.tas.gov.au.

SCHEDULE OF SPECIALIST SUBCONTRACTORS (AS 2124-1992) Annexure Part B Clause 9.2

Work Categories	**Name**	**Sum $**
Electrical services		
Mechanical services		
Fire services		
Building systems - monitoring and control		
Facilities management and maintenance		

Signed by the Tenderer or for and on behalf of the Tenderer by a person who by his/her signature duly warrants his/her authority to sign ……

Name of Signatory (please print) ……

Name of Tenderer: ……

Address of Tenderer: ……

……

(Include facsimile number and telephone number) ……

ABN of Tenderer: ……

Dated the day of 20

GOVERNMENT BUILDING AND CONSTRUCTION TRAINING POLICY COMPLIANCE DECLARATION

(This Declaration will be included in Tender documentation for Tender and contracts valued equal to or greater than $250 000.)

This Declaration must be completed by the Tenderer and returned with the Tender Form. Failure to do so may result in the Principal treating the Tender as informal. Tenderers must comply with the Government Building and Construction Training Policy.

The Principal shall not be liable for any costs incurred by the contractor in meeting any of the requirements of the Policy.

Information on the Government Building and Construction Training Policy is available from Skills Tasmania at *www.skills.tas.gov.au*. I declare that I will ensure that all works undertaken as part of the project will comply with the Government Building and Construction Training Policy.

I will ensure that all subcontractors utilised by me during the contract period will also act within the scope of the Policy.

I undertake that I will submit a Compliance Plan within fourteen (14) days of the contract being awarded to the Tenderer, an Interim Compliance Report as requested by the contracting agency and a Final Compliance Report to the contracting agency at practical completion.

I will submit a Statutory Declaration with both the Interim and Final Compliance reports declaring that the contents of those reports are true and correct.

Signed by the Tenderer or for and on behalf of the Tenderer by a person who by his/her signature duly warrants his/her authority to sign ……

Name of Signatory (please print) ……

Name of Tenderer: ……

Address of Tenderer: ……

……

(Include facsimile number and telephone number) ……

ABN of Tenderer: ……

Dated the day of 20

DECLARATION WITH RESPECT TO LICENCES AND REGISTRATIONS

Tenderer:
(Use block letters) . . . . . .

Address: of. . . . . .
(For notices)
. . . . . .

The Tenderer declares that it, all its employees that will undertake any of the Principal's Requirements and all of its nominated subcontractors hold at the date of this Declaration all required accreditations, certifications, registrations or licences required at law for it or them to undertake their work on the Principal's Requirements.

Signed by the Tenderer or for and on behalf of the Tenderer by a person who by his/her signature duly warrants his/her authority to sign ……

Name of Signatory (please print) ……

Name of Tenderer: ……

Address of Tenderer: ……

……

(Include facsimile number and telephone number) ……

ABN of Tenderer: ……

Dated the day of 20

This Declaration must be completed by the Tenderer and returned with the Tender Form. Failure to do so may result in your Tender not being evaluated.

The reference to accreditations, certifications, registrations and licences is a reference to those things that the Tenderer, its employees or subcontractors must hold in order to undertake the type of work required of them under the Principal's Requirements (for example, plumbing practitioner licences or electrical contractor licences). This requirement does not refer to specific permits such as building or plumbing permits required to undertake the Principal's Requirements.

WORKPLACE HEALTH AND SAFETY (WHS) CONTRACTOR MANAGEMENT SYSTEM QUESTIONNAIRE

The objective of this Questionnaire is to provide an overview of the status of a contractor's workplace health and safety management system. The Questionnaire is intended only to indicate whether the contractor has a basic level of commitment and capacity to achieve effective workplace health and safety management.

Contractors that can provide a current certified copy of Third Party Quality Assurance (Occupational Health and Safety) will not be required to complete this Questionnaire.

Prior to engagement, successful contractors will be required to provide a completed Questionnaire and verify their responses by providing evidence of their ability and capacity in relevant matters.

Prior to the commencement of works, the contractor will also be required to provide any site-specific workplace health and safety details and plans.

Please note that contractors are not required to send a completed WHS Contractor Management System Questionnaire with their Tender submission. The Questionnaire is only included for the contractor's self-assessment and to enable contractors to sign the declaration of the Tender Form. However, it is recommended that contractors retain a copy of the Questionnaire for their own record, as it will be required if they are the successful Tenderer.

		Yes/No
1.	**Health and Safety Policy and Management**	
1.1	Is there a written company health and safety policy?	
1.2	Does your company have procedures to update OH&S information and maintain ongoing awareness of OH&S regulations (e.g. relevant memberships/subscriptions or available consultant)?	
2.	**Safe Work Practices and Procedures**	
2.1	Has the company prepared safe operating procedures or specific safety instructions relevant to its operation?	
2.2	Is there a formal and/or documented incident investigation procedure?	
2.3	Are there procedures for maintaining, inspecting and assessing the hazards of plant operated/owned by the company?	
3.	**Health and Safety Training**	
3.1	Does your company have an induction program for new employees and subcontractors and also provide task specific training for new users of equipment or those that are unfamiliar with how to complete a specific task?	
3.2	Does your company have emergency response procedures in place and organise for employees to attend first aid training?	

		Yes/No
4.	**Health and Safety Workplace Inspection**	
4.1	Are regular health and safety inspections conducted at work sites where your employees or subcontractors are present?	
5.	**Health and Safety Consultation**	
5.1	Does your company make provision for health and safety communication and consultation (for example toolbox meetings, employee involvement in inspections)?	
6.	**Health and Safety Offences**	
	Can you confirm that in the past five years your organisation has not been convicted of an occupational health and safety offence, nor been served with an improvement or prohibition notice? *If No, prior to engagement, you will be required to provide details of the offence or notice and provide evidence of the appropriate remedial/corrective action that the company has taken.*	

Local SME Industry Impact Statement (template)

Introduction

The Tasmanian Government is committed to maximising opportunities for local SME* businesses in competing for, and winning, Government procurements. As part of this commitment, suppliers are required to provide a statement of industry impact as part of their submission. This statement is aimed at enabling suppliers to outline how their proposed supply of goods/services will provide a positive impact on the local industry.

Your local SME industry impact statement is an essential part of your submission and will be used by the agency to evaluate your submission. The statement will contribute a minimum of twenty per cent (20%) of the procurement evaluation. Suppliers that fail to submit a statement will not be able to be scored in relation to this criterion.

Agencies will assess this criterion by rating the degree to which a supplier's submission has satisfied the categories below, before the weighting is applied. The criterion is not treated as a simple "met/not met" assessment.

Local SME industry impact statement

Please provide comment on how your submission will positively impact the local industry/economy. You should answer all of the questions below. You will need to ensure you can verify the information you submit and where possible should provide actual numbers of staff/values of goods and/or services in your statement.

Local Industry impact of the business

What is the direct local impact of your business?

Examples: Are you a local SME (how many people do you employ, where is your business located, what is the ownership)? How many people do you employ in Tasmania? Would any new SME jobs be created by the proposed contract - how many?

Goods and services to be utilised in the contract

How much of the goods and services in your submission will be provided by/sourced from local SMEs (this includes goods/services you provide as well as goods/services procured/produced from suppliers/sub-contractors/partners)?

Identify the goods and/or services you expect to purchase in order to complete the contract and provide the requested information in relation to same, where known.

Identified goods and/or services	**Total estimated value**	**Name of supplier anticipated to be used (if already determined through existing supply chain arrangements)**	**Location of supplier (where already determined through existing supply chain arrangements)**	**If supplier not yet determined, is there a local SME market for same?** (Yes/No)

Opportunity for Local SME involvement

Will you source components of your offer from other local SME companies/sub-contractors or is there new work to be undertaken locally as a result of you fulfilling the contract or workers travelling to the local area to undertake the work? How much?

Detail how you intend to identify and engage with sub-contractors and/or other SMEs in relation to the delivery of the contract including your supply chain ie use of existing supply chains, advertising of sub-contracting or supply opportunities, liaison with industry groups, etc.

Detail the process that you are to undertake to ensure that local SMEs are not disadvantaged where competing with other suppliers in the provision of goods and/or services to be used as part of this contract (ie unpacking of procurements into smaller components so that local SMEs can compete more effectively etc).

Broader economic opportunities

Are there any other impacts that your business and/or this specific supply will provide to the local/regional economy?

Examples: Your supply may lead to: new skills being developed locally; trainees/apprentices being appointed; cross transfer skills to a local SME partner/sub-contractor; your company (if you are not a local SME) setting up an office/employing local staff; scale for you to take your products/services interstate/overseas; local community sponsorship etc.

Completed and endorsed

.....
(Name and position – print)

.....
(Signature)

...../...../.....
(Date)

* Local SMEs are Australian and New Zealand businesses employing less than 200 people, consistent with the obligations under various free trade agreements and procurement arrangements by which the Tasmanian Government is bound.

PART THREE

CONDITIONS OF CONTRACT INCLUDING ANNEXURES

Conditions of Contract

The Conditions of Contract are the general conditions of contract (AS 2124-1992), as amended under this Part Three and including the annexures to those general conditions of contract set out in this Part Three.

ANNEXURE PART A

This Annexure is to be attached to the General Conditions of Contract and shall *form* part of the Contract.

1	The law applicable is that of the State or Territory of: (Clause 1)	*Tasmania*
2	Payments under the Contract shall be made at: (Clause 1)	*Hobart, Tasmania*
3	The Principal: (Clause 2)	*Metro Tasmania Pty Ltd*
4	The address of the Principal: Postal address:	212 Main Road Moonah TAS 7009 *(PO Box 61 Moonah TAS 7009)*
	The Principal's Representative:	*Ian Ward (General Manager Operations)*
	The address of the Principal's Representative:	212 Main Road Moonah TAS 7009 *(PO Box 61 Moonah TAS 7009)*
5	The Superintendent: (Clause 2)	*Johnstone McGee and Gandy Pty Ltd*
6	The address of the Superintendent:	*117 Harrington Street Hobart TAS 7000*
7	Limits of accuracy applying to quantities for which the Principal accepted a rate or rates: (Clause 3.3(b))	*Not applicable, the Principal has not accepted rates*
8	Bill of Quantities - the alternative applying: (Clause 4.1)	*Not applicable, there is no Bill of Quantities*
9	The time for lodgement of the priced copy of the Bill of Quantities: (Clause 4.2)	*Not used*
#10	Contractor shall provide security in the amount of: (Clause 5.2)	*Security shall be 5% of the Contract Sum. Additional Security of $5,000 to be held until satisfactory load tests of heat pumps in both Heating and Cooling.*
#11	Principal shall provide security in the amount of: (Clause 5.2)	*Not applicable, the Principal is not required to provide security*

#12	The period of notice required of a party's intention to have recourse to retention moneys and/or to convert security: (Clause 5.5)	*5 days*
13	The percentage to which the entitlement to security and retention moneys is reduced: (Clause 5.7)	*50% Contract Sum only*
14	Interest on retention moneys and security - the alternative applying: (Clause 5.9)	*Alternative 2*
15	The number of copies to be supplied by the Principal: (Clause 8.3)	*2 bound copies*
16	The number of copies to be supplied by the Contractor: (Clause 8.4)	*Three*
17	The time within which the Superintendent must give a direction as to the suitability and return the Contractor's copies: (Clause 8.4)	*14 days*
18	Work which cannot be subcontracted without approval: (Clause 9.2)	*All Works*
19	The percentage for profit and attendance: (Clause 11(b))	*An amount not exceeding 10 per cent of the amount payable by the Contractor to the Subcontractor for the work or item.*
20	The amount or percentage for profit and attendance: (Clause 11(c))	*An amount not exceeding 10 per cent of the amount payable by the Contractor to the Subcontractor for the work or item.*
20A	Legislative Requirements not required to be satisfied by Contractor: (Clause 14.1 - as amended)	*The Contractor is required to satisfy all Legislative Requirements.*
21	Insurance of the Works—the alternative applying: (Clause 18)	*Refer amended clause 18 in Annexure Part B and clause 13 Annexure Part C*
22	The assessment for insurance purposes of the costs of demolition and removal of debris: (Clause 18(ii))	*Not applicable*
23	The assessment for insurance purposes of consultants' fees: (Clause 18(iii))	*Not applicable*

24	The value of materials to be supplied by the Principal: (Clause 18 (iv))	*Not applicable*
25	The additional amount or percentage: (Clause 18(v))	*Not applicable*
26	Public Liability Insurance - the alternative applying: (Clause 19)	*Refer amended clause 19 in Annexure Part B and clause 13 Annexure Part C*
27	The amount of Public Liability Insurance shall be not less than: (Clause 19)	*$20,000,000* *Excess as quoted in the insurance policy is the responsibility of and paid for by the Contractor.*
28	The time for giving possession of the Site: (Clause 27.1)	*Within 14 days after exchange of signed counterparts of the Contract as evidenced by the date of the Formal Instrument of Agreement*
#29	The Date for Practical Completion: (Clause 35.2)	*The Contractor will ensure the work under the Contract reaches Practical Completion by no later than within 16 weeks after the date of the Formal Instrument of Agreement*
#30	Liquidated Damages per day: (Clause 35.6)	*Five hundred dollars ($500) per day*
#31	Limit of Liquidated Damages: (Clause 35.7)	*Not limited*
#32	Bonus per day for early Practical Completion: (Clause 35.8)	*Not applicable, there is no bonus for early Practical Completion*
#33	Limit of bonus: (Clause 35.8)	*Not used*
#34	Extra costs for Delay or Disruption: (Clause 36)	*Nil, that is the Contractor will not be entitled to extra costs for Delay or Disruption in respect of any event other than a delay or disruption event under Clause 35.5(b)(i)*
#35	The Defects Liability Period: (Clause 37)	*12 months*
36	The Charge for overheads, profit, etc. for Daywork: (Clause 41(f))	*Nil*
37	Times for Payment Claims: (Clause 42.1)	*Monthly, submitted on the last day of each month*
38	Unfixed Plant and Materials for which payment claims may be made notwithstanding that they are not incorporated in the Works: (Clause 42.1(ii))	*Nil, that is the Contractor is not permitted to make any payment claims in respect of any items of plant or materials that are not incorporated in the Works*

39	Retention Moneys on: (Clause 42.3)	*Not used*
40	Unfixed Plant or Materials - the alternative applying: (Clause 42.4)	*Alternative 1*
41	The rate of interest on overdue payments: (Clause 42.9)	*The appropriate rate of interest on overdue payments will be determined in accordance with Section 15 of the Security of Payment Act 2009 (Tas)*
42	The delay in giving possession of the Site which shall be a substantial breach: (Clause 44.7)	*3 months*
43	The alternative required in proceeding with dispute resolution: (Clause 47.2)	*Alternative 1*
44	The person to nominate an arbitrator: (Clause 47.3)	*Institute of Arbitrators and Mediators Australia*
45	Location of arbitration: (Clause 47.3)	*Hobart, Tasmania*

ANNEXURE PART B

NOTE: This table is intended for easy reference to clauses that may have been deleted, amended or added to Australian Standard 2124—1992

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1. The following Clauses have been deleted from the General Conditions in AS 2124—1992:

Clause 8.6 Confidential Information

Clause 8.7 Media Releases

Clause 30.2 Quality Assurance

Clause 35.8 Bonus for Early Practical Completion

2. The following Clauses have been amended and differ from the corresponding Clauses in AS 2124—1992:

Clause 2 Interpretation

Clause 2 is amended by adding the following new definitions:

'Working Day' means any day on which banks, as defined in the Banking Act 1959 (Commonwealth), are open for business in the area in which the Works are situated excluding rostered days off. Rostered days off are defined in the calendar of the Master Builders' Association of Tasmania.

'Broker' means an insurance broker nominated by the Principal.

'Formal Instrument of Agreement' means a formal instrument of agreement based on the Australian Standard Form of Formal Instrument of Agreement in respect of AS 2124-1992, and which is in a form satisfactory to the Principal.

'Insurance Office' means an insurance office nominated by the Principal.

"Code of Practice" includes a code of practice approved under Part 14 of the Work, Health and Safety Act 2012.

"Legislative Requirements" means Acts, Regulations, local laws and by-laws, Codes of Practice and any other instruments made under any Act or subordinate legislation, whether State or Federal, which are in any way applicable to the delivery of the Principal's Requirements.

Clause 2 is amended by deleting the definition of 'Date of Acceptance of Tender' and replacing it with the following new addition:

'Date of Acceptance of Tender' means the date of the signed Formal Instrument of Agreement.

Clause 3.3 Adjustment for Actual Quantities - Schedule of Rates

Clause 3.3 is amended by adding the following paragraph to the end of clause 3.3:

Despite the preceding paragraphs of this Clause 3.3, adjustments for actual quantities shall be in accordance with the procedures specified in Annexure Part C and if there is any inconsistency between Clause 3.3 and Annexure Part C, Annexure Part C will prevail.

Clause 5 Security, Retention Moneys and Performance Undertakings

Clause 5.3 is amended by deleting the first and second paragraph of Clause 5.3 and substituting the following:

The security shall be in the form of an unconditional undertaking given by an approved financial institution or an unconditional performance bond given by an insurance company approved by the Principal. The wording of the unconditional undertaking or the bond (as the case may be) must be in a form approved by the Principal.

Clause 6 Evidence of Contract

Clause 6 is deleted and replaced with the following new clause 6:

6.1 No Contract in Absence of Formal Instrument of Agreement.

The evidence of the Contract shall be the exchange of a Formal Instrument of Agreement signed by both parties, or the exchange of signed counterparts of a Formal Instrument of Agreement, and no contract shall arise until either such exchange has occurred.

Clause 9.2 Subcontracting

Clause 9.2 is deleted and replaced with the following new clause 9.2:

The Contractor shall not without the written approval of the Superintendent, which approval shall not be unreasonably withheld, subcontract or allow a subcontractor to assign or subcontract any of the work under the Contract.

With a request for approval, the Contractor shall provide to the Superintendent particulars in writing of the work to be subcontracted and the name and address of the proposed subcontractor.

The Contractor shall provide to the Superintendent other information that the Superintendent reasonably requests, including the proposed subcontract documents without prices.

Within 14 days after a request by the Contractor for approval, the Superintendent shall advise the Contractor of approval or the reasons why approval is not given.

Approval may be conditional upon -

(a) the subcontract including -

(i) provision that the subcontractor shall not assign or subcontract without the consent in writing of the Contractor;

(ii) provisions that may be reasonably necessary to enable the Contractor to fulfil the Contractor's obligation to the Principal; and

(b) the Contractor ensuring that:

(i) where the value of any of the subcontracts exceeds $20 000 AS 2545-1993 is used as the basis of the subcontract;

(ii) for all subcontracts that have a value of $250 000 or more to provide building works–institutional, building works-residential, mechanical services, electrical services, fire services, building systems–monitoring and control, and facilities management and maintenance – it engages only subcontractors who are prequalified, with the Department of Treasury and Finance, in those specific work categories, to a value that is at least equal to the value of the subcontract;

(iii) the conditions applying to supply contracts (within building contracts) will remain unchanged;

(iv) all subcontracts that have a value of $20 000 or more must be in writing; and

(v) where the subcontract incorporates AS 2545-1993 as the contract conditions, the subcontract will contain no amendments other than that necessary to reflect the head contract conditions of contract.

(c) the Contractor warranting that the subcontract will be entered into in accordance with the requirements of Clause 9.2 (b).

Clause 10.5 Direct Payment of Nominated Subcontractor

Clause 10.5 is deleted and replaced with the following new clause 10.5:

In respect of Nominated Subcontract work performed by a Nominated Subcontractor, the Principal shall make payment directly to the Nominated Subcontractor. Except where the Contractor has accepted an assignment of the benefit of a prior contract made between the Principal and a Nominated Subcontractor -

(a) such payment shall be made on behalf of the Contractor; and

(b) if the Contractor reasonably requests the Principal in writing not to make a payment to the Nominated Subcontractor, the Principal shall withhold payment but under no circumstances, including bankruptcy or winding up of the Contractor, shall payment be made to the Contractor.

Clause 10.6 Termination of Nominated Subcontract

Clause 10.6 is deleted and replaced with the following new clause 10.6:

The Contractor shall not unreasonably terminate a subcontract for Nominated Subcontract Work and as early as possible the Contractor shall notify the Superintendent of the Contractor's intention to terminate and the reasons. If a Nominated Subcontractor repudiates or abandons a subcontract or it is terminated, the Contractor shall forthwith notify the Superintendent in writing and the Superintendent shall proceed under Clause 10.3 to nominate a Nominated Subcontractor to complete the subcontract work. Alternatively, the Contractor may notify the Superintendent that the Contractor elects to complete the subcontract work without the use of a further Nominated Subcontractor.

Clause 11(b) shall only apply where the Contractor has terminated the subcontract due to insolvency of the subcontractor for any of the reasons listed in Clause 44.11(a) to (l).

In all other circumstances the Contractor shall be paid only the amount which it would have been paid pursuant to Clause 11(b) if the subcontract had not been terminated.

Clause 11 Provisional Sums

Clause 11 is amended by adding the following paragraph to the end of clause 11:

Despite the preceding paragraphs of this Clause 11 the amount or percentage for profit and attendance shall be as specified in Annexure Part C.

Clause 18 Insurance of the Works

Clause 18 is deleted and replaced with the following new clause 18:

18.1 Principal to insure

On or before the Date of Acceptance of Tender, the Principal shall effect a policy of insurance in relation to the work under the Contract in the terms of the policy or proposed policy included in Annexure Part C. The Principal shall maintain the policy while the Contractor has an interest therein and the Contractor shall pay all premiums.

If the Contractor considers that the insurance cover taken out by the Principal is not sufficient to cover the Contractor's liabilities then the Contractor shall take out and pay for additional insurance as the Contractor considers necessary.

18.2 Excess

Any excess or deductible as quoted in the insurance policy taken out under Clause 18.1 is the responsibility of, and to be paid by, the Contractor upon demand. Any excess or deductible payable but unpaid by the Contractor shall be treated as a debt due from the Contractor to the Principal.

Clause 19 Public Liability Insurance

Clause 19 is deleted and replaced with the following new clause 19:

19.1 Principal to insure

On or before the Date of Acceptance of Tender, the Principal shall effect in relation to the work under the Contract a public liability policy of insurance in the terms of the policy or proposed policy included in Annexure Part C. The Principal shall maintain the policy while the Contractor has an interest therein and the Contractor shall pay all premiums.

If the Contractor considers that the insurance cover taken out by the Principal is not sufficient to cover the Contractor's liabilities then the Contractor shall take out and pay for additional insurance as the Contractor considers necessary.

19.2 Excess

Any excess or deductible as quoted in the insurance policy taken out under Clause 19.1 is the responsibility of, and is to be paid by, the Contractor upon demand. Any excess or deductible payable but unpaid by the Contractor shall be treated as a debt due from the Contractor to the Principal.

Clause 40 Variations

Clause 40.1 is amended by adding the following paragraph to the end of clause 40.1:

Notwithstanding the provisions of Clauses 40.2 and 40.5 the Contractor shall not be reimbursed for "reasonable costs" incurred in complying with the requirements of these clauses beyond the total 12.5% allowance to be applied to variations as specified in Annexure Part C.

Clause 40.5 Valuation

Clause 40.5 is amended by adding the following paragraph to the end of clause 40.5:

Notwithstanding the provisions of Clause 40.5 sub-clauses (a) to (h) inclusive, valuation of variations and application of allowances for Contractor's profit and attendance shall be applied as specified in Annexure Part C.

3. The following Clauses have been added to those of AS 2124—1992:

After clause 8, the following new clause 8A is added:

Clause 8A Confidentiality

8A.1 Parties may disclose contract provisions

Despite any confidentiality or intellectual property right subsisting in this Contract or a tender giving rise to it, either party may publish, without reference to the other, all or any part of this Contract, except those parts identified in Annexure Part D ("Confidential Provisions").

8A.2 Limited confidentiality for Confidential Provisions

(a) The Head of Agency has determined that the Confidential Provisions must remain confidential.

(b) The parties must maintain confidentiality of the Confidential Provisions for the period determined and approved by the Head of Agency, so far as the law allows, except to the extent that:

(i) the Confidential Provisions are available to the public generally, other than by breach of this Contract;

(ii) a law requires a party to file, record or register something that includes the Confidential Provisions;

(iii) disclosure is necessary or advisable to get a consent, authorisation, approval or licence from a governmental or public body or authority;

(iv) it is necessary or advisable to disclose the Confidential Provisions to a taxation or fiscal authority;

(v) it is necessary to disclose the Confidential Provisions in answer to a question asked of a Minister in the Parliament or otherwise to comply with a Minister's obligations to Parliament;

(vi) the Confidential Provisions are disclosed confidentially to a party's professional advisers:

(A) to get professional advice about this Contract; or

(B) to enforce this Contract; or

(vii) the parties agree otherwise in writing.

8A.3 Contractor must not disclose other material

Subject to clause 8A.1, the Contractor must not publicly disclose, or use for a purpose other than this Contract, any information or material acquired or produced in connection with, or by performing, this Contract ("Confidential Material"), without the Principal's prior written consent, except to the extent that:

(a) the Confidential Material is available to the public generally, other than by breach of this Contract;

(b) a law requires the Contractor to disclose, file, record or register something that includes Confidential Material;

(c) disclosure is necessary or advisable to get a consent, authorisation, approval or licence from a governmental or public body or authority;

(d) it is necessary or advisable to disclose the Confidential Material to a taxation or fiscal authority;

(e) the Confidential Material is disclosed confidentially to professional advisers:

(i) to get professional advice about this Contract; or

(ii) to enforce this Contract; or

(f) the parties agree otherwise in writing.

8A.4 Employees to comply

The parties must ensure that their respective employees who have access to the Confidential Provisions, Confidential Material, or both, are aware of, and comply with, all confidentiality obligations affecting it.

8A.5 Privacy obligations preserved

Nothing in this clause derogates from a party's obligations under the Personal Information Protection Act 2004 (Tas) or the Privacy Act 1988 (Cwlth).

Clause 14.5 Goods and Service Tax (GST)

After clause 14.4, the following new clause 14.5 is added:

Unless expressly stated otherwise all fees or other sums payable or any other consideration provided or to be provided under or in connection with the Contract are GST exclusive.

Unless expressly stated otherwise a party (in this Clause called the "Supplier") making a taxable supply under or in consideration with the Contract may recover from the party (in this Clause called the "Recipient") to whom the taxable supply is made, the amount of any GST (the "Additional Amount") payable under the GST Act on the Taxable supply.

The Additional Amount must be paid at the same time when payment of the monetary consideration for the taxable supply is due.

If either party is entitled under the Contract to be reimbursed or indemnified by the other party for a cost or expense incurred in connection with the Contract, the reimbursement or indemnity payment must not include any GST component of the cost or expense for which an input tax credit may be claimed by the party entitled to be reimbursed or indemnified, or by its representative.

Terms and expressions used in this clause which are defined in the GST Act have the same meaning given to those terms and expressions in that Act. "GST Act" means the A New Tax System (Goods and Services Tax) Act 1999 including all amendments made to the Act and any other regulations and other instruments made under the Act.

Clause 17A Proportionate Liability

After clause 17.2 the following new clause 17A is added:

(a) In this clause, "Proportionate Liability Legislation" means Part 9A of the Civil Liability Act 2002 (Tas) (and any equivalent statutory provisions in any other state or territory).

(b) To the extent permitted by law, the operation of the Proportionate Liability Legislation is excluded in relation to all and any rights, obligations and liabilities under this Contract, whether such rights, obligations or liabilities are sought to be enforced by a claim in contract, tort or otherwise.

(c) Without limiting Clause 17A(b), the rights, obligations and liabilities of the parties under this Contract with respect to proportionate liability are as specified in this Contract and not otherwise, whether such rights, obligations and liabilities are sought to be enforced by a claim in contract, tort or otherwise.

(d) To the extent permitted by law:

(i) the Contractor must not seek to apply the provisions of the Proportionate Liability Legislation in relation to any claim by the Principal against the Contractor (whether in contract, tort or otherwise); and

(ii) if the provisions of the Proportionate Liability Legislation are applied in relation to any claim by the Principal against the Contractor (whether in contract, tort or otherwise) the Contractor will indemnify the Principal against any loss or damage the Principal is not able to recover from the Contractor because of the operation of those provisions.

(e) The Contractor must ensure that all policies of insurance covering third party liability which the Contractor is required by this Contract to effect or maintain:

(i) cover the Contractor for potential liability to the Principal assumed by reason of the exclusion of the Proportionate Liability Legislation; and

(ii) do not exclude any potential liability the Contractor may have to the Principal under or by reason of this Contract.

Clause 24A Principal's Representative

After clause 24, the following new clause 24A is added:

24A Principal's Representative

The Principal may from time to time appoint, and revoke or alter the appointment of, an individual or individuals (the Principal's Representative) to exercise any functions of the Principal under the Contract. The Principal's Representative at the Date of Acceptance of Tender is the person named as such in Annexure Part A and the Principal delegates all of its functions and obligations to this Principal's Representative. There may be more than one Principal's Representative at any one time. The appointment of a Principal's Representative shall not prevent the Principal from exercising any function. The Principal shall forthwith notify the Contractor in writing of:

(a) the appointment and the name of any Principal's Representative and the functions delegated to the Principal's Representative; and

(b) the termination of the appointment of a Principal's Representative.

Clause 47 Resolution of Disputes

After clause 47.4, the following new clause 47.5 is added:

47.5 ***Resolution of Disputes***

47.5.1 ***Notice***

*If a party has a dispute or complaint against the other, that party (**Notifying Party**) must notify the other party in writing (signed) by hand delivery, posted, emailed or faxed. The Notifying Party must ensure that the notice contains specific detail identifying the nature of the dispute or complaint.*

47.5.2 ***Best endeavours to resolve***

Both parties within 21 days of the delivery of a dispute notice will meet and use their

best endeavours to resolve the dispute or complaint to the mutual satisfaction of both parties as soon as possible.

47.5.3 ***Arbitration***

(a) *If the parties are not able to reach a resolution of the dispute or complaint within a reasonable period of time (in any event being no more than 21 days after the date of receipt of the notice of the dispute or complaint), then the dispute or complaint must be submitted for arbitration in accordance with, and subject to, The Institute of Arbitrators & Mediators Australia Fast Track Arbitration Rules (**Referral of Dispute**).*

(b) *The parties must consult with a view to selecting a single arbitrator but in the event they are unable to agree on the appointment of a single arbitrator within 10 days of the Referral of Dispute, the matter will be referred to an arbitrator to be appointed by the President (or their nominee) for the time being of the Law Society of Tasmania.*

(c) *The decision of the arbitrator must be final and conclusive and binding on the parties and the parties must sign all documents and do all things necessary to give effect to the decision of the arbitrator.*

(d) *Each party must bear their own costs of and incidental to the arbitration, except where stipulated to the contrary by the arbitrator.*

(e) *For disputes or complaints which involve a claim for less than $50,000.00, arbitration will take place by way of written submissions supported by relevant documents alone unless both parties agree otherwise.*

47.5.4 ***Exceptions***

Nothing in this clause 47.5 prevents:

(a) *either party from seeking urgent interlocutory relief;*

(b) *Metro from seeking recovery for any claim that Metro reasonably considers to be a monetary claim,*

from a Court of competent jurisdiction or by such other manner as is appropriate in the circumstances; or

(c) *Metro from exercising its rights to terminate this document.*

47.5.5 ***Continuing obligations***

The parties agree to continue to perform their obligations under this document, notwithstanding the existence of a dispute or complaint.

47.5.6 ***Survival***

This clause 47.5 survives the expiry or termination (for any reason) of this document.

Clause 49 Workplace Health & Safety Requirements

After clause 48, the following new clause 49 is added:

While the Contractor has control of the Site:

(a) The Contractor must at all times comply with the requirements of the Work Health and Safety Act 2012 and the Work Health and Safety Regulations 2012 and all other Legislative Requirements.

(b) For the avoidance of doubt, the Contractor is for the purposes of the Work Health and Safety Act 2012 and the Work Health and Safety Regulations 2012 the "Principal Contractor" as described in Regulation 293.

(c) The Contractor must, when requested by the Superintendent, promptly provide evidence, satisfactory to the Superintendent, of ongoing performance of and compliance with the Contractor's health and safety management system and in particular must provide the following information:

(i) number of lost-time injuries on the Site;

(ii) working days lost due to injury on the Site;

(iii) current status of any injured personnel, damaged property or environmental damage or pollution;

(iv) status of the implementation and outcomes of corrective actions undertaken as a result of required workplace health and safety inspections and risk assessments; and

(v) status of workplace health and safety management system audits undertaken.

(d) The Contractor must, when requested by the Superintendent, promptly provide reports on workplace health and safety inspections, audits or assessments undertaken and any notices issued pursuant to Legislative Requirements during the course of the Contract.

(e) The Contractor must promptly notify the Superintendent of any accident, death, injury, workplace related illness, property or environmental damage that occurs during the carrying out of the work under the Contract. All lost time incidents shall be immediately notified to the Superintendent. The Contractor must within 3 working days of any such incident, provide a report to the Superintendent giving complete details of the incident, including results of investigations into its cause, and any recommendations or strategies for prevention in the future.

(f) If during the carrying out of work under the Contract the Superintendent informs the Contractor that it is the opinion of the Superintendent that the Contractor is:

(i) not conducting work in compliance with the Contractor's Safety Management Plan, relevant health and safety management procedures or relevant legislative requirements;

(ii) conducting work in such a way as to endanger the health and safety of the Contractor's employees, subcontractors or other persons; or

(iii) otherwise in breach of any health and safety duty under any Legislative Requirements.

then the Contractor must promptly rectify the deficiencies identified by the Superintendent. The Superintendent may also direct the Contractor to suspend the work until such time as the Contractor satisfies the Superintendent that the work will

be carried out in conformity with applicable health and safety requirements, and the Contractor must comply with any such direction. During the period of any such suspension, the Principal will not be required to make any payment whatsoever to the Contractor under the Contract. The Principal will also have no obligation whatsoever for any costs or losses incurred by the Contractor as the result of delays due to the suspension. If the Contractor fails within a reasonable time stipulated by the Superintendent to rectify any such deficiency for which the work has been suspended, or if the Contractor's performance has involved recurring breaches of applicable health and safety requirements, the Principal may terminate the Contract without further obligation to the Contractor. In this event, the Principal's total liability will be limited to payment for the work properly performed and costs properly incurred by the Contractor up to the time of the suspension of works.

Clause 50 Security of Payment Act

After clause 49, the following new clause 50 is added:

50.1 Application of the Security of Payment Act

"Security of Payment Act" means the Building and Construction Industry Security and Payment Act 2009. This clause will apply if that Act applies.

50.2 Service of Notices under the Security of Payment Act

(a) The Contractor shall:

(i) ensure that a copy of any written communication it delivers to the Principal in relation to the Security of Payment Act is also provided to the Superintendent at the same time.

(ii) provide, to the Principal and the Superintendent, a copy of any notice or other communication which it receives under or in relation to the Security of Payment Act; and

(iii) when the Contractor becomes aware that a subcontractor is entitled to suspend work pursuant to the Security of Payment Act, promptly and without delay give the Principal and the Superintendent a copy of any written communication it receives from the subcontractor; and

(b) The Principal shall ensure that a copy of any written communication it delivers to the Contractor in relation to the Security of Payment Act is provided to the Superintendent at the same time.

50.3 Payment Claim

The date prescribed in clause 42.1 as the time for payment claims is, for the purposes of the Security of Payment Act, the "reference date".

The Principal may deduct from progress payments the retention amount stated, if any, in the Annexure (in addition to any other amount that the Principal may be entitled to deduct).

50.4 Suspension of Works under the Security of Payment Act

If the Contractor suspends all or part of the work under the Contract pursuant to the Security of Payment Act, the suspension in itself shall not affect the Date for Practical Completion but may be a ground for an extension of time under Clause 35.5.

Except where otherwise required by the Security of Payment Act, the Principal shall

not be liable for any costs, expenses, damages, losses or other liability suffered or incurred by the Contractor as a result of the suspension.

The Contractor must continue to comply with its obligations in respect to all statutory requirements as referred to in clause 14.

50.5 Sub-contractor Suspension

If the Principal becomes aware that a sub-contractor is entitled to suspend work pursuant to the Security of Payment Act, the Principal may (if it wishes) pay the sub-contractor such money that may be owing to the sub-contractor and any amount paid by the Principal shall be a debt due from the Contractor to the Principal.

50.6 Indemnity

The Contractor shall indemnify the Principal against all damage, expense, loss or liability incurred by the Principal arising out of a suspension of the work by a sub-contractor properly exercising its rights under the Security of Payment Act.

Clause 51 Supplementary Conditions of Contract

After clause 50, the following new clause 51 is added:

Supplementary conditions of the Contract are set out in Annexure Part C.

Clause 52 Licences and registrations

After clause 51, the following new clause 52 is added:

Notwithstanding anything else in this Contract and without limitation, the Contractor must hold and must ensure that all its employees and its subcontractors undertaking any work under the Contract hold at all times when undertaking any Works all required accreditations, certifications, registrations or licences relevant to the work under the Contract that they are undertaking.

Clause 53 Zero tolerance towards violence against women

After clause 52, the following new clause 53 is added:

(a) *Violence against women is defined by the United Nations as "any act of gender based violence that results in or is likely to result in physical, sexual or physiological harm or suffering to women".*

(b) *The Principal upholds a zero tolerance policy towards violence against any person in the workplace. The Contractor acknowledges and undertakes to uphold a zero tolerance policy towards violence against any person in the workplace in its interaction with employees, agents and subcontractors of the Principal and in delivery of the Principal's Requirements.*

(c) *The Contractor must and will ensure that its employees, agents and subcontractors will at all times in delivery of the Principal's Requirements act in a manner that is non-threatening, courteous and respectful.*

(d) *If the Principal reasonably believes that any of the Contractor's employees, agents or subcontractors are failing to comply with the behavioural standards specified in this clause then the Principal may in its absolute discretion:*

(i) *prohibit access by the relevant employees, agents or subcontractors to the Principal's premises; and*

(ii) *direct the Contractor to withdraw the relevant employees, agents or subcontractors from providing the Principal's Requirements.*

ANNEXURE PART C

This Annexure, which is not part of AS 2124-1992, is to be attached to the General Conditions of Contract contained in AS 2124-1992 as amended and shall form part of the Contract.

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1. "STANDARD SPECIFICATIONS"

References to "**Standard Specifications**" in the Contract shall mean NATSPEC Standard Specifications.

1A Further Definition

The following further definition is included in and forms part of the Contract:

"Standards" means all Australian Standards applicable to the Principal's Requirements published by Standards Australia.

2. DOCUMENTS

General Requirements NATSPEC Basic apply to the Contract.

3. CONTRACTING

3.1 Measurement of Work

For the purposes of the Contract, work must be measured as follows:

(a) **Building Work -** In accordance with the Australian Standard Method of Measurement of Building Works Edition 5.

(b) **Civil Engineering Work -** In accordance with AS 1181 Method of Measurement of Civil Engineering Works and Associated Building Works.

3.2 Import Costs

- The Contractor must allow for costs of imported materials, plant and equipment purchased for incorporation in the Works, including costs for customs and import duty; and
- Reimbursement claims for variations to the exchange rates shall only be accepted if the imported equipment, exchange rate, and applicable date have been identified in the Contractor's Tender.

3.3 Separate Contracts

- Contracts shown in the Separate Contracts Schedule are not included in this Contract, but will be carried out concurrently by others on the Site;
- The Superintendent shall give notice to the Contractor of his intention when letting separate contracts. Operations of separate contractors shall be carried out so as not to impede the progress of the Works. Separate contractors shall be provided access to the Works to execute their work;
- The Contractor shall be neither remunerated nor responsible for separate contracts but shall be responsible for damage to the Works of the separate contracts due to Contractor's negligence or that of the Contractor's subcontractors or nominated subcontractors; and

- The Contractor shall permit free use of the sanitary accommodation provided for the Works.

3.4 Notice and Fees

All costs, fees and charges associated with the Contractor complying with Clause 14 of the Contract must be paid by the Contractor.

4. NOMINATED SUBCONTRACTS

- The Contractor must allow for profit, co-ordination, supervision and general attendance upon Nominated Subcontractors.
- The Contractor must provide at no cost to the Nominated Subcontractor all normal facilities for the performance of the nominated subcontract, including the following:
    - access to the site;
    - storage areas;
    - storage of tools;
    - water for use in the Works;
    - statutory requirements for drinking water, messing, changing and sanitary accommodation;
    - first aid and safety measures;
    - scaffolding and hoisting facilities as provided for, and during the period of the Contractor's own use, including operators, but not labour for loading or unloading; and
    - lighting, and facilities for making connections to a power supply as specified in clause 9.2 of this Annexure.
- Additional facilities required and cutting of holes, chases, making good or other builder's work required in connection with the work of a Nominated Subcontractor, unless elsewhere specified or shown on the drawings, shall be the responsibility of the Nominated Subcontractor concerned.
- Refer to the Specification for the schedule of Nominated Subcontract.

5. ADMINISTRATION

5.1 Programme of Work

- Within 10 Working Days of the Date of Acceptance of Tender the Contractor must provide 3 copies of a construction programme, showing planned weekly progress and a provision for entering comparative actual progress. If the actual progress for any item of work shown deviates from that forecast by the bar chart or it is considered that the bar chart does not show a satisfactory programme, the Contractor must provide within 5 Working Days, a revised and satisfactory programme. Any application for extension of time shall be supported by information derived from the bar chart and its revisions;
- The Contractor must submit within 10 Working Days of the Date of Acceptance of Tender, 2 copies of a report directly related to the programme showing:
    - anticipated monthly progress claims for the duration of the Contract; and

- individual monthly claims and cumulative totals;

- Whenever a Bar Chart is revised or it is determined that any progress payment has deviated from the projected cash flow, the Contractor must provide a revised cash flow report within 5 Business Days.

- Within 10 Working Days of the Date of Acceptance of Tender the Contractor must provide 3 copies of a construction program notification ('C.P.N.') of the proposed construction programme, and permanently display a copy on site in an approved location. The extent, detail, number of activities indicated, and general format of the document shall show the following:

  - relationship and sequence of each building activity;

  - earliest and latest starting date for each building activity;

  - latest date for nomination of subcontractors and suppliers and permission for use of shop drawings;

  - latest date for receipt of details from the Superintendent and subcontractors; and

  - continuously monitor and update the C.P.N as necessary to minimise consequences of known or anticipated delays to the Works to the satisfaction of the Superintendent. Application for extension of time must be supported by information clearly based upon the current C.P.N;

- The Contractor must provide 2 copies of a weekly status report in an approved format. The report must show the following activities in working day units:

  - scheduled duration;

  - elapsed time;

  - remaining time;

  - time ahead of or behind programme;

  - indicated finishing date;

  - activities subject to known or anticipated delays; and

  - current 10 most critical activities listed with a reference number, activity description, scheduled duration, extent complete and time ahead of or behind completion;

- The Contractor must provide at the start of each week a schedule of the major items proposed for the following 10 Business Days in the form of a simple bar chart. Within 2 Business Days of the start of each week the Contractor must provide the Superintendent with 2 copies of the schedule and 1 copy to all other parties concerned; and

- The Contractor must prepare checklists if requested showing the balance of work by building activities in small areas, rooms, etc. Show the balance of work in man-hours per building activity to ensure adequacy of labour as Practical Completion is approached.

5.2 Site Meetings

The Contractor must:

- provide accommodation for site meetings; and
- record and distribute minutes of the meeting within 3 Working Days of the meeting. The minutes must clearly state the party or parties from whom action is required. The Contractor must bring forward this requirement to the successive meetings until satisfactorily discharged. Distribution of minutes must be to:
    - the Superintendent; and
    - all other interested parties.

6. VARIATIONS, PROVISIONAL SUMS AND PROVISIONAL QUANTITIES

6.1 Variations

All variations shall be valued in accordance with the provisions of Clause 40 of the Contract. In valuing a variation the following procedure and percentage adjustments shall apply:

6.1.1 Variations Priced at Reasonable Rates or Prices

Where a rate in a Schedule of Rates, Schedule of Prices or Priced Bill of Quantities is not applicable the following procedure shall be used to price a variation at reasonable rates or prices in accordance with Clause 40.5 of the Contract.

6.1.2 Debit (Extra) Variations

The value of debit (extra) variations (i.e. variations which increase the Contract Sum) shall be the sum of all labour, materials, plant and subcontract costs calculated as follows:

6.1.3 Net Variation Price comprising:-

Building Construction Labour. Labour shall be priced at the On-Site Loaded Building Wage (calculated by the Master Builders' Association of Tasmania) for the relevant labour, plus 32.5%;

- the net cost of material;
- the net cost of any plant hire; and
- subcontract components shall be costed by the subcontractor on the basis of labour, material and plant calculated in accordance with the above.

The above components shall be totalled to give the Net Variation Price.

- add 7.5% to the Net Variation Price to include for Contractor's profit and attendance; and
- add a further 5% to the cumulated sum calculated. This 5% allows for preliminaries, overheads and administration costs associated with executing the variation.

6.1.4 Credit Variations

The value of credit variations (i.e. variations which reduce the contract sum) shall be calculated as follows:

- the allowance included in the Tender for labour, materials, plant and subcontracts relating to the item or work deleted shall be totalled to give the Net Variation Price; and

- reduce the Net Variation Price by 5% to allow for preliminaries, overheads and administration costs associated with processing the variation.

The 7.5% allowance for profit and attendance shall not be applied to credit variations.

6.2 Variations Priced at Bill of Quantities Rates or Schedule of Rates Prices

6.2.1 Debit (Extra) Variations

Debit (extra) variations priced at Bill of Quantities rates or Schedule of Rates prices shall be calculated as follows:

- Price the quantity of additional works at the applicable rate/rates included in the contract documents totalled to give a Net Variation Price; and
- Add 5% to the Net Variation Price to allow for preliminaries, overheads and administration costs associated with executing the variation.

(Profit and attendance is deemed to be included in the rates included by the Contractor in its priced Bill of Quantities or Schedule of Rates and is therefore not adjusted).

6.2.2 Credit Variations

Credit variations priced at Bill of Quantities rates or Schedule of Rates prices shall be calculated as follows:

- Price the quantity of deleted works at the applicable rate/rates included in the contract documents totalled to give a Net Variation Price; and
- Reduce the Net Variation Price by 5% to allow for preliminaries, overheads and administration costs associated with processing the variation.

(Profit and attendance is deemed to be included in the rates included by the Contractor in his priced Bill of Quantities or Schedule of Rates and is not adjusted).

6.3 Provisional Sums

Notwithstanding the requirements of Clause 11 and Clause 40.5 of the Contract, Valuation, adjustment of Provisional Sums shall be net. The Contractor's Tender allowance for profit and attendance on Provisional Sums shall be adjusted in accordance with the following:

- the Contractor's Tender allowance for profit and attendance on Provisional Sums will not be adjusted unless the total sum of the adjusted value of all Provisional Sums exceeds the total sum of the value of the Provisional Sums included in the Tender documents. Where this occurs a 12.5% allowance will be added to the increase between the total value of the Provisional Sums included in the Tender documents and adjusted value of all Provisional Sums; and
- if the total sum of the adjusted value of all Provisional Sums does not exceed the total sum of the value of the Provisional Sums included in the Tender documents the Contractor's Tender allowance for profit and attendance will not be adjusted.

6.4 Provisional Quantities

- Adjustment of Provisional Quantities will be net at the applicable Bill of Quantities or Schedule of Rates prices with no adjustment to the Tendered rates.

- The Contractor shall include for all Provisional Quantities costs and profit and attendance associated with the particular provisional item or quantity in the rate for that item in its priced Bill of Quantities or Schedule of Rates.

7. SITE

7.1 Site Identification

The area within the boundaries shown on the drawings.

7.2 Occupied Premises

- Before commencement of the Works the Superintendent shall convene a meeting with the Contractor and the person in charge of the premises, to determine the programming necessary for the performance of the Works in areas available to the Contractor or not available, and to ensure the building can continue to function; and

- The Contractor must protect the occupants, their activities and equipment from fumes, dust, dirt, noise, moisture or other nuisance.

7.3 Contractor's Site Areas

- The Contractor must restrict use of the site for temporary works, construction plant, working and storage areas, location of offices, workshops, sheds, roads, parking and the like, to those areas shown on the drawings or as approved.

- The Contractor must restrict workmen to that part of the site where the Works are being carried out.

7.4 Setting Out

When requested the Contractor must certify that the Works have been correctly located.

7.5 Existing Services

The Contractor must notify the Superintendent immediately and await instructions if existing services not shown in the Contract documents are encountered, obstructed or damaged in the course of the work under the Contract.

7.6 Adjoining Property

The Contractor must:

- arrange a joint inspection with the Superintendent and the owners and/or occupants of adjoining properties prior to commencement and on completion of the Works;

- at initial inspection, make detailed records of conditions existing within the adjoining properties, especially structural defects and other damage or defacement. Arrange for not less than two copies of each record, including drawings, written descriptions, and photographs, to be endorsed by the owners and occupants, or their representative, as evidence of conditions existing before commencement of work. Provide one endorsed copy of each record to the Superintendent. Keep the other endorsed copy on site;

- give notice of intention to commence work to owners and/or occupants of adjoining property, and give them an outline description of the type and extent of the work;

- not demolish or damage adjoining property shown on the drawings as encroachments on to the Site; and

- should the Works reveal encroachments of adjoining property on to the site or encroachments of existing site structures on to adjoining property, and should such encroachments be not referred to in the Contract, obtain instructions immediately such encroachments are revealed.

8. ENVIRONMENTAL PROTECTION

8.1 Smoking

Smoking will not be permitted in any building or facility owned or occupied by a Government Department.

8.2 Dust control

The Contractor must restrict dust caused by the work under the Contract to a minimum.

8.3 Existing flora

The Contractor must protect from damage all trees and other plants which:

- are shown or specified to be retained, or
- are beyond the limits allowed to the Contractor, or
- which need not be removed or damaged for construction operations.

8.4 Environmental control

The Contractor must submit for approval proposals for traffic movement, temporary structures, lamps, cleaning up, burning-off, erosion control, demolition, formation of new and alteration of existing tracks, erection of camps, removal of flora and cutting of fences.

8.5 Noise control

- The Contractor shall take all practical precautions to minimise noise resulting from work under the Contract. Fit all construction equipment with noise suppressors and use so that noise is minimised;
- All work, including demolition, excavation and building work must comply with AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites;
- The Contractor shall fit jackhammers and other noisy hand-held tools used in the performance of the work with effective silencers of a type recommended by the tool manufacturer. Tools and silences shall be kept in first class condition. The Contractor shall supervise operators of jackhammers to ensure that silencers are always in place while the tools are being used; and
- All compressor sets used in the performance of the work shall be fitted with effective acoustic canopies and special engine exhaust silencers of a type recommended by the compressor manufacturer. Alternatively, the Contractor shall keep compressor sets and canopies in first class condition, and keep access panels in acoustic canopies closed while sets are running.

9. PLANT [NOT APPLICABLE]

9.1 Site Offices [Not Applicable]

The Contractor must provide for the Superintendent where directed a temporary weather-proof office as follows:

- floor Area: 12 m2;
- 900 deep bench full width office, with two plan drawers under and two 250 deep shelves over, three hat and coat hooks, and night latch with two keys;
- one stool, 1200 x 750 table and three chairs;
- one 2 x 40w light fitting, one P.O. a 2Kw moveable electric heater and a separate telephone service;
- submit proposals for design and construction of site office for approval;
- maintain in a clean and proper order. Remove from site on completion of the Works; and
- pay all electricity charges and, telephone installation, rental, and removal charges, but not call charges.

Not Applicable

9.2 Temporary Services [Not Applicable]

- The Contractor must provide and maintain the following temporary services necessary for the execution of the work under the Contract. Install such services in accordance with the requirements of the relevant authorities. Pay charges in connection with the installation and use of such services. Make such services available to subcontractors. On completion, disconnect temporary services, remove and make good;
- The Contractor must provide electricity on each floor at a central point or points such that all parts of the Works requiring power can be reached by a 70 metre lead, through a minimum of four 10 A single phase 240 V GPO's and one 30 A 3 phase 4 wire 415 V welding outlet and adequate lighting for the construction of the Works;
- The cost of electricity from a permanent power supply used for testing plant and equipment shall be borne by the Principal;
- The Contractor must provide temporary potable water supply for building purposes;
- The Contractor must provide clean sanitary accommodation for use of persons employed upon the Works; and
- The Contractor must provide a telephone service available for use by the Superintendent. The Contractor shall be reimbursed for all call charges incurred by the Superintendent.

Not Applicable

9.3 Existing Services

The Contractor is permitted to use the following existing services for the execution of the work under the Contract. Arrange with the Superintendent for their use and pay any charges in connection with their use. Make these services available to subcontractors. On completion leave services in good order to approval:

- power;
- water; and
- sanitary accommodation.

9.4 Signboards [Not Applicable]

- The Contractor is to allow for the supply, erection and dismantling of the project signboard. The design and wording shall be as to the drawing provided with the

contract documents. The location of the board shall be as directed by the Superintendent;

- At Practical Completion the Contractor must dismantle, remove and make good to existing work;

Not Applicable

- The signboard is to remain the property of the Principal; and

- The Contractor's signboard is to be an approved design, located where directed, and accommodating all subcontractors' advertisements. At Practical Completion the Contractor must dismantle, remove and make good to existing work.

10. COMPLETION [NOT APPLICABLE]

10.1 Vermin [Not Applicable]

Not Applicable

The Contractor must employ an approved firm of pest exterminators and provide a certificate from the firm stating that the completed building is free of vermin, if required.

11. MATERIALS AND WORKMANSHIP

11.1 Standards

- The Contractor must comply with all applicable Standards in performance and delivery of the Principal's Requirements.

- The Contractor must and is deemed to fully informed and appraised itself of, and to remain fully informed and appraised of, all applicable Legislative Requirements and Standards.

- If there is any ambiguity or inconsistency between any applicable Standards, then the Standard to be complied with and achieved will be the higher applicable Standard.

11.2 Samples

- Where the provision of samples are specified it is for the purpose of approval;

- The Contractor must incorporate into the Works only materials and products, which comply with or lie within a range defined by the approved sample. Keep approved samples in good condition on site until Practical Completion; and

- The Contractor shall be solely responsible for the consequences of delay resulting from failure to allow adequate times for the assessment and approval of samples.

11.3 Testing

- Any testing required to be by an independent testing authority shall be carried out by an authority registered with the National Association of Testing Authorities Australia (NATA) to perform the specified testing;

- Where evidence of compliance of tests is required it shall precede the inclusion of the material or product into the Works; and

- If the period of viability specified is exceeded such evidence shall be deemed to have lapsed.

11.4 Proprietary Items

- Any product or service identified by graphic representation or by a proprietary item naming one or more of the following: manufacturer, supplier, installer, trade name, brand name, catalogue or reference number, and the like in the contract documents.

- The identification of products or services as a proprietary item shall not necessarily imply exclusive preference for the item so identified, but shall be deemed to indicate the required properties of the item, such as type, quality, appearance, finish, method of construction, performance and the like.

- A similar alternative product or service having the required properties may be offered for approval. When offering an alternative for approval the Contractor must provide all available technical information, itemised monetary amount and any other relevant information requested by the superintendent. If so requested, obtain and submit reports on relevant tests by an independent testing authority (NATA).

- If the alternative offered is approved the Contract shall be adjusted in accordance with the procedures specified in – Clause 40.

- Any approved alternative shall be used, fitted, installed and finished in accordance with the written instructions of the supplier or manufacturer. State whether the use of the alternative will require alteration to any other parts of the Works.

11.5 Items Supplied By Principal

Where materials and other items are specified to be supplied free of charge to the Contractor for use in the execution of the Works, the Contractor must take delivery of the materials and other items under the specified conditions and in accordance with the Contract.

11.6 Joining Up

The Contractor must carry out the joining of new work to existing work, and any consequent cutting away, in a manner appropriate to the materials, and make good to existing work.

11.7 Salvaged Items

Contractor's Property: Unless otherwise specified, materials, plant, equipment or other things salvaged from the Works shall become the property of the Contractor and shall be removed from the Site;

Principal's Property: The Contractor must recover intact, clean, store where directed on the Site, and protect from damage until removed by the Principal;

Salvages by Principal: Items specified in the Salvaged Items Schedule will be salvaged and removed from the site by the Principal; and

Items for Preservation: The Contractor must preserve and protect the items specified in the Salvaged Items Schedule.

11.8 Items for Incorporation in the Works

The Contractor must recover intact, clean, store and protect from damage until incorporated into the Works as specified.

12. ASBESTOS

- The Contractor must ensure that asbestos is not used as part of or for the purposes of carrying out the work under the Contract.

- Before commencing on the Site any Work under the Contract, the Contractor must check the Site's asbestos register (being any register required to be maintained in

respect of asbestos in accordance with any Legislative Requirements and hereafter referred to as the "Register") and have regard to the presence or presumed presence of any recorded asbestos containing materials. If one is not available, it must be assumed that no assessment of asbestos containing materials has been undertaken.

- If the Register states that it is presumed that asbestos materials are present, no validation sampling will have been conducted. Therefore, before commencing on the Site any work under the Contract, the Contractor will be required to conduct all necessary validation sampling of materials. The Contractor must allow for the costs of conducting all required validation sampling as part of its tender for the work under the Contract.

- If asbestos containing materials (identified in the Register) are removed, the Contractor must ensure that the Register is updated by ensuring that copies of all documentation relating to any validation, interference or removal work are included in the Register.

- If asbestos containing material or material suspected of containing asbestos is discovered on the Site, the Contractor must:

  - stop work in the immediate area;

  - advise the Superintendent, and Workplace Standards Tasmania by phoning: 1300 366 322 (inside Tasmania) or (03) 6166 4600 (outside Tasmania) or by emailing: wstinfo@justice.tas.gov.au; and

  - await instructions from the Superintendent.

- The Contractor must treat all asbestos products encountered as part of or for the purposes of carrying out the work under the Contract, including as applicable undertake asbestos removal, repair, renovation or demolition work, in strict compliance with all Legislative Requirements.

- The Contractor must obtain the necessary approvals before commencing any work under the Contract on or with products that contain asbestos and evidence of approval must be presented to the Superintendent before commencing work.

- The Contractor is reminded that the Principal arranged Legal Liability insurance does not cover legal liability arising from asbestos.

- The Contractor is to be solely responsible for all costs associated with the above obligations described in this clause 12 except to the extent (if any) expressly otherwise provided in the Contract.

13. INSURANCE

- The Principal has arranged a Contracts Works and Legal Liability insurance policy to cover all civil and civic construction works with a contract value of up to $20 000 000,

that do not fall within the works excluded under the policy[1] or special limitations that apply to the policy[2].

- The policy is with Key Underwriting Pty Ltd (acting on behalf of QBE (Australia) Limited), and the policy number is MK1BU 18100 CAR.
- The Policy may be viewed at the Department of Treasury and Finance, Procurement and Property Branch, 21 Murray Street, Hobart.
- The Contractor shall allow for the insurance premium and any related costs in the Contract Sum.
- The Contractor will pay the insurance premium within 14 days of being invoiced that amount by the insurer or insurance broker.
- Failure by the Contractor to pay the premium will result in the Principal maintaining the policy. The premiums so paid as well as any incurred expenses in undertaking this additional work shall be a debt due from the Contractor to the Principal.
- If the Contractor considers that the insurance cover arranged by the Principal is not sufficient to cover the Contractor's liabilities, then the Contractor shall take out and pay for additional insurance, as it considers necessary.
- The premium rates for each $10 000 of the Contract Sum are:
    - $26.75 for all Civic Works projects; and
    - $49.05 for all Civil Works projects.
- The Terrorism Insurance Act (TIA) Levy, Fire Service Levy, Stamp Duty and GST are included in the rates.

[1] The following works are excluded under the Contract Works and Legal Liability insurance Policy:
- Works involving Flood Mitigation works, Weirs, Tunnels, Shafts, Jetties, Wharves and Works under or over or in water;
- Dam Construction and maintenance Contracts; and
- Demolition only contracts.

These contracts will be referred to the insurance market by the Principal's insurance broker to determine appropriate terms and a premium rate.

[2] The Contract Works and Legal Liability insurance policy has the following special limitations in respect to:

- Incomplete Trenches — Maximum 500 metres
- Incomplete Revetments — Maximum 250 metres
- Unsealed Roadworks — Maximum 2 000 metres

The following deductibles as quoted in the Insurance Policy are the responsibility of, and will be paid by, the Contractor:

Contract Works (Material Damage)		**Deductibles**
Civic	Contract Values not exceeding $20 000 000	$1 000.00
Civil	Contract Values not exceeding $10 000 000 Contract Values $10 000 001 to $20 000 000	$15 000.00 $25 000.00
Civic/Civil Works – Legal Liability		**Deductibles**
All claims (excluding injury to worker claims)		$2 500.00
Injury to worker claims		$10 000.00

ANNEXURE PART D

This Annexure, which is not part of AS 2124-1992, is to be attached to the General Conditions of Contract contained in AS 2124-1992 as amended and shall form part of the Contract.

Confidentiality (Clause 8A)

Confidential Provisions

There are no Confidential Provisions.

FORMAL INSTRUMENT OF AGREEMENT

AGREEMENT made ..... day of ..... 20....

BETWEEN .....

..... (the Contractor)

AND METRO TASMANIA PTY LTD (the Principal)

IT IS AGREED that the annexed documents marked as follows:

TITLE MARK

Quotation, dated .....

Letter of acceptance, dated .....

General Conditions of Contract and Annexure.

(Agreement Signed and all pages initialled by parties)

Specification for METRO TASMANIA – SPRINGFIELD DEPOT – ADMINISTRATION BUILDING – THERMAL PLANT UPGRADE (RFT TENDER NO. J154048MM) .....

Dwg Nos:
J154048MM-M01 Mechanical Services – Plant Area Modifications, Floor Layouts and Water Schematic .....

Other Documents:

.....

.....

.....

(Use extra sheets if necessary to list all documents and drawings)
..... shall together comprise the contract between the parties AND if the Contractor or the Principal is two or more persons then they shall be bound jointly and severally.

Signing by Principal

Executed as an agreement by the person named below acting as a delegate of **Metro Tasmania Pty Ltd** pursuant to an instrument of delegation dated ....., in the presence of the witness named below:

Signature of delegate: →			
*Print name and position of delegate:		Witness' signature: →	
		*Witness print name and position:	

*USE BLOCK LETTERS

Signing by Contractor

Executed as an agreement by ..... (ACN .....) in accordance with section 127(1)(a) of the *Corporations Act 2001* (Cwlth):

Signature: →		Signature: →	
*Print name and office held:		*Print name and office held:	

*USE BLOCK LETTERS

PART FOUR

SPECIFICATION

SPECIFICATION

1 BRIEF OUTLINE OF THE WORKS

Location: Metro Tasmania

Street name and number: 212 Main Road

District: Moonah

State: Tasmania

Description: Bus Depot

Function: Transport

Order of size: N/A

Basic structure: N/A

External cladding: N/A

Building services: Mechanical

External works: N/A

2 SEPARATE CONTRACTS SCHEDULE

Title: Administration Building – Thermal Plant Upgrade

3 EXISTING CONTRACTS SCHEDULE

EXTENT: The following contracts exist on the site:

N/A

CONTRACTOR'S RESPONSIBILITY:

Thermal Plant Upgrade as specified.

4 DRAWINGS SCHEDULE

DRAWINGS:

No:	Title:
J154048MM-M01	Mechanical Services – Plant Area Modifications, Floor Layouts & Water.

5 SITE MEETINGS SCHEDULE

CHAIRPERSON: Site meetings to be chaired by: Contractor

MEETING INTERVALS: Fortnightly or as agreed

MINUTES: The minutes to be recorded and distributed by: Contractor within 3 working days.

6 ORDER OF WORKS SCHEDULE

REQUIREMENT: Refer to Specification Section 2.

SERVICES: Following completion of the building work ensure that sufficient time is allowed for the commissioning of any Building Services prior to Practical Completion of the Works.

7 RESTRICTED WORKING HOURS SCHEDULE

REQUIREMENT: Refer to Specification clause 2.5 for details

8 SITE LIMITATIONS SCHEDULE

REQUIREMENT: Observe the following limitations on the use of the site:

Area:	Limitations:
N/A	N/A

9 EXISTING PREMISES LIMITATIONS SCHEDULE

The existing premises or parts of the premises will be closed for the periods listed below. Request the superintendent to arrange for access. The security of both buildings and contents shall be the responsibility of the contractor during the contractor's sole occupation of these areas.

Areas:	Periods:
N/A	N/A

10 SPECIAL AREA LIMITATIONS SCHEDULE

REQUIREMENT: N/A

11 TEMPORARY FENCING SCHEDULE

EXTENT: N/A

12 AS INSTALLED DRAWINGS SCHEDULE

REQUIREMENTS:

Refer specification clause 16.3

13 MAINTENANCE MANUALS SCHEDULE

REQUIREMENTS:

Refer specification clause 16.4

14 ITEMS SUPPLIED BY THE PRINCIPAL

Item: Nil

Delivery: Nil

Collection: Nil

15 CHANGES TO EXISTING ITEMS SCHEDULE

Before making any changes to the existing items specified, give 3 working days' notice, and carry out the work as directed.

Existing items: N/A

16 SALVAGED ITEMS SCHEDULE

Principal's Property: N/A

Items salvaged by Principal: N/A

Items for preservation: N/A

Items for incorporation into the Works: N/A

17 INSURANCES SCHEDULE

Refer Annexure Part B.

These policies may be viewed at the Department of Treasury and Finance, Procurement and Property Branch, 21 Murray Street, Hobart.

18 PROVISIONAL SUMS SCHEDULE

18.1 Nominated Subcontracts

Include the following provisional sums in the contract sum for the work to be undertaken by a specialist subcontractor nominated by the Principal. Allow for quotations. All provisional sums are net and Tenderers shall allow in their Tender sum for all profit and attendances they deem necessary for this work associated with these items.

Nominated Subcontract:	Provisional Sum $:
N/A	N/A

18.2 Other Items

Include the following provisional sums in the contract sum. Expend these sums only in accordance with written directions. All provisional sums are net and Tenderers shall allow in their Tender sum for all profit and attendances they deem necessary for this work associated with these items

Item:	Provisional Sum $:
N/A	N/A

18.3 Quotations

Include the following provisional sums in the contract sum. Obtain and submit a minimum of three quotations for these items when directed in writing. Expend these sums only in accordance with written directions. All provisional sums are net and Tenderers shall allow in their Tender sum for all profit and attendances they deem necessary for this work associated with these items.

Item:	Provisional Sum $:
N/A	N/A

19 NOMINATED SUBCONTRACT WORK

N/A

MECHANICAL SERVICES SPECIFICATION TABLE OF CONTENTS

Issuing Office: 117 Harrington Street, Hobart 7000
JMG Project No. J154048MM

Document Issue Status

Ver.	Issue Date	Description	Originator		Checked		Approved	
1	18/09/2018	Draft JMG issue	NMS		RCB		RCB	
2	01/10/2018	Issued for final comments	NMS		RCB		RCB	
3	10/10/2018	RFT issue	NMS		RCB		RCB	

1 GENERAL REQUIREMENTS

1.1 General

In undertaking this Contract the Contractor represents itself to be an expert in all aspects of mechanical services, installations and their operation.

1.2 NATSPEC

Comply with the requirements of the latest version of relevant technical sections of NATSPEC SERVICES – MECHANICAL.

- 0171 GENERAL REQUIREMENTS (MECHANICAL)
- Project relevant sections of section 7 MECHANICAL and cross references indicated therein (refer Technical Specification)

NATSPEC Specification clauses are not reproduced in this document but shall have the same meaning and effect as they would if incorporated within this document.

Obtain a copy of the latest issue of NATSPEC for reference.

1.3 Definitions

The following definitions shall apply, unless inconsistent with the subject matter, or unless a contrary intention appears:-

Approval	-	shall mean approved in writing by the Superintendent.
Consulting Engineer or Engineer	-	shall mean any nominated employee of Johnstone McGee & Gandy Pty Ltd.
Proprietor or Principal	-	shall mean the person, company or corporation for whom the project is being executed. In this case Metro Tasmania Pty Ltd.
Superintendent	-	Johnstone McGee & Gandy Pty Ltd.

1.4 Controls Functional Description

Prior to commencing works submit for review and approval a full functional description of the operation of all systems in all modes of operation.

1.5 Access for Maintenance

Locate all equipment which must be serviced, operated or maintained in fully accessible positions.

Locate all plant, equipment, pipework, valves, ancillary items etc., where required for maintenance and access in accordance with safe working practices and compliance with Workplace Standards requirements, including Work Health and Safety Regulations 2012.

1.6 Site Representation and Control

The Contractor shall advise the Superintendent the name and position of their representative who will be responsible for the control and administration of the Contract.

The Contractor shall have a competent representative on site to whom directions and instructions may be given. Any instructions given to such representative shall be deemed to have been given to the Contractor.

1.7 Occupation/Impairment Notice

Existing facilities must be maintained in a fully operational, safe and pleasant state during normal operating hours. Where disruptions to services are required, consultation with the Superintendent is required.

Any work required to be completed in or around the site which will affects the normal operation of the building shall be completed outside normal working hours.

All noisy work shall be completed outside normal working hours.

Any power shutdowns are required to be minimised and will require at least five (5) working days' notice. Power shutdown affecting building operation will need to be completed outside normal working hours.

An Impairment Notice shall be issued to the Superintendent (5 working days prior to the event) to obtain approval prior to shutting down any services which affect the building's normal operation.

The Impairment Notice shall provide full details of the service to be shutdown, the effect on the building and/or services, period of proposed shutdown.

Where designated sections of the building are off limits to the occupants the areas shall be cordoned off or barricaded as appropriate and satisfactory signage provided.

Refer to Appendix A for the form.

1.8 Coordination

All works which affect the Principal's occupation and daily operation shall be coordinated with the Principal's Representative and will be subject to their approval.

At a minimum, the following shall be provided:

- Works programme with a special emphasis on details of work which will affect the Principal.
- Weekly report distributed to Superintendent:
    - works completed to-date,
    - works proposed to be completed within the next seven (7) days,
    - location of proposed works,
    - Detail of any disruption that affects the Occupants of the building.

1.9 Contract Administration

The Contract shall be administered by the Superintendent or his authorised representative and shall be executed to his reasonable satisfaction.

The Superintendent shall in the administration of this Contract act as the authorised representative of the Principal and any instructions issued by the Superintendent shall be executed in their entirety.

1.10 Inspection of Works

At various stages as the work proceeds the Superintendent may inspect the works both on and off site and comment on its adequacy, compliance with specification and/or performance. It is the Contractor's responsibility to supervise the performance of his Contract and to ensure its adequacy, specification compliance and correct performance.

Defective materials or workmanship shall be removed from the site when directed by the Superintendent, and shall be replaced with no additional cost to the Principal.

1.11 Practical Completion

The works of the Contract shall be considered as being "Practically Complete" when all Works of the Contract are complete.

The Superintendent shall inspect the works of the Contract and providing he is satisfied with the standard and quality of workmanship, shall issue a Certificate of Practical Completion within seven (7) days.

1.12 Standards and Authorities

The works of this Contract shall comply with the requirements of the current edition of all relevant Standards and Codes published by the Standards Association of Australia.

The works of the Contract shall also comply with all requirements and procedures required by Statutory Authorities having jurisdiction over the works.

1.13 Maintenance and Defects Liability Period

During the Defects Liability Period the Contractor shall be responsible for the maintenance and continuous operation of all mechanical services equipment and associated services on site.

Provide warranty cover and maintenance for all equipment and systems in accordance with manufacturer's recommendations, all statutory requirements and maintenance schedules for the duration of the Defects Liability Period.

All new equipment shall have a 12 months defects and warranty period.

The Contractor shall respond and attend site, if required, to all call-outs during the defects period within a 60 minute response time.

1.14 RF l's

The Mechanical Services Contractor should review all RFI's prior to issuing to the Superintendent.

RFI's requesting information that is already contained in the documentation will not be accepted or responded to.

1.15 Tender Drawings

The drawings accompanying this specification are, together with this Specification, intended to describe the extent and operation of the Works. Drawings in general are diagrammatic and must not be scaled for manufacturing purposes.

Before commencing work obtain measurements, dimensions and other necessary information.

Undertake full coordination with all structure, building fabric and other services, both existing and proposed.

Any apparatus, appliance or material not shown on the drawings but which is mentioned in these Specifications or vice versa or any incidental appliance, or materials or services, which are, or may be, necessary to make the Works complete in all respects and ready for operation even if not particularly specified shall be supplied, delivered and installed without any additional expense to the Proprietor as though specifically shown on the drawings or mentioned in these Specifications. All such apparatus, appliances or materials shall conform to the same standard and shall be of the same manufacture as for other similar items which are specified in these specifications.

Small details not usually shown or specified but necessary for the proper installation and operation of the work shall be included in the work and in the tender.

1.16 Document Discrepancies

Refer any discrepancies or ambiguities in the documents to the Superintendent for clarification prior to proceeding. Where there are conflicting requirements described in different parts of these documents it is deemed that the most expensive has been allowed for in the Tender.

1.17 Site Meetings

In addition to AS 2124 the Contractor's site representatives shall be available to attend meetings as directed by the Superintendent.

The Contractor shall at a minimum allow for fortnightly meetings.

1.18 Security Screening of Personnel

Before any person shall be employed or engaged to provide services in relation to the Contract, the Contractor shall ensure that each Contractor shall, in respect of that person - meets any security requirements, or if requested, the Contractor shall complete the following:

a. Obtain a police records check (mandatory requirement for all site personnel).

b. Investigate the person's employment history.

c. Obtain at least two character references from appropriate persons.

The Principal shall pay all costs associated with carrying out these checks.

The Contractor shall allow to provide all appropriate information to enable the completion of these checks.

The Contractor shall notify the Principal of the results of the above screening as soon as possible after it has been carried out in respect of a person, and shall, if so requested by the Principal, provide such documentary evidence as the Principal may require to satisfy itself as to the sufficiency and accuracy of that screening.

If required by notice from the Principal, the Contractor shall provide such further evidence or perform such further checks as may be specified in the notice.

After completion of all screening and any further checks to the satisfaction of the Principal, he shall give written notice to the Contractor of the name or names of persons who are approved persons for the purposes of screening requirements. The Principal may at any time and without coming under any liability, notify the Contractor that a person has ceased to be an approved person for the purposes of screening requirements. Each notice of approval, a copy of which is to be retained by the Principal, is to be countersigned without alteration or erasure by representatives of the Contractor and the Principal and in the event of any dispute as to whether a person is an approved person for the purposes of screening requirements, the particulars contained in the relevant notice shall be final and conclusive evidence of that matter.

The Contractor shall notify the Principal immediately should he become aware of any changes to the security arrangement of approved personnel. Failure to provide this information will be considered a substantial breach of Contract.

1.19 Job Safety Analysis (JSA)

Prior to commencing any work on site, the Contractor shall complete a JSA for each task.

The JSA shall include, but not be limited to :-

- Work Method Statement
- Risk Assessment
- Details of Task/Activity
- Identification of Potential Hazards associated with the Work
- Identification of Potential Control Measures to be Implemented
- Provide details of Employees Personal Qualifications and Expertise relevant to the Task

All personnel working on site shall have a copy of the JSA which shall be provided to the Principal and/or his representative on request.

The successful Tenderer will be required to have all Contractors working on all sites complete a Job Safety Analysis prior to commencing work. If the Contractor is not competent to perform this task to the Principal's satisfaction, then he is to arrange for a suitable training course (approved by the Principal) in this area for staff affected and pay all costs.

1.20 Fit for Purpose

All materials, equipment, systems and finishes shall be new, compatible with other systems and the expected working environment, and fit for its intended purpose and operating lifespan.

1.21 Ordering

As soon as practical after notification of acceptance of his tender the Contractor shall place orders for all equipment required for the project.

It is the Contractor's responsibility to place orders in sufficient time to ensure the delivery of materials and equipment by the time they are required for installation on the site.

Extensions of time will not be granted for delays resulting from the Contractor's failure to place orders at the correct time.

When directed by the Superintendent the Contractor shall forward copies of his orders for particular items of equipment.

(Refer also to Clause "Equipment Schedules" in respect of pre-manufacture information required by the Superintendent.)

1.22 Packing and Transport

The Contractor shall be responsible for the transport and delivery of plant materials and equipment to the site in an undamaged condition and for the safe storage of equipment on the site of the work. Any material, plant or equipment which suffers damage shall be replaced or repaired at the option of the Superintendent and to his complete satisfaction.

1.23 Samples

Provide to the Superintendent when specified or when directed samples of materials and equipment for inspection.

1.24 Pre-Works Inspection

Before commencing work on the site, the Contractor shall carry out:

A comprehensive survey of existing areas in company with a representative of the Principal and Superintendent.

A comprehensive survey of adjoining areas affected by the Works in company with a representative of the Principal including stairs, lifts and foyer areas and provide a dilapidation survey.

The survey record may include photographs showing the general condition of existing areas and shall include photographic details of all apparent building faults prior to commencement of the Works.

The Contractor shall prepare two copies of survey records and obtain the Principal’s endorsement that the records are a true and accurate description of the condition of the property at the time of the survey.

The Contractor shall be responsible to rectify all damage caused by any works undertaken as part of this contract.

1.25 Fire System Isolation

The Contractor shall allow for all costs associated with isolation and reinstatement of the existing fire detection and alarm system required to complete the works.

1.26 Setting Out and Measurement

The Contractor shall be responsible for his own setting out and shall inspect in detail the site, specification and drawings. Dimensions for the fabrication of pipework, steel work, cable trays, equipment etc. shall be taken from site measurements. Where work is being carried out within existing buildings particular care shall be taken to ensure that equipment and plant will fit within the indicated space in proper co-ordination with other building services and elements.

The accuracy of the Contractor's work shall be carefully supervised by his own staff and any rework that becomes necessary due to inaccurate, fabrication, measurement or setting out shall be rectified at the Contractor's own expense.

No variations to the Contract shall be issued for expenses arising out of the Contractor's failure to sufficiently examine drawings, specification details or to take sufficient measurements from the site.

1.27 Cutting, Providing Openings and Making Good

The Contractor is responsible for and shall pay all costs arising from the necessity to core, penetrate and chase building works for the proper installation of conduits, piping and other services which form part of the work of his Contract.

No structural member or element shall be cut, drilled, welded or interfered with, without the agreement of the Superintendent and all such work shall be done in a manner acceptable to him.

All penetrations in elements with a fire resistance level shall be provided with suitable fire dampers, collars of stopping as required to maintain the required fire resistance level.

1.28 Supports and Fixings

All pipework and equipment etc. shall be adequately supported from the building structure by means of hangers, brackets, steelwork and supports suitable for the building construction in accordance with the relevant Standards.

Methods and locations of fixing to building structural members shall be subject to the approval of the Superintendent and Structural Engineer. Submit details required for sign-off as part of workshop drawings.

1.29 Flashings

Any penetration of the external surfaces of the building shall be weather flashed.

1.30 Cranage and Hoistage

Apply in writing to the Principal and obtain written approval from the Principal, Building Owners and Tenants of adjacent properties, and all relevant authorities prior to undertaking cranage/hoistage.

Submit crane study plans of each lift.

Include the proposed cranage lift site in the dilapidation survey.

Check structural adequacy of the proposed lift site and provide any additional footings and/or support structure as required.

Provide safety barriers and comply with crane company safety requirements.

Arrange for removal of existing plant and installation of new plant in same operational period for crane.

Allow, through timing of the works and site control measures, to maintain adequate pedestrian and vehicular access during cranage operation.

Provide an independent traffic management plan and associated controls for the works. Allow for all required safety barriers, signage, vehicular and pedestrian control procedures etc. to maintain access, including appropriate allowances for access by people with disabilities, people with young children in prams etc.

Allow for any required after hours work.

Make good the cranage lift site on completion

1.31 Safety Measures

The Contractor shall carry out the whole of the Works in a thoroughly safe manner and in particular shall conform to the requirements of all relevant Acts and Statutes of Parliament, Regulations, By-laws or Orders relating to the safety of persons on or about the site including the Tasmanian Work Health and Safety Regulations 2012.

The Contractor shall ensure that all equipment necessary for execution of the Works is of adequate strength and otherwise safe for use, and shall remove from the site any equipment which becomes, or is likely to become, unsafe.

The Contractor shall ensure that all electrical equipment is appropriately tagged and conforms to Australian Safety advisory standards.

When carrying out any "hot" work, the Contractor shall complete a Hot Work Permit Form before commencing work.

All associated fire detection isolation and reinstatement will be at this Contractor’s expense. The Principal’s Representative shall be notified prior to fire isolation and after reinstatement.

2 PROJECT SPECIFIC REQUIREMENTS

2.1 Scope of Works

Supply, install, test, commission, warrant and maintain all equipment, materials, systems and work described in this Specification and depicted in the Drawings.

The systems or works to be provided are generally defined below:

- Supply and install new air/water/heat pump chillers HP-1, HP-2, HP-3 and HP-4.
- Supply and install new thermal storage tanks, associated valving and pipework.
- Supply and install new secondary heating water circulating pump P1.
- Modify existing secondary pipework reticulation and connect new to existing.
- Supply and install new heating water coils HC-1 and HC-2 and modify AHU-1 and AHU-2 air handling units accordingly.
- Supply and install new Mechanical Switchboard MSSB-THERMAL.
- Modify the existing Mechanical Switchboard.
- Electrical modifications.
- Control system upgrade, include BMS Graphics.
- Rebalance of water reticulation system.
- Commissioning of systems, including removal of air.
- Maintenance of systems.
- Demolition works.
- The Contractor shall complete all associated building works including at a minimum the following:
    - All openings, chasing and penetrations in walls, floors, ceilings, roof, partitions etc. for passage of pipes, cables, conduits, etc.
    - Cutting, drilling, welding, fixing of any structural element or member.
    - Provision of structural elements as per the drawings.
    - All weatherproofing, flashings and over-flashing.
    - All access panels, cutting of ceiling tiles including removal and reinstatement of ceilings to accommodate cabling reticulation.
    - Plant framework where nominated on drawings, including steel work and packers.
    - Power for installation, testing and commissioning.
    - Making good to a workmanlike finish where services removed, including patchwork / paintwork etc.
    - Fire and smoke seal all services penetrations and through fire or smoke rated construction.
    - Isolation of Fire Services.
    - Asbestos removal.

Ancillary Works

Provide all ancillary works and ancillary items, whether called up specifically in the Documents or not, but which are necessary to enable the installation of the mechanical works and for the safe, correct and satisfactory operation and performance of the mechanical systems.

2.2 Tender Drawings

The drawings supplied with the specification at the time of tendering are diagrammatic and approximate only, and for tendering purposes only. The drawings are not detailed coordinated working drawings. Refer Working Details and Working Drawings elsewhere in this Specification. These drawings, however, together with the specification and schedules, are intended to be mutually explanatory and to describe the scope of the work required. All work set forth by one, if not by the other, shall be fully executed.

Drawing No.	Drawing Title
J154048MM-M01	Mechanical Services – Plant Area Modifications, Floor Layouts and Water Schematic

2.3 Working Details

Scope
Prepare details of the work to be carried out.

Working details include:

- Working drawings
- Detailed coordination with all structure, fabric, and services proposed and existing
- Pump operating duty pressures
- Equipment selections
- Functional descriptions
- Access requirements
- Structural support and penetrations

Submit working details together with additional manufacturers information describing application, selection, performance, installation, maintenance and where applicable, troubleshooting to fully describe and detail the work to be done.

Submit details in time to allow a minimum period of two weeks for examination and return of each submission. Submit one A1/B1 print and PDF copy of each working drawing for each review submission.

Bear all cost associated with abortive and corrective work which result from work proceeding without stamped working details. Such abortive corrective work shall not be cause for extension of time.

Measure-up, set-out and co-ordinate all working details with the structure, architectural details and all other services prior to submission of the drawings. Ensure that all information from all other trades is fully and clearly cross referenced. Service routes shall be designed to assist and minimise penetrations in structure and building fabric.

Review by Consultant
Working details will be reviewed by the consultant for general compliance with the design intent. This review does not constitute approval of the submission or acceptance of a design change. Any design changes proposed by the Subcontractor shall be separately identified and submitted for review. Where a design change is made, “for the Subcontractor convenience”, the Subcontractor shall be responsible for any associated works and costs which are required as a result of the design change.

Structural Support and Penetrations
Provide details of proposed structural support, platforms and penetrations for all aspects of the works.

At the direction of the Engineer, provide structural certification from a practicing engineer.

Working Drawings
Prepare all drawings on AutoCAD using competent and experienced drafters.

Include at least the following on the working drawings:

Before commencing work, check and coordinate with Contract drawings, site measure to determine dimensions, exact locations of existing services and coordination with existing structure.

Submit measured drawings of all aspects of the works for review and comment prior to proceeding with manufacture.

Three (3) copies of drawings shall be submitted as A1 size, 1:50 scale unless otherwise approved by the Engineer.

As a minimum, drawings shall show the following as applicable:-

- pipe and equipment layouts and sections
- pipework layouts and schematics
- plant area layouts and sections
- locations of sensors, motors and valves
- switchboard construction and schematic diagrams
- control system schematic and arrangement details
- structural drawings of support structures
- submission drawings required by authorities

Allow 5 working days for review and return of drawings.

Allow to revise and resubmit drawings as directed by the Superintendent.

The Superintendent and Consulting Engineer are under no obligation to check the accuracy, compliance, or correctness of the drawings and inspection of the drawings does not in any way transfer the responsibility away from the Subcontractor to ensure the accuracy, correctness and compliance of the drawings and to execute the Works in compliance with the requirements of the Contract.

2.4 Environmental Design Criteria

The mechanical services system heating and cooling load calculations and equipment performance parameters have been based on the following environmental criteria:-

Ambient Conditions

	Summer	**Winter**
Temperature ^{o}C-DB	27.9	-0.7
Temperature ^{o}C-WB	18.6	-

Space Conditions

Air Conditioned Areas:

Temperature	22^{o}C ±2 ^{o}C	22^{o}C ±2 ^{o}C

2.5 Staging of the Works

The Works of the Contract shall be completed in a number of stages all in accordance with the Superintendent's works package.

STAGE 1 - Order all new thermal plant, pumps, tanks, coils, switchboard etc.

STAGE 2
- Pre-fabricate pipework, tank and pump assemblies off-site.
- Install new switchboard and rough-in cabling.
- Install new control system, including cut-over of existing to remain.

STAGE 3
- Decommission existing rooftop plant.
- Modify existing MSSB and cut-over new supply feed to MSSB-THERMAL.
- Remove all redundant equipment.
- Install new plant and equipment.

STAGE 4 - Final commissioning and controls.

GENERAL

The final staging program shall be subject to the Principal and Superintendent's approval.

Work shall be staged in such a manner as to cause minimum disruption of service to the building occupants.

Allow for after-hours work, due to noisy works or heavy lifting, or as directed by the Superintendent

As part of the chiller decommissioning ensure that all the refrigerant is evacuated and removed from site in accordance with Refrigeration Handling and Best Practice.

All the electrical shall be made safe.

Note – Staff will be occupying the space during work periods and any obstructive works shall be coordinated with the Principal and Superintendent.

DOWNTIME

The existing plant shall remain fully operational until final cut-over of new services.

This Contractor shall allow to minimise downtime of air conditioning plant to 10 working days during the changeover process of new thermal plant and associated equipment..

These works shall be completed in conjunction with the 2019 Easter Period.

In order to reduce downtime to 10 days the Contactor shall provide methodology as part of their tender submission and include staging similar to the above in order to achieve this.

Works shall include but not limited to: ordering of plant, pre-fab works, rough-in of electrical, install new controls etc.

2.6 Demolition

Assess the magnitude of the work involved by examining the Contract Specification and visit the site.

Prior to and during the installation of the new works, disconnect, remove and make safe the existing services installation which is not being reused, including equipment and cabling to all areas.

Demolition shall include, but not limited to, the following:

- Equipment
- Pipework
- Cabling
- Controls
- Asbestos removal
- Removal of all redundant equipment

Areas adjacent to demolition areas are to be rewired or refitted as required to maintain full services as existing and prior to demolition of the adjacent areas. Provide all new cabling and equipment as required to complete this work.

Make good all services and areas affected by the Works. Make good shall be equivalent to the standard of the adjoining areas and shall include painting, patching, removals of plinths, brackets etc.

There will be no variations issued to provide for work associated with demolition of existing services.

Maintain power supplies to areas not affected by the new works and as required by the Principal.

2.7 Water Balancing

- Prior to any works, undertake water flow testing at the following stad valves:
    - AHU-1, AHU-2 and AHU-4 heat and cool valves (5 off)
    - Main circulating pumps (2 off)
- If existing stad valves become difficult to calculate, allow to use an ultrasonic meter to obtain flow measurement on each of the zones for both heating and cooling.

2.8 Removal of Air

- Allow to bleed the system for air during various stages of the construction period when cutting and draining the system.
- Allow to supply and install additional automatic air vents as required to ensure all the air is bled from each existing secondary chilled and heating water loop at high points in the system.

2.9 Existing Water Coils (AHU-1 and AHU-2)

Engage “DUNBAR’ and undertake “Blast Clean’ of cooling coils in both systems (2 x total).

2.10 Critical Spares

Ensure 1x ‘spare’ primary circulating pump as per Daikin ‘hydronic’ module is kept on site at all times during the defects liability period.

Allow to replace any faulty pumps during the defects liability period within a 48 hour period.

1x spare circulating pump shall reman on site in a suitable location at the end of the defects period and handed over to the maintenance contractor.

3 AUTOMATIC CONTROL AND BUILDING MANAGEMENT SYSTEM (BMS)

3.1 General

(NATSPEC Reference: 0771 AUTOMATIC CONTROLS)

Supply and install all labour, materials, equipment and services required for a complete automatic control, monitoring and building management system to replace the existing.

Note – the existing Drivers area 'BAC' controls shall be upgraded and implemented into new system.

System shall be complete, including all required hardware, wiring, software and programming to satisfy the required system functionalities.

System shall be installed, set and commissioned by the control equipment manufacturer or his authorised representative.

Controls manufacturer must have representation in Tasmania and shall hold locally stocks of relevant spare parts and skilled service personnel competent to undertake servicing, fault tracing, call backs and programme alterations and adjustments.

Scope shall include , but not be limited to:

- Supply and installation of field controllers.
- Supply and installation of BMS software.
- Supply and install new Control Panels to house required new I/O controllers if the existing switchboard cannot accommodate.
- Installation of database points, and configuration of controllers.
- Configuration of alarm, logging and reporting functions.
- Preparation of system graphic displays.
- Configuration of remote access facilities.
- Programming of system back-up facilities.
- Preparation of Shop Drawings.
- System commissioning.
- Operator training.
- Operating and Maintenance Manuals.

Bus cables for control system to be CAT 6 or RS485 on longer cable runs.

The control system shall be complete with all associated hardware to allow for a future increase in the number of inputs and outputs by 30% without requiring additional hardware.

The existing controls not mentioned in the specification shall be controlled as per the existing functionality.

3.2 BMS/Controls Selected Subcontractors

To be a complying Tender the automatic control system portion of the works must be done by the following selected subcontractor:

Building Automation Controls
7 Howard Road
GLENORCHY TAS 7010

3.3 General

Within the new mechanical switchboard MSSB-THERMAL provide a monitoring panel at the external face thereof. The required functions at each monitoring panel are as follows:

1. Green indicating LED's, (Superbright, large diameter), to indicate the normal operating status of all major equipment as indicated below:-
    - Air-to-water heat pumps.
    - Pumps.

2. Red indicating LED., (Superbright, large diameter), to indicate abnormal operating conditions or plant failure for the following equipment:-

   - Air-to-water heat pumps fault.
   - Pumps fault.

3. The main thermal plant and air handling units shall be provided with individual time controlled manual over-ride functions. Appropriate ancillary amenities exhaust systems shall initiate during after-hours.

   - Ground Floor
   - Level 1

   Allow manual operation at each level of the building, (which shall be programme adjustable between 1 and 5 hours – initially set at 2 hours). At the expiration of the preset period the plant shall resume its normal programme status. The over-ride control and a blue indicator shall be mounted at each level as close as practical to the centre stairwell. All locations to be confirmed with Superintendent and Principal prior to rough-in of cabling.

3.4 System Software

General

Software shall provide a real-time, multi-tasking environment. Programming and database entry shall be object oriented in design and provide a uniform approach to manipulation of input, output, setpoint and program variables. The system shall readily accept additional data points, changes to variables and expansion to additional field controllers. Simplicity of the operator interface to access and reconfigure display, monitoring and reporting screens is essential and reconfigure via use of menus, screen-pops and single keystroke operation.

System shall be IP addressable, utilising Cat 6 data cabling to CPU's and to field devices where appropriate.

The system shall also have inter-operability capability with respect to recognised market standards and protocols, and relevant third party packages.

Access

User access shall be enabled via password entry with several levels of security to restrict access to the following minimum requirements:-

Access Level	*Functions Available*	*Training Level*
1	Monitoring displays, variables, alarms	Basic
2	Monitoring, trending, reporting	Intermediate
3	Monitoring, trending, reporting, setpoint adjustment	Supervisor
4	All functions including programming	Programmer

User access codes shall be made available and remain the property of the Principal.

Functions

Functions of the system shall include :-

Database
- Configuration of inputs, outputs, controllers, and alarms.
- Standardised approach to configuration and operation.

Trending
- time-based, infinite tendering of sampled data, over operator selected periods.
- circular trends to over-write oldest data entry once specified data duration is attained.
- time interval based trends (eg. minute, hourly, daily, monthly, yearly intervals).

Reporting	- customised report generation, utilising display - variables, trending data, alarms. - compliance with ODBC protocols. - compatibility with “Crystal” reporting. - use of standard templates.
Alarms	- recording of alarms on a continuous basis. - prioritising of alarms according to required response level. - notification of critical alarms via taskbar or similar whilst other functions or displays accessed. - upper limit (2 No.) and lower limit (2 No.) alarm setpoints per variable. - delay and suppression functions. - All heat pump faults to be emailed to the installing contractor, current maintenance contractor, JMG during the defects period.
External Database	- has to export data, as trend or report to external database package, eg. Excel, Crystal reports
Scheduled Tasks	- trending and report generation automatically on a scheduled time basis or on demand.

Remote Access	- Remove existing.
	- Supply and install 4G modem.
	- Supply HTML5 web interface.
	- System shall be fully accessible remotely by the following users:
	  - JMG
	  - Maintenance Contractor
	  - Site
	- Allow for all commissioning, software and site works at each location.

Archiving	- routine automatic backup of database. - periodic archiving with alarm function to initiate sequence to CD writer.
Demand Control	- energy monitoring. - load control of plant. - optimisation of plant operation to achieve energy efficiency.

3.5 Graphic Displays

General

Graphic displays shall be provided as a readily accessible, user friendly, mouse driven logical sequence of screens.

Screens

The sequence of screens shall include, but not be limited to:-

1. Site layout showing overall system.
2. Individual screens for each level (with ready access to plant items).
3. Detailed plant (eg. AHU layouts for monitoring and changing of setpoint variables and alarms).
4. Thermal plant (minimum 4 pages)
   - primary chilled water
   - primary heating water
   - secondary chilled water
   - secondary heating water
5. Detailed zoning (all supply zones and thermal plant), including trends of zone temps, ambient, supply air temps, thermal plant info.
6. Metering and load control of each heat pump.

Screens shall be accessible from multiple operator stations simultaneously, to access the same graphic and updated datapoint information. Displayed information shall be updated constantly (eg. refresh 50 data points in 5 secs.)

Graphics Builder

The graphics builder software shall be capable of :-

1. Importing CAD files for floor plans.
2. Button operation for toggle access, movement between screens and other functions.
3. Utilise text messages with font, size and colour options.
4. Numeric level indicator, line graph representation of analogue datapoints.
5. Configure alarms within graphics screens.

Alarms may be viewed in the following ways :-

1. Dedicated alarm listing page.
2. Field equipment on display screens.
3. Pop-up over any running application.

JMG will provide CAD based Drawings of the new buildings to assist in graphic construction.

3.6 Operator Stations

General

Provide new PC operator station, suitably located in the Level 1 plantroom as per the following requirements.

PC Specification

PC operator stations shall include the following minimum requirements:

1.	Processor	-	Minimum Intel Core i7
2.	Memory	-	Minimum 8 GB Ram
3.	Hard Drive	-	Minimum 1 TB
4.	Drives	-	Minimum 1 x DVD Dual Core Rewriter
5.	Ports	-	Minimum 4 x USB
6.	Network	-	Gigabit LAN Port
7.	Monitor	-	Minimum 22” LCD Display
8.	Keyboard	-	Standard Wired Keyboard
9.	Mouse	-	Standard Wired Optical Mouse
10.	Operating System	-	Microsoft Windows 7 / 8 or latest compatible supported version
11.	Power	-	UPS backup with inbuilt power filtering
12.	Other	-	RJ45 outlet for networking; keyboard

Provide all cabling to connect operator stations onto BMS bus.

Provide suitably sized workstation and chair, as required, to locate the operator station.

3.7 Alarms

Alarms initiated by the control system shall include, but not be limited to, the following:

Local Alarms:

- Air to water heat pump fault
- DDC control fault
- Power failure
- Fire alarm.

Refer Section 3.4 for alarms to be emailed.

3.8 Functionality Configuration

The BMS shall provide monitoring and control functions in accordance with the requirements above. Undertake re-configuration of functionality of the existing database, as scoped by the above descriptions. The functional control requirements for the systems shall be provided for the Mechanical Services Contractor in accordance with the description below.

Coordinate the provision of these controls with the mechanical services electrical control system.

This system shall provide the following essential control functions :-

- Time control of plant.
- Energy management control.
- Functional plant and system control.
- Plant status and monitoring function.
- Remote system monitoring, analysis and adjustment.

3.9 Functionality Control Requirements

Prior to commencing works submit for review and approval a full functional description of the operation of all systems in all modes of operation.

The electrical and control systems shall provide the following functional controls:-

- All set points shall be adjustable at the BMS graphics. These shall include, but not be limited to, the following:
  - Zone temperatures.
  - Individual plant start/stop times.
  - Outdoor temperature lock-outs
  - Duct schedules.
- 365 day programmable time control function capable of individual programming for the following items of plant:
  - Air-to-water heat pumps.
  - New circulating pumps.
  - All air handling units (individual).
  - Exhaust fans (individual).
  - All Supply ventilation fans (individual).
- Plant operation and control shall be automatically reset on restoration of power after a power failure.

3.10 Air-to-Water Heat Pump Control

The air cooled heat pumps are controlled by their own proprietary control system. Integration of the heat pump control system and the new automatic control system shall be by way of the necessary interface to ensure satisfactory control, monitoring and interrogation of the parameters implied by this Specification. The heat pump's authorised representative and the control system supplier shall ensure complete coordination of the two control systems.

Heat pumps shall stage to maintain the flow water temperature to the heating/cooling coils scheduled as per an output from the BMS to the heat pump integral control system. Flow temperature shall be maintained downstream of each chilled and heating water tank. Adjustable deadbands and delays shall limit the loading of heat pumps and mode changes to ensure the system does not short-cycle and to avoid simultaneous peak start-up loads. Heat pumps shall unload and disable last on – first off.

The automatic control system shall initiate heat pumps to operate continuously during occupied times in a mode dictated by ambient temperature. Heat pumps shall only shut down under their own integral controls based on return water temperature or if control valves have been closed for 30 minutes.

Heat Pump Staging:

Ambient	Heat Pumps HEATING On/Off	Heat Pumps COOLING On/Off
<5°C	1, 2, 3, 4	
< 5°C to 10°C	1, 2, 3, 4∗	4∗
10°C to 14°C	1, 2, 3	4
14°C to 18°C	1, 2	3, 4
18°C to 22°C	4	1, 2, 3
> 22°C	4∗	1, 2, 3, 4∗

Notes:

- ∗ indicates that this machine will only run if the average heating or cooling control valve position has been > 80% for 15 minutes.
- The heat pumps once enabled will control under their own controls to maintain the required flow temperature downstream of each chilled and heating water tank.
- All setpoints and sequencing shall be fully adjustable at the BMS.
- Primary Pumps shall run for 5 minutes (adjustable) prior to heat pumps run and run-on for 5 minutes (adjustable) after heat pumps are disabled.
- Motorised valves at each heat pump's flow and return lines shall oscillate between the heating and cooling tanks dependent upon ambient temperatures and building demand as indicated in the above table. Supply 'Belimo' SY Butterfly valve and actuator with sight glass for position indication.

There shall be a 15 minute (adjustable) delay between heating and cooling modes of each heat pump.

3.11 Heating and Chilled Water Temperature

The heating and chilled water temperature setpoints shall be as follows:-

Chilled Water Flow temperature 7 deg C

Heating Water Flow temperature 45 deg C

3.12 Defrost Cycle

Air-to-water heat pumps shall have defrost cycles based on reversion to cooling cycle. The defrost cycle shall be temperature controlled and time limited. Units shall be controlled so that not more than one compressor circuit will be in defrost mode at any time.

The defrost cycle shall conform with the following, (options which rely on reversion to cooling mode operation, or simple shutdown principles will not be accepted).

The defrost cycle shall be temperature initiated and temperature terminated with timer override to permit only one defrost cycle in each timed period, (usually 30 minutes).

The defrost cycle shall be independent for each refrigerant circuit.

3.13 Temperature Control

3.13.1 AHU-1 and AHU-2

Space temperature in each zone of each system shall be sensed by a suitably located electronic sensor. Position shall be as per the existing, unless over an adjacent existing heat source. Relocate sensors to avoid heat sources.

Setpoints shall be adjustable at the BMS and shall initially be set at 22°C.

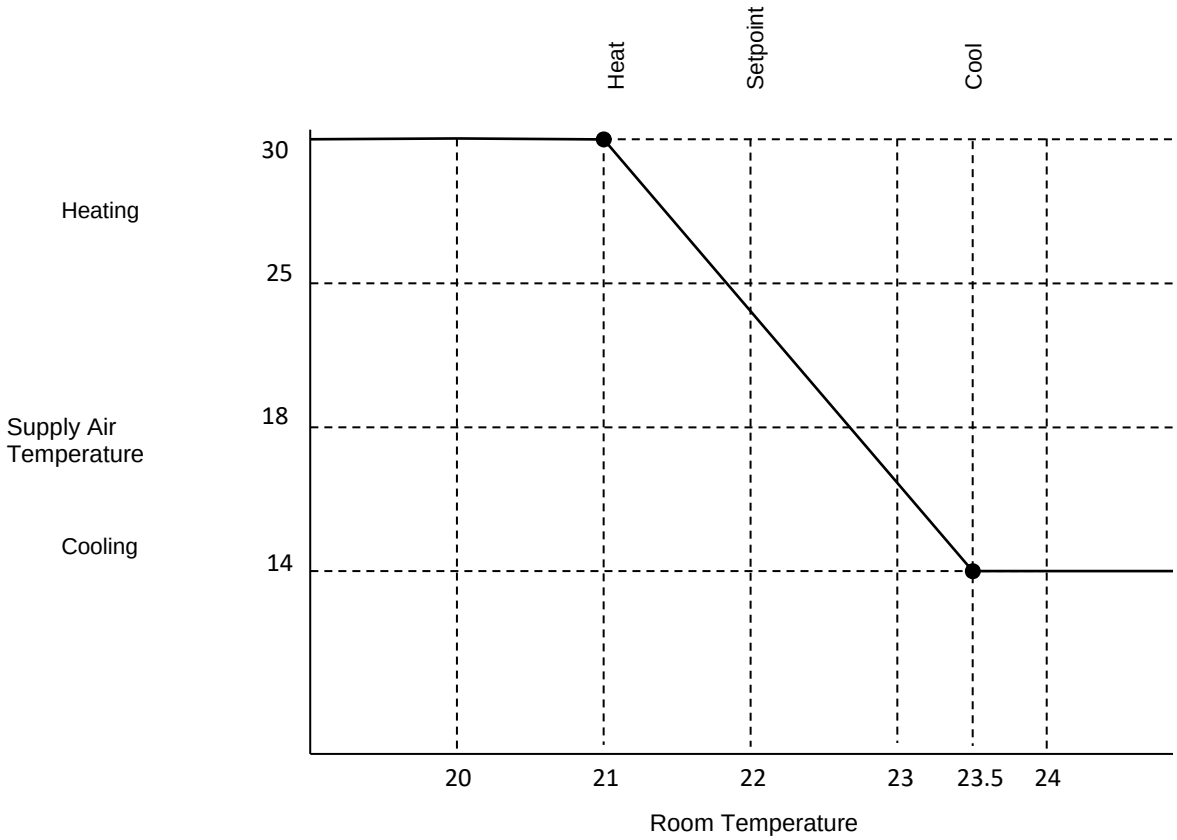
A reset schedule shall be utilised to reset hot and cold deck supply air-off temperature setpoints based on the deviation from setpoint temperature of the zone served by the air handling units.

When (the coldest) zone temperature is 1.0°C < setpoint, supply air-off temperature setpoint shall reset between 25°C and 30°C (adjustable).

When (the hottest) zone temperature is 1.5°C > setpoint supply air-off temperature setpoint shall reset between 18°C and 14°C (adjustable).

Setpoint reset shall utilise a time delay to limit the rate of change of the setpoint to no greater than 1.0°C every 2 minutes (adjustable).

Control each individual 3-way control valve to maintain supply air schedules indicated below to the hottest & coldest zones accordingly:



Note:
Rogue zones, i.e. zones with significantly high internal loads, shall be excluded from the deviation calculation. Provide an individual override point for each zone on the BMS graphic to facilitate this. Numbers to be confirmed during Tender period.

The supply air-off temperature setpoint limits shall be adjustable at the BMS graphics.

3.13.2 AHU-4

Existing heating only AHU. Coil control valve shall modulate to maintain space temperature. Initial setpoint 22°C.

3.13.3 The following operational schedule shall be programmed in conjunction with temperature control and economy mode operation:

Ambient	Mode of Operation
≤ 12°C	- Heating only
12 - 21 °C	- Economy mode (1st stage of cooling) - Cooling valves open (2nd stage of cooling)
>21 °C	- Cooling only

3.14 Zone Hot/Cold Deck Dampers

Heat Mode

- Hot deck damper shall modulate to fully open to satisfy coldest zone temperature.
- Hot deck dampers shall modulate to control supply air temperature reset as per previous clause.
- When zone setpoint is achieved hot deck damper shall modulate closed, cold deck damper shall open to provide recirculating air.

Cool Mode

- Cold deck damper shall modulate to fully open to satisfy hottest zone temperature.
- Cold deck dampers shall modulate to control supply air temperature reset as per previous clause.
- When zone setpoint is achieved cold deck damper shall modulate closed, hot deck damper shall open to provide recirculating air.

Economy Mode

- If all zones are above setpoint on either AHU-1 and AHU-2 and ambient temperature is between 13 - 21°C main AHU fresh air damper shall modulate open.
- Hot deck dampers shall modulate open for economy mode operation and the 1st Stage of cooling.
- If any zone is still above setpoint, cold deck damper shall modulate open.

3.15 Electric Reheats

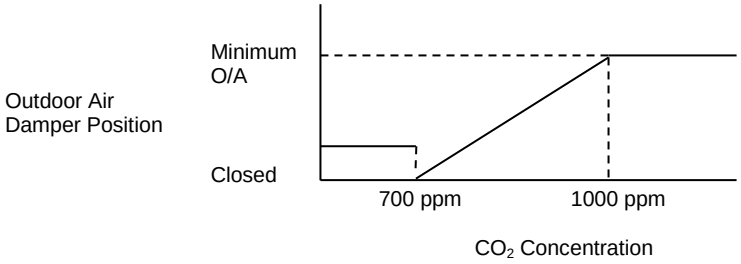
All zones complete with downstream electric duct trim heaters shall have setpoints adjusted to 22.5°C.

If subzone temperatures are 1°C below setpoint (21.5) duct heaters shall be energised and heat up to 22°C.

3.16 Carbon Dioxide (CO_2) Sensors

Individual air handling systems AHU-1 and AHU-2 shall be provided with a dedicated CO_2 sensor. Sensors shall be located in respective return air ductwork.

The ambient CO_2 level shall be monitored and used to control outside air dampers according to the following diagram:



Return air dampers shall modulate as required to maintain system supply air quantities.

System economy cycle operation shall override CO_2 control.

AHU-1 and AHU-2 shall be provided with an "AUTO/OFF" CO_2 control over-ride function. Switch positioning shall be indicated on the BMS graphics.

The over-ride control shall be located on the MSSB within First Floor plantroom. All locations to be confirmed with Superintendent prior to rough-in of cabling.

Allow to adjust minimum fresh air position @ 15% the total supply air at each AHU (1 and 2).

3.17 Spill Air

System spill air damper shall be controlled to maintain a positive 5 Pa average pressure in the building (adjustable).

Maintain this pressure by means of a pressure sensors (2 x total) installed in central locations to accurately measure the building pressure on each floor of the building. Refer air schematic for details.

3.18 Pre-conditioning

Each air handling unit AHU-1 and AHU-2 shall be controlled to provide an optimised pre-conditioning cycle (either heating or cooling) to ensure that the controlled space is at the required temperature by scheduled operation time.

Pre-conditioning shall be locked out 2½ hours before occupied time. Air-to-water heat pumps shall commence operation 30 minutes prior to air handling plant start-up.

During pre-conditioning air handling unit coil air-off temperatures shall be allowed to increase to 35^{o}C, outdoor air and spill air dampers shall close and return air dampers shall open to the maximum position.

3.19 Metering

3.19.1 Multi-Function Metering

Supply and install new multi-function meters for monitoring and logging of kWh energy consumption to monitor 'real time' amperage and kWh usage.

- New Air-Water Heat Pumps (4 off).

Meter shall be type Carlo Gavazzi: EM21-72D, AV53X0SX RS485.

Provide certification of meter calibration to the Superintendent.

Supply, commissioning and calibration of all meters shall be by the Mechanical Contractor.

Clearly and appropriately identify and label meter.

Validate multi-function meter (new and existing) and corresponding output to the BMS in accordance with NABERS requirements. Provide validation certificates for the same.

NABERS validation of multi-function meters shall include:

- Meter calibration;
- Validation of meter CT's;
- Validation of BMS connection.

3.20 Energy Logging, Analysis and Reporting

Refer to Clause "Multi-function Metering" for details on multi-function meters.

The following shall be displayed at the BMS.

Allow to integrate the outputs from these meters into the control system and provide the following logging, analysis and reporting of each individual heat pump's energy usage in Amps.

- Provide a BMS graphics page detailing:
    - Instantaneous readings for each individual meter.
    - Cumulative daily, monthly and 12 monthly totals for each individual meter.

3.21 Fire System Integration

Existing to remain.

3.22 Control Device Locations

The Subcontractor shall take care in the location of all control devices safety, control or indication, to ensure that they accurately measure and indicate the medium in which they are placed. The specialist control supplier shall be consulted in the selection of such locations.

The Contractor shall complete a site inspection with the Superintendent to obtain approval for the proposed location of zone sensors prior to installation.

The Contractor shall allow as part of his Tender Submission to relocate sensors as directed.

Sensor housing shall be approved by the Superintendent prior to installation. The Contractor shall ensure that the sensors are suitable for the environment and that they accurately reflect room temperatures at all times.

Contractors shall provide data logging of sensor housing and sensor to confirm correct sensor calibration.

Sensors shall be designed and installed in a manner which prevents cold bridging or drafts from influencing sensor calibration.

4 ELECTRICAL SYSTEM

4.1 General

(NATSPEC Reference: 0781 MECHANICAL ELECTRICAL).

(NATSPEC refer also Reference: 0941 SWITCHBOARDS – CUSTOM BUILT).

Project specific or non-standard requirements if applicable are indicated below.

Allow 30% spare rating and spare space in all electrical submains, switchboards and cable trays.

4.2 Existing Mechanical Services Switchboard MSSB-1 (Located in L1 Plantroom)

Make modifications to the above board as follows:

- Supply and install electronic 160 Amp MCCB (adjustable 100-160) to feed the new Mechanical Services Board MSSB-THERMAL and connect to the existing bus.

- Disconnect and remove the existing chiller set 160A fuse switch and line heater 100A fuse switch, and modify switchboard escutcheon and panels to incorporate the new circuit breaker.
- Supply and install new submain cable 4SC+E 35mm^2-HF-110 flexible cable from existing MSSB to new MSSB-THERMAL and terminate at either end.
- Provide a discrimination study for the mechanical services from the point of supply (site main switchboard) to MSSB-THERMAL for approval by the Superintendent. Circuit breaker to be selected to provide full discrimination for the MSSB supply.
- Remove all redundant busbar connections and redundant cabling and make safe.

4.3 Existing MSSB-1 Controls and Indicating Equipment

- Remove all existing control gear including but not limited to the following to facilitate the new 'BAC' control system within MSSB1:
    - 'Old' Honeywell controller.
    - Temperature indicators.
    - Temperature dials.
    - Cascade controls.
    - Sequencers.
    - Step controllers.
- Supply and install new I/O modules.
- Supply and install new Jace and run interconnecting data cable to existing MSSB-2 switchboard within roof space above Drivers area and terminate to accept signals from existing 'BAC' modules and replicate at new BMS front-end.
- Replace RHS door section where existing temperature indicators are housed.
- Replace escutcheon, housing 'indicating LED's' and switches with new and remove hours run meter.
- New LED's to be provided for the following:

  Run/fault status (Green and Red)

    - All existing fans and AHU's (AHU-1, 2 and 4)
    - All circulating pumps.
    - Fire alarm (fault only).
    - Common fault (heater banks).
- Re-use existing MANUAL/OFF/AUTO selector switches for:
    - Existing exhaust fans.
    - Existing pumps.
    - AHU-1, AHU-2 and AHU-4 air handling units.
- Re-use existing terminals/relays etc. and provide new as required.

4.4 Existing MSSB-1 Switchgear

- Existing fuses and contactors to remain.
- Remove all redundant transformers and supply/install new suitable for new control gear.

4.5 New Mechanical Services Switchboard MSSB-THERMAL

This new board shall provide power supplies to all new equipment under this Contract

Provide a front-connected mechanical services switchboard designed, constructed and installed in accordance with Australian Standard AS 3439.1 to serve all equipment installed under this Contract. The switchboard shall be located where shown on the plans and fully IP rated and waterproof.

The switchboard shall be constructed of panels and doors of stress-relieved sheet steel panels. Doors shall have double turned edges tack-welded at corners; and shall be minimum thickness of 1.6mm suitably reinforced where required. Other panels shall be 1.6mm minimum thickness.

Switchboard door and cabinet panels shall be factory fitted with impact and moisture resistant protection coves which shall not be removed until just prior to the completion of the works and the semi-final inspection.

Provision shall be made for removable escutcheon plates, to gain access to equipment. Mono construction shall be used, with pressed panels and folded edges.

Cubicle provision shall be made for housing the maintenance manual and the servicing log book within the switchboard enclosure.

Switchboard shall be fitted with dust sealed hinged lockable doors having at least two (2) concealed hinges and a lockable recessed handle fitted with an L&F Series 92268 key lock. Where the switchboard is installed outdoors or in a location requiring special attention to waterproofing it shall be adequately protected against moisture entry to a degree of protection of IP56D in accordance with Australian Standard AS 1939.

Provide adequate ventilation.

Provide all busbars, cables, etc., as required. Busbars shall be high conductivity hard-drawn copper tinned at all busbar joints.

Provide a schedule of all equipment supplied, including make/mode nos.

Provide within the switchboard the following equipment:

- Main isolator.
- Circuit breakers to protect motive power circuits.
- Motor starters with appropriate manual reset overloads for motive power circuits.
- Thermistor control units for motors fitted with thermistor sensors.
- DDC control system.
- Mechanical separation between 240V and 24V control gear within board.
- Contactors/relays as required.
- Control relays and indicating lamps.
- Re-set buttons and indicating lamps.
- Current transformers.
- Spares cabinet.
- Condensate heater.
- Fault current limiters, as required to maintain fault level.

All outgoing connections from the sub-switchboard shall firstly be terminated in approved terminal blocks then cabled to the equipment concerned.

All wires to the switchboard shall bear a distinguishing number at each end fixed to the cable in an approved manner. Numbers shall be inscribed on the schematic wiring diagram included in the maintenance manual.

Each item on the switchboard shall be labelled by means of black traffolyte labels with white letters. Labels shall be neatly and securely attached to the sheet steel by means of chrome plated escutcheon pins.

Provide all the necessary termination blocks and cable glands etc.

Obtain local electrical supply authority approval of the mechanical switchboard shop drawings and schematics prior to commencing switchboard manufacture.

MSSB-THERMAL shall incorporate 30% spare capacity and 30% spare space for future loads and plant connections (240V x 24V switchgear and control gear)

Switchboard shall be complete with high level interface check meters for logging and analysis of energy usage via the BMS. (Heat pumps only)

Confirm colour of switchboard prior to ordering with Superintendent.

Obtain approval of workshop drawings from regulating authority.

Obtain fault rating of each switchboard.

Confirm maximum permissible dimensions of each board prior to manufacture.

Provide earth leakage protection.

4.6 Wiring Methods

All wiring installed shall be run via suspended cable tray (allow 30% spare capacity on cable tray).

Seal all slab or wall penetrations with approved proprietary sealant.

All exposed cabling shall be suitably covered for protection.

4.7 Variable Speed Drives (VSD)

All pumps where indicated with VSD's on Equipment Schedules or within the specification.

Supply, install, test and commission the installation of new variable speed drive, complete with EMC filter and associated control panels.

Install input and output choke, as required, to smooth out any voltage peaks.

Coordinate pump motor with VSD for operation and compatibility with functional control requirements.

Provide protective ventilated covers to suit selected VSD.

Provide high level interface to accept MODBUS or equivalent and to suit compatibility of proposed control system.

Provide shielded cables from VSD to pump motor.

5 ELECTRIC MOTORS AND STARTERS

5.1 General

(NATSPEC Reference: 0784 MOTORS AND STARTERS)

Project specific or non-standard requirements if applicable are indicated below.

6 HEATING COILS

6.1 General

(NATSPEC Reference: 0733 AIR COILS)

Technical schedules accompanying this specification detail specific project technical requirements.

Project specific or non-standard requirements if applicable are indicated below.

Remove the existing heating coils as designated on the air schematic on drawing M01 and replace with new as per the equipment schedules. Note, these works may be omitted during contract negotiations subject to any budget constraints

Coils shall be of a recognised Australian manufacture.

In transportation, handling and erection of coils particular care shall be exercised to protect fins from damage. Any damage to coil fins shall be made good by combing, and where damage is not repairable by this method coils may be rejected.

Coils shall be mounted in rigid structural frames which have been designed to allow the removal of coils. Structural frames shall be constructed of hot dipped galvanised steel or aluminium angle or channel sections. Contact between ferrous and non-ferrous materials shall be prevented by the use of neoprene washers and gaskets.

Coils shall be selected and arranged for contraflow of air and water and piping connections shall be made to allow the easy removal of coils.

All coils shall be provided with air vents.

6.2 Heating Coils

Heating coils shall be of copper tube corrugated aluminium fin construction with heavy copper headers and heavy gauge galvanised steel frame.

Coils shall be selected to have a face velocity not exceeding 3.75 m/s.

7 INSTRUMENTS

7.1 General

Binder points are required at the following locations :

- Flow and return pipes to each storage tank (primary and secondary).
- Flow and return to individual heat pumps

Thermometers are required at the following locations :

- Secondary flow and return (chilled and heating water).
- Flow and return to each heat pump HP-1, HP-2, HP-3, HP-4.

Pressure gauges are required at the following locations :

- Suction and discharge connection to pumps.

Supply and install all thermometers, manometers, and sensing points required by the Project Specification and Drawings and in particular as detailed below;

Full technical, descriptive and dimensional data for all instruments shall be submitted for approval.

All indicating instruments shall be selected so that their normal operating point is approximately in the centre of the dial range.

Instruments for each component or component system shall be mounted on common gauge boards for the particular component or equipment system to which they refer. Gauge boards shall be hammertone finish with chrome trim.

7.2 Pressure Gauges

Pressure gauges shall be of the bourdon type encased in 100mm diameter moulded polycarbonate cases and fitted to the pipework with ball valves and snubbers.

Gauges shall register in kPa and shall be selected for mid-scale operation at normal operating duties. Gauges shall be fitted where indicated on Project Drawings and Specifications.

7.3 Thermometer Pockets

Provision shall be made, by means of thermometer pockets in pipelines and 10mm diameter plugged holes in ductwork for reading temperatures, wherever indicated on Project Drawings and Specification.

Thermometer pockets shall be Binder Twinlok Test Plugs.

Test plugs shall be installed, into a bend, or at angle to the pipe so that a minimum length of 100mm is in contact with the pipe fluid.

All pipes below 50mm diameter shall be enlarged in section to at least 50mm, where test plugs are to be installed.

7.4 Thermometers

All thermometers shall be 100mm diameter and have adjustable pointers of the type that cannot be altered without removal of glass.

Thermometers in pipelines shall be remote capillary, back connected industrial type Tel-Tru GT300R. Stems shall be at least 50mm long and accuracy shall be guaranteed to ±1% at mid-range. They will be installed wherever shown on the Project Drawings and indicated in the Project Specification.

8 INSULATION

8.1 General

(NATSPEC Reference: 0752 PIPING INSULATION)

Project specific or non-standard requirements if applicable are indicated below.

This Specification shall be read in conjunction with a Particular Project Specification, Technical Schedules and Drawings.

Where specified and where indicated on the Project Drawings, pipework, air handling equipment and equipment handling fluids shall be insulated.

Insulation shall not be applied to any pipework and equipment specified to be externally insulated, until the workmanship and pressure testing has been approved by the Consulting Engineer.

No insulation shall be concealed from sight within the building structure until it has been inspected and approved by the Engineer.

All insulation, scrim coverings, adhesives etc. shall be of fire resistant type and shall comply with the regulations of the insurance Council of Australia and the requirements of AS 1668 - Part I.

All piping and equipment shall be installed to permit the proper installation of the insulating material specified. Makeshift patching or filling with loose or blown insulation due to lack of space will not be permitted. Adjacent and parallel pipes shall not be married together with insulating material.

8.2 Pipe Insulation

The following schedule details specific project pipe system insulation:

Service	Location	Pipe Size (mm)	Thickness (mm)	Type & Finish
Heating Water	Plantrooms where exposed to view and external	Up to 50	25 (38mm for systems > 65 kW)	Sectional Rigid Glasswool, 60 kg/m³ density. Wrap with Thermobreak no clad
		65 & above	38	
	Concealed within ceiling space	Up to 50	25	Sectional Rigid Glasswool, 60 kg/m³ density with factory fixed aluminium foil
		65 and above	38	
Chilled/Heating Water	Plantrooms where exposed to view and external	Up to 50	38	Expanded polystyrene and vapour barrier. Wrap with Thermobreak no clad
		65 to 100	38	
		125 to 200	50	
	Concealed within ceiling space	Up to 25	38	Polystyrene with aluminium foil
		32 to 50	38	
		65 to 100	38	
		125 to 200	38	

Colour of PVC insulock to be confirmed by Superintendent prior to ordering.

8.3 Thermobreak No Clad

Foam pipe insulation as an alternative to external cladding in plantrooms or external (50mm).

8.4 Adhesives and Sealants

Adhesives and sealants shall be of Foster's or equal approved manufacture of fire resistant type and suitable for the duty and materials for which they are used.

The following types of adhesives and sealants are approved for the applications listed:-

Protection and vapour sealing of chilled water lines;

Fosters Sealfas 30-36

Adhering and vapour sealing of vapour barrier jackets on cold pipe insulation;

Foster's, Ductfas 85-23

Joint sealing and Vapour barrier for joints in cellular foam insulation;

Foster's Sealfas 30-36; Reinforced Aluminium Foil Tape;

Adhesive for polystyrene insulation;

Ritetach or similar

8.5 Pipework

Pipework, valves, fittings etc. shall be externally insulated as specified and as indicated on the drawings.

All insulation shall be continuous through sleeves and hangers and all flanges and unions shall be insulated except at final connections to equipment and where specifically specified to be omitted.

Insulation shall be made a tight fit on piping so that none of it can be turned by hand pressure. All canvas or scrim layers shall be neatly and securely glued down with a rodent proof adhesive. All bends shall be covered with lagging to the same thickness as the sectional pipe covering and shall be of lobster-backed construction or of preformed type.

Insulation shall be neatly coned down to fittings such as valves, leaving sufficient clearance to enable removal of valves at any time without damage to the insulation.

It is important that all lagging in the plant rooms shall be finished accurately and neatly to present a true and smooth finish.

Where a vapour seal is required on the insulated line the vapour seal shall be continuous through the pipe support.

It is the intent of this specification that, where a vapour barrier is specified, this forms a continuous, unbroken, vapour barrier on the outside surface of the insulation.

Any pipe showing 'sweating' during the defects period shall be stripped, allowed to rise to ambient temperature, thoroughly cleaned and dried and covered with new material.

9 LIQUID CHILLER SETS (AIR-TO-WATER HEAT PUMPS)

9.1 General

(NATSPEC Reference: 0711 CHILLERS)

Technical schedules accompanying this specification detail specific project technical requirements.

Project specific or non-standard requirements if applicable are indicated below.

The air-to-water heat pump shall be complete with its own control system.

Provide all necessary control system hardware, software and accessories to allow for integration of the heat pump control systems and the new control and building management system (BMS) and open standard contemporary building automation system using BACnet Modbus or equivalent protocol. Functionality is to include, but not limited to:-

- Individual heat pump fault output alarms;
- Outdoor temperature lockouts;
- Heat pump status monitoring
- Heat Pump energy meters (refer “Multifunction Metering” clause)
- Heat Pump START/STOP
- Heat Pump load control
- Heat Pump deadband settings. (This shall be adjusted at each individual heat pump and set at the factory.)

Supply and install all additional ancillary control and sensing equipment required to provide the required functionality.

Air-to-water heat pump units shall be complete with all required accessories, i.e. differential pressure switches etc., to operate as specified.

Heat pump to be complete with condenser fan VSD head pressure control.

All heat pumps complete with high static condenser fans.

Heat pumps shall be registered with Workplace Standards Tasmania including required pressure vessel registration.

9.2 Heat Pump Chiller Security

Note that a retention in the form of bank guarantees on the new heat pump chillers will be held until a full load test is completed on a design heating and design cooling day which satisfactorily confirms the unit's operating capacity.

9.3 Heat Pump Chiller Documentation

Provide detailed technical documentation for each chiller set suitable for installation maintenance manuals and to allow installation by the Installing Contractor. This information shall include detailed wiring diagrams, heat pump and chiller operation, fault finding, manufacturer's data, etc.

9.4 Critical Spare Parts

Provide as separate cost item in Tender Submission.

A local supply of critical spare parts shall be supplied and maintained by the Contractor for the duration of the defects liability period.

Critical spare parts shall be defined as any part which, if part failure occurs, will result in heat pump chiller downtime exceeding 8 hours. Tenderer's shall provide a critical spare parts list with their tender submission detailing the current supply cost for each part.

All spare parts used by the Contractor during the defects period shall be replaced at NIL COST and be on site within 48 hours.

9.5 Capability and Support

Chillers and heat pumps shall only be considered with an assessment on the following guidelines. Relevant information should be provided with Tender Submission.

Capability of Manufacturer:

- Capacity and viability of organisation.
- Experience in chiller manufacture.
- Number, quality and duration of installations in Australia.
- Number, quality and duration of installations in Tasmania.

Maintenance and Support:

- Capability and viability of service organisation.
- Relevant experience of local representatives.
- History of experience servicing the product.
- Number of staff located in Hobart with chiller maintenance experience and qualifications.
- Response to call-out and repairs.
- Maintenance methodology and processes.
- Spare parts stock in Hobart.

Quality of Product:

- Materials of construction.
- Supplier quality checking processes.
- Demonstrated reliability of major components, eg. compressors – history and statistics.

- Demonstrated longevity in service.
- Guarantee/warranty offered.
- Maximum operating noise level (dB).

10 NOISE AND VIBRATION

10.1 General

NATSPEC Reference: 0701 GENERAL REQUIREMENTS)

The following background sound levels due to mechanical services equipment installed under this Contract shall not be exceeded:

Location	Noise Rating
General Office areas	NR38
Meeting/Conference Rooms	NR35
All other circulation and amenity areas	NR45

Where noise levels in occupied areas and elsewhere are stated in the Specification they are the maximum noise levels which will be considered acceptable when all mechanical equipment is operating.

Tenderers having any doubts as to their ability to guarantee noise levels with the proposed design shall state so in their Tender and shall indicate any design modifications which they consider necessary to guarantee noise levels, together with Tender price variations for such modifications.

Ensure that equipment selections are based on the lowest available sound power levels and shall provide sound power level spectrums for all finally selected noise emitting equipment for approval within one (1) week of being awarded the Contract.

This does not release Tenderers from providing sound power level data on initial equipment selections, with their Tenders.

Tenderers having any doubt as to their ability to guarantee noise levels with the proposed design shall state so in their Tenders and shall indicate any design modifications which they consider necessary to guarantee noise levels, together with Tender price variations for such modifications.

Be responsible for the performance of selected equipment as related to sound and vibration generation and the standard of workmanship of the installation.

10.2 Measurements

Measurements shall be made with a sound level meter complying with AS 1259. Where the acceptable noise levels specified are described in Terms of Noise Rating curves, the noise levels will be measured in each of the internationally preferred octave bands. (i.e. 63, 125, 250, 500, 1000, 2000, 4000 and 8000 hertz.)

Measurement shall be made at a height not less than 1500 from floor level and not closer than 1500 from any wall or air distribution outlet and at 90^{o} to the face of these air openings.

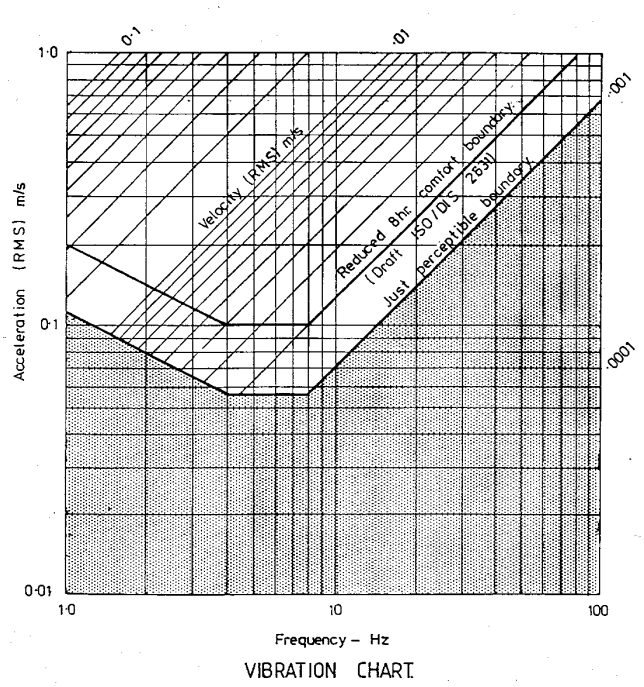
Measurement shall be made during normal occupancy hours, but with the immediate area in which the measurements are being made unoccupied.

10.3 Noise Levels

Noise levels in various areas of the building due to air conditioning, ventilation and mechanical equipment shall generally be in accordance with the requirements of AS 1469 and shall not exceed the noise levels specified in the table provided within the Particular Project Specification.

10.4 Vibration

With all equipment operating in its worst unbalanced condition the vibration levels in any part of the building shall be within the 'just perceptible' region when plotted on the chart below:-



VIBRATION CHART

10.5 Precautions

General

The precautions to be taken to prevent generation and transmission of undue noise and vibration are as follows;

Piping shall be installed so that there are no fluid noises due to localised high velocities or sudden changes or direction. Fittings required to throttle or control the flow of fluid shall be selected to give quiet operation under throttling conditions.

Check valves shall be selected to operate without giving rise to water hammer. Spring loaded check valves or motorised check valves shall be used where necessary to prevent water hammer.

Piping near vibrating machinery shall be supported where necessary with rubber bushed pipe supports to allow torsional and lateral deflections to take place in them and to prevent the transmission of vibrations into the building.

Reciprocating compressors, giving rise to air or gas pulsation noises in the intake or discharge pipework shall be fitted with suitable mufflers.

Internally insulated ducts shall be provided where they are considered necessary to obtain the sound level specified and where particularly specified on the drawings. Duct interiors shall be smooth and streamlined. Screw ends, raw edges of metal and drumming of panels shall be avoided.

Air outlets and inlets shall be selected to permit the noise levels specified to be achieved. Air velocities in register and diffuser necks shall not exceed 3 m/s. Air handling terminal equipment shall be fitted with sound absorbing chambers and baffles where necessary.

All rotating machinery shall be statically and dynamically balanced and shall be designed with clearances and mechanisms suitable for the noise level requirements.

Equipment shall be mounted on a rigid base and spring, rubber or other approved vibration isolation mountings. The base shall have an area sufficiently large to support the connecting pipework up to the pipe vibration isolating fitting. Additional mass shall be provided where necessary to reduce the amplitude of movement to an approved limit.

Materials used to seal spaces containing the isolating materials shall be flexible so that vibration is not transmitted and so that the seal is not damaged.

Care should be taken to prevent transmission between identical machines having same frequency response which can cause bearing deterioration in the idle machine when the other is operating.

Fan tip speeds and velocities, and motor, pump and compressor speeds shall be kept within the limits specified.

Electric motors shall be selected for quietness where noise from them could disturb occupied areas or raise noise levels above those specified.

Contactors shall be free of undue hum and vibration. Any motor deemed unduly noisy by the Engineer shall be placed at the expense of the Sub-Contractor. (Refer also to **Standard Specification "Electric Motors"**.)

10.6 Vibration Isolation Equipment

All rotating or vibration emitting equipment shall be isolated from the building structure by vibration eliminators designed to prevent a minimum of 90% of vibrating forces being transmitted to the structure.

All vibration isolating equipment of similar type shall be supplied by one manufacturer. All isolator selections shall be subject to the approval of the Engineer.

Rubber-in-shear isolators shall be properly housed and provided with adequate facilities for bolting.

Rubber shall be 50 durometer, with an area ratio of 0.5 and shall be selected to deflect by a maximum of 15% of its thickness.

10.7 Pipe Connections

All pipe connections to rotating or vibrating machinery shall be made with flexible connections of the twin sphere type. Available from 'Reece HVAC'. (Selection care in respect to operating pressure and temperature will be required.)

All flexible connections shall be connected in complete accordance with the manufacturer's recommendations and in such a way to eliminate transmission of vibration to pipework, and so that the weight of pipework and valves is not transmitted to the particular machines.

10.8 Pipes

Pipes shall be supported as follows:

Between vibration producing equipment – Spring/neoprene hangers

First three supports after equipment – Spring/neoprene hangers

Next five supports – Rubber in shear hangers

Remaining supports – Solid fixings

All springs shall be selected for a minimum static deflection of 25mm.

11 PIPEWORK SYSTEMS

11.1 General

(NATSPEC Reference: 0751 MECHANICAL PIPING)

Technical schedules accompanying this specification detail specific project technical requirements.

Project specific or non-standard requirements if applicable are indicated below.

Service Duties

The minimum operating pressure expected of the respective piped services is indicated below. Notwithstanding this service duty the design operating pressure for the system shall be the full rated operating pressure of the nominated pipe and fittings. The applicable piping material and its construction standard is also tabulated below.

Piped Service	Service Duty	Material	Standard
Chilled and heating water	300 kPa	Type B copper	AS 1432
Drains	50 kPa	Type B copper/or UPVC	AS 1432

Provide suitable expansion in all pipework, including support systems to eliminate all movement when expanding and contracting, including potential water hammer.

All pipework shall be suitably supported on Unistrut or approved equivalent.

Provide suitable fire collars on all pipework that penetrates walls with a required fire resistance level.

12 PUMPS

12.1 General

(NATSPEC Reference: 0714 MECHANICAL PUMPS)

Technical schedules accompanying this specification detail specific project technical requirements.

Project specific or non-standard requirements if applicable are indicated below.

13 WATER TREATMENT

13.1 General

(NATSPEC Reference: 0753 WATER TREATMENT)

Project specific or non-standard requirements if applicable are indicated below.

pH levels to be confirmed with the heat pump manufacturer prior to dosing during the construction and defects period and inhibitors provided as required by the same.

Allow to chemically dose the heating and chilled water loops prior to practical completion and re-dose at the end of the defects period.

All inhibitors shall be incorporated into future Maintenance Contracts.

13.2 Flushing of Secondary Water Loops

Engage ‘Integra Water Treatment Solutions’ or a suitable water treatment contractor as a selected water treatment contractor to undertake the following works to the secondary loop of both heating and chilled water systems:

- A ‘PCL’ clean of each secondary water loop with staged circulation.
- A slow bleed when draining each system.
- Full chemical re-dose at the completion of the works to maintain the required ‘pH’ levels suitable for new heat pumps.

COMMISSIONING AND MAINTENANCE

14 TESTING AND COMMISSIONING

14.1 General

(NATSPEC Reference: 0791 MECHANICAL COMMISSIONING)

Project specific or non-standard requirements if applicable are indicated below.

- Contractors shall provide the Superintendent seven (7) days' notice prior to requesting any services inspections.

  Inspections shall include:

  - Practical completion and commissioning inspections. Contractors shall provide copies of all commissioning results prior to requesting inspections (1 off).
  - End of defects inspection (1 off).
- A programme for all inspections shall be coordinated with the Superintendent and incorporated into the Contractor's programme.
- Individual and 1 off inspection shall not be undertaken. Contractors are responsible for grouping inspections as a whole.

14.2 Functional Witness Testing

The following items must be complete prior to functional witness testing by the Superintendent:-

(i) All progressive testing certificates submitted and accepted.

(ii) Primary testing and commissioning.

(iii) Contractor functional testing.

Primary Testing and Commissioning

At the completion of the works the entire installation shall be re-tested under working conditions.

Contractor Functional Testing

Once the basic integrity and compliance of the installation has been established by primary testing and commissioning, perform full functional testing to establish and verify correctness of functional operation under all load and working conditions.

Functional testing shall be performed to an approved and itemised Test Plan. Submit a draft Test Plan to the Superintendent for approval at least one (1) month prior to the commencement date of testing.

The Functional Test Plan shall include but not necessarily be limited to :-

- itemised simulated conditions and corresponding expected resultant control system responses,
- system sequential responses, interlock 'in' responses and interlock 'out' responses,
- power failure response,
- alarm verification,
- graphics demonstration,
- heat pump operation,
- AHU operation,
- DDC controls operation,
- water flow testing.

When the Contractor has tested and verified all functional testing to his own satisfaction, submit completed Test Plan sheets to the Superintendent for approval. When the Superintendent is satisfied that functional testing by the Contractor has demonstrated that the functional operation has reached a substantial level of compliance, then functional witness testing can take place.

Functional Witness Testing Procedure

Witness testing shall involve the Contractor demonstrating to the Superintendent, and his nominated support representatives, the correct operation of all systems covered under this Contract. Witness testing shall proceed in accordance with the approved Test Plan. Witness testing will not necessarily be limited to the items in the Test Plan but shall include any and all other relevant tests as the Superintendent may reasonably request.

Hard copies of trend logs of system operation shall be provided as directed by the Superintendent during both the commissioning and defects periods.

The specified control system shall provide a great deal of flexibility and opportunity to fine-tune system operation.

Tenderers shall allow to adjust all setpoints and controls functionality as directed by the Superintendent during the commissioning and defects period.

14.3 Control System

Undertake testing and commissioning of the BMS including all data points to provide a complete and operating system to the satisfaction of the Superintendent. Verify operation of data points and associated equipment including :-

1. Equipment status inputs
2. Analog inputs over calibrated range
3. Digital outputs including equipment operation
4. Adjustment of setpoints

Ensure that all field equipment, including dampers and valves operate over their full range as controlled by the BMS. Simulate alarm conditions at the field device to confirm alarm input operation.

Verify bus operation and speed, and satisfactory update of datapoints on graphics screens.

Provide a detailed commissioning report indicating :-

1. Listing of datapoints as tested.
2. Calibration of ranges for analog points.
3. Operation of field devices.
4. Functional control operation.
5. Setpoints.

Allow to undertake alterations to the system as requested by the Superintendent for fine-tuning of the system configuration during the defects and commissioning period.

14.4 Instruction of Principal's Representative

Prior to Practical Completion, the Contractor shall demonstrate to the operating staff the operation of all equipment and systems. The Contractor shall conduct at a minimum four (4) training sessions covering the operation and maintenance of the installation including all safety aspects, lasting for not less than four (4) hours each.

Training shall continue until the operators are confident in the operation of all systems.

Training shall include in-situ hands-on operation of systems and control system training.

Control system training shall include instruction of the Superintendent as the Principal's nominated remote monitoring consultant. Instruction shall occur at the remote terminal in the office of the Superintendent.

14.5 Performance Tests

Allow for further performance testing of HP-1, HP-2, HP-3 and HP-4 during the Defects Period.

The manufacturer or their authorised representative shall attend site a minimum of three (3) times during the defects period.

Performance tests shall be carried out during peak heating and cooling conditions, when the outdoor temperatures are close to ambient design conditions.

Compliance with this requirement will NOT be approved as the basis of tests made during intermediate ambient conditions.

The system shall be tested and logs provided on a design day for a period of no less than 24 hours, at a date approved by the Superintendent. All tests shall be carried out to the satisfaction of the Superintendent and prior to the end of defects period.

The equipment shall be tested by operating the equipment at prevailing conditions and recording the condition of all variables.

Operation of all low pressure, high pressure safeties, including oil pressure and sump heater alarms shall be checked.

Operation of load control and sequencing systems where applicable shall be checked.

At a minimum the following information shall be recorded:

- Time hours, minutes, seconds
- Machine operating capacity
- Setpoints
- Refrigeration circuit operating capacity
- Entering temperatures
- Leaving temperatures
- Outside temperature
- Delta T across coils
- Capacity kW
- COP on all heat pumps

15 CORROSION PROTECTION AND LABELLING

15.1 General

(NATSPEC Reference: 0701 GENERAL REQUIREMENTS)

Project specific or non-standard requirements if applicable are indicated below.

Items to be Factory Finished

- Air-to-water heat pumps
- Pumps
- Inertia tanks
- Switchboards

16 COMPLETION

16.1 Substantial Completion

The following requirements shall be fulfilled before the work can be considered to be substantially complete:

All systems shall be commissioned and tested with complete test sheets submitted for review.

Installation to be certified by the installing Subcontractor in a form satisfactory to the Local Authority, for each essential service covered stating that it has been designed, installed and is capable of operating to the standards specified and required by the local authorities.

Draft As-Installed drawings to be submitted.

Draft Operation and Maintenance Manuals to be submitted.

Any outstanding defects to be limited to minor items which do not affect operational requirements of the system as dictated by Australian Standards.

16.2 Practical Completion

The following requirements shall be fulfilled before the work can be considered to be practically complete:

- Final As-Installed drawings received.
- Principal's Instruction complete.
- Final Operating and Maintenance Manuals received including commissioning reports.
- Maintenance log book received for warranty period.
- Zero outstanding defects.

Provide after 12 months maintenance of essential services, a completed certificate in a form satisfactory to the Local Authority for each essential service covered stating that it has been maintained and is capable of operating at a standard not less than that to which it was originally designed and installed.

16.3 As-Installed Drawings

Requirement

"As-Installed" drawings are required to be submitted with the Operating and Maintenance Manuals prior to the date of practical completion. The drawings shall comprise those required as Working Drawings and brought up to date.

Format: Prepare "As-Installed" drawings in 3D CAD, as a Revit model, and as .pdf files.

Submission

Submit the following with the Operating and Maintenance Manuals:

One (1) set of full size A1/B1 prints.

Three (3) sets of A3 reduced prints bound separately as part of the Operating and Maintenance Manuals.

Two (2) sets of CAD file disks.

Two (2) sets of PDF file disks.

Preliminary Drawings: Submit preliminary drawings for examination prior to preparation of final drawings. Label all drawings "As-Installed" and incorporate all amendments with the amendment block blanked. Revert issue number to A or 1.

16.4 Operation and Maintenance Manuals

Provide Operating and Maintenance Instruction Manuals to provide a comprehensive instruction reference for the Proprietor with regard to his normal obligations in respect to the routine operation and maintenance of all plant and equipment installed/modified as part of the Works, including:

- General description of systems and equipment
- Description of systems operation
- Schedules of periodic maintenance requirements for all systems and equipment
- Schedules of all proprietary equipment: ID, Make, model, supplier, address, phone number
- Manufacturer's technical literature
- Commissioning data
- As-installed drawings
- System operation
- DDC database, control logics configuration and graphics screens
- Calibration instruction, and settings
- Troubleshooting
- Wiring diagrams and field controller connections
- Details of passwords and access codes

Provide one 1 hard copy draft issue for review, comments and approval.

Prior to manuals being submitted for review, the relevant Contractor shall:

- Sign the manuals off as being correct and meeting all of the specified requirements;
- Confirm that the 'As-Installed' drawings have been checked and that they accurately reflect the installation;
- Confirm that any previously flagged defects, Architect's Instructions and Engineer's Instructions have been actioned and included in the manual.

Once approved, provide 3 hard copies and 3 electronic copies.

Electronic copies of the manual shall include the following:

- General information in relevant Microsoft Office application files or .pdf files.
- Technical literature scanned as .pdf files.
- Drawings in AutoCAD format.

Electronic copies shall be provided on clearly labelled CD's complete with labelled jewel case.

Control System Operating and Maintenance Manuals

Provide Operating and Maintenance Manuals to provide a comprehensive instruction reference for the operators with respect to routine operation and maintenance of the automatic control system.

Include detailed descriptions in text, tabular and diagrammatic form of all aspects of the system, including:

- System operation including flow charts for each control sequence.
- Listing of DDC database and control logic, configuration and graphics screens.
- Calibration instructions and controller settings.
- Trouble-shooting procedures.
- Wiring diagrams for operator stations and field controller connections.
- Schedules of equipment: ID, make, model, supplier, address, phone number.
- Details of all passwords and access codes.

Provide software and hard copy of parameter files where they are not directly accessible on the operating system.

Provide hard copy draft issue for review, comments and approval.

One (1) copy shall be kept by Engineer.

Two (2) copies shall be handed to Principal.

Once approved, provide 3 hard copies and 3 electronic copies.

Electronic copies of the manual shall include the following:

- General information in relevant Microsoft Office application files or .pdf files.
- Technical literature scanned as .pdf files.
- Drawings in AutoCAD format.

16.5 Principal's Instruction

Upon completion of the work and after completion of all tests, supply the necessary skilled labour to adequately instruct the Principal as to the safe, efficient and effective operation and maintenance of his equipment. Such instruction shall be as detailed as necessary to fully instruct the Principal and in any case shall consist of a period of not less than eight (8) hours. Where necessary the Subcontractor shall involve his specialist Subcontractors in such instruction, but only in his presence.

Arrange for the above period of instruction to suit the Principal's Representative.

Be fully responsible for the operation of all plant and equipment supplied and installed by him until the Superintendent acknowledges that the Principal has received all necessary instructions in the operation of equipment and systems.

Provide operator training for the automatic control system, to cover all aspects of operation and functionality, as relevant to each access level.

Arrange instruction sessions to suit availability of the operators, to be coordinated through the Superintendent. Allow for a minimum of eight (8) hours training over the sessions.

Provide a follow-up session to occur approximately one (1) week later to assist operators in any further operating queries. Allow for a minimum of two (2) hours for the follow up session.

Provide 1 repeat follow-up session on site and telephone/on site response support during the defects period.

17 MAINTENANCE, WARRANTY AND DEFECTS LIABILITY

17.1 Maintenance

(NATSPEC Reference: 0792 MECHANICAL MAINTENANCE)

Project specific requirements are indicated below:

Maintenance Services

Maintain all equipment and systems to a high level of efficiency and reliability. Minimise disruption to occupants.

The required maintenance services have been grouped into the following disciplines:

- **Mechanical Services**

  Equipment under the Mechanical Services heading includes:

  - Thermal plant
  - Control systems
  - Mechanical services misc

  The basis of maintenance shall include Australian Standards AS/NZS 3666, AS 1668, SAA/SNZ HB32, AS 1851-2012, Workplace Health & Safety Act 2012, the maintenance schedules.

  - **Mechanical Switchboards**

  Equipment under this heading includes:

  - Mechanical switchboards
  - Mechanical control panels

Annual maintenance shall be carried out in accordance with Australian Standard AS 2467.

Types of Maintenance

Provide the following types of maintenance for the duration of the Contract:

1. Maintenance During Construction
2. Preventative Maintenance
3. Statutory Maintenance
4. Corrective Maintenance
5. Emergency Maintenance
6. Registered Plant Inspections
7. Update of Manuals and Drawings

Maintenance During Construction

During the construction period and until all maintenance and operation manuals have been completed and submitted and all proprietor instruction is complete to the Superintendent's approval, provide all maintenance including but not limited to:

- Daily operation including starting and stopping of the plant.
- All routine service tasks.
- Emergency visits.

Preventative Maintenance

Preventative Maintenance refers to the routine works to be carried out to keep the equipment in good operating condition, and the routine checks and inspections intended to identify problems or potential problems before major damage or breakdown occurs.

Preventative Maintenance shall be carried out to the procedures, and at the regular intervals, indicated in the Preventative Maintenance Schedules in the operation and maintenance manuals.

All inspections and tests by Statutory Authorities required for any plant must be co-ordinated by the Contractor. The Contractor shall allow for this in his price for Preventative Maintenance. The Superintendent reserves the right to attend all inspections.

Statutory Maintenance

Statutory Maintenance refers to the routine works to be carried out so as to ensure that all equipment is maintained in accordance with all relevant Acts, Regulations, Codes and Standards, meeting State, Local Government and other Statutory Authority requirements including, but not limited to :-

- Councils
- TasNetworks
- Tasmania Fire Service
- WorkSafe Tasmania
- All relevant Australian Standards
- National Construction Code (NCC) (BCA)
- Building Act 2016

Corrective Maintenance

Corrective Maintenance refers to the unscheduled rectification works, not of an emergency nature, required to repair, restore or replace equipment to an acceptable condition.

Should the Contractor observe or otherwise become aware of any equipment requiring, or likely to require, corrective maintenance he shall advise the Superintendent's Representative without delay.

Carry out Corrective Maintenance only with the prior approval of the Superintendent's Representative, and in accordance with any time-frame limitations, or other conditions he may direct.

Emergency Maintenance

Emergency Maintenance refers to the unscheduled Works required to be undertaken immediately following an equipment breakdown, pending failure or major alarm.

Maintain a 24-hour, 7-day emergency call-out service for the duration of the Contract.

Provide one emergency contact telephone number which shall at all times automatically connect the caller to the Contractor's attended receiving location. A call for emergency maintenance will generally come from the Building Manager, the Building Security Guard or the Security Monitoring Company.

Upon receiving an emergency call-out, the Contractor's suitably-qualified representative shall attend the site within sixty (60) minutes, with the necessary tools and equipment to commence the emergency works.

Following completion of the emergency works, the Contractor's representative shall complete the Maintenance Log Book and ensure that both the equipment and the site are left in a safe and secure condition.

Should the Contractor fail to respond to site within the required response time, the principal may, without incurring any liability or obligation and without limiting any other redress, engage persons other than the Contractor to undertake emergency work on the systems. In such cases the Contractor shall fully reimburse the principal for any costs incurred.

Registered Plant Inspections

Registered plant inspections refer to the routine works and inspections to be carried out so as to ensure that all registered plant maintains its registration and certification in accordance with all Statutory Authorities requirements.

Contractors shall allow for all costs to complete these inspections and subsequent certification which shall include, as a minimum:

- Preparing equipment for inspections.
- Inspections by registered inspectors.
- Completion and provision of all documentation to enable certification and maintain registration.
- Coordination of inspections.

Maintenance Manuals and As-Installed Drawings

Update the Site Maintenance Manuals and As-Installed Drawings with all changes during the defects period. Provide two (2) additional copies of the relevant information to the Superintendent.

Annual Report

Provide an annual report to confirm maintenance has been completed in accordance with the Specification.

17.2 Warranty and Defects Liability

Warrant all work and equipment against defective workmanship and materials from the date of Practical Completion until the end of the Defects Liability Period including the extension of any warranty provided by a manufacturer should it be for a lesser period. Rectify any outstanding minor works or faults which occur or are identified during the Defects Liability Period.

Where the manufacturers of items of equipment give standard warranty periods in excess of the Defects Liability Period, assign such warranties to the building owner prior to Final completion.

Replaced items of equipment must carry a warranty covering a period equal in duration to the Defects Liability Period and dating from the time of installation of the replacement.

18 EQUIPMENT

18.1 General

Equipment Schedules in this Specification may refer to some items of equipment by brand name/model number. This is done to assist tendering, not to indicate pre-approved selection, and does not relieve the Contractor from responsibility to select all items of equipment to meet the performance, and other criteria nominated in this Specification.

It is the responsibility of the Contractor to select all equipment to meet the performance and other requirements of this Specification.

Contractor's Equipment Selections

Prior to placing orders for equipment, submit schedules of all proposed equipment for Engineer's review and approval.

Schedules shall include information: brand, model number, dimensional data, performance data, materials of manufacturers, etc.

Where there is deviation from or non-compliance with the Specification, the Contractor must point this out in writing in their Submission.

Review/approval by the Engineer does not transfer responsibility away from the Contractor to comply with the requirements of the Specification in all respects.

The Principal reserves the right to accept or reject any equipment offered.

18.2 Manufacturer's Warranty

All equipment must be selected and installed in accordance with manufacturer's instructions and in such a way that the manufacturer's warranty remains intact. Deviations from the manufacturer's

recommendations must be obtained in writing and submitted for approval prior to proceeding with works.

18.3 Access for Maintenance

Locate all equipment which must be serviced, operated or maintained in fully accessible positions. Supply access doors as required for this purpose.

Provide all necessary access to plant and equipment as recommended by manufacturer, and as required by sensible and safe practice.

All access provisions eg. manholes, access ladders, walkways and work platforms shall satisfy the requirements of Workplace Standards Tasmania, and other statutory requirements.

19 MECHANICAL SERVICES EQUIPMENT AND PREVENTATIVE MAINTENANCE SCHEDULES

MECHANICAL SERVICES EQUIPMENT SCHEDULES

Schedule No.	Schedule
MES09	Heat Pumps (Air Cooled)
MES12	Heating Coils
MES29	Pumps
MES33	Tanks and Vessels
MES35	Miscellaneous Equipment

MES-Data	Automatic Control System – Data Monitoring, Display and Control Summary

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HEAT PUMPS

Properties and Performance Specification	**HP-1**		**HP-2**		**HP-3**		**HP-4**			
Make	Daikin		Daikin		Daikin		Daikin			
Model	EWYQ050-CWP		EWYQ050-CWP		EWYQ050-CWP		EWYQ050-CWP			
Type:	Scroll		Scroll		Scroll		Scroll			
Unloading mechanism	Inverter		Inverter		Inverter		Inverter			
Acceptable refrigerants	R-410A		R-410A		R-410A		R-410A			
Net cooling capacity at full load (kW(r))	50.7		50.7		50.7		50.7			
Net heating capacity at full load (kW(r))	50.1		50.1		50.1		50.1			
Minimum part load capacity (kW(r))										
Chilled/Heating water	**CHW**	**HW**	**CHW**	**HW**	**CHW**	**HW**	**CHW**	**HW**		
Flow rate (L/s)	3.0 - TBC with manufacturer		3.0 - TBC with manufacturer		3.0 - TBC with manufacturer		3.0 - TBC with manufacturer			
Entering temperature (°C)	12	39	12	39	12	39	12	39		
Leaving temperature (°C)	7	45	7	45	7	45	7	45		
Liquid cooler										
Maximum water pressure drop at design flow rate (kPa)	14		14		14		14			
Air cooled condenser										
Condenser air on temperature (°C)	35	0	35	0	35	0	35	0		
Motor										
Maximum electrical input (kW(e)/kW(r) at:										
100% capacity	19.0 (Nom.)		19.0 (Nom.)		19.0 (Nom.)		19.0 (Nom.)			
75% capacity										
50% capacity										
25% capacity										
Maximum integrated part load value (IPLV) to ARI 550/590 (kW(e)/kW(r)										
Noise level										
Sound power (dB)										

Notes:

1. All heat pumps complete with hydronic modules.
2. All heat pumps complete with high static condenser fans.
3. Unit to be complete with PC boards required for integration with BMS.
4. Provide output to the BMS to indicate defrost cycle.
5. Units to be complete with all accessories, eg. DP switches etc. to ensure full operation, initiation of faults at the BMS.
6. Fouling factor 44 x $^{-4}m^2/k/kW$.
7. Provide anti-vibration mounts and all supports necessary for mounting and drainage thereof.
8. Ensure maintenance and airflow clearances are to the manufacturer's specification.
9. Confirm min. flow requirements through unit and set in-built pumps accordingly.
10. Confirm software within unit controls is capable of accepting signals from DDC control system (ie. 0-10V analog input) to control/ramp flow water temperature based on outdoor ambient. Provide BMS interface modules.
11. Ensure energy efficiency ratio is in accordance with Section J5.4 of the BCA .
12. Unit defrost to be reverse cycle.
13. Provide VSD's on the condenser fans, complete with EC fan motors.
14. Ensure all pressure relief valves are selected and set for the actual system pressures prior to ordering of heat pumps. Provide corrosion protection on all parts.
15. Heat Pump Chillers to be registered with Workplace Standards Tasmania, including all required pressure vessel registration. Submit certification to Engineer.

In formulating this Specification data has been received from the following manufacturers:	Daikin

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HEATING COILS

Coil designation		**HC-1**	**HC-2**	
Coil Model				
- Type		1/2W	1/2W	
- Rows		4 (TBC)	4 (TBC)	
- Fins per inch		TBC	TBC	
- Circuit		TBC	TBC	
Part of system		AHU-1	AHU-2	
Approx. dimensions HxW (mm)		762 x 2133	762 x 2133	
Heating medium		Water	Water	
Air quantity (L/s)		4200	4700	
Maximum face velocity (m/s)		3.5	3.5	
Maximum coil finned height (mm)				
Maximum air pressure drop (Pa)		50	50	
Maximum fin pitch (fins/m)				
Heating capacity (kW)		100	100	
Air entering dry bulb (°C)		15	15	
Air leaving dry bulb (°C)		35	35	
Heating water	Entering (°C)	45	45	
	Leaving (°C)	39	39	
	Flow (litres/sec)	4.0	4.0	
	Max. water pressure drop (kPa)	50	50	

Specification Notes:

1. Equipment selections provided in this schedule are for tender purposes only. It is the Contractor's responsibility to select all equipment for the project works.
2. NATSPEC Reference 0733 AIR COILS.
3. Coils shall be of a recognised Australian manufacture.
4. In transportation, handling and erection of coils particular care shall be exercised to protect fins from damage. Any damage to coil fins shall be made good by combing, and where damage is not repairable by this method coils may be rejected.
5. Coils shall be mounted in rigid structural frames which have been designed to allow the removal of coils. Structural frames shall be constructed of hot dipped galvanised steel or aluminium angle or channel sections. Contact between ferrous and non-ferrous materials shall be prevented by the use of neoprene washers and gaskets.
6. Coils shall be selected and arranged for contraflow of air and water and piping connections shall be made to allow the easy removal of coils.
7. All coils shall be provided with air vents.
8. Heating coils shall be of copper tube corrugated aluminium fin construction with heavy copper headers and heavy gauge galvanised steel frame.
9. Coils shall be selected to have a face velocity not exceeding 3.75 m/s.

In formulating this Specification data has been received from the following manufacturers:	Reece, HVAC

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PUMPS

Properties	**P-1**		
Pump type	Centrifugal		
Casing material	Cast iron		
Impeller material	Cast iron		
Shaft material	Stainless steel		
Shaft seal	Mechanical		
Maximum flow (L/s)	10.0		
Minimum flow (L/s)	10.0		
Duty head at maximum flow rate (kPa)	400		
Shut-off head (kPa)			
Maximum speed (rev/s)			
Minimum efficiency at duty point (%)	75		
Suitable for parallel operation?			
Inertia base required			
Spring mount type	Yes		
Minimum motor (kW)	TBC		

Notes:

1. System pressures to be calculated by this Contractor based on the actual equipment installed.
2. Pumps to be corrosion resistant.
3. All pumps complete with variable speed drives (VSD's).
4. Ensure bearing housing is sealed.
5. Provide mounting feet, concrete plinth and anti-vibration mounts.
6. Provide all mechanical seals required.
7. Bearings – life span to be submitted as part of Schedule.
8. Pumps shall be selected such that the design duty point is within 5% of the maximum efficiency point.
9. Any pump circulating water >2 l/s shall be selected so that the total of the motor shaft power to the A/C pump does not exceed: 3 W/m^2 for a building of not more than 500m^2 floor area; and
   4 W/m^2 for a building of not more than 500m2 floor area.
10. Allow for 20% extra pressure drop on the above for pricing purposes to cater for final heat exchanger selection.

In formulating this Specification data has been received from the following manufacturers:	Grundfos

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TANKS AND VESSELS

Designation	**HW-T1**	**CW-T1**			
Storage capacity (litres)	1000	1000			
Heating element (kW)	-				
Required delivery temperature (°C)					
Cylinder dimensions (height x dia.)					

Specification Notes:

1. Equipment selections provided in this schedule are for tender purposes only. It is the Contractor's responsibility to select all equipment for the project works.
2. NATSPEC Reference 0715 TANK, VESSELS AND HEAT EXCHANGERS.
3. Inertia tanks will require re-insulating with vapour sealed insulation 50mm to suit chilled water operation + external aluminium sheathing.
4. Supply and install vertical 'Aquazone' Buffer Tank 'AVBT' series complete with insulation, cladding, air release valve, pressure gauge.

In formulating this Specification data has been received from the following manufacturers:	Masterflow Solutions

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MISCELLANEOUS EQUIPMENT

Identification	Type of Equipment	Description
RU-1/RU-2	Backflow Prevention and Autofill Unit	Unit shall be of Autoheat manufacture complete with break tank, pumps, float valves and all necessary control and safety devices.
ET-1/ET-2	HW/CHW Expansion System	Units shall be of Autoheat manufacture and comprise expansion tanks, safety relief valve, fill valve complete with gauge and backflow valves.

In formulating this Specification data has been received from the following manufacturers:	Automatic Heating

Sizing of all expansion systems shall be dictated by system water volume in each loop. Provide calculations as part of shop drawing details for approval by Engineer prior to ordering thereof.

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AUTOMATIC CONTROL SYSTEM – DATA MONITORING, DISPLAY AND CONTROL SUMMARY (continued)

SYSTEM DESCRIPTION	CONNECTED POINTS																									
	INPUTS																OUTPUTS									
	Digital				Analog												Digital						Analog			
THERMAL PLANT (HEAT PUMPS) (Requirements for each item of plant)	STATUS	PRESSURE SWITCH	STATUS DEFROST		PRESSURE	DIFFERENTIAL PRESSURE	TEMPERATURE	HUMIDITY	FLOW	POSITION	SPEED		CURRENT	POWER			START/STOP	ON/OFF/AUTO	HI/LOW/OFF	OPEN/CLOSE			POSITIONING	SPEED CONTROL		
Heat Pump Chillers	x	x				x	x							x			x									
Circulating Pumps	x	x				x			x								x									
Primary Flow water Temp.							x																			
Primary return water Temp.							x																			
Secondary Flow Water Temp.							x																			
Secondary Return Water Temp.							x																			

THERMAL PLANT (HEAT PUMPS)	LEVEL/POSITION/MODE	LEVEL/POSITION/MODE DISPLAY	L/S AIR	L/S FLUID	PROPORTIONAL (P)	P + INTEGRAL (I)	P + I + DERIVATIVE	ALARM	HIGH ALARM	LOW ALARM	FLOATING ALARM	ABNORMAL ON/OFF	AIRFLOW CONTROL	SMOKE CONTROL	SET POINT DISPLAY & ADJUST	RUN TIME TOTALISATION	TIMED START STOP	OPTIMUM START STOP	PRECONDITIONING	ECONOMISER CHANGE OVER	ENTHALPY CHANGEOVER	DEMAND LIMITING	kW	NIGHT CYCLE	NIGHT PURGE	LEAD RESET	TEMPERATURE RESET	SETPOINT DISPLAY	MODE CHANGEOVER	ALLOW ALL REQ'D SOFTWARE
Heat Pump Chillers	x	x						x				x			x		x	x	x			x	x			x	x	x	x	x
Circulating Pumps	x	x						x				x			x		x									x			x	x
Primary Flow water Temp.	x														x															x
Primary return water Temp.	x														x															x
Secondary Flow Water Temp.	x														x															x
Secondary Return Water Temp.	x														x															x

Notes:

1. The control system schedules are provided to give indication of the extent of general requirements for different types of plant. It shall not be read as a comprehensive list and does not take precedence over specific requirements detailed on the drawings or elsewhere in the specification.
2. Ensure all hardware is provide as part of required software upgrades.
3. Connected points are per each item of plant.

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AUTOMATIC CONTROL SYSTEM – DATA MONITORING, DISPLAY AND CONTROL SUMMARY (continued)

SYSTEM DESCRIPTION	CONNECTED POINTS																									
	INPUTS																OUTPUTS									
	Digital				Analog												Digital						Analog			
AIR HANDLING UNITS (Requirements for each item of plant)	STATUS	PRESSURE SWITCH	STATUS DEFROST		IN-LINE DUCT PRESSURE	DIFFERENTIAL PRESSURE	TEMPERATURE	HUMIDITY	FLOW	POSITION	SPEED		CURRENT	POWER			START/STOP	ON/OFF/AUTO	HI/LOW/OFF	OPEN/CLOSE			POSITIONING	SPEED CONTROL		
Air Handling Unit Fans	X	X			X												X							X		
Coil Control Valves							X																X			
Space T'stat							X																			
In-Duct T'stat (after both water coils)							X																			
In-Duct T'stat (after heater banks)							X																			
Mixed Air Temperature							X																			
Return Air Temperature							X																			
After Hours switches	X									X																
Multi-Function Meter							X						X	X												
Motorised 2-Position Valves	X									X													X			

AIR HANDLING UNITS (Requirements for each item of plant)	LEVEL/POSITION/MODE	LEVEL/POSITION/MODE DISPLAY	L/S AIR	L/S FLUID	PROPORTIONAL (P)	P + INTEGRAL (I)	P + I + DERIVATIVE	ALARM	HIGH ALARM	LOW ALARM	FLOATING ALARM	ABNORMAL ON/OFF	AIRFLOW CONTROL	SMOKE CONTROL	SET POINT DISPLAY & ADJUST	RUN TIME TOTALISATION	TIMED START STOP	OPTIMUM START STOP	PRECONDITIONING	ECONOMISER CHANGE OVER	ENTHALPY CHANGEOVER	DEMAND LIMITING	kW	NIGHT CYCLE	NIGHT PURGE	LEAD RESET	TEMPERATURE RESET	SETPOINT DISPLAY	MODE CHANGEOVER	ALLOW ALL REQ'D SOFTWARE
Air Handling Unit Fans	X							X				X					X	X	X				X							X
Coil Control Valves	X						X								X															X
Space T'stat	X														X															X
In-Duct T'stat (after both water coils)	X														X															X
In-Duct T'stat (after heater banks)	X														X															X
Mixed Air Temperature	X														X															X
Return Air Temperature	X														X															X
After Hours switches	X	X													X															X
Multi-Function Meter	X														X							X	X							X
Motorised 2-Position Valves	X																													X

Notes:

1. The control system schedules are provided to give indication of the extent of general requirements for different types of plant. It shall not be read as a comprehensive list and does not take precedence over specific requirements detailed on the drawings or elsewhere in the specification.
2. Ensure all hardware is provide as part of required software upgrades.
3. Connected points are per each item of plant.

PREVENTATIVE MAINTENANCE SCHEDULES

Mechanical
Schedule
General Requirements – HVAC
Autofill and Expansion Tank Units
Chillers - Screw
Coils
Mechanical Electrical Switchboards
Pipework
Pumps - Centrifugal
Valves
Controls
Control Panels
Controls - Electronic
Controls – Electronic (Mechanical Contractor)
Miscellaneous
Plantrooms

GENERAL REQUIREMENTS

AIR CONDITIONING, HEATING AND VENTILATION EQUIPMENT

1. Work shall be scheduled in such a manner as to reduce to the practical minimum any disruption of existing services. Any connection, disconnection or interference with services shall be co-ordinated with the Superintendent, to whom reasonable notice shall be given of the intention to perform the work.

2. When work is performed in enclosed compartments or isolated locations where there is a risk of equipment being accidentally energised, warning signs conforming to AS 1319 must be displayed at the following positions.

   a. all power isolation switches for the system concerned.

   b. all lockable doors to the compartments to prevent them from being locked accidentally.

   c. all deactivating switches for fire detection devices which may be affected.

   d. all valves for refrigerant and water connected to the system concerned.

   e. all automatic tripping, manual override switches concerned.

3. When there is the likelihood of a toxic or flammable gas present in the work area during the course of the work, large warning notices must be displayed at all entrances to the hazardous area. These may only be removed after the hazard is cleared.

4. On the completion of the work, all temporary hazard warning signs shall be removed and all surfaces on which the signs are mounted shall be made good.

HAZARDS TO PERSONNEL WORKING ON ELECTRICAL EQUIPMENT

All personnel working on electrical reticulation or operating equipment are to comply with the safety regulation as defined in AS 2467 and any other therein referenced documents.

PREVENTATIVE MAINTENANCE SCHEDULE

FOR EQUIPMENT: AUTOFILL AND EXPANSION TANK UNITS

ITEM	REQUIREMENT	INTERVAL
1	Check operation of autofill unit.	3M
2	Check auto unit for leaks.	3M
3	Check operation of expansion tank relief safety valve.	3M
4	Check expansion tank pressure.	3M

PREVENTATIVE MAINTENANCE SCHEDULE

FOR EQUIPMENT: HEAT PUMP

ITEM	REQUIREMENT	INTERVAL
1	Check for unusual noise and vibration.	M
2	Check operation of compressor oil sump heater.	M
3	Check compressor lubricating oil level from oil sight glass.	M
4	Check and record pressure and temperature drops across the vessels, both evaporator and condenser.	M
5	Check crankcase temperature.	M
6	Check superheat and sub-cooling.	3M
7	Check voltage within +-10%.	3M
8	Check recycling timer setting, readjust if required.	6M
9	Check cycling thermostat setting, readjust if required including unloading and loading operation.	6M
10	Check spin down time, readjust if required.	6M
11	Check oil pump run-on time, readjust if required.	6M
12	Check cutout points of safety controls, readjust if required.	12M
13	Check and adjust if necessary overloads to trip at 105% of f.l.a. (nameplate rating only — do not adjust for line or voltage conditions).	3M
14	Visual check on plant.	3M
15	Check compressor operation pressures, both suction and discharge.	6M
16	Check refrigeration filter dryer, change as required.	12M
17	Refrigeration leak test entire unit if refrigerant level is low.	12M
18	Check amps for load conditions.	12M
19	Check motor control 50% -100%.	12M
20	Check interlock operation.	12M
21	Change oil and oil filter, if recommended by item 23.	12M
22	Visual check of plant.	12M
23	Coordinate analysis of oil samples. Provide a report from a reputable laboratory, Technical Services, Caltex Oil or similar.	12M
24	Inspect and report on overall condition of plant.	12M
25	Carry out total load test if necessary.	12M
26	Lubricate and grease all points.	12M
27	Clean and/or replace filters and sludge traps where required.	12M
28	Organise and prepare vessels for Statutory inspections. Check safeties etc.	12M OR AS REQUIRED BY STATUTORY AUTHORITIES

The above shall also be read in conjunction with the below extract from ‘Daikin’ maintenance and operating instructions for HP1-HP4 heat pump chillers:

Maintenance and service

Maintenance MUST be done by an authorized installer or service agent.
We recommend performing maintenance at least once a year. However, applicable legislation might require shorter maintenance intervals.

Overview: Maintenance and service

▪ Preventing electrical hazards when maintaining and servicing the system

▪ The refrigerant recovery operation

WARNING
▪ Before carrying out any maintenance or repair activity, always switch off the circuit breaker on the supply panel, remove the fuses or open the protection devices of the unit.
▪ Do not touch live parts for 10 minutes after the power supply is turned off because of high voltage risk.
▪ Please note that some sections of the electric component box are hot.
▪ Make sure you do not touch a conductive section.
▪ Do not rinse the unit. This may cause electric shocks or fire.

Checklist for yearly maintenance of the outdoor unit

Check the following at least once a year:

▪ Pressure relief valve hose (if present)

▪ Water pressure relief valve

▪ Electrical component box

▪ Water pressure

▪ Water filter

▪ Glycol concentration and pH-value

Pressure relief valve hose

Check whether the pressure relief valve hose is positioned appropriately to drain the water.

Water pressure relief valve

Turn the red knob on the valve counter-clockwise and check if it operates correctly:

▪ If you do not hear a clacking sound, contact your local dealer.

▪ In case the water keeps running out of the unit, close both the

water inlet and outlet shut-off valves first and then contact your local dealer.

Switch box

Carry out a thorough visual inspection of the switch box and look for obvious defects such as loose connections or defective wiring.

WARNING
If the internal wiring is damaged, it has to be replaced by the manufacturer, its service agent or similarly qualified persons.

Water pressure

Check whether the water pressure is above 1 bar. If it is lower, add water.

Water filter

Clean the water filter.
NOTICE
Handle the water filter with care. Do NOT use excessive
force when you reinsert the water filter so as NOT to damage the water filter mesh.

PREVENTATIVE MAINTENANCE SCHEDULE

FOR EQUIPMENT: COILS

ITEM	REQUIREMENT	INTERVAL
1	Check coils and pipework for leaks.	M
2	Check and clean condensate trays and drains.	M
3	Check coil fins for damage and dirt build-up.	3M
4	Check mountings and pipe connections.	12M
5	Check and replace valve packing materials of control valves as often as may be necessary in order to maintain the valves without leaking.	AS REQUIRED
6	Lubricate control valves and valve motors.	12M

PREVENTATIVE MAINTENANCE SCHEDULE

FOR EQUIPMENT: MECHANICAL ELECTRICAL SWITCHBOARDS

ITEM	REQUIREMENT	INTERVAL
1	*Check and replace as required all indicating lights.*	3M
2	General inspection of equipment and report.	12M
3	Tong test all major electrical motors and electric pre-heater and record.	12M
4	Check overload setting of all motors.	12M
5	Check operation of SCR controls.	12M
6	Infrared test of switchboard components. (See Note below)	12M
7	Verify all Schedules are up-to-date.	12M
8	Check for loose connections. Tighten as required.	12M
9	Vacuum internal areas of switchboard to remove dust and debris.	12M
10	To comply to AS 2467.	

Note: (Ref. Item 6)
Infrared testing to include a thermal imaging report where contactors are installed.
Ensure all contactors are powered on during testing.

PREVENTATIVE MAINTENANCE SCHEDULE

FOR EQUIPMENT: PIPEWORK

ITEM	REQUIREMENT	INTERVAL
1	Check of leaks at flanged, threaded and welded joints.	12M
2	Ensure that all hangers and supports are secure.	12M
3	Check pipework for insulation damage.	12M

PREVENTATIVE MAINTENANCE SCHEDULE

FOR EQUIPMENT: PUMPS — CENTRIFUGAL

ITEM	REQUIREMENT	INTERVAL
1	*Check for abnormal noise or vibration.*	3M
2	Check for leaks. Repair as required.	3M
3	Check and clean drains.	3M
4	Check coupling and mechanical seal/stuffing box for wear. Adjust/replace as required.	6M
5	Check and clean inlet strainer.	6M
6	Check flexible connections.	6M
7	Clean pump and motor.	6M
8	Check and touch-up paint as necessary.	12M
9	Check mountings, fasteners and electrical connections. Repair as required.	12M
10	Check switchgear and electrical connections at switchboard.	12M
11	Inspect and report on overall condition of the unit.	12M
12	Lubricate as required.	

PREVENTATIVE MAINTENANCE SCHEDULE
FOR EQUIPMENT: VALVES

ITEM	REQUIREMENT	INTERVAL
1	Inspect for leaks and repair as required.	6M
2	Check valve packing, repack and adjust if required.	6M
3	Check operation of valve motors.	12M
4	Clean pipe strainers.	12M
5	Manually open/close cooling tower by-pass valve.	12M

PREVENTATIVE MAINTENANCE SCHEDULE
FOR EQUIPMENT: CONTROL PANELS

ITEM	REQUIREMENT	INTERVAL
1	Check and replace, as required, faulty indicating lamps.	3M
2	Check panels for correct operation.	3M
3	Infrared test of main components including heater bank controls.	12M
4	Vacuum internal areas of switchboard to remove dust and debris.	12M

PREVENTATIVE MAINTENANCE SCHEDULE

FOR EQUIPMENT: CONTROLS — ELECTRONIC

ITEM	REQUIREMENT	INTERVAL
1	Check plant operating times and confirm that plant is operating within the set point parameters.	6M
2	Complete a functionality test of thermal plant, air handling systems, associated dampers and controls to verify correct operation.	6M
3	Confirm the clocks have been adjusted for daylight saving.	6M
4	Field controller and BMS software backups	6M
5	Adjust time clocks for public holidays, weekends, plant operating times.	12M
6	Check and confirm correct calibration of CO_2 sensors.	12M
7	Check load shedding during generator run tests	12M
8	Maintain Functional Description and supporting documentation to reflect the current operation of plant.	AS REQUIRED

PREVENTATIVE MAINTENANCE SCHEDULE

FOR EQUIPMENT: CONTROLS — ELECTRONIC (MECHANICAL CONTRACTOR)

The following items should be checked by the Mechanical Contractor where BMS access is available on site:

ITEM	REQUIREMENT	INTERVAL
1	Review of BMS Graphics. Identify and report on faults. Confirm correct operation of equipment. Check space temperatures.	M
2	Check plant operating times and confirm that plant is operating within the set point parameters.	M

PREVENTATIVE MAINTENANCE SCHEDULE
FOR EQUIPMENT: PLANTROOMS

ITEM	REQUIREMENT	INTERVAL
1	Clean all plantrooms.	M

APPENDIX A
Impairment Notification Form

Sample Only

Engineers & Planners

IMPAIRMENT NOTIFICATION FORM

Attention: Nathan Stevanovich

Email: nstevanovich@jmg.net.au **Date:** ____/____ 201_

From: **Company:**

Title: **Location:**

Fax No: **Phone:**

SUBJECT:

Complete the Subject above and details below and forward to nstevanovich@jmg.net.au *and confirm by telephone 6231 2555.*

1. Essential Fire Safety Service to be Shutdown (Please Indicate with ✓)

- ❒ Automatic Sprinklers
- ❒ Alarm System/Security/Fire
- ❒ Firewater Tank
- ❒ Other _____
- ❒ Fire Pump(s)
- ❒ Fire Main/Hydrants
- ❒ Safety Interlocks

2. Other Services to be Shutdown (Please Indicate with ✓)

- ❒ Mechanical Services
- ❒ Electrical to Building
- ❒ Electrical to a Tenancy
- ❒ Other _____
- ❒ Hydraulic Services
- ❒ Security Services
- ❒ Access Control

➢ **Description of Impairment:** *(Please describe below and complete "Precautions to be followed" detailing strategies designed to supplement and compensate for the loss of essential service).*

➢ **Reason for Shutdown**:

➢ **Specific Area(s) Affected** *(tenancy, floor)***:**

➢ **Proposed Start time/date:** _____ ____/____/___ **Estimated duration:** ____ **hrs.**

2. Precautions Planned (Please ✓)

This notice details actions and initiatives designed to supplement and compensate for the loss of essential safety/fire fighting/alarm/ security systems caused by the planned outage/impairment. The owner and insurer must be satisfied that the impairment, given the implementation of supplementary systems and precautions detailed below in this report, will result in negligible or no additional risk to property or people. Please note the list of planned actions is a guide to assist safety planning.

The following supplementary precautions and initiatives, have been, or are to be implemented to address risks.
Please tick ✓and complete with details where appropriate.

❒ A risk assessment has been undertaken.

The risk assessment identified risks for which the following mitigating actions have been taken.

Attach additional Information if necessary. The following page details a guide to precautions available, please complete this page.

2.1 Precautions planned (Please ✓ to indicate relevant actions planned where applicable)

- ❒ The fire/Security alarms will be isolated
- ❒ Tas Fire will be aware of this as it will show on their master control panel
- ❒ Onsite team has/will be advised (if applicable)
- ❒ All hydrants and hose reels are/will be fully operational
- ❒ Fire extinguishers are in place around the centre/property
- ❒ Additional extinguishers have been arranged to be available on site
- ❒ No hot work is required during the impairment period
- ❒ Total hot work, welding, cutting ban will be implemented throughout during the impairment period
- ❒ Supplementary lighting/power/_____ has been arranged
- ❒ Hot Work Permit completed
- ❒ Generator organised (if applicable)
- ❒ Security/access control system will be out of action
- ❒ Work has been planned and scheduled
- ❒ Work will be continuous
- ❒ Tenants have been advised verbally and in writing
- ❒ Copy of tenant notice is attached
- ❒ Arrangements will be co-ordinated with individual tenants with regard to access requirements
- ❒ There is a no smoking policy in the centre/property
- ❒ Contractors/tenants have been advised to remain vigilant on lookout for any fire outbreak
- ❒ Contractors/tenants have been advised who to contact in the event of incident or risk
- ❒ Contractors have been advised of the site supervisor's and Property Manager's contact details
- ❒ Additional security will be on site for the total duration of the impairment
- ❒ Additional personnel will be engaged to assist with monitoring the site during the impairment
- ❒ *Other* _____*attach any additional information*

Contact details of essential personnel:
The responsible person on site will be _____ and is contactable on Mobile _____

The Builder/Contractor/Architect in charge of overall impairment supervision is _____
Mobile _____

_____ _____
Sign *Name*

_____ _____
Position *Company*

_____ _____
Telephone *Mobile*

Recommended: _____ ___/___/____
Property Manager, Name / Sign / Date

……

Protection Restored Confirmation

Building contractor please complete and sign tis confirmation that services have been restored following completion of works.

_____ _____ ___/___/___ time _____
Signed *Name*

return by e-mail to nstevanovich@jmg.net.au