TENDER DOCUMENTS FOR

TENDER TSIRC2017-110
MOGOR WELL PUMP STATION UPGRADE

VOLUME 1

Job No. 60283674
January 2018
Tender Documents

**CONTRACT TSIRC2017-110**

Ref 60283674  
Date 22 January 2018  
Prepared by Frank Fernando  
Reviewed by Scott Snelling

**Revision History**

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|          | 29 January 2018 | Final Copy | Scott Snelling  
Associate Director |

AECom Australia Pty Ltd
120 Bunda Street, PO Box 5971, Cairns QLD 4870, Australia  
T +61 7 4222 6000 F +61 7 4222 6001 www.aecom.com  
ABN 20 093 846 925

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1.0 GENERAL CONDITIONS OF TENDERING

The documents upon which the Tenderer is to tender are the documents listed in the Table of Contents in the tender documents.

Tenderers must complete the Tender Form provided and lodge it with any accompanying schedules or information in a sealed envelope endorsed with the contract number at the place and by the time stated in the invitation to tender.

The Principal has the right and is not bound to accept the lowest nor any tender.

The Principal is not bound to proceed with the tender if all necessary approvals are not obtained.

The submission of a tender does not create a pre tender process contract between the parties and that relationship between the parties is strictly pre contractual. The Principal is not bound in contract until the Contract is awarded to the successful Tenderer.

2.0 COMMUNICATION PROTOCOLS

Tenderer’s queries and clarifications or requests for additional information will be in writing to the Superintendent. The Superintendent will respond in writing to the Tenderer. The query and the response will be forwarded to all other Tenderers for information in completing their tender.

Tenderers will direct all correspondence to the Superintendent:

Torres Strait Island Regional Council
PO Box 7336
Cairns, Queensland 4870
Phone: 07 4047 5217
Attention: Mr Chandra Kalidindi
Email: Chandra.Kalidindi@tsirc.qld.gov.au

3.0 ADVICE GIVEN TO TENDERERS

Refer to Clause 2.0.

The Principal will not be bound by any oral advice given nor any oral information furnished by the Principal or by any member, officer, employee or agent of the Principal in respect to the Contract tendered for, but will be bound only by written information provided by the Principal or an authorised officer of the Principal that forms part of the Contract.

4.0 FORMAT AND COMPLETENESS OF TENDER

Further to Clause 1.0, the Tenderer is required to complete and submit the forms and schedules provided in the tender documents and such additional forms and schedules as are called for or are needed to complete the tender.

The Tenderer must sign each form and schedule.

Any tender that:
- omits any form or schedule that is provided or called for or needed to complete the tender
- is not signed in each place where a signature is required
- is not accompanied by a tender deposit when a tender deposit is required

will be incomplete and may not be admitted for evaluation.
5.0 IDENTIFICATION OF TENDERER

The Tenderer is required to state in the tender:

- In the case of an individual, their full Christian or given names, surname and address.
- In the case of a business, the business name, names and addresses of all proprietors and the address of the principal place of business.
- In the case of a company, the full name of the company and the address of the registered office of the company.

6.0 NATURE OF CONTRACT

The basis of the Contract will be Australian Standard General Conditions of Contract (AS 2124-1992).

Any Contract made pursuant to any tender hereunder will be a Lump Sum Contract as defined by the General Conditions of Contract (with no provision for Rise and Fall). The rates shown in the Schedule of Rates are rates referred to in paragraph (a) of Clause 40.5 of AS2124-1992 and will be used for the valuation of variations and may be used for the calculations of the amounts of progress payments but the scheduled rates will have no other application under the Contract.

The total amount will be full compensation for the complete construction of all works under this Contract, including any items of work not specifically mentioned but necessary to complete the work.

7.0 LODGEMENT OF TENDER

Further to Clause 1.0:

- Tenders are to be lodged by either being put by the Tenderer or by an agent of the Tenderer in the tender box at:
  Level 3, 111-115 Grafton Street
  Cairns, Queensland 4870
  or emailed to:
  tendersTSIRC@tsirc.qld.gov.au

- Any tender not lodged before the time stated in the invitation to tender may not be considered unless there is evidence satisfactory to the Principal that the tender was dispatched to the place stated in the invitation to tender in sufficient time, before the time stated in the invitation to tender, to reach that place under normal circumstances but was still in the course of delivery at that time.

- The Principal in its discretion may reject a tender delivered after the time stated in the invitation to tender no matter what the reason be for the late delivery.

- Tenders sent or transmitted direct to the Principal, or the Principal's agent, by telephonic or telegraphic means, telegram, telex, facsimile or other electronic means will not be considered by the Principal.

- Franking machine stamps will not be accepted by the Principal as proof of the date of posting of a tender received after the time stated in the invitation to tender.
8.0 TENDER WARRANTIES
By submitting a tender, the Tenderer warrants:

- That it has carried out its own investigations has acquainted itself fully with the requirements of the tender documents and has fully informed itself in respect of its tender.

- The information contained in the tender is accurate.

- It has not engaged in any collusive process or any other anti–competitive processes in preparing the tender.

- That its tender has been submitted on the basis of its own inquiries and acknowledges that the Principal assumes no responsibility for the accuracy or adequacy of any information, statements or material provided as part of the tender process.

9.0 OPENING OF TENDERS
Tenders will not be opened publicly. Tenderers will not be permitted to be present at the opening.

Each tender opened will be registered. The register of tenders will provide a record of the name of each Tenderer, whether the tender appears to be complete, and the amount of the tender deposit. The register of tenders will be signed by the officer opening tenders and will be witnessed (and signed) by one other person.

The register of tenders will be kept at the Cairns office of AECOM Australia Pty Ltd.

10.0 TENDER VALIDITY PERIOD
Each tender will remain open to acceptance for a validity period of 90 days from the date of closing of tenders.

11.0 ALTERNATIVE TENDERS
The Principal is not bound to consider any alternative tender, and any Tenderer offering alternatives or qualified by any other departure from full compliance with the requirements of the tender documents should:

- Draw the Principal’s attention to the particulars in which the alternative or qualified tender differs from the requirements of the tender documents and state the advantages and disadvantages to the Principal in accepting the alternative proposed.

- Lodge a tender that does comply in every respect with the requirements of the tender documents.

12.0 SELECTION AND ACCEPTANCE OF TENDER
Further to Clause 1.0, the Principal may accept (but is not bound to accept) the tender, that on a view of all the circumstances, appears to the Principal to be the most advantageous.

The Principal may accept a tender that, in minor respects, does not comply with the requirements of the tender documents.

No tender will be deemed to be accepted other than by notice in writing given by the Principal.
13.0 EVALUATION CRITERIA

In the evaluation of a tender, the Principal can be expected to take into account:

**Relevant company experience: 30%**
- Type of Work
- Work in Remote Locations
- Torres Strait and Indigenous Community Experience
- Experience of Key Staff/Resources

**Capacity to carry out the work: 10%**
- QA, EMS and WH&S
- Financial (Past Projects)

**Other**
- Contract Price: 30%
- Methodology and Program: 20%
- Local employment and Training Opportunities: 10%

14.0 POST-TENDER NEGOTIATIONS

Post-tender negotiations are a prospect.

The Principal may:
- Permit a Tenderer to complete an incomplete tender.
- Request a Tenderer to clarify a tender.
- Request a Tenderer to give further information.
- Require a Tenderer to remove a qualification or condition of a tender as a condition of the Principal's accepting that tender.
- Advise a Tenderer whether an alternative offer is acceptable.
- Where a construction program is called for by a Clause of the Conditions of Tendering, negotiate as provided in that Clause.
- Invite all Tenderers to change their tenders to take account of a change in the tender documents.

A Tenderer may:
- Clarify a tender.
- Remove a qualification or condition of a tender.
- Where an alternative has been offered, offer goods, equipment or services in accordance with the tender documents or offer a different alternative.

A Tenderer may not except with the permission of the Principal:
- Complete an incomplete tender.
- Offer new or enhanced goods, equipment or services.
- Amend any rate or lump sum in the Schedule of Rates.
15.0 QUALITY ASSURANCE POLICY

Refer to “Contractor’s Quality Assurance” Clause of the Job Specification in these tender documents. Assessment of a tender in which the Tenderer offers a quality system that is not fully in accordance with the requirements of the Job Specification may not be considered unless:

- The quality system has been established and implemented and only an external audit is required to demonstrate that it is a quality system fully in accordance with the requirements of the Job Specification.
- No other Tenderer offers a quality system fully in accordance with the requirements of the Job Specification.

16.0 TIME FOR COMPLETION

The Principal may consider a tender that offers a time for completion shorter or longer than the Time for Completion specified in the Annexure A to the General Conditions of Contract. The Principal may take into account any savings in price or other benefit to the Principal.

17.0 SCHEDULE OF TENDER DATA

Each Tenderer will include a completed Schedule of Tender Data giving sufficient information to identify and evaluate the materials and products offered.

Where there is no departure from the specifications, the Schedule of Tender Data may state, “In accordance with the Specification.”

Where the Schedule of Tender Data indicates “Drawings to be provided”, Tenderers will submit with their tender, a set of Tender Drawings showing sufficient information (i.e. significant dimensions, material types, etc.) to enable a tender assessment to be undertaken.

18.0 TENDERER’S EXPERTISE SOUGHT

If, during the tender phase or after contract award, there are improvements to the design that will reduce cost and/or improve reliability of the design, the Tenderer is encouraged to make the necessary representations.

19.0 TENDER PACKAGE

The tender documents are comprised of a number of different aspects to be considered for award of the work, including, amongst others; Schedule of Contractor’s Details, Schedule of Rates, Schedule of Tender Data, Undertaking of Compliance, Construction Programme, etc.

Tenderers are required to complete each schedule in accordance with these Conditions of Tendering and the Job Specification.

Complete all forms and data sheets in the tender package to submit a complying tender. State the price tendered on the form provided and indicated as Tender Summary, included with the tender documents.
20.0 TENDER PRICE COMPONENT BREAKDOWNS

While the tender is a lump sum tender, quantities have been included for some items in the Schedule of Rates. Quantities shall be used for such items as progress payments, valuing additional work, and the like. Where quantities are provided, they are for information only and are not to be relied on. Tenderers shall make their own determination of quantities on which to construct their tenders and the works. For provisional items, tendered rates must be provided to match the measurement quantity indicated in the tender form and shall be derivable by dividing the lump sum for the unit by either the quantity shown in the tender form, or by that provided by the Tenderer in their tender submission.

The schedule shows a breakdown of various components considered to be relevant to the project. Tenderers shall also provide a breakdown of their lump sum price against each of these components. The sum of the amounts against each item shall be equal to the lump sum tender price included in the schedule.

The Principal may request a Tenderer to revalue several of the components in the breakdown should it be considered that an unrealistic value has been placed against them, however, the total of the revalued items shall equal the lump sum tender schedule price.

Tenderers are encouraged to include additional component breakdowns, should they consider it beneficial.

21.0 SUBCONTRACTORS

Each Tenderer shall state in the tender the names of the subcontractors proposed to be employed and the extent of the work proposed to be carried out under subcontract.

22.0 SUPERVISION

Each Tenderer shall state in the tender the names and office addresses of the supervisory and administrative staff proposed to be employed.

23.0 CONSTRUCTION PROGRAM

Each Tenderer shall lodge a construction program as part of the tender.

The construction program will be a bar chart showing the proposed activities in each week following the date of Acceptance of Tender. The program will be submitted in MS Project 2010 Format, in Gantt Chart View.

The Principal may require a Tenderer to amend its construction program as a condition of the Principal's accepting that tender. If the Tenderer is not prepared to make the amendment required and the Tenderer and the Principal do not agree on a construction program, then that Tenderer may withdraw its tender and the moneys deposited by the Tenderer will be returned without forfeiture or deduction.

24.0 RISE AND FALL IN COSTS

Payments under the Contract will not be subject to an adjustment for rise and fall in costs.

25.0 EVIDENCE OF CONTRACT

26.0 ACCESS TO SITE
Tenderers will make an assessment of access routes to the site and determine any limitations of access for the transport of equipment, materials and personnel, and any changes, which may arise to these conditions during the period of the Contract, particularly during periods of wet weather.
Refer to the Job Specification in this tender document.

27.0 EMPLOYMENT AND TRAINING OF COMMUNITY LABOUR
This Project is not subject to the requirements of the Queensland Government Building and Construction Training Policy. However employment and local business opportunities offered by Tenderers as part of their tender will be evaluated by the Principal in determining the preferred Contractor. Refer Clause 13.0 Evaluation Criteria – Conditions of Tender.

28.0 AVAILABILITY OF FUELS AND OTHER CONSUMABLES
Tenderers are advised that the availability of fuels, oils and other similar consumables may not be available for purchase on the island. Tenderers will make their own arrangement and make allowance for the delivery of fuels, oils and other similar consumables to the job site.

29.0 CULTURALLY SIGNIFICANT FINDS
The Tenderer acknowledges that a “Cultural Heritage Duty of Care” under the Torres Strait Islander Cultural Heritage Act 2003 (Qld) exists in relation to works to be performed under this contract.

The Tenderer is required at all times to comply with the Cultural Heritage Duty of Care during construction of the works set out in the Tender including pre construction activities, construction activities and post construction activities. The Contractor shall arrange a Cultural Monitor to be present on site all the time during earthwork activities. The Contractor shall implement and comply with the Cultural Heritage Finds Procedure during construction of the works. The Cultural Heritage Finds Procedure is included in Volume 2.

30.0 QUEENSLAND BUILDING AND CONSTRUCTION COMMISSION ACT 1991
Tenders will not be accepted from tenderers who do not hold a licence of appropriate class in accordance with the Queensland Building and Construction Commission Act 1991.

31.0 MANDATORY TENDER SITE INSPECTIONS
The Principal shall conduct a site inspection for Tenderers during the tender period. It is a condition of tendering that all Tenderers attend this site inspection. The Principal shall coordinate this site inspection and shall provide transport from Horn Island to each site return at the Principal’s expense. However, all other costs (accommodation, meals, time, incidentals, etc.) associated with the Tenderer’s attendance at the site inspection and transport to Horn Island shall be the Tenderer’s own expense.

Tenders from Tenderers absent from this inspection will not be considered.

32.0 GEOTECHNICAL INFORMATION
A geotechnical investigation has not been conducted by the Principal. Tenderers shall make all necessary allowances for and take all necessary precautions to fully inform themselves of the ground conditions present at the site.
33.0 SITE FACILITIES

The Contractor may use the existing power, water and amenities on site, subject to capacity and availability. The Contractor shall include within their tender clarify the quantity of water required for their facilities. The Contractor shall provide any other statutory and necessary amenities and sanitary facilities for workers and other persons lawfully on the site, and remove them on completion of Works. The location of establishment of the Contractor’s site facilities shall be subject to the final confirmation of the Superintendent.

The Contractor shall make all arrangements and pay all charges in connection therewith, for any temporary services that may be required for the execution of all works under this contract. Reference should be made to the following website for a copy of Council’s current fees and charges.

TORRES STRAIT ISLAND REGIONAL COUNCIL

CONTRACT TSIRC2017-110

TENDER FORM

Name of persons, firm or company tendering (USE BLOCK LETTERS)

________________________________________________________________________

Address

of

________________________________________________________________________

hereby tender(s) to perform the work for

Description

of Works

MOGOR WELL PUMP STATION UPGRADE

(CONTRACT TSIRC2017-110)

in accordance with the following Documents:

 the Documents listed in the Table of Contents
 the Addenda issued by the Principal, as listed below:

The Tenderer is to list all other schedules and documents that are included in his tender and are not listed in the Table of Contents

 the additional Documents included by the Tenderer, as listed below:

If the Tenderer is a firm the full names of the individual members of the firm must be stated here.

for the lump sum of $___________________________ (Excl. GST)

DATED this ________________ day of ________________ 2018

Signature of Tenderer
TENDER SCHEDULES
## MOGOR WELL PUMP STATION UPGRADE

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</tr>
<tr>
<td>54.3</td>
<td>Aboveground Water Pipeline Installation</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>55.0</td>
<td>INTERNAL PLANT ROOM PIPEWORK AND EQUIPMENT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56.0</td>
<td>HYDROSTATIC TESTING</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>57.0</td>
<td>FLUSHING</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>58.0</td>
<td>CONNECTIONS TO EXISTING MAINS</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>59.0</td>
<td>PUMPS</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>60.0</td>
<td>PUMP STATION STRUCTURE</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>61.0</td>
<td>ELECTRICAL WORKS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61.1</td>
<td>Switchboard Replacement</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>61.2</td>
<td>Power and Lighting</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>62.0</td>
<td>STAIRS, PLATFORMS AND HANDRAILS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62.2</td>
<td>Design of Stairs, Platforms and Handrails</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>62.3</td>
<td>Construction of Stairs, Platforms and Handrails</td>
<td>LS</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**SUB-TOTAL (EXC. GST)**

**GST (10%)**

**TOTAL (INC. GST)**
1.0 CONTRACTOR’S DETAILS

Name: _________________________________________________________________
Address: ______________________________________________________________
Contact Person: __________________________________________________________
Telephone No.: __________________________________________________________
Facsimile No.: ____________________________________________________________
Email Address: ____________________________________________________________
QBCC Licence No.: _________________________________________________________
QBCC Licence Class: _______________________________________________________
QBCC Nominee: ____________________________________________________________
MR Category: ______________________________________________________________
Conditions (Y/N): _________________________________________________________

2.0 SCHEDULE OF QUALITY ASSURANCE

The Tenderer shall submit his company’s standard Quality Assurance Program with his Offer. On award the Quality Assurance Program is required to be updated, targeting this project specifically. The Tenderer’s QA Program shall address at a minimum the following general headings (list items covered by the Tenderer’s QA Program not included below).

<table>
<thead>
<tr>
<th>QA Item</th>
<th>Included</th>
<th>Not Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation, Reporting, Records Management and Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Program and Emergency Procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveillance, Monitoring, Testing, Testing Equipment and Inspections during construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurement (Purchasing), Suppliers, Sub-contractor and Design Control management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Identification, Traceability and Materials Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control and Procedures of non-conforming products, deficient work and corrective action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QA Item</td>
<td>Included</td>
<td>Not Included</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Submittals to Superintendent (Document Control)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submittals and Inspections to / from Jurisdictions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start-up and Commissioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defect Liability Period</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Tick the box indicating whether QA items are included in the Contractor’s QA System)

3.0 QUALITY ASSURANCE REPRESENTATIVE

Name: ________________________________________________________________

Telephone: ____________________________________________________________

Previous Experience:
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

4.0 PROJECT MANAGER

Name: ________________________________________________________________

Telephone No: _________________________________________________________

Previous Experience:
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

Referees & Contact Details: ____________________________________________

__________________________________________________________________
__________________________________________________________________
5.0 PROJECT SUPERVISOR / FOREMAN

Name: ____________________________________________________________
Telephone No.: ______________________________________________________
Email Address: ______________________________________________________

Previous Experience:
________________________________________________________________
________________________________________________________________
________________________________________________________________

Referees & Contact Details: ____________________________________________
________________________________________________________________
________________________________________________________________

Hours/week on site: ___________________________________________________

6.0 LICENCED SURVEYOR

Name: ____________________________________________________________
Licence No.: ________________________________________________________
Telephone No.: ______________________________________________________

7.0 LICENCED ELECTRICIAN

Name: ____________________________________________________________
Licence No.: ________________________________________________________
Telephone No.: ______________________________________________________

8.0 OTHER KEY PERSONNEL

Name: ____________________________________________________________
Telephone No: ______________________________________________________
9.0 SUBCONTRACTORS (Excluding those supplying materials only)

Name: ___________________________________________________________

Extent of Work: ___________________________________________________

Name: ___________________________________________________________

Extent of Work: ___________________________________________________

Name: ___________________________________________________________

Extent of Work: ___________________________________________________

Name: ___________________________________________________________

Extent of Work: ___________________________________________________

10.0 CURRENT WORK COMMITMENTS (Contractor Only)

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Contract Sum</th>
<th>Completion Date</th>
<th>Principal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>
11.0 SIMILAR REMOTE WORK COMPLETED IN THE LAST 5 YEARS (Contractor and Subcontractor).

Note: all past projects in Indigenous communities to be listed.

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Contract Sum</th>
<th>Contract Period</th>
<th>Funding department (including contact details)</th>
<th>Supervising Engineer (including contact details)</th>
<th>Community (including contact details)</th>
<th>Key Staff Included in This Tender (including role in past projects)</th>
<th>Reference for Key Staff (including contact details)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
## 12.0 TIME PERFORMANCE

<table>
<thead>
<tr>
<th>Project (refer Section 11.0)</th>
<th>Due Date for Practical Completion</th>
<th>Actual Date of Practical Completion</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

The information provided by the Tenderer in response to this Section 12.0 of the Schedule of Contractor’s Details will not form part of the Contract (either express or implied) and without limiting other terms of the Conditions of Tender, will only be used or interpreted in respect to and for the purpose of the Principal’s evaluation of the Tenderer’s Tender irrespective of whether it is bound into the Contract.
13.0 METHODOLOGY

Each Tenderer is to provide with its Tender a statement of its proposed methodology to construct the works.
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
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</thead>
<tbody>
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</tbody>
</table>
14.0 PROJECT RESOURCES

(List all equipment and labour to be utilised for the project and the estimate of hours per week that the equipment will be utilised during the project, further list hourly and daily rates for that equipment).

<table>
<thead>
<tr>
<th>Description of Equipment/Labour</th>
<th>Average Hours/Week</th>
<th>Rate Hourly/Daily (incl. profit and overheads)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

The information detailed on these pages inclusive of the Schedule of Contractors Details will be read in conjunction with and form part of my / our tender for Contract TSIRC2017-110

Name of Tenderer: _______________________________________

Signature: _____________________________________________

Address: _____________________________________________

__________________________________________________________________________

Witness: _________________________________________________

Date: ___________________________________________________
To be completed fully as applicable, and attached to tender. Where particular items or components listed in this schedule are not included in the tenderers offer, the item will be clearly marked "N/A". Items not so marked will be deemed to be included in the offer notwithstanding that the technical data may be omitted. Relevant standards to which material will be made, and metal or alloy types will be stated where applicable.

### 1.0 TAPPING SADDLE

| Manufacturer: |  |
| Model Number: |  |
| Construction Materials: |  |
| Internal Coating: |  |
| External Coating: |  |

### 2.0 BALL VALVES

| Manufacturer: |  |
| Model Number: |  |
| Construction Materials: |  |
| Internal Coating: |  |
| External Coating: |  |

### 3.0 NON-RETURN VALVES

| Manufacturer: |  |
| Model Number: |  |
| Construction Materials: |  |
| Internal Coating: |  |
| External Coating: |  |

### 4.0 PRESSURE RELIEF VALVE

| Manufacturer: |  |
| Model Number: |  |
| Construction Materials: |  |
| Internal Coating: |  |
| External Coating: |  |

### 5.0 PRESSURE GAUGE

| Manufacturer: |  |
| Model Number: |  |
| Construction Materials: |  |
| Internal Coating: |  |
| External Coating: |  |
6.0 VACUUM GAUGE

Manufacturer: ____________________________
Model Number: ____________________________
Construction Materials: ____________________
Internal Coating: __________________________
External Coating: __________________________

7.0 PVC PIPES AND FITTINGS

Location: ____________________________
Manufacturer: ____________________________
Type and Class: ____________________________

Location: ____________________________
Manufacturer: ____________________________
Type and Class: ____________________________

8.0 DUCTILE IRON CONCRETE LINED PIPES

Location: ____________________________
Manufacturer: ____________________________
Type and Class: ____________________________

Location: ____________________________
Manufacturer: ____________________________
Type and Class: ____________________________

9.0 FLOW METER

Manufacturer: ____________________________
Model Number: ____________________________
Construction Materials: ____________________
Internal Coating: __________________________
External Coating: __________________________
10.0 DICL FITTINGS

Fitting: ________________________________
Manufacturer: __________________________
Type and Class: _________________________

Fitting: ________________________________
Manufacturer: __________________________
Type and Class: _________________________

11.0 CONTRACTOR’S ACCOMMODATION ARRANGEMENTS

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

12.0 CONCRETE BATCHING METHODOLOGY

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________
13.0 COMPLIANCE ASSESSMENT TESTING LABORATORY

NATA Certified Laboratory Name: _____________________________

The information detailed on this Schedule of Tender Data will be read in conjunction with and form part of my / our tender for Contract TSIRC2017-110.

Name of Tenderer: _____________________________

Signature: _____________________________

Address: _____________________________

Witness: _____________________________  Date: _____________________________
## Schedule of Compliance Assessment Testing

<table>
<thead>
<tr>
<th>SPECIFICATION</th>
<th>LOCATION OF TEST</th>
<th>TESTING REQUIRED</th>
<th>APPLICABLE STANDARDS</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5</td>
<td>Water Reticulation</td>
<td>Backfill</td>
<td>Maximum Dry Density Density Index/Field Density</td>
<td>AS 1289</td>
</tr>
<tr>
<td></td>
<td>Water Reticulation Pipework</td>
<td></td>
<td>Pressure</td>
<td>FNQROC Clause S5.28</td>
</tr>
<tr>
<td></td>
<td>Suction and Pumped Mains</td>
<td></td>
<td>Pressure</td>
<td>FNQROC Clause S5.28</td>
</tr>
<tr>
<td>G15</td>
<td>Concrete Works (incl. concrete kerb)</td>
<td>Concrete in Structures</td>
<td>Slump</td>
<td>AS 1012</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Strength (excl. batches of less than ½ cubic metres).</td>
<td>AS 1012</td>
</tr>
</tbody>
</table>

**Notes**

- “Tested once” means one test where pipework passes successfully i.e. one test only where pipework fails will not be sufficient.
- All sampling of stockpile lots for aggregate or pavement materials will be to Test Method Q060 and supported by a NATA endorsement.
1) Applicable to contractors, subcontractors, suppliers and agents (the Contractor).

2) There shall be no direct contact or liaison with elected representatives of the Council or Council staff unless initiated by the Council.

3) No loan or gift of equipment, vehicles, food, beverages or labour shall occur to any member of the Community (including elected representatives) unless as part of employment by Contractor, under an award or over award conditions.

4) The Contractor shall not provide goods or services not included in the contract to a community person, Council staff or employee (including elected Council members) without specific prior approval from the Superintendent.

5) Neither the Contractor nor his staff shall be employed except on this Contract within the Community during the entire term of the Contract, with the possible exception of work for Council, but dependent upon the Superintendent’s approval and any such work being properly documented and a price properly agreed upon. The Council may however approach the Contractor to undertake other work upon completion of this Contract.

6) Any racially discriminatory behaviour by the Contractor will result in dismissal and/or removal from the site and the Community.

7) There shall be no initiation or maintenance of sexual or close contact relationships by the Contractor with any community members. In the event of such an occurrence, instant dismissal and/or removal from the site and the Community will occur.

8) The Contractor should be discreet in his handling of alcohol in the community i.e. alcohol brought onto the community should not be obvious and should be consumed within the Contractor’s camp. The sale of alcohol to community members is prohibited and offenders will be dismissed and/or removed from the site and the Community.

9) In the event of a dispute arising in relation to the requirements or application of this clause an independent adjudicator, nominated by the Grantee Organisation Representative, will consider representations from the Contractor and the Council. All parties shall adhere to the determination of the adjudicator.

10) The Contractor shall not employ any Council staff members or employees without prior approval of the Council in writing.

11) Neither the Contractor nor his employees or subcontractors will use or borrow any Council plant, fuel, vehicles, equipment, building materials, car parts etc. without prior approval of the Council in writing. The arrangements for all hiring of Council plant shall be properly documented in writing prior to use of the plant.

12) Animals shall not be brought onto the community.

13) The costs for removal of Contractor personnel from the site and replacement by other suitable personnel shall be borne by the Contractor.

I / We have read this Code of Conduct, and agree to abide by the conditions whilst on site.

Printed Name: ________________________________________________ (Contractors Representative)

Signature: ____________________________________________________

Date: ________________________________________________________

Witness Signature: ____________________________________________

Date: ________________________________________________________
This Annexure will be issued as part of the tender documents, attached to the General Conditions of Contract, and will be read as part of the Contract.

The law applicable is that of the State or Territory of: QUEENSLAND

Payments under the Contract will be made at: CAIRNS

The Principal: TORRES STRAIT ISLAND REGIONAL COUNCIL

The address of the Principal: TORRES STRAIT ISLAND REGIONAL COUNCIL
PO BOX 7336
CAIRNS QLD 4870

The Superintendent: THE EXECUTIVE MANAGER ENGINEERING SERVICES
TORRES STRAIT ISLAND REGIONAL COUNCIL

The address of the Superintendent: TORRES STRAIT ISLAND REGIONAL COUNCIL
PO BOX 7336
CAIRNS QLD 4870

Limits of accuracy applying to quantities for which the Principal accepted a rate or rates: +/- 100% (PROVISIONAL QUANTITIES)

Bill of Quantities – the alternative applying: N/A

The time for lodgement of the priced copy of the Bill of Quantities: N/A

Contractor shall provide security in the amount of: 5.5% of Contract Sum (GST Inclusive)

Principal shall provide security in the amount of: NIL

The period of notice required of a party’s intention to have a recourse to retention moneys and/or to convert security: FIVE CALENDAR DAYS

The percentage to which the entitlement to security and retention moneys is reduced: SECURITY: 0% RETENTION: 100%

Interest on retention moneys and security – the alternative applying: ALTERNATIVE 2

The number of copies to be supplied by the Principal: ONE COPY

The number of copies to be supplied by the Contractor: THREE COPIES
<table>
<thead>
<tr>
<th>Clause</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.4</td>
<td>Time for Superintendent to give direction</td>
<td>14 DAYS</td>
</tr>
<tr>
<td>8.4</td>
<td>Work subcontracted without approval</td>
<td>WHOLE OF WORKS</td>
</tr>
<tr>
<td>9.2</td>
<td>Profit and attendance</td>
<td>10%</td>
</tr>
<tr>
<td>11(b)</td>
<td>Profit and attendance</td>
<td>10%</td>
</tr>
<tr>
<td>11(c)</td>
<td>Profit and attendance</td>
<td>10%</td>
</tr>
<tr>
<td>18</td>
<td>Insurance of Works</td>
<td>ALTERNATIVE 1</td>
</tr>
<tr>
<td>18(ii)</td>
<td>Assessment for insurance</td>
<td>2.5% of the Contract Sum</td>
</tr>
<tr>
<td>18(iii)</td>
<td>Assessment for insurance</td>
<td>5% of the Contract Sum</td>
</tr>
<tr>
<td>18(iv)</td>
<td>Value of materials</td>
<td>NIL</td>
</tr>
<tr>
<td>18(v)</td>
<td>Additional amount</td>
<td>10%</td>
</tr>
<tr>
<td>19</td>
<td>Public Liability Insurance</td>
<td>ALTERNATIVE 1</td>
</tr>
<tr>
<td>19</td>
<td>Amount of Public Liability Insurance</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>27.1</td>
<td>Time for giving possession of the Site</td>
<td>REFER TO CLAUSE 25 OF THE JOB SPECIFICATION – NON TECHNICAL</td>
</tr>
<tr>
<td>35.2</td>
<td>Date for Practical Completion</td>
<td>84 CALENDAR DAYS FROM LETTER OF ACCEPTANCE</td>
</tr>
<tr>
<td>35.6</td>
<td>Liquidated Damages per day</td>
<td>$516 PER CALENDAR DAY</td>
</tr>
<tr>
<td>35.7</td>
<td>Limit of Liquidated Damages</td>
<td>NO LIMIT</td>
</tr>
<tr>
<td>35.8</td>
<td>Bonus per day for early Practical Completion</td>
<td>NIL</td>
</tr>
<tr>
<td>35.8</td>
<td>Limit of Bonus</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Extra Costs for delay or disruption: NONE SPECIFIED
(Clauses 36)

The Defects Liability Period: 12 MONTHS
(Clauses 37)

The Charge for overheads, profits, etc. for Day work: 10%
(Clauses 41(f))

Times for Payment Claims: EACH CALENDAR MONTH
(Clauses 42.1)

Unfixed plant and materials for which payment claims may be made notwithstanding that they are not incorporated in the Works: NIL
(Clauses 42.1 (ii))

Retention Moneys on:
(Clauses 42.3)
(a) work incorporated in the Works and any work or items for which a different amount of retention is not provided: 10% of the value until
5% of the Contract Sum is held
(b) items on Site but not yet incorporated into the Works: N/A
(c) items off Site but in Australia: N/A
(d) items not in Australia: N/A
(e) disbursements incurred by the Contractor for customs duties, freight, marine insurance, primage, landing and transportation in respect of the works under the Contract: N/A

Unfixed plant or materials - the alternative applying: ALTERNATIVE 1
(Clauses 42.4)

The rate of interest on overdue payments: 7.5% PER ANNUM
(Clauses 42.9)

The delay in giving possession of the Site which will be a substantial breach: THREE MONTHS
(Clauses 44.7)

The alternative required in proceeding with dispute resolution: ALTERNATIVE 2
(Clauses 47.2)

The person to nominate an arbitrator: CHAIRPERSON, QUEENSLAND CHAPTER INSTITUTE OF ARBITRATORS
(Clauses 47.3)

Location of arbitration: QUEENSLAND
AGREEMENT made this ________________ day of ________________ 2018

BETWEEN _____________________________________________________________ (Called the Contractor)

AND TORRES STRAIT ISLAND REGIONAL COUNCIL ____________________________

__________________________________________ (Called the Principal)

IT IS AGREED that:

- The documents, including Drawings, listed in the Table of Contents to the tender documents for Contract TSIRC2017-110 and including the Table of Contents itself.

- And the Addenda issued by the Superintendent and included in the Contractor’s tender and listed in the Tender Form lodged by the Contractor.

- And the additional documents and Drawings included in the Contractor’s tender and listed in the Tender Form lodged by the Contractor.

- And the additional documents, drawings and correspondence listed in the notice in writing of acceptance of tender.

- The notice in writing of acceptance of the tender, which is the Principal’s letter dated ________________

All of which are annexed hereto, together comprises 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.

Signed by the Contractor

Signature: __________________________

Position: __________________________

Signed by the Principal

Signature: __________________________

Position: __________________________
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1.0 THE CONTRACT

1.1 General

The parties involved in the project are as follows:

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<th>Agency</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torres Strait Island Regional Council</td>
<td>Principal</td>
</tr>
<tr>
<td>The Executive Manager Engineering Services (Torres Strait Island Regional Council)</td>
<td>Superintendent</td>
</tr>
</tbody>
</table>

1.2 Works

This Contract is to demolish the existing Mogor Pump Station at Erub and construct a new pump station as per the Contract Document. The works include, but are not limited to:

- Salvage all the existing pipe work, pumps, electrical equipment.
- Demolition and disposal of the existing dilapidated pump station structure and access stairs.
- General earthworks for the new access stairs and pump station site.
- Installation of new pumps.
- New pipework and associated process equipment, including, but not limited to, pressure gauges, valving, magnetic flow meter and flow switches.
- Design, fabrication and installation of a new switchboard.
- Design, fabrication and installation of new access stairs.
- Relocation of the Ergon meter from the existing switchboard to the new switchboard.
- Connection of pumps, flow switch and flow meter to the SCADA network.
- All other works as indicated on the Drawings and in accordance with the Contract.

1.3 The Site


The site is located on Erub (Darnley Island) in the eastern Torres Strait. Access to Erub is via regular passenger transport or charter flights. The island is also serviced by a regular barge service operated by Sea Swift.

The Site shall comprise of sufficient land to contain the works as set out on the drawings together with such other land as the Principal may make available for the storage of materials and equipment.

The Contractor shall procure for itself and at its own cost the right to the occupation or use of any land in addition to the Site which the Contractor may deem necessary for the execution of the work under the Contract or for the purposes of the Contract and will, as a condition precedent to the issue of the Final Certificate, if so required by the Superintendent, provide a properly executed release from all claims or demands (whether for damages or otherwise whatsoever) from the owner or occupier of such land and from any other person having an interest in such land. Any such release will be in a form approved by the Principal.
1.4 General Conditions of Contract

1.4.1 General

The Australian Standard General Conditions of Contract AS 2124-1992 will apply. This non-technical specification acts to insert, replace or amend clauses in the General Conditions of Contract.

1.4.2 Annexure

The forms of the Annexure to the Australian Standard General Conditions of Contract, Part A, published as part of AS 2124-1992 will not be used and the Annexure to the Australian Standard General Conditions of Contract, Part B, published as part of AS 2124-1992 is deleted.

The Annexure Part A to the General Conditions of Contract attached to this Job Specification is the Annexure referred to by any reference made in AS 2124-1992 or elsewhere in the Contract Documents.

1.4.3 Agreement

The Form of Formal Instrument of Agreement published with AS 2124-1992 will not be used.

The Formal Instrument of Agreement incorporated in these Contract Documents and evidencing the terms and conditions of this Contract is the Formal Instrument of Agreement referred to in the General Conditions of Contract.

2.0 INTERPRETATION


"AS (number)" means Australian Standard (number).

"As-Constructed Drawings" means the permanent record of the completed works including the record of any modifications to, or departures from, the works as described by the drawings and specification referred to in the Contract.

The term includes the drawings amended as necessary, new drawings prepared for record purposes, schedules, manuals and any other documents that may be required by the Superintendent in accordance with the Contract.

"Council" or "TSIRC" refers to the Torres Strait Island Regional Council.

"Engineer" means the Superintendent.

"Engineer's Representative" means the Superintendent's Representative.

"Indicated on the Drawings" refers to works and their dimensions shown explicitly on the drawings or indirectly indicated thereon and its meaning includes the meaning "directed by the Superintendent" where the Superintendent's direction is an amendment to such an indication and is or can be issued by the issue of an amended drawing or by the issue of a written order, instruction or direction amending a drawing.

"Scheduled Rate" (or "Scheduled Lump Sum") means, for each item of the work, the rate (or lump sum) therefore shown in the Schedule of Rates and is the rate accepted by the Principal (or the lump sum) referred to in Clause 3.1 of AS 2124-1992.

"Lump Sum", except where qualified by a reference to particular items, means the aggregate of the rates and lump sums shown in the Schedule of Rates.

"Service" means any main, cable, transmission line, pipe, sewer, duct or the like provided for the conveyance of anything, commodity or form of energy or for the removal of any discharge or waste or for communications and will include any pole, supporting structure, manhole, marker or other thing forming part of such service or ancillary to it and will include also any connection to such service.

"Specification" includes this Job Specification, the standard specifications attached hereto and any other standard specification, Australian Standard or other documents incorporated by reference in this Job Specification or those standard specifications.
3.0  STANDARD SPECIFICATIONS AND DRAWINGS

The Contractor is made aware that there are standard specifications and standard drawings which shall be abided by where applicable. These standard specifications and standard drawings are contained within this Contract Document.

4.0  LUMP SUM CONTRACT

Refer to Clause 3 of AS 2124-1992.

Clause 3.3 of AS 2124-1992 is deleted from this Contract.

Notwithstanding anything to the contrary elsewhere in these Contract Documents, work will not be measured except as is necessary for the valuation of variations and for the calculation of the amounts of progress payments prior to the issue of the Certificate of Practical Completion.

The rates shown in the Schedule of Rates are rates referred to in paragraph (a) of Clause 40.5 of AS 2124-1992 and will be used for the valuation of variations and may be used for the calculation of the amounts of progress payments but the scheduled rates will have no other application under the Contract.

Refer to the clauses in the Technical Specification and standard specifications that specify the materials, work and other things for which full compensation shall be provided in the scheduled rates and scheduled lump sums.

“Other costs incurred in carrying out and completing the work in accordance with the Contract” include, as relevant to each section or item of the work under the Contract, the costs of:

- compliance with a term of the Contract, where the Contract provides that compensation for compliance shall be included in the scheduled rates or the Contract Sum
- providing security
- supplying Contractor-supplied documents, except where expressly stated otherwise in the Contract
- satisfying legislative requirements, except as provided in Clause 11.2 of AS 4902-2000
- protecting people and property and care of the work under the Contract, including maintenance to the Date of Practical Completion and rectifying loss or damage
- insurances
- setting out
- cleaning up
- planning establishing and maintaining a quality system, except as otherwise provided in the Contract
- tests conducted by the Contractor, except as otherwise provided in the Contract
- preparing, giving and maintaining a construction program, except as otherwise provided in the Contract
- on-Site and off-Site overheads, whether time-related or not
- any other risk, liability or obligation expressed in the Contract or necessarily to be inferred from the Contract Documents.

4.1  Where No Rate Is Shown

Where no scheduled rate or scheduled lump sum is shown for a section or item in the Schedule of Rates that scheduled rate or scheduled lump sum shall be deemed to be nil and full compensation in regard to that section or item shall be included in the scheduled rates.
5.0 PROVISIONAL QUANTITIES AND "IF ORDERED" ITEMS

5.1 Provisional Quantities

Refer to Clause 3.2 of AS 2124-1992.

Where the description of an item of work in the Schedule of Rates includes the qualification "(Provisional Quantity)" the item of work was not measured exactly at the time of preparing the Tender Documents.

Where the description of an item of work in the Schedule of Rates includes the qualification "(Provisional Quantity)" the scheduled rate for that item will apply to the whole of the quantity of that item actually carried out, whether greater or lesser than the quantity shown in the Schedule of Rates and regardless of any limits of accuracy stated in the Annexure.

5.2 "If Ordered" Items

Refer to Clauses 3.2 of AS 2124-1992.

Refer to Clause 41.2 of this Job Specification.

Where the description of an item of work in the Schedule of Rates includes the qualification "(If Ordered)" the item of work may not have been measured exactly at the time of preparing the Contract Documents.

If the description of an item of work in the Schedule of Rates includes the qualification "(If Ordered)" and a scheduled rate applies to that item and:

a. The Superintendent has directed work to a greater or lesser quantity than the quantity shown in the Schedule of Rates.

b. The item of work was not measured exactly at the time of preparing the Contract Documents.

Then the scheduled rate for that item will apply to the whole of the quantity of that item actually carried out pursuant to the Superintendent's direction, whether greater or lesser than the quantity shown in the Schedule of Rates and regardless of any limits of accuracy stated in the Annexure.
5.3 “Rate Only” Items

Refer to Clauses 3.2 of AS 2124-1992.

Where the description of an item of work in the Schedule of Rates includes the qualification "(Rate Only)" the Scheduled Rate for that item will apply to the whole of the quantity of that item actually carried out (as directed by the Superintendent), regardless of any limits of accuracy stated in the Annexure.

6.0 SECURITY MONEYS

6.1 Form of Security

Notwithstanding the provisions of Clause 5.3 of AS 2124-1992, the Principal requires the security to be in the form of an unconditional Bank Guarantee. The Bank Guarantee will not have an expiry date and a draft copy will be provided to the Superintendent for approval prior to the Bank Guarantee being finalised.

The Bank Guarantee will be made out in the name of the Principal and will be lodged with the Superintendent.

6.2 Form of Retention

In lieu of withholding a cash retention, the Principal shall accept retention in the form of an Unconditional Bank Guarantee. The Bank Guarantee shall not have an expiry date and a draft copy shall be provided to the Superintendent for review prior to being finalised. The amount of the Bank Guarantee shall be in the amount of 5.5% of the Contract Sum (i.e. 5% of the Contract Sum plus GST).

The Bank Guarantee shall be made out in the name of the Principal and shall be lodged with the Superintendent.

Under Subsection (2) of Section 67K of the Queensland Building Construction Commission Act 1991 a building Contract is subject to a condition that the total value of security, including retention moneys, held by the Principal before Practical Completion is reached shall not exceed 5% of the Contract price. However, under Subsection (4) of Section 67K a building Contract is not subject to that condition if requirements specified by subsection (4) are met.

This Contract is not subject to the condition mentioned in subsection (2) of Section 67K of the Queensland Building Construction Commission Act 1991.

7.0 SERVICE OF NOTICES ON CONTRACTOR

Refer to Clause 7 of AS 2124-1992.

In the absence of any notification to the contrary by the Contractor the address entered by the Contractor in its Tender will be deemed to be the address communicated in writing by the Contractor to the Principal.
8.0 INTERPRETATION OF THE CONTRACT DOCUMENTS

8.1 Tender Documents
Refer to Clauses 8 and 12.1 of AS 2124-1992.

The Contractor will be deemed to have acquainted itself with all conditions relating to its Tender and, if it had any doubt as to the meaning of any portion of the Tender Documents, to have either:
- requested clarification in writing before submitting its Tender
- included with its Tender a statement of the interpretation upon which it relied.

Except for items so detailed and for ambiguities and discrepancies as provided in Clause 8.1 of AS 2124-1992, the Contractor will have no claim arising out of its misinterpretation of these Contract Documents.

8.2 Discrepancies
Refer to Clause 8.1 of AS 2124 1997.

This Contract does not specify the order of precedence of the documents that together comprise the Contract Documents.

In determining and directing the interpretation to be followed in the event of ambiguity or discrepancy the Superintendent will consider the following:
- The Contract Documents are to be read together and treated as a whole.
- The later-written is to be preferred to the earlier-written.
- The specific is to be preferred to the general.
- For a pictorial description of the works and for their dimensions, the Drawings are to be preferred to the Specifications.

8.3 On-site Copy of Contract Documents

The Contractor will ensure a complete set of the Contract Document is retained on site at all times. The Contractor will also supply all subcontractors with a complete set each of the Contract Document, prior to their arrival on site. Payment may be withheld for any item carried by a subcontractor who cannot produce his own full set of the Contract Document.

9.0 CONNECTION TO EXISTING WORKS AND SERVICES


Before commencing any work that is to be connected or joined, directly or indirectly, to existing works or services (including parts of the works previously constructed) the Contractor will expose the existing works or services as may be necessary and will verify that the locations, lines, levels and dimensions of such existing works or services and the materials of which they are made are as indicated on the Drawings.

If the Contractor discovers any discrepancy between the locations, lines, levels, dimensions and materials actually existing and the corresponding indications on the Drawings the Contractor will notify the Superintendent of the discrepancy and will not proceed with work affected by the discrepancy until the Superintendent has directed the action, if any, that is to be taken.
10.0 HANDOVER DATA

Refer to Clause 8 of AS 2124-1992.

The Contractor will prepare as-constructed drawings for all works constructed under the Contract. As-constructed drawings will be submitted as a separate document at the same time as the Operation and Maintenance Manuals.

The Superintendent will make available electronic copies of all offer drawings to the Contractor, if required.

10.1 As Constructed Drawings to be Furnished

Refer to Clause 8 of AS 2124-1992.

The Contractor will furnish to the Superintendent "as constructed" drawings showing the following.

10.1.1 Details

The Contractor will furnish to the Superintendent "as constructed" drawings. The "as constructed" drawings will show, but not be limited to:

- The locations of the works relative to adjacent property boundaries.
- As constructed details and location of the aboveground pipework and the access steps (including buried concrete footings).
- 3D isometric drawing of the layout of pipework and equipment inside the pump station building.
- The surveyed locations of the centrelines of the pipelines at all changes in direction (where installed in a trench), including the identification of all valves, scours, envelopers, connections, terminations and fittings to provide changes of direction. Survey to be undertaken by a licensed surveyor.
- The cover over the top of the pipeline at intervals not greater than 20 m where pipeline is being constructed utilising open trench methods, and where such cover varies from the specified dimensions by more than -50 mm (i.e. shallower) or more than +100 mm (i.e. deeper).
- The diameter, type, class and material of the pipelines, envelopers, fittings, valves and connections.
- The as constructed details of anchor blocks, air valve installations, and any supports or scour protection.
- The coordinates of connection points to the existing pipeline, valves, scours, envelopers, connections and terminations.
- In addition, full details of any departure (whether by way of variation ordered or arising in the course of construction) from the locations, levels, sizes and materials indicated on the Drawings at the commencement of the Contract that is not included in the requirements specified above.

10.1.2 Nature of Drawings

The Contractor will provide the as-constructed information in the following formats:

- One digital copy in AutoCAD (Version 2010) format.
- One digital copy of the AutoCAD format drawings converted to Portable Document Format (pdf) suitable to be read in Adobe Acrobat (latest version).

A digital copy of the base drawings will be made available to the Contractor on request.

Once the Contractor has prepared the As-Constructed Drawings, they will submit a draft set to the Superintendent for review and comment. The Contractor will not submit final drawing/s to the Superintendent until the Superintendent has provided written comments to the Contractor on the draft manual/s, and the Contractor has addressed those comments.
10.1.3 Certification

All drawings associated with the as constructed information will be signed by a Licensed Surveyor, who will certify their accuracy.

10.2 Maintenance and Operating Manuals

The Contractor shall supply the required electronic or hard copies of an Operating and Maintenance Manual for the equipment supplied under this Contract.


The Contractor shall prepare Operations and Maintenance Manuals that are fit for the purpose of providing a “step-by-step” guide for the Principal in the operation and maintenance of the works constructed under each separable portion of the Contract. The Contractor shall ensure that a complete set of the manuals for each separable portion are available for the sewerage scheme training to be conducted under the contract.

The Contractor shall prepare and shall supply four (4) hard copies and two (2) electronic copies of the manuals for the equipment and materials supplied and installed under each separable portion of this Contract. The electronic copies shall consist of one file in PDF format (latest version), comprising a single file that is index to the relevant sections, and a second file in Microsoft Word format (latest version) that will allow the Principal to make future revisions to any part of the manuals.

All information supplied shall be in the English language and all dimensions shall be metric.

The “as-constructed” drawings described in Clause 10.1 shall be submitted as part of the manuals.

The completion of this schedule is not expected to be an onerous task as all the information required by this schedule forms part of the requirements for the manuals. The Superintendent shall liaise with the Principal to determine which items of work are to be classed as ‘new assets’ and advise the Contractor accordingly.

The Contractor is referred to the “A Guide for the Development of Operations and Maintenance Manuals’. A copy of this guide is included for information purposes. This guide has been developed by the Principal and, as indicated, it is a draft in progress. As such it shall not form the basis for the development of the manuals by the Contractor and it shall not replace any of the requirements specified in this Clause 10.2, or those deemed necessary by the Contractor.

Once the Contractor has prepared the manuals the Contractor shall submit a draft copy of each to the Superintendent for review and comment. The Contractor shall not submit final manuals to the Superintendent until the Superintendent has provided written comments to the Contractor on the draft manuals, and the Contractor has addressed those comments.

The manual shall include but not be confined to:

- manufacturer’s operating instructions for all items of plant and control equipment
- instructions for adjusting and setting all control, alarm protection and tripping devices
- details of all reference levels and/or datum points necessary for reinstalling equipment after dismantling
- all test certificates, type test certificates and details of tests conducted off-site
- QA information (refer Clause 30.0)
- a schedule detailing manufacturers and suppliers (including the Contractor) of all items of plant, electrical components, and control equipment, including telephone and fax numbers and a contact person
- photos of each item of plant and control equipment, clearly labelled to point out which item in the photo is which
• diagrams and flowcharts clearly indicating the operation, maintenance and troubleshooting of equipment
• a list of workplace health and safety issues which operators/maintenance personnel need to be aware of, and what actions/procedures need to be in place to address these
• Complete RPEQ Certified Design Files for all works designed by the Contractor.
• As Constructed Drawings associated with all works completed by the Contractor including switchboard general arrangements, switchboard single line diagrams, switchboard schematics, switchboard equipment schedules, trip/closing supply schematics and general arrangements.
• Complete details for servicing and adjusting all items of plant including instruments, relays, operating elements, mechanical interlocks and control equipment.
• Complete schedules of parts and information on the sources of supply of parts including copies of all contract sub-orders to Contractors (prices may be blanked out). Identifying codes or part numbers shall be quoted.
• List of recommended spare parts for all the major equipment supplied.

The manuals shall be clearly labelled and indexed. The manual shall be submitted in draft form three weeks prior to the delivery of the equipment or as indicated elsewhere and shall be revised as directed by the Superintendent and the required copies submitted prior to the date of acceptance.

The text of the operating and maintenance instructions together with all drawings, illustrations and diagrams shall refer specifically to the plant and equipment being supplied under this Contract. General instructions referring to a range of equipment are not acceptable.

10.3 Payment
The Contractor will be entitled to claim 50% of the scheduled lump sum for “Handover Data” once a draft Maintenance and Operations Manual (including as constructed drawings) has been submitted, to the Superintendent for review. The remaining 50% will be entitled to be claimed once the final Maintenance and Operations Manual has been submitted and no alterations are required (in the opinion of the Superintendent).

The scheduled lump sums for “Handover Data” will include full compensation for all labour, plant and equipment necessary for provision of the drawings in accordance with this contract.

11.0 COPYRIGHT IN DOCUMENTS SUPPLIED BY CONTRACTOR
Refer to Clauses 8.4 and 13 of AS 2124-1992.

In respect of rights which the Contractor may have or acquire under the Copyright Act or any Act in substitution thereof relating to the documents which the Principal is entitled to be provided with by the Contractor pursuant to the Contract, the Contractor will grant to the Principal an irrevocable licence to exercise such of those rights as are necessary to multiple copy all or any of the said documents and to use such copies for the purposes of the Contract and in the use and disposal of the works. The term of the licence will be for the duration of the copyright in the said documents.

12.0 SITE CONDITIONS
Refer to item (i) of paragraph (a) of Clause 12.1 of AS 2124-1992.

Information as to the physical conditions upon and below the surface of the site, including interpretations of field observations, made available to tenderers by inclusion in the Tender Documents or by other written or oral advice is not guaranteed to be accurate and the Principal’s making such information available will not relieve the Contractor of any responsibility under Clause 12 of AS 2124-1992.
13.0 INDUSTRIAL RELATIONS

The legislation and subordinate legislation referred to in Clause 14.1 of AS 2124-1992 includes the industrial relations components of the National Construction Industry Code of Practice together with relevant legislation and codes of the State or Territory in which work under the Contract is carried out.

The Principal may apply sanctions as permitted by the National Code, the State or Territory code and relevant legislation.

14.0 STATUTORY REQUIREMENTS

PAYMENT WHERE THERE IS NO VARIATION

Clause 14.2 of AS 2124-1992 is omitted from this Contract.

15.0 QUEENSLAND GOVERNMENT

15.1 General


15.2 Work Health and Safety Act

15.2.1 General

For the purposes of this clause, the words “construction work”, “person with management and control”, and “notifiable incident” have the meanings assigned to them by the Work Health and Safety Act 2011 (WHS Act) and the Work Health and Safety Regulation 2011 (WHS Regulation). “Workplace” has the meaning given to it in the WHS Act, as amended from time to time; and the “regulator” is Workplace Health and Safety Queensland.

15.2.2 Appointment of Principal Contractor

Upon the Date of Acceptance of Tender, the Contractor agrees and acknowledges that, as between the parties, the Contractor is, for the purposes of the WHS Act and the WHS Regulation:

- The Principal Contractor as defined in the WHS Regulation.
- Responsible for discharging its duties as a person conducting a business or undertaking in accordance with the WHS Act and WHS Regulation.
- Responsible for discharging the duties of a Principal Contractor in accordance with the WHS Act and WHS Regulation.
- Authorised to have management and control of the workplace.
- Responsible for discharging the duties of work health and safety matters, in relation to or connected with the management and control of the workplace, as far as is reasonable practicable.
- Responsible for ensuring all risks to health and safety are eliminated, so far as is reasonably practicable and where it is not reasonably practicable to eliminate those risks to health and safety, to minimise those risks to health and safety so far as is reasonably practicable.
- Required to consult with the Superintendent in relation to matters of safety that the Contractor cannot resolve to the standard imposed by the WHS Act and the WHS Regulation and to cooperate and coordinate with the Superintendent to ensure any issues are resolved to the required standard.
15.2.3 Workplace

For the purpose of this Clause 15.2 “workplace” is defined as the site.

15.2.4 Contractor’s Safety Officer

The Contractor must appoint at least one person appropriately qualified to competently discharge the functions of Safety Officer as set out in this clause, and trained to at least the standard considered appropriate by the regulator as defined under the WHS Act, and consistent with legislative requirements.

The functions to be discharged include:

- Keep the Contractor informed and up-to-date about the overall state of health and safety at the workplace.
- Conduct regular inspections at the workplace to identify any hazards and unsafe or unsatisfactory work health and safety conditions and practices.
- Report in writing to the Contractor any hazard, unsafe or unsatisfactory work health and safety practice identified during inspections.
- Establish educational programs in work health and safety to an appropriate standard.
- Investigate, or assist in the investigation of, all incidents at the workplace.
- Assist inspectors and auditors in the performance of their duties.
- If any incident or immediate risk to health and safety at the workplace happens to immediately report the incident or risk to the Contractor and the Superintendent.
- Maintain all health and safety representatives’ training and competency to the level required by the regulator under the WHS Act, and consistent with legislative requirements.

15.2.5 Responsibilities and Liabilities

The Contractor is responsible for and assumes liability for the duties under the WHS Act and the WHS Regulation for which the Contractor is responsible and liable as between the parties, in accordance with this clause.

Nothing contained in this clause will in any way limit or exclude any of the Contractor’s obligations or liabilities under the Contract.

15.2.6 Notifiable Incidents

The Contractor will:

- Ensure that the regulator for work health and safety is notified of any notifiable incident immediately after becoming aware of a notifiable incident, arising out of or in connection with the conduct of the business or undertaking of the Contractor.
- Notify the Superintendent of every notifiable incident in relation to or in connection with the workplace as soon as possible but not more than twelve (12) hours after the occurrence.
- Keep the Superintendent informed of the status of any safety or health related incidents that have occurred in relation to or in connection with the site.
- Do all that is necessary to assist the Principal and Superintendent with any investigations into any safety or health related incident in relation to or in connection with the workplace, including requiring, to the extent possible, the Contractor’s agents and subcontractors to assist the Principal and Superintendent.
- As soon as practicable but no later than seven (7) days of receiving a request from the Superintendent to do so, provide the Superintendent with a copy of any notification to the regulator for work health and safety of a safety or health related incident.
- Consult, cooperate and coordinate with the Principal and Superintendent in relation to any safety matters arising out of, or in connection with the workplace.
15.2.7 Indemnities

The Contractor indemnifies and will keep indemnified the Principal from and against all loss which may be brought against or made on the Principal or which the Principal may pay, sustain or be put to, arising by reason of or in connections with:

- Any breach of the WHS Act or the WHS Regulation at the workplace.
- Any breach by the Contractor of its obligations under this clause or its duties under the WHS Act or the WHS Regulation.
- The Principal being deemed under the WHS Act to be the person with management and control of the workplace, or the person with management and control of any fixtures, fittings and plant in relation to or in connection with the workplace.

It is not necessary for the Principal to incur expense or make a payment before enforcing any indemnity conferred by this clause.

15.2.8 First Aid

The Contractor will ensure the workers have access to appropriate equipment, facilities and training in accordance with the provisions of the WHS Regulation.

Any first aid requirements on the site will be determined in accordance with the First Aid Code of Practice 2014.

15.2.9 Work Health and Safety Management Plan

The Contract shall prepare a Work Health and Safety Management Plan (WHS Management Plan). Within 28 days after the Date of Acceptance of Tender the Contractor shall prepare and submit its WHS Management Plan to the Superintendent.

15.2.10 Definition

In this Clause 15.2.10, “Work Health and Safety Management Plan” or “WHS Management Plan” means a written work health and safety management plan for the workplace titled “Work Health and Safety Management Plan”, which must be as a minimum (and without limitation) in compliance with the WHS Regulation, be signed by the Contractor and include the following components:

- The names, positions and health and safety responsibilities of all persons at the workplace whose positions or roles involve specific health and safety responsibilities in connection with the works.
- The arrangements in place, between any persons conducting a business or undertaking at the workplace for consultation, cooperation and the coordination of activities in relation to compliance with their duties under the WHS Act and the WHS Regulation.
- The arrangements in place for managing any incidents that occur.
- Any site specific health and safety rules, and the arrangements for ensuring that all persons at the workplace are informed of these rules.
- The arrangements for the collection and any assessment, monitoring and review of safe work method statements at the workplace.

15.2.11 Preparation

The Contractor will not commence construction works until its WHS Management Plan is deemed suitable by the Superintendent. The Contractor will comply with the following:

- The Contractor will prepare and submit a WHS Management Plan to the Superintendent.
- If the Superintendent notifies the Contractor that the WHS Management Plan is not suitable, the Contractor will at its cost amend and resubmit the WHS Management Plan.
- The Contractor is not entitled to make any claim for additional costs or expense, adjustment to the contract sum or extension to the Date for Practical Completion or to make a claim in connection with any review, approval of, or modification to the WHS Management Plan as directed the Superintendent.
15.2.12 Duty to Inform

The Contractor must ensure, so far as is reasonably practicable, that before commencing work each person who is to carry out construction work in connection with the works is made aware of:

- The content of the WHS Management Plan for the workplace.
- The person’s right to inspect the WHS Management Plan under the WHS Regulation.

15.2.13 Revision and Reporting

The Contractor must, under the WHS Regulation, review and, as necessary, revise the WHS Management Plan to ensure that it remains up-to-date and give written monthly reports on its WHS Management Plan outlining any:

- Non-compliance.
- Work improvement notices.
- Safety incidents.
- Any other matters relevant to the management of work health and safety or reasonably required by the Principal.
- During any audit, provide the Superintendent with all documents, access and assistance necessary for its completion.
- Any costs associated with rectifying the non-conformance and any associated delays must be borne by the Contractor.
- If a non-compliance is reported three times in the auditing process the Principal may give notice to the Contractor of a substantial breach of the Contract under Clause 44.2 and 44.3 of the General Conditions of Contract.

15.2.14 Safety Audits

The Superintendent may audit the implementation of the WHS Management Plan at any time. During any audit the Contractor must provide the Superintendent with all documents, access and assistance necessary for completing the audit. Auditing may take one or a combination of the following forms:

- A check on whether the Contractor is complying with the provisions of the WHS Management Plan.
- A check on the Contractor’s individual procedures and records.

If any non-conformance in the Contractor’s WHS Management Plan is detected, the Contractor will rectify the non-conformance and resubmit the amended WHS Management Plan within seven (7) days.

The Contractor must suspend construction works (or the relevant portion) until the Contractor has addressed the safety issues identified during the audit, and in the meantime continue to comply with all duties and obligations under the WHS Act and the Contract.

If the Contractor fails to rectify a non-conformance that has been identified on three (3) separate occasions in the auditing process, the Principal may give notice to the Contractor of a substantial breach of the Contract under Clause 44.2 and 44.3 of the General Conditions of Contract.

15.2.15 Health and safety duties

15.2.15.1 General Duty

The parties must discharge all applicable duties under the WHS Act and (without limiting those duties) must ensure, so far as is reasonably practicable, the health and safety of all persons associated with the works, the workplace, fixtures, fittings, plant and structures associated with any of them, and that persons are not exposed to risks to health and safety in relation to or connection with the Contract, the works or the workplace.
15.2.15.2 Principal’s obligations

The Principal must:

- Comply with its obligations under the WHS Act.
- As soon as reasonably possible, give the Contractor any information the Principal has in relation to hazards and risks at or in the vicinity of the workplace where any construction work is to be carried out.
- Provide the Contractor with copies of any construction drawings and specifications created for the Principal by its designer of any works to be constructed under this Contract.
- Consult, cooperate and coordinate with the Contractor in relation to any health or safety matters arising out of or in connection with the Workplace, the works or the Contract.

15.2.15.3 Contractor’s Obligations

The Contractor must discharge its duties and comply with all relevant obligations under the WHS Act, including (but not limited to) the following:

- The duties of a principal contractor.
- The duties of a person conducting a business or undertaking.
- The duties in relation to health and safety matters in relation to or connected with the management and control of the workplace.
- The duty to ensure all risks to health and safety are eliminated, minimised or managed.
- Any other duties, obligations, standards and requirements under the WHS Act which may be or become applicable in relation to or in connection with the Contract or the works.

15.2.15.4 Additional Contractor Obligations

Without limiting the obligations in Clause 15.2.15.1 and 15.2.15.3 of these additional clauses, the Contractor must ensure the Contractor, its officers, employees, agents and subcontractors:

- Are familiar with and comply with all their obligations and exercise due diligence in discharging all their duties under the WHS Act.
- As a minimum comply with the Principal’s reasonable policies, procedures and directions in relation to health and safety.
- Are suitable and competent, and must retain evidence of that verification, and provide that evidence to the Principal promptly upon written or verbal request.
- Where the Contractor provides or commissions any design for the works, the Contractor must:
  - Ensure that it and any designer discharge all duties as required under Part 6.2 of the WHS Regulation.
  - Obtain a design safety report from any designer in accordance with the WHS Regulation and provide a copy to the Superintendent.
  - Ensure it obtains full details of all hazards and risks from any designer and incorporates corresponding methods of controlling these in the WHS Management Plan.

15.2.15.5 Primary responsibility

As between the Principal and the Contractor, where a duty is held by both parties, and without limiting the Principal’s rights under the Contract, the Contractor has the primary responsibility for ensuring that duty is discharged and any investigations are undertaken.

If the Contractor cannot discharge its work health and safety duties and obligations under the WHS Act or the Contract to the standard imposed by the WHS Act or the Contract, the Contractor must:

- Ensure work health and safety is preserved including, if necessary, stopping the relevant part of the works.
Immediately notify the Principal and consult, cooperate and coordinate with the Principal to ensure any duties are discharged or issues resolved to the standard required.

If the Contractor in its capacity as principal contractor or otherwise in relation to the Contract, the workplace or the works, creates, sends or receives any document, notice or report under the WHS Act, it must forward a copy to the Principal.

15.2.15.6 Communication, consultation and coordination
The Contractor must, before commencing the works and then on an ongoing basis, consult, cooperate and coordinate with:

- The Principal.
- All other duty holders in relation to any duty held by the Contractor.
- Workers (whether or not directly employed by the Contractor) who are or are likely to be directly affected.
- Relevant suppliers, contractors and other third parties, in relation to any health or safety matters arising out of or in connection with the workplace, the works or the Contract.

Without limiting the above obligations, the Contractor must as a minimum comply with the Principal’s reasonable policies and procedures in relation to communication, consultation and coordination.

15.2.15.7 Measurement and Payment
No separate payment will be made for complying with the WHS Act, WHS Regulation or the work health and safety requirements under this Contract. The Contractor will allow for the cost of compliance in the Contractor’s tendered price.

15.3 Building and Construction Industry (Portable Long Service Leave) Act
The Building and Construction Industry (Portable Long Service Leave) Act applies to construction projects over $150,000. The Contractor, on behalf of the Principal, will pay the long service levy pursuant to the Building and Construction Industry (Portable Long Service) Act for the building and construction work to be carried out under this Contract.

No separate payment will be made to the Contractor for compliance with this clause, but rather full compensation, including for payment of the long service levy will be included in the scheduled rates generally.

15.4 Environment Protection Act

15.4.1 General
The Contractor will observe and comply with all environmental protection requirements that apply to the area in which work under the Contract is to be carried out.

15.4.2 Noise Control
The Contractor will take all practicable precautions to minimise noise arising out of or resulting from any activity associated with the works under this Contract.

15.4.3 Site Control
Except as otherwise provided in the Contract, delivery of materials to the site, space for storage of such materials and for buildings sheds, offices, workshops and other temporary structures will be allowed only in accordance with the arrangements entered into between the Contractor and the Council and subject to such conditions as are determined by the Council and/or Superintendent.

No new tracks or roads will be formed, existing roads and tracks altered, camps erected, trees or shrubs removed, fences, water, sewerage, telephone lines or power lines cut or other things done that may affect the environment to a significant extent without the prior approval of Council or the Superintendent.

No fires will be lit on the site without the prior approval of the Superintendent.
15.4.4 Disposal of Wastes and Refuse

The Contractor will be responsible for the proper disposal of all solid, liquid and gaseous wastes in accordance with all statutory requirements.

All refuse arising from the execution of work under the Contract (including packing boxes, pallets and demolition materials etc.) will be removed from the island unless approved otherwise by the Superintendent. Domestic waste only (e.g. food scraps) may be disposed of at the Erub dump (operated by TSIRC). The Contractor will be required to pay dumping fees in accordance with Council’s regulated charge.

Refuse will not be dropped free, but hoppers and shutters, chutes or refuse buckets will be used. All hoppers, chutes or buckets for refuse will be covered or be of such a design as to fully confine the material and prevent dissemination of dust.

15.4.5 Dust, Dirt and Water

The Contractor will prevent nuisance to the owners, tenants or occupiers of properties adjacent to the site and to the public generally. Nuisance includes nuisance caused by dust, dirt and water.

Some of the roads in the community are unsealed. During the course of the Contract, the Contractor’s vehicles will be traversing these roads regularly, and it is likely that a dust nuisance will be caused. The Contractor will prevent dust becoming a nuisance to the community by regularly watering unsealed roads and work areas, or using other methods approved by the Superintendent. The frequency of watering the roads will be a minimum of twice daily however if this is not sufficient to suppress the dust additional watering will be carried out as required.

15.4.6 Soil Conservation

The Contractor will take such steps as are necessary to prevent the erosion of any lands used or occupied by the Contractor in the execution of the work under the Contract. This will include all necessary measures to prevent the runoff of silt from the works into adjoining watercourses.

15.4.7 Preservation of Flora

The Contractor will not destroy, remove or clear any trees or shrubs (except those marked to be removed either on the drawings or by the Superintendent) from any lands used or occupied by the Contractor in the execution of the work under the Contract without prior approval of the Superintendent.

Trees and shrubs allowed to be removed will be identified by the Superintendent prior to construction, by marking with paint or flagging tape.

15.4.8 Measurement and payment

No separate payment will be made to the Contractor for compliance with this clause, but rather full compensation will be included in the Schedule of Rates generally.

16.0 PRINCIPAL’S RULES AND REQUIREMENTS

16.1 Out of Bounds

All workers will be required to observe the limits of the areas which they may use as laid down by the Council and they will refrain from entering any areas laid down as ‘out of bounds’ by the Council.

16.2 Interruptions to Services

Interruptions to services will be kept to a minimum and will be confined to times suitable to the Council. A minimum of 48hrs notice of all proposed interruptions must be given, in writing, to the Chief Executive Officer and the Superintendent. Council will then advise the Contractor whether the proposed timing is suitable or unsuitable. If deemed unsuitable the Contractor will amend the timing to suit Council’s requirements.
16.3 Normal Working Hours

Working hours will be 7am - 5pm Monday to Friday and 7am - 12pm on Saturdays. No work will be allowed on Sundays. Construction vehicles will not drive within the community on Sundays.

Any work carried out by the Contractor outside normal working hours, will be subject to the written approval by the Superintendent. The Torres Strait Island Region’s gazetted holidays can be found at the following link:


16.4 Publicity

The Contractor will not issue any information, publication, document or article for publication in any media which includes details of the work under the Contract without prior written approval of the Principal.

16.5 Immunisation against Infectious Diseases

The Contractor will ensure, at their own expense that all field employees and subcontractors are immunised against infectious diseases as required by the Department of Health.

16.6 Animals

The Contractor will ensure that no animals are brought into the community by their employees or subcontractors. Any of the Contractor’s employees or subcontractors found to have animals in the community will be removed from site at the Contractor’s expense within 24 hours of written notification from the Superintendent. Failure to comply with this clause will be a breach under the Contract.

16.7 Abuse and threatening behaviour

The Contractor will ensure that their workers and subcontractors do not abuse (verbally, physically etc.) threaten or intimidate any person whilst employed under this Contract. Where such abuse has occurred, in the opinion of the Superintendent, the Contractor will immediately confine the person(s) responsible for the abuse to the Contractor’s camp until their immediate departure from the community for the remainder of the Contract. The person deemed responsible for such abuse, in the opinion of the Superintendent, will be removed from site at the Contractor’s expense within 24 hours of written notification from the Superintendent. Failure to comply with this clause will be a breach under the Contract. All costs in relation to removing and replacing the person(s) responsible for the abuse, in the opinion of the Superintendent, will be borne by the Contractor. All allowances for this activity will be included in the Schedule of Rates generally.

16.8 Borrow Pits

The Contractor will not obtain quarry material, fill etc. from independent people around the community. The Contractor will only obtain quarry material from a commercially operated quarry. Appropriate records will be kept as proof of where and how quarry material, fill etc. has been obtained. The Contractor will not rely on Council having a borrow pit available for obtaining quarry material, fill etc. being available throughout the Contract period.

16.9 Hunting

Hunting is not permitted.

Any of the Contractor’s employees or subcontractors found hunting, or to be in possession of firearms (or similar) or hunting dogs, on the DOGIT land will be removed from site at the Contractor’s expense within 24 hours of written notification from the Superintendent. Failure to comply with this clause will be a breach under the Contract.

17.0 AVOIDANCE OF INTERFERENCE

Refer to Clauses 15 and 27.1 of AS 2124-1992.
The Contractor will minimise interference with the ongoing activities of the Community during the execution of the work under the Contract.

The Contractor will fully enclose the areas in which work is being carried out, using “PARAWEB” or a similar prominent barricade. There are a large number of children in the community and many dwellings are unfenced. For safety, backfilling of trenches, pits and other deep excavations will be completed at the end of each day’s work unless otherwise approved by the Superintendent. Furthermore no open trench will be left unattended at any time.

The Contractor will take all reasonable steps to prevent:
- Dust, material and rubbish blowing from the site into residential areas.
- Dust, material and rubbish blowing from vehicles hauling materials.
- Stationery, noisy plant operating near residential areas.

The Superintendent at any time he views warranted, may suspend operations of the Contractor that are causing any inconvenience to residents until such a time as the Contractor adopts methods to minimize or eliminate the problem. No claim either for an extension of time or of a financial nature from the Contractor for works necessary in conforming to this requirement will be allowed by the Superintendent.

No separate payment will be made to the Contractor for compliance with this clause and Clause 15 of AS 2124-1992, but rather full compensation will be included in the Schedule of Rates generally.

18.0 EXPLOSIVES


Explosives will not be used in the works.

19.0 PRESERVATION OF PROPERTY MARKS

Refer to Clauses 14, 15 and 17 of AS 2124-1992.

The Contractor will be held responsible for the preservation of all property and permanent survey marks within the area of the works and will note that it is an offence under the Survey Marks Acts and Survey Co-ordination Acts to destroy such marks. The Contractor will advise the Superintendent in writing of any such marks that necessarily must be removed to allow the work to proceed and the Superintendent, if they concur, will forthwith engage a Licensed Surveyor at the Principal's expense to offset such marks.

If the Contractor disturbs or destroys any such mark without its previously having been offset as provided above, the Contractor will inform the Superintendent of such disturbance or destruction. The Superintendent will then arrange for reinstatement of the mark by a Licensed Surveyor at the Contractor's expense.

20.0 PROTECTION OF EXISTING SERVICES

20.1 General

Refer to Clauses 14, 15 and 17 of AS 2124-1992.

20.2 Existing Services Indicated on Drawings

Existing services on the site seen at the time of survey are shown on the Drawings. Such indications are not guaranteed to be accurate or complete and will not relieve the Contractor of any responsibility under this Clause.
20.3 Notification of Authorities

Before commencing work the Contractor will ascertain from the relevant authorities and owners details of all services in the area affected by the works and will comply with all relevant requirements of the relevant authorities.

Where work is to be done adjacent to or connecting to any existing service the Contractor will notify the relevant authority or owner in writing and will obtain that authority's or owners written approval to carry out the work, giving any period of notice stipulated by the authority and in any case before commencing work.

20.4 Charges and Co-operation

The Contractor will arrange for and pay all charges incurred in any interruption of service or temporary or permanent relocation of any service and will co-operate with the relevant authority or owner.

20.5 Payment for Relocations

If a service that is relocated was shown on the Drawings or its presence was otherwise notified to the Contractor prior to the closing of tenders or it was visible prior to the closing of tenders then, excepting in the case of a service for which provision is made in the Schedule of Rates or of a service that is shown on the Drawings to be relocated by others, full compensation for authorities’ or owners’ charges and for any other costs incurred by the Contractor will be deemed to be included in the scheduled rates and no further reimbursement will be made.

If such service was not shown on the Drawings and its presence was not otherwise notified to the Contractor prior to the closing of tenders and it was not visible prior to the closing of tenders or if such service is shown on the Drawings to be relocated by others and the Superintendent directs the Contractor to arrange for its relocation then such charges and other costs necessarily incurred by the Contractor will be valued under Clause 40.5 of AS 2124-1992.

The Contractor will coordinate, manage and carry out all relocations of services as necessary in conjunction with the relevant service authorities.

20.6 Service Interruptions

The work of this Contract will not interfere with the operation of Council's sewer or water infrastructure systems.

The Contractor is required to co-ordinate and schedule with Council for any shut down and to be flexible in terms of the timing of the works (i.e. shut downs may need to be undertaken on the weekend or at night). Scheduling of the work may be adjusted by Council or the Superintendent to provide a continuous water supply to the community. The Contractor will provide Council and the Superintendent a minimum of one week’s written notice of the preferred shut-down day.

20.7 Avoidance of Damage

The Contractor will exercise reasonable care in carrying out work so as to avoid damage to existing services, whether or not details of such services have been made available to the Contractor. Furthermore the Contractor will carry out such protection works as are necessary to protect existing services from damage as a result of the works, under the supervision of the relevant service authority (e.g. additional stays or support for a power pole where the works are close).

Except as provided in the paragraph below the Contractor will be held solely responsible for any damage to existing services and in the event of damage will immediately advise the relevant authority or owner and will co-operate with the authority or owner in making safe and/or restoring the service and will bear any costs so incurred.

Where damage is caused to a service of which the Contractor was unaware and the Contractor has fully complied with the requirements of Clause 20.3 and has exercised reasonable care and has co-operated with the authority or owner and the Superintendent determines that the existence of such a service could not reasonably be inferred from available information, costs necessarily incurred by the Contractor in complying with this Clause will be valued under Clause 40.5 of AS 2124-1992.
20.8 Payment

Full compensation for carrying out protection works, will be included in the Schedule of Rates generally; no separate payment will be made.

21.0 SALVAGED MATERIALS

Notwithstanding anything implied by Clause 17.1 of AS 2124-1992 but except as otherwise provided elsewhere in the Contract Documents, materials salvaged by the Contractor during the carrying out of the work under the Contract and not used in work under the Contract will be the property of the Contractor.

For the purposes of Clause 38 of AS 2124-1992 such materials are surplus material.

22.0 SUPERINTENDENT

22.1 Superintendent to Act as Agent of the Principal

Further to Clause 23 of AS 2124-1992, for the purposes of receiving and delivering claims (including payment claims made under the Building and Construction Industry Payments Act 2004), the Superintendent will act as agent of the Principal. The Contractor must provide the Superintendent a copy of any payment claim made to the Principal under the Building and Construction Industry Payments Act 2004 at the same time the claim is made to the Principal.

23.0 CONTRACTOR’S SITE SUPERVISOR/FOREMAN


The Contractor’s site supervisor / foreman will be the same person listed in the Contractor’s tender, unless approved otherwise by the Superintendent. Replacement personnel for this position will be approved by the Superintendent (generally on the basis of their relevant experience and referees from previous projects), prior to arrival on site.

The Superintendent will not be required to issue a Progress Payment Certificate and the Principal may withhold payment if the Contractor has employed on site a site supervisor / foreman who has not been approved by the Superintendent. The Principal will not be held responsible for delays due to the need to find a replacement site supervisor / foreman who is acceptable to the Superintendent.

No separate payment will be made to the Contractor for compliance with this clause, but rather full compensation will be included in the Schedule of Rates generally.

24.0 SITE MEETINGS


The Superintendent will require the Contractor to attend meetings during the Contract period. Other stakeholders including Council, the Contracted Program Manager and the Principal will be invited to attend these meetings to assist in the dissemination of information between the Contractor and the Community.

These meetings will include, but are not limited to, the following:

- post-contract award meeting (off-site) if required
- pre-start meeting – prior to commencement of construction
- monthly site meetings during the Contract
- practical completion, defects and commissioning meetings.

All meetings will be held on site unless directed otherwise by the Superintendent.
Additional meetings may also be required during the defects liability period/s for the works; however these may not necessarily be held on site.

No separate payment will be made to the Contractor for compliance with this clause, but rather full compensation will be included in the Schedule of Rates generally.

25.0 POSSESSION OF SITE

Refer to Clause 27.1 of AS 2124-1992.

The Principal may give the Contractor possession of the site (or of part of the site) conditional upon any or all of:

- The Contractor’s having paid the training and portable long service leave levy (refer to Clause 15.3 of this Job Specification) as required.
- The Contractor’s having established a quality system in accordance with the requirements of Clause 30.0 of this Job Specification.
- The Contractor’s having submitted to the Superintendent an approved construction program in accordance with the requirements of Clause 34.0 of this Job Specification.
- The Contractor having submitted safe work method statements and a safety plan in accordance with Clause 15.2 of this Job Specification.

If the Principal gives conditional possession of the site as specified above, the Contractor will not take possession of the site and will not commence work thereon until the Contractor has complied with each condition.

26.0 WORK ON THE SITE BY OTHERS

Refer to Clause 27.2 of AS 2124-1992.

In addition to the provisions of that Clause 27.2, the Contractor will permit Telstra, Ergon Energy and any other like authority or owner of a service to have access to the site and to execute work on the site and will co-operate with such authorities and will co-ordinate their own work with that being carried out by such authorities or owners, notwithstanding that such authorities or owners may not have been engaged by the Principal.

The Principal’s undertaking to ensure that the Contractor is not impeded in the work under the Contract at the site will apply only where the Principal has engaged an authority or owner of a service to carry out work on the site. The Superintendent will notify the Contractor of any such engagement.

No separate payment will be made to the Contractor for compliance with this clause, but rather full compensation will be included in the Schedule of Rates generally.

27.0 CULTURAL HERITAGE

27.1 Cultural Heritage Duty of Care

The Contractor acknowledges that a “Cultural Heritage Duty of Care” under the Torres Strait Islander Cultural Heritage Act 2003 (Qld) exists in relation to works to be performed under this contract.

The Contractor is required at all times to comply with the Cultural Heritage Duty of Care during construction of the works including pre construction activities, construction activities and post construction activities.

The Contractor shall employ and arrange for a Cultural Heritage Monitor to be present on site all the time during all ground disturbance activities.
The Contractor shall implement and comply with the Cultural Heritage Finds Procedure during construction of the works. The Cultural Heritage Finds Procedure is included in Volume 2.

Where items of potential cultural heritage significance are discovered, the Contractor will immediately stop work and notify the Superintendent.

No separate payment will be made to the Contractor for compliance with this clause, but rather full compensation will be included in the Schedule of Rates generally.

28.0 SETTING OUT THE WORKS

28.1 General

28.2 Setting Out

28.2.1 Survey Marks Provided
The survey marks referred to in Clause 28.1 of AS 2124-1992 are:
- The Brazier Motti survey information
- The site datum shown on the Drawings.
- Marks of property lines and boundaries as necessary for setting out the works including existing services.

28.2.2 Missing Survey Marks
If any survey marks referred to in Clause 28.2.1 are not in position at the time of the Principal's giving possession of the site to the Contractor, the Contractor will so advise the Superintendent and will give the Superintendent not less than ten (10) working days' notice of the date by which each such survey mark is required to be supplied to enable the Contractor to set out the works.

28.2.3 Additional Survey Marks
If the Contractor considers that survey marks additional to those referred to in Clause 28.2.1 are necessary it will notify the Superintendent not less than ten (10) working days prior to the date by which those additional survey marks are required.

The Superintendent will determine which survey marks are necessary to enable the Contractor to set out the Works.

28.3 Care of Survey Marks

Where any survey mark must be removed or covered to allow the work under the Contract to proceed, the Contractor will so advise the Superintendent and the Superintendent may take action to reinstate or replace the survey mark as he considers necessary.

Notwithstanding anything to the contrary implied by Clause 28.2 of AS 2124-1992, such action taken by the Superintendent will be at no cost to the Contractor.

If a survey mark is disturbed or obliterated and the Contractor has not given prior advice to the Superintendent as provided above, Clause 28.2 of AS 2124-1992 will apply un-amended.

28.4 Offset Pegs
The Contractor will offset accurately all survey marks provided by the Superintendent so that the original positions and levels can be re-established at any time during construction.

The Contractor will place beside each peg and offset peg a stake clearly and durably marked to identify the peg.
The Contractor will supply in writing to the Superintendent details of all offset pegs and construction pegs placed.

The offsetting of survey marks will be deemed to be part of the setting out of the work and will be at the Contractor's expense.

28.5 Assistance to the Superintendent

As and when required by the Superintendent the Contractor will make available such staff men and chainmen as may be required to enable the work to be checked for line and level.

No separate payment will be made in respect of such staff men and chainmen.

28.6 Payment

No separate payment will be made to the Contractor for compliance with this clause, but rather full compensation will be included in the Schedule of Rates generally.

29.0 MATERIALS AND WORK

29.1 General


All materials and equipment used in the works shall be the best of their respective kinds and in accordance with the current specifications of the Standards Association of Australia for those particular classes of material, where such specifications are applicable and do not conflict with this specification. If there is no Australian Standard Specification, then the relevant British Standard Specification or others approved by the joint committee, if any, shall apply.

The Superintendent may require samples of any or all of the materials nominated to be submitted for their review prior to their use on the job. Whether the Superintendent has called for samples or not, all materials used in the work shall be subject to the Superintendent's review.

All items that may need to be replaced or serviced shall be able to be removed and replaced by normal tools without the need to cut pipes or fittings.

Equipment, pipe and fittings shall be suitable for operation in an environment where relative humidity of 95% and shade temperatures of 40°C can occur simultaneously (conditions inside tanks etc. may exceed these figures).

29.2 Editions of Standards

Where the edition of any Australian Standard or other standard is stated in the Specification, that edition will apply for the whole of the Contract period including the Defects Liability Period.

Where the edition of any Australian Standard or other standard referred to in the Specification or relevant in accordance with Clause 29.1 above is not stated in the Specification, the edition current at the time of calling tenders will apply for the whole of the Contract period including the Defects Liability Period.

Notwithstanding the above, the Superintendent may direct that a different edition (of any Australian Standard or other standard) from the edition specified will apply to the Contract.

Where the Contract refers to Australian Standards, the Contractor will own a copy of each relevant standard, and if he doesn’t, then will purchase a copy of each standard referred to immediately, at their own expense, and send to site.

Payment may be withheld for any item carried out to an Australian Standard that the Contractor does not own or retain on site.

The Contractor may be required to produce these documents on site as evidence of compliance with this clause.
No separate payment will be made to the Contractor for compliance with this clause, but rather full compensation will be included in the Schedule of Rates generally.

30.0 CONTRACTOR'S QUALITY ASSURANCE

30.1 General
The Contractor shall control the quality of the Contract Works.
The Contractor shall have and shall implement a Quality System that is based on and is in accordance AS/NZS ISO 9001-2008 and is at least second-party certified.

30.2 Quality Assurance Representative
The Contractor shall have named its Quality Assurance Representative (QAR) in its tender.
The QAR shall be a suitably qualified person that has authority to control effectively the complete quality assurance process. The QAR shall be site-based.
The Contractor shall confirm the name of the QAR to the Superintendent before commencing work.

30.3 Documents to Be Provided at Start of Contract
Within 14 days after the Date of Acceptance of Tender, the Contractor shall provide to the Superintendent a copy of the following documents:
- Two controlled copies of the Project Quality Plan.
The Contractor shall also provide the Superintendent with access to inspect Corporate Quality Procedures applicable to this Contract.

30.4 Project Quality Plan
The Project Quality Plan (PQP) shall follow the guidelines of AS/NZS ISO 10005:2006.
The PQP shall cover all Quality System elements required by the appropriate Quality Systems Standard as specified, that are applicable to this Contract.
The PQP shall include:
Organisational structure

A Project Organisation Chart or list of nominated Project Personnel showing their positions, lines of communication and details of the responsibilities of the positions.

Details of the qualifications and experience of the following positions:

1. Project Manager
2. Project Engineer
3. Contractor’s Quality Representative (QAR)
4. Surveyor
5. Foreman, Supervisor(s).

Inspection and test procedures

Inspection and Test Plans for the various phases during construction, as applicable to the Contract, to be submitted at least 10 working days prior to commencement of relevant activity.

Where ITPs are not developed at the same time as the PQP, the Contractor shall provide a schedule of the proposed ITPs to be used for the works. The schedule shall include target submission dates to ensure they are submitted and received 10 working days prior to the activity’s commencing.

A copy of the NATA Terms of Registration for the Contractor’s Compliance Testing Laboratory (internal or Contract) where applicable.

Project specific operating procedures or descriptions outlining as a minimum, details of activities, who is responsible for implementation/verification, identification of relevant Quality Records and distribution of such records, to be submitted at least 10 working days prior to commencement of relevant activities.

Filing System

A Register of all intended Quality Records to be used on the project, together with proformas.

30.5 Inspection and Test Plans

Inspection and Test Plans shall contain at least the following information for each significant activity identified in the relevant process:

- description of activity
- specification requirements/reference
- person responsible for activity (title)
- hold and witness point
- activity checklists
- inspection and test type
- tolerances or other acceptance criteria that are measurable
- identification of relevant procedure and quality records
- test/inspection frequency
- work item or work lot identification with the physical boundaries of each lot defined.

Inspection and Test Plans and examples of their relevant activities checklists established for this Contract shall be submitted to the Superintendent for review.
30.6 Identification and Traceability

All Contractors’ Activities, including manufacture, site construction and commissioning, and the Contract Works shall be subdivided into distinct work lots or work items. Work lots or work items and lot sizes shall be chosen by the Contractor, consistent with any specified requirements, but shall be subject to approval by the Superintendent.

Each work lot or work item shall be assigned a unique identification number, and the Contractor shall maintain a register of all allocated work lot or work item numbers. This register shall contain as a minimum, the following information:

- brief description of the work lot or work item
- location reference (3 dimensional where applicable)
- lot or item status (conforming or non-conforming).

The Contractor shall ensure that traceability is maintained throughout all documented records under this Contract. All test results where applicable under this Contract shall be positively identified with their respective work lot or work item number. The Contractor shall notify the Superintendent in writing 24 hours prior to commencing a new work lot or work item.

30.7 Conformance Reports

Conformance Reports shall be made available to the Superintendent for each designated work lot or work item within 48 hours (subject to the qualification in the last paragraph of this clause) of completion of the work lot or work item.

Conformance Reports shall include a verification statement certifying that the relevant work lots or work items have been inspected and/or tested in accordance with the Contractor’s Inspection and Test Plan(s) applicable to this Contract and that they comply with the specified requirements of the Contract Documents.

Conformance Reports shall consist of or make reference to the following documents:

- All relevant signed off Inspection and Test Plans, associated Checklists and their status at any point in time via a lot register or similar means.
- A monthly project assessment report that references the NATA certified test results (where applicable).
- Non-conformance register – (refer to Clause 30.8 of this Specification).
- Survey and measurement compliance data (where applicable).
- Certification or acceptance by others.
- Survey data.

30.8 Non-conformance Reports

The Contractor shall submit a Non-conformance Report to the Superintendent within 24 hours of detecting nonconforming work.

The Contractor’s Non-conformance Report shall clearly detail but shall not be limited to the following items:

- The nature and extent of the non-conformance.
- The work lot or work item number it relates to including the precise boundaries of the nonconforming work.
- Any relevant information, data, test results and/or measurements (as applicable).
- The corrective and preventive actions that the Contractor proposes to take.
- The time frame within which the non-conformance will be rectified.
Potential savings or any benefits that the Principal acquires.

The method of isolating/identifying nonconforming work, applying and releasing Hold Points, etc. shall be clearly stated in the Project Quality Plan.

The proposed corrective action shall be subject to approval by the Superintendent.

### 30.9 Hold Points and Witness Points

#### 30.9.1 Hold Points

A Hold Point is defined as a position in the progress of the Contractor's Activities, beyond which further work shall not proceed without mandatory verification by the QAR and by the Superintendent (or nominated representative) where relevant.

If the Contractor proceeds beyond this point without the Hold Point's being released, the Superintendent may direct the Contractor to halt the work to and remove any materials from the Site.

Hold Points shall apply to this Contract to ensure compliance with the intent of the designs and with other specified requirements, and to ensure that critical and/or irreversible activities are not constructed incorrectly. Hold Points shall apply prior to commencement of designated work lots or work items. Hold Points shall be verified by the Superintendent.

Except for Hold Points listed in this Clause and for additional Hold Points directed to be included pursuant to this Clause, the Contractor's Quality System shall not require verification of Hold Points by the Superintendent.

The Contractor shall be liable for the cost of any additional hold point inspections deemed necessary by the Superintendent should the works not meet the requirements of this Job Specification at the initial hold point inspection.

The Contractor's Quality System shall include at least the following Hold Points.

- Certified engineering drawings for the Access Staircase (prior to fabrication of the staircase).
- Contractor's mix design, site batching methodology and trial mix (prior to placing concrete on site).

The Superintendent may direct that any Hold Point shown in the Contractor's Inspection and Test Plans shall not be a Hold Point.

If the Contractor's Inspection and Test Plans show a Mandatory Hold Point that is not listed as such in this Clause and has not been directed to be added by the Superintendent, that Hold Point shall not be a Mandatory Hold Point unless it is specifically accepted in writing by the Superintendent.

The Contractor has sole responsibility for constructing the works in accordance with the Contract. The release of a Hold Point by the Superintendent's Representative shall not in any way relieve the Contractor from their responsibility to construct the works in accordance with the Contract and does not entitle the Contractor to make any claim or in any way limit or change the Contractor's warranties, obligations or liabilities under or in connection with this Contract. Should defective work, errors or omissions in work, be identified in the completed works following the release of a Hold Point, the Contractor is bound to rectify the defects in accordance with the Contract.

#### 30.9.2 Witness Points

Witness Points shall not apply to this Contract.

### 30.10 Notice for Examination


Unless otherwise specified the Contractor shall give the Superintendent not less than five days' notice of its intention to commence each of the following operations:

- clearing
• earthworks, including excavation of rock and excavation for structures and excavation of trenches
• placing concrete
• backfilling around completed concrete works
• laying pipes
• backfilling trenches
• pressure testing of pipework
• electrical testing of the switchboard
• erecting structural timber
• painting.

If the Contractor does not give the notice specified by this Clause, any work covered up or made inaccessible by the work for which the notice was required shall be deemed to be work covered up or made inaccessible without a required prior direction by the Superintendent.

The Contractor has sole responsibility for constructing the works in accordance with the Contract. Failure to inspect the notified works by the Superintendent’s Representative shall not in any way relieve the Contractor from their responsibility to construct the works in accordance with the Contract and does not entitle the Contractor to make any claim or in any way limit or change the Contractor’s warranties, obligations or liabilities under or in connection with this Contract. Should defective work, errors or omissions in work, be identified in the completed works the subject of a prior notification, the Contractor is bound to rectify the defects in accordance with the Contract.

Hold Points shall not apply to this Contract. The Contractor’s Quality System shall not require Superintendent verification of Hold Points.

30.11 Compliance Inspections and Testing

30.11.1 General
Refer to Clause 31 of AS 2124 -1992. Testing to demonstrate the compliance of materials and work with the Contract will be conducted by the Contractor.

30.11.2 Tests
Tests to be made are those listed in the attached Schedule of Compliance Assessment Testing or specified elsewhere in the Contract Documents.

For compliance assessment inspections the Contractor shall nominate responsible persons, who are not directly involved in performing the work.

A NATA-registered laboratory certified for the tests specified in this Contract shall carry out all compliance testing (where applicable).

The Contractor shall advise the Superintendent of the work lot or work item number and the location within the lot or item, prior to any testing of the lot or item.

The Contractor shall make available a Non-conformance Report and the proposed corrective action for any nonconforming test result. No further compliance assessment testing shall be permitted until approved by the Superintendent.

The frequency of compliance testing shall be at least in accordance with the minimum requirements of the Contract Documents. In particular, the Contractor’s Quality System shall include at least the testing listed in the table below.

The Contractor shall submit to the Superintendent any preliminary results on compliance assessment tests carried out for each work lot or work item within 48 hours of the completion of the tests.

The Contractor will be solely responsible for all testing necessary to ensure compliance with or required under the Specification.
No separate payment will be made to the Contractor to cover costs associated with testing which will be deemed to be included in the Schedule of Rates for the relevant item.

30.12 Quality Records

The Contractor’s Quality System shall include sufficient quality records to provide objective evidence that the requirements of the Contract are met. The evidence shall include Contractors’ and Suppliers’ records relevant to this Contract.

When requested by the Superintendent, the Contractor shall provide access to all quality records relevant to the Contractor’s Quality System under this Contract.

Prior to Practical Completion, the Contractor shall forward a complete and bound clean copy of at least the following records to the Superintendent. Previously submitted documents may be selected as appropriate.

- The Work Lot or Work Item Register for the Contract.
- All Conformance and Non-conformance Reports.
- At and after Practical Completion the Contractor, when requested, shall make copies of at least the following documents available to the Superintendent:
  - All Inspection and Test Plans and associated checklists.
  - All test results, analyses, reports, measurements and observations.
  - The original Project Quality Plan and any changes made to the Contractor’s Quality System.
  - Records for equipment and parts subject to inspection and approval by the relevant regulatory authority shall be made available on site at the time of arrival of all relevant items at site, or after inspections have been carried out on site (if applicable).

30.13 Additional Testing (Provisional) (If Ordered)

The Superintendent reserves the right to order additional samples and testing to satisfy them that the requirements of the Contract documents are being adhered to.

The Contractor will arrange for carrying out of testing and/or the obtaining of samples by a testing authority nominated by the Superintendent.

The scheduled provisional sum (If Ordered) for “Additional Testing” has been provided in the scheduled rates. The cost of additional testing ordered by the Superintendent will be valued in accordance with Clause 11 of AS 2124-1992, but will only be reimbursed to the Contractor against the scheduled lump sum (Provisional) (If Ordered) for the costs of tests where the test results confirm that the Specification requirements have been met. The Contractor will, therefore, have to meet the costs of additional tests ordered by the Superintendent which fail.

30.14 Certifications

30.14.1 To Accompany Each Payment Claim

A Conformance Report shall accompany each payment claim from the Contractor in respect of the work completed to the date of the claim and the subject of the claim, certifying that the Contract Works as constructed are in full accordance with the Contract requirements.

In any statement of the amount payable in a payment certificate, the Superintendent shall not be required to include in the amount, and the Superintendent shall not be obliged to pay, the value of any work for which evidence of conformance has not been submitted as set out in this clause.

Certification and payment shall not be unreasonably withheld, however, where the relevant evidence of conformance has not been submitted due only to the normal delays in processing, testing, analysis and reporting. In that case the Contractor’s payment claim shall set forth the lots for which payment is claimed but for which Conformance Reports have not been submitted and shall certify that Conformance Reports for those lots will be submitted prior to the next payment claim.
If any work for which payment has been included in the amount payable shown in a payment certificate is found not to be in accordance with the Contract, the Superintendent may take this into account in valuing any future certificate.

30.15 At Practical Completion

Prior to the Date of Practical Completion, the Contractor shall submit a Conformance Report certifying that the Contract Works have been constructed in accordance with the Specification and Drawings or approved revisions thereto.

If any work for which payment has been made is found not to be in accordance with the Contract, the Superintendent may take this into account in valuing any future certificate.

30.16 Measurement and Payment

The scheduled rate for “Contractors Quality Assurance” shall include full compensation for the establishment and operation of the Contractor’s Quality System, including preparation of the Project Quality Plan, preparation of Inspection and Test Plans, identification and registration of work lots and work items, engagement of a NATA-registered laboratory, preparation and submission of Conformance Reports, preparation and submission of Non-conformance Reports and reporting corrective action, verification of work at Witness Points and Hold Points, compliance assessment inspections and testing, for managing the quality systems of Contractors and suppliers, for maintenance of quality records and submission of copies, for quality audits, for notifications to and liaison with the Superintendent and for all other costs incurred in executing and completing the work in accordance with the Contract.

31.0 TESTING WORKS IN OPERATION

31.1 General


In addition to tests of operation and performance expressly specified in the Contract documents, the Superintendent may direct that the works, or any part of the works, be tested in operation.

All tests of works in operation, whether expressly specified or directed, are tests pursuant to Clause 31 of AS 2124-1992 and will not be deemed to be use of works that have not reached the stage of Practical Completion.

31.2 Conduct of Tests of Works in Operation

Tests of works in operation will be conducted by the Superintendent and/or Council.

Notice of tests of works in operation will be given by the Superintendent to the Contractor.

31.3 Nature of Tests

Tests may include:

- Connection of works to other components of the system in which the completed works will be incorporated.
- Operation of works with the fluids, solids or other things with which the works are intended to be operated or with things in substitution.
- Operation of works at any point or points within performance envelopes specified in the Contract.
- Any performance test, examination or measurement.
31.4 Costs of Testing

Refer to Clause 31.7 of AS 2124-1992.

Costs incidental to testing include costs of making connections, operating costs and costs of furnishing fluids, solids or other things with which to operate works.

The scheduled provisional sum for “Testing Works In Operation” has been provided in the scheduled rates. The cost of Testing Works In Operation ordered by the Superintendent will be valued in accordance with Clause 11 of AS 2124-1992, but will only be reimbursed to the Contractor (for the costs of testing in operation) where the test results confirm that the Specification requirements have been met. The Contractor will, therefore, have to meet the costs of additional tests ordered by the Superintendent which fail.

31.5 Practical Completion

Tests referred to in this Clause 31.0 are tests required to be carried out and passed before the works reach Practical Completion.

32.0 COSTS OF INSPECTION, EXAMINATION AND TESTING OF WORK DONE OUTSIDE NORMAL WORKING HOURS

32.1 General

Refer to Clause 31.7 of AS 2124-1992 and Clause 16.3 of this Job Specification – Non Technical Clauses.

If the Contractor carries out work outside normal working hours or carries out work on any day that is not a counted day then the Principal may recover from the Contractor any additional costs, including wages and overtime payments, travel costs and accommodation costs, incurred by the Principal in relation to the inspection and examination/inspection, examination and testing of such work.

32.2 Exclusions

This Clause 32.0 shall not apply to additional work ordered by the Superintendent where the Superintendent directs the hours within which the work is to be done and the Superintendent determines that the need for such additional work arises from a cause beyond the control of the Contractor.

33.0 ORDER OF WORK, ACCELERATION

33.1 General

Refer to Clause 33 of AS 2124-1992.

33.2 Acceleration

If it becomes apparent to the Contractor that the completion of the Works to the stage of Practical Completion is likely to be delayed the Contractor shall notify the Superintendent forthwith.

On receipt of such a notice, or at any time that the Superintendent considers that the work is delayed or likely to be delayed, the Superintendent may direct the Contractor to accelerate the work to counter the delay.

A direction to accelerate the work may include directions to:

- Employ additional plant or labour.
- Work additional days or hours.
• Carry out additional work to rectify damage or otherwise to counter the effects of a cause of delay.

• To the extent that the cause of a delay is a cause entitling the Contractor to an extension of time under Clause 35.5 of AS 2124-1992, the Contractor shall be reimbursed for extra costs and expenses incurred by the Contractor in complying with a direction to accelerate the work to counter that delay. Refer to Clauses 11 and 33.1 of AS 2124-1992.

33.3 Effect on extensions of time for Practical Completion

Notwithstanding anything to the contrary in Clause 35.5 of AS 2124-1992, in determining whether the Contractor is or will be delayed in reaching Practical Completion the Superintendent shall have regard to the effect of acceleration directed pursuant to clause 33.2.

34.0 CONSTRUCTION PROGRAM

34.1 General

Refer to Clause 33.2 of AS 2124-1992.

The Construction Program lodged by the Contractor with its Tender (including any amendment made in accordance with the Conditions of Tendering) and accepted by the Principal will be deemed to have been furnished by the Contractor on the Date of Acceptance of Tender and will be a construction program included in the Contract.

34.2 Form of construction program

Within 14 days after the Date of Acceptance of Tender the Contractor shall furnish to the Superintendent the construction program augmented and re-presented as necessary to show:

• Any activities, including activities to be carried out by the Principal or others, that may affect the progress of the work under the Contract but are not shown in the construction program lodged by the Contractor as part of its Tender.

• The duration of each activity.

• The logical links between activities on the Gantt chart including the critical path.

• The Contractor, within fourteen days after the Date of Acceptance of Tender, shall furnish to the Superintendent a digital copy of the construction program in MS Project 2010.

34.3 Updating

The Contractor shall update the construction program to show progress at intervals not greater than one week and shall furnish a copy of each updated construction program to the Superintendent.

The Superintendent may give a direction under Clause 33.2 of AS 2124-1992 at any time before the expiry of the last Defects Liability Period.

The Contractor may give an updated or revised construction program to the Superintendent voluntarily but such a construction program shall not supersede an earlier construction program except as directed by the Superintendent.

34.4 Applicable revision of construction program

The Superintendent may give a direction pursuant to the fifth paragraph of Clause 33.2 of AS 2124-1992 at any time and from time to time.

If the Superintendent directs the Contractor to furnish to him a construction program the Contractor will obtain the Superintendent’s direction about the construction program furnished.
If the Superintendent has not directed the Contractor to furnish to him a construction program but the Contractor considers that it has reasonable cause to depart from a construction program, the Contractor will:

- Give details of the cause for departure from the current construction program and obtain the Superintendent's direction whether the cause is reasonable.
- Furnish a new construction program to the Superintendent and obtain the Superintendent's direction about the construction program furnished.

The construction program referred to in the sixth paragraph of Clause 33.2 of AS 2124-1992, which will not be without reasonable cause be departed from, will be:

- Until it is superseded by a construction program that the Superintendent directs is suitable, the construction program lodged by the Contractor as part of its tender and accepted by the Principal.
- If the Superintendent has directed the Contractor to furnish to him a construction program and has directed that the construction program so furnished is suitable, or if the Contractor has given details of a cause for departure from a construction program and has furnished to the Superintendent a new construction program and the Superintendent has directed that the cause for departure is reasonable and that the new construction program is suitable, the latest construction program that the Superintendent has directed is suitable.

### 34.5 Payment

Full compensation for all costs incurred in producing the construction program, in updating and revising the construction program and in producing any further construction program shall be included generally in the scheduled rates.

### 35.0 TIME FOR PRACTICAL COMPLETION

#### EXTENSIONS OF TIME FOR PRACTICAL COMPLETION

### 35.1 General


### 35.2 Time for Practical Completion

The time for Practical Completion and any extension thereof granted by the Superintendent pursuant to Clause 35.5 of AS 2124-1992 and this Clause 35.0 will be reckoned in calendar days.

### 35.3 Extension of the time for Practical Completion

In addition to the provisions of Clause 35.5 of AS 2124-1992 and notwithstanding anything to the contrary contained therein:

- The Contractor will not be entitled to an extension of time for Practical Completion for any delay due to a cause that occurs after the Due Date for Practical Completion if the cause of delay is an act or omission on the part of the Principal, the Superintendent or the employees, consultants, other Contractors or agents of the Principal that is a direct and, in the opinion of the Superintendent, necessary consequence of the Contractor's not having executed the work under the Contract to the stage of Practical Completion by the Due Date for Practical Completion.
- The Superintendent's granting an extension of the time for Practical Completion will not be a determination as to any claim for costs submitted or later submitted by the Contractor, nor will the Superintendent's granting an extension of the time for Practical Completion be evidence as to the merits of such a claim.
36.0 CLAIM FOR EXTENSION OF TIME

Refer to Clause 35.5 of AS 2124-1992 and to Clause 34.0 of this Job Specification.

The Superintendent may direct the Contractor to include in the written claim referred to Clause 35.5 of AS 2124-1997 and the Superintendent may direct the Contractor to furnish in respect of any cause of delay identified by the Superintendent:

- A copy of the construction program updated to show the progress of the work under the Contract at the time when the cause of delay began to cause delay.
- A copy of that updated construction program further revised to show the effect of the cause of delay.

Neither updated construction program shall supersede an earlier construction program except as the Superintendent may direct under Clause 34.0 of this Job Specification and Clause 33.2 of AS 2124-1992.

37.0 LIQUIDATED DAMAGES FOR DELAY IN REACHING PRACTICAL COMPLETION

Refer to Clause 35.6 of AS2124-1992. The rate of liquidated damages stated in the Annexure Part A to AS 2124-1992 is exclusive of goods and services tax.

Any indebtedness of the Contractor to the Principal under clause 35.6 of AS 2124-1992 is immediately due upon the passing of the Date for Practical Completion and the right of the Principal to recover such debt, or deduct the amount of such debt from any money otherwise payable by the Principal to the Contractor, is not dependent upon the Contractor reaching Practical Completion, a Final Certificate being issued under clause 42.8 of AS 2124-1992 or otherwise.

To remove any doubt, upon the Contractor failing to reach Practical Completion by the Date for Practical Completion, the Principal will be immediately entitled to:

- Deduct from any payment otherwise due to the Contractor under any payment claim or claim for payment delivered by the Contractor to the Superintendent under clause 42.1 of AS 2124-1992.
- Recover from the Contractor, any amount of liquidated damages for which the Contractor is indebted to the Principal under clause 35.6 of AS 2124-1992 and this clause 38.0.

38.0 LIMIT ON LIQUIDATED DAMAGES

Clause 35.7 of AS 2124-1992 is omitted from this Contract.

39.0 BONUS FOR EARLY PRACTICAL COMPLETION

Clause 35.8 of AS 2124-1992 is omitted from this Contract.

40.0 MAINTENANCE

40.1 Directed maintenance

In addition to the Contractor's responsibilities under Clause 37 of AS 2124-1992, during the Defects Liability Period the Contractor will carry out such other remedial work as the Superintendent may direct.

Payment for such work, to the extent that it exceeds the Contractor's responsibilities under Clause 37 of AS 2124-1992, will be calculated in accordance with Clause 11 of AS 2124-1992.
40.2 Defects liability

The Contractor’s attention is drawn to Clause 37 of AS 2124-1992.

The Contractor will allow in their Schedule of Rates generally for rectification of defects required under Clause 37 of AS 2124-1992 during the defects liability period. It is brought to the Contractor’s attention that the site is in a remote location and that significant costs will be incurred whenever they are required to visit the site to remedy a defect. No separate payment will be made for travelling expenses, freight expenses, labour, plant, materials or any other costs incurred by the Contractor in remediating defects irrespective of whether access or conditions on site differ materially from the time of tender.

During the Practical Completion site inspection the Superintendent will prepare a list of defects requiring the Contractor’s attention. The Contractor will make all arrangements necessary to ensure that all items on the Superintendent’s defects list are addressed prior to their disestablishing from site.

The Superintendent will monitor the works during the respective defects liability periods and will advise the Contractor to address any defects as required. During the respective defects liability periods the Contractor may delay remediation of non-urgent defects so that several defects may be fixed during the same visit, however, such delay will not exceed one (1) month, and will not affect the proper and efficient running of the works.

If a defect does affect the proper and efficient running of the works it will be deemed urgent, and will be remedied without delay.

41.0 VARIATIONS

41.1 General

Refer to Clause 40 of AS 2124-1992.

The Contractor’s profit and overhead margin on variations where there is no applicable item in the schedule of rates will be 10%.

41.2 “If Ordered” items

Refer to Clause 5.2 of this Job Specification.

Work shown on the Drawings to be "(If Ordered)" and items of work for which the description in the Schedule of Rates includes the qualification "If Ordered" will not be carried out without the prior direction of the Superintendent.

The Superintendent may direct that such work be carried out to a greater or lesser quantity than may be shown in the Schedule of Rates.

The Superintendent may refrain from issuing any direction.

Any variation that results from the Superintendent's issuing, or not issuing, a direction pursuant to this Clause 41.2 will be deemed to be within the general scope of the Contract.

41.3 Protection of existing services

Notwithstanding anything to the contrary contained in Clause 40.1 of AS 2124-1992, the Contractor will have the right to vary the work under the Contract despite the Superintendent's not having directed a variation order where such a variation is essential for compliance with Clause 20.0 of this Job Specification.

41.4 Maintenance

Notwithstanding the limitation as to time specified in Clause 40.1 AS 2124-1992, the Superintendent at any time prior to their issuing the Final Payment Certificate may issue a direction pursuant to Clause 40.0 of this Job Specification and the remaining provisions of Clause 40 of AS 2124-1992 thereupon will apply to the work so ordered.
42.0  CERTIFICATES AND PAYMENT

42.1  General
Refer to Clause 42 of AS 2124-1992.

42.2  Claims for payment
A claim for payment lodged by the Contractor will not be headed “tax invoice”. The Contractor’s tax invoice will only be submitted after the Superintendent has issued a draft progress certificate.

A complete claim for payment will include:

- Consecutively numbering.
- Every item for which payment is being claimed up to the date in the claim listed in the manner and in the order of the Schedule of Rates.
- The amount of payment being claimed in respect of each item together with supporting calculations.
- Details of variations if any issued by the Superintendent, with the amounts to be added or deducted in respect of each. All variations will be identified by their numbers and titles.
- A summary of day work, if any, ordered by the Superintendent.
- A summary grouped in the same manner as in the Schedule of Rates showing the total gross value of work done to the date of the payment claim.
- Show a deduction for retention monies.
- Statutory declaration complying with Clause 43.0 of this Job Specification.
- A progress report including employment and training progress against project requirements.

An incomplete claim for payment will not be processed. Progress claims will be lodged with the Superintendent, not the Principal.

42.3  Payment Certificates
To remove any doubt, the Superintendent will allow in any payment certificate issued pursuant to clause 42.1 of AS 2124-1992, any Final Certificate issued pursuant to clause 42.8 of AS 2124-1992 or a Certificate issued pursuant to clause 44.6 of AS 2124-1992, any amounts due from the Contractor to the Principal under clause 35.6 of AS 2124-1992 or Clause 37.0 of this Job Specification – Non-Technical.

42.4  Tax invoices given by the Contractor
Refer also to Clause 14 of AS 2124 1992.

If the Superintendent does not issue the draft payment certificate within 10 business days of receiving a claim for payment that is in accordance with Clause 42.2 of this Job Specification and Clause 42.1 of AS 2124 1992 the Contractor will submit a valid tax invoice that reflects accurately the amounts shown in the payment claim.

For the purposes of this Contract a valid tax invoice is a tax invoice that:

- Complies with relevant legislative requirements.
- Is in its original form (i.e. not faxed or photocopied).
- Reflects accurately the amounts shown in the payment certificate.
- Is addressed as follows:
The Superintendent shall confirm the Purchase Order number to be referenced on the Contractor’s invoice upon award of the Contract.

42.5 Tax invoices given by the Principal

If an amount payable to the Principal is the amount of a payment or moneys due to the Principal on which goods and services tax is payable:

- The Principal may set off against payment to the Contractor, the amount of goods and services tax payable.
- The Principal will give a tax invoice to the Contractor.

42.6 Time for certificates and payment

In this Clause 42.0 “business day" has the meaning in the Building and Construction Industry Payments Act.

Under Clause 42.1 of AS 2124-1992, 1st sentence of paragraph 1 will be replaced with the following text:

- An “Application for Payment” rather than a Progress Claim, must be submitted in the first instance. Within 10 business days after receipt of the Contractor’s “Application for Payment”, the Superintendent will issue to the Contractor a draft payment certificate stating the amount of the payment which, in the opinion of the Superintendent, is to be made by the Principal to the Contractor, or the Contractor to the Principal. Within 5 business days of receiving the draft payment certificate, the Contractor will submit its Progress Claim together with the original Tax Invoices to the Superintendent matching the draft payment certificate. Subject to receiving a correct original Tax Invoice, the Superintendent will issue a signed payment certificate to the Principal for payment with a copy to the Contractor.

Notwithstanding anything contrary to Clause 42.1 of AS 2124-1992:

- the Principal will pay in accordance with that Clause 42.1 of AS 2124-1992 not later than the earlier of 15 business days after the Superintendent has received the Contractor’s progress claim referred to in that Clause 42.1 of AS 2124-1992 or 30 business days after the Superintendent has received the Contractor’s progress claim made in accordance with Clause 42.1 of AS 2124-1992, but the Principal will not be obliged to pay earlier than the earlier of 15 business days after the Principal has received both certificates referred to in that Clause 42.1 of AS 2124-1992 or 30 business days after the Superintendent has received the Contractor’s progress claim made in accordance with Clause 42.1 of AS 2124-1992.

43.0 PAYMENT OF EMPLOYEES AND SUBCONTRACTORS

43.1 Payment of Employees

Delete Clause 43 of AS 2124-1992 and insert:

As part of the Contractor’s claim for payment:

- the Contractor must deliver to the Superintendent an original statutory declaration completed by the Contractor, or where the Contractor is a corporation, by the representative of the Contractor who is in a position to know the facts attested to that:
  - All subcontractors and any sub subcontractors performing work under the Contract have been approved by the Superintendent in accordance with Clause 9.2 of AS2124-1992.
- All subcontractors of the Contractor have been paid all that is due and payable to such subcontractors up to the date of submission by the Contractor of a payment claim in respect of the work under the Contract.

- All its workers who at any time have been engaged on work under the Contract by the Contractor have been paid, in accordance with the relevant award or industrial instrument, all moneys due and payable to them up to the date of submission by the Contractor of a payment claim, in respect of their engagement on the work under the Contract.

- All suppliers of the Contractor have been paid all that is due and payable up to the date of submission by the Contractor of a payment claim in respect of the work under the Contract.


If requested in writing, reasonable supporting documentary evidence thereof:

- If previously requested by the Superintendent, the Contractor must deliver to the Superintendent an original statutory declaration in the form attached to these Conditions completed by any subcontractor, or where the subcontractor is a corporation, by a representative of the subcontractor who is in a position to know the facts attested to:

  - That all workers who have been engaged by a subcontractor of the Contractor have been paid, in accordance with the relevant award or industrial instrument, all moneys due and payable to them up to the date of submission by the Contractor of a payment claim in respect of their engagement on the work under the Contract.

  - All suppliers of the subcontractor have been paid all that is due and payable up to the date of submission by the Contractor of a payment claim in respect of the work under the Contract.

  - That all subcontractors of the subcontractor have been paid all that is due and payable to such subcontractors up to the date of submission by the Contractor of a payment claim in respect of the work under the Contract.

If requested in writing, reasonable supporting documentary evidence thereof.

Notwithstanding Clause 42.1 of AS2124-1992, the Principal may withhold payment of moneys due to the Contractor until the statutory declaration or documentary evidence (as the case may be) is received by the Superintendent.

If the Contractor provides to the Superintendent, satisfactory proof of the maximum amount due and payable to workers, suppliers and subcontractors by the Contractor, the Principal shall not be entitled to withhold any amount in excess of the maximum amount.

The Contractor acknowledges that the Principal may release to a subcontractor details of payments in percentage terms made by the Principal to the Contractor in respect of the Works or any part thereof unless the Contractor shows reasonable grounds why such details should not be released or satisfies the Principal that all payments due and payable to the subcontractor by the Contractor have been paid.

At the written request of the Contractor and out of moneys payable to the Contractor the Principal may on behalf of the Contractor make payment directly to any worker or subcontractor.

If a worker or subcontractor obtains a court order in respect of moneys unpaid and the subject of a statutory declaration under Clause 43.2, and produces to the Principal the court order and a statutory declaration that it remains unpaid, the Principal may pay the amount of the order, and costs included in the order, to the worker or subcontractor and the amount paid shall be a debt due from the Contractor to the Principal.

After the making of a sequestration order or a winding up order in respect of the Contractor, the Principal shall not make any payment to a worker or subcontractor without the concurrence of the official receiver or trustee of the estate of the bankrupt or the liquidator as the case may be.
43.2 **Proof of Final Payments by Contractor**

Upon the issue of the Final Certificate, the Contractor will deliver to the Superintendent a statutory declaration made before a Justice of the Peace to the effect that all claims for royalties on timber, gravel or other materials or for damage or injury arising out of the Contract have been satisfied and that wages and allowances of workmen employed on or about the works, including subcontractors and workmen of subcontractors, and any other person working for the Contractor have been paid in full to the date of such statutory declaration, in accordance with the various Industrial Awards that are applicable.

In addition the statutory declaration will contain a statement to the effect that no subcontractors or piece workers have been employed other than those approved in accordance with Clause 9 of AS 2124-1992.

44.0 **DEFAULT BY THE CONTRACTOR**

Refer to Clause 44.2 of AS 2124-1992.

Substantial breaches also include failing to establish, within one month after the Date of Acceptance of Tender, a quality system that is in accordance with the Contract, in breach of Clause 30.2 of AS 2124-1992.
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62.0 STAIRS, PLATFORMS AND HANDRAILS

62.1 General

62.2 Design of Stairs, Platforms and Handrails

62.3 Construction of Stairs, Platforms and Handrails
45.0 STANDARDS

Unless specified differently, carry out the work in accordance with the FNQROC standards, specifications and drawings, generally and the following standard specifications. Refer:

- FNQROC Standard Specification S1 – Earthworks
- Standard Specification G15 – Concrete 1

No separate payment will be made for the Contractor complying with this clause but rather full compensation will be provided in the scheduled rates generally.

46.0 MATERIALS & FITTINGS

46.1 General

All materials and equipment used in the works will be the best of their respective kinds and in accordance with the current specifications of the Standards Association of Australia for those particular classes of material, where such specifications are applicable and do not conflict with this specification. If there is no Australian Standard Specification, then the relevant British Standard Specification or others approved by the joint committee, if any, will apply.

The Superintendent may require samples of any or all of the materials nominated to be submitted for their review prior to their use on the job. Whether the Superintendent has called for samples or not, all materials used in the work will be subject to the Superintendent’s review.

All valves and fittings, installed external to the pump station building shall be “Rilsan” coated (or approved equivalent) unless nominated otherwise.

All items that may need to be replaced or serviced will be able to be removed and replaced by normal tools without the need to cut pipes or fittings.

Concrete used in the works shall have compressive strengths as indicated on the Drawings.

All equipment shall be suitable for operation in an environment where relative humidity of 95% and shade temperatures of 40ºC can occur simultaneously (conditions inside tanks etc. may exceed these figures).

All electrical equipment and instrumentation to be mounted outdoors shall have an enclosure protection rating of IP65 (unless noted otherwise) to AS 1939. Protection shall be provided by encapsulation and / or varnish impregnation using non-hydroscopic materials which do not age and are unaffected by sunlight.

46.2 Concrete Works

The Standard Specification G15 – Concrete 1, as amended by this Job Specification and the drawings, will apply to and form part of this Contract. Concrete used in the works will have the following 28 day compressive strengths, unless noted otherwise on the Job Drawings or in this specification:

- Reinforced concrete: N40
- Mass concrete: N20
- Lean mix concrete; flowable backfill: 1MPa (not greater than 5MPa); slump > 100mm.
- Cement Grout: The cement grout mix for plugging of underground pipes/conduits shall be in accordance with WSAA Drawing WAT-1214 Note 4. Cement grout to be used in grouted rock installations shall be in accordance with TMR standards specification MRTS03 Clause 6.3.
The Contractor will carry out sampling during concrete construction. Sampling and testing of concrete for compliance will be in accordance with AS 1379. Slump tests and projected assessment of each strength grade will be undertaken in accordance with AS 1379.

No separate payment will be made for the Contractor complying with this clause but rather full compensation will be provided in the lump sum amount generally.

46.2.1 Site Mixed Concrete Submittals

The Contractor shall prepare and shall supply a method statement as per the requirements of Clause 4.4.2 of the Standard Specification G15 – Concrete 1.

The Contractor shall supply:
- one (1) electronic copy of the draft for the Superintendent to review;
- one (1) electronic copy of subsequent revisions that may be required; and
- one (1) hardcopy and one (1) electronic copy incorporating all changes to the method statement as directed by the Superintendent.

The electronic copy shall consist of one (1) file in PDF format (latest version), comprising a single file that is indexed to the relevant sections.

The scheduled lump sum for “Site Mixed Concrete Submittals” shall include full compensation for all labour, plant and equipment necessary for provision of the information as described in Clause 4.4.2 of the Standard Specification G15 – Concrete 1 and for all other costs incurred in executing and completing the work in accordance with the Contract.

The Contractor shall only be entitled to claim 100% of the scheduled lump sums for “Site Mixed Concrete Submittals” once all the information has been reviewed and no alterations are required.

46.2.2 Concrete Mix Design

The Contractor shall prepare and supply a concrete mix design as per the requirements of Clause 4.4.3 of the Standard Specification G15 – Concrete 1.

The Contractor may provide the concrete mix design as part of the method statement as per Clause 4.4.2 of the Standard Specification G15 – Concrete 1 (refer to Clause 46.2.1 Site Mixed Concrete Submittals of this specification).

The Contractor shall supply:
- one (1) electronic copy for the Superintendent to review;
- one (1) electronic copy of subsequent revisions that may be required; and
- one (1) hardcopy and one (1) electronic copy incorporating all changes to the mix design as directed by the Superintendent.

The electronic copy shall consist of one (1) file in PDF format (latest version), comprising a single file that is indexed to the relevant sections.

The scheduled lump sum for Concrete Mix Design shall include full compensation for all labour, plant and equipment necessary for provision of the information as described in Clause 4.4.3 of the Standard Specification G15 – Concrete 1 and for all other costs incurred in executing and completing the work in accordance with the Contract.

The Contractor shall only be entitled to claim 100% of the scheduled lump sums for Concrete Mix Design once all the information has been reviewed and no alterations are required (in the opinion of the Superintendent).
46.2.3 Trial Mix

**HOLD POINT:** The submission of the method statement (refer to Clause 46.2.1 Site Mixed Concrete Submittals of this specification) constitute a hold point in the Contract. This hold point can only be released via written advice from the Superintendent.

**HOLD POINT:** The submission of mix design (refer to Clause 46.2.2 Concrete Mix Design of this specification) constitute a hold point in the Contract. This hold point can only be released via written advice from the Superintendent.

Once the Superintendent or nominated representative has completed the review of the mix design (refer to Clause 46.2.2 Concrete Mix Design of this specification), the Contractor shall prepare a trial mix as per the requirements of Clause 4.4.3 of the Standard Specification G15 – Concrete 1.

Results of the 7 day and 28 day compressive strength tests shall be provided to the Superintendent when they become available.

The scheduled lump sum for Trial Mix shall include full compensation for all labour, plant and materials required for supply of concrete, sampling & testing of concrete and for all other costs incurred in executing and completing the work in accordance with the Contract.

The Contractor shall only be entitled to claim 100% of the scheduled lump sums for Trial Mix once the 28 day concrete compressive strength results has been reviewed and meet the concrete specification (in the opinion of the Superintendent).

46.2.4 Materials for Concrete

**Cement**

All cement shall be of Australian manufacture and shall conform to Type SL in AS 3972, Portland and Blended Cements. Type GB cement in accordance with AS 3972 may be supplied provided it is blended for use in the Works and the subsequent cementitious blend is sampled at the site and tested for compliance with the requirements of a Type SL in AS 3972. The Contractor shall submit documentary evidence from the cement supplier regarding the source and conformance to AS 3972 of all cement used in the base and subgrade beam concrete.

**Aggregates for Hand Placed Concrete**

Besides the requirements of Clause 4.2.3 of G15 Standard Specification, the Contractor shall nominate target coarse and fine aggregate grading that, at the extremes of all the tolerances and their combinations, shall always ensure that the combined grading is wholly within the limits of Table 1 (following).
### Table 1  Combined Aggregate Grading for Hand Placed Concrete

<table>
<thead>
<tr>
<th>AS Sieve</th>
<th>% Passing Sieve Size by Mass of Sample</th>
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<tr>
<td>19.0 mm</td>
<td>95 - 100</td>
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<tr>
<td>13.2 mm</td>
<td>75 – 90</td>
</tr>
<tr>
<td>9.50 mm</td>
<td>55 – 75</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>36 – 48</td>
</tr>
<tr>
<td>2.36 mm</td>
<td>30 – 42</td>
</tr>
<tr>
<td>1.18 mm</td>
<td>22 – 34</td>
</tr>
<tr>
<td>600 micrometre</td>
<td>16 – 27</td>
</tr>
<tr>
<td>300 micrometre</td>
<td>5 – 12</td>
</tr>
<tr>
<td>150 micrometre</td>
<td>0 – 3</td>
</tr>
<tr>
<td>75 micrometre</td>
<td>0 - 2</td>
</tr>
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</table>

### Aggregates for Lean Mix Concrete (N10)

Besides the requirements of Clause 4.2.3 of G15 Standard Specification, the Contractor shall submit an aggregate grading in accordance with AS1141.11, known as the “nominated lean mix concrete grading, which is within the combined aggregate envelope shown in Table 2 below. The specified grading distributions are based on materials of equal bulk densities in a saturated surface-dry condition. Where bulk densities are unequal, the specified combined particle size distribution shall be adjusted accordingly.

### Table 2  Combined Aggregate Grading for Lean Mix Concrete

<table>
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<tr>
<th>AS Sieve</th>
<th>% Passing Sieve Size by Mass of Sample</th>
</tr>
</thead>
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<tr>
<td>26.5</td>
<td>100</td>
</tr>
<tr>
<td>13.2 mm</td>
<td>60 – 90</td>
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### 47.0  MISCELLANEOUS ISSUES COMMON TO SEVERAL WORK ITEMS

#### 47.1  Shoring

During the excavation and construction of the works of the Contract, the Contractor is to comply with workplace health and safety requirements, provide all materials, plant and labour and carefully execute at their own cost, adequate shoring and in sandy or loose soil, close timbering and other work that maybe required to prevent earth or other material at sides of excavation from being shaken, slipping or falling in.

The Contractor will utilize shoring as required, in order to limit the width of disturbance. As applicable, the maximum width of disturbance for trenching will be 2.0 metres.

No separate payment will be made for the Contractor complying with this clause but rather full compensation will be provided in the lump sum amount generally.
47.2 Construction Water

Unless agreed in writing by Council and agreed by the Superintendent, construction water will not be sourced from the town water supply. The Contractor will liaise with the Torres Strait Island Regional Council (TSIRC) to determine an appropriate location to source construction water. The Contractor will submit details of the location to the Superintendent. The Contractor will be responsible for procurement of all necessary environmental approvals to gain access to water for construction prior to use. The Contractor will allow to pay any Council fees and charges should they be applicable.

No separate payment will be made for the Contractor complying with this clause but rather full compensation will be provided in the lump sum amount generally.

47.3 Over Excavation

Over-excavation in the bottom of excavations will be backfilled with lean mix concrete. Over-excavation on the sides of trenches will be backfilled as per Standard Specifications and drawings.

In-situ soil may be used for “approved surround” provided it meets the requirements of the Standard Specification. In-situ soils may require screening to comply with the Standard Specification. Otherwise, import all materials required for pipe bedding.

No separate payment will be made for the Contractor complying with this clause but rather full compensation will be provided in the lump sum amount generally.

47.4 Restoration

Refer to Specification S5 - Water Reticulation Clause S5.28. The Contractor shall restore all surfaces to their existing condition after construction of the works (unless noted otherwise).

The Contractor will document, with photographs or video, the existing site conditions prior to commencing the works on site.

The Contractor will not unreasonably destroy or damage any existing infrastructure, property, fences, gardens, walls, paved areas (including bitumen sealed roads), concrete surfaces, paths, trees, roads, gravelled areas & grassed / landscaped areas. Items, vegetation or surfaces disturbed will be restored to the same or better condition than before commencement of the work.

Backfilling will be completed by the end of each work day. As soon as practicable, remove off-site surplus spoil, construction materials and cleared waste. As soon as practicable, make good disturbed areas to the satisfaction of the Superintendent. Failure to complete cleaning up and restoration will not be considered a minor omission. The Superintendent may withhold portions of intermediate payments and the issuance of the Certificate of Practical Completion until restoration is complete.

No separate payment will be made for the Contractor complying with this clause but rather full compensation will be provided in the lump sum amount generally.
47.5 Excavation in Rock ‘extra over’ (Provisional)

47.5.1 Rock Excavation

Rock will be defined as provided in Clause 3.3.2 and 3.3.3 of TMR Specification MRS04.

The Contractor shall undertake testing and confirm to the Superintendent the production rates achieved.

The extent of rock and the volume excavated during each day of the contract will be agreed with the Superintendent’s Representative based on photographs provided by the Contractor.

47.5.2 Payment for Rock

An “Excavation in Rock ‘extra over’ (Provisional)” cubic metre rate for the excavation of rock is included in the Schedule of Rates for all excavation in rock.

Rock will be paid at a cubic metre ‘extra over’ rate based on the widths and depth of excavations as defined by the specification, standard drawings or project specific drawings as applicable. The upper surface of the rock-layer in any excavation will be agreed with the Superintendent’s Site Representative. Daily logs will be required for payment.

The scheduled rate for “Excavation in Rock ‘extra over’ (Provisional)” will include full compensation for all labour, plant and equipment necessary for excavating in rock, over and above that required in the relevant section for excavation and for all other costs incurred in executing and completing the works in accordance with the Contract.

47.6 Maintenance of Roads

The Contractor will make all reasonable efforts not to damage any roads traversed in the course of undertaking the works. The Contractor will make every effort to minimize the number of roads traversed in the course of executing the Contract. No tracked machinery will be permitted to travel on paved roads without suitable protection for the road.

The Contractor will maintain roads used in the course of carrying out the Contract. The Contractor will manage dust generation, making every effort to suppress dust.

The Contractor will make good damage to roads.

No separate payment will be made for the Contractor complying with this clause but rather full compensation will be provided in the lump sum amount generally.

48.0 SITE ESTABLISHMENT/DISESTABLISHMENT

48.1 General

The scheduled lump sum for “Site Establishment / Disestablishment” will not be more than 20% of the total Contract amount. The scheduled lump sum for “Site Establishment / Disestablishment” will be divided among three distinct components comprised of establishment on site, maintaining an ongoing a contractor’s camp and disestablishment from site.

48.2 Establishment

The Contractor will arrange for and provide such transport of employees and plant to the Site, establish accommodation, shelters, storage facilities and the like as are required for the Contractor’s establishment on the Site and execution of the work under the Contract.

The scheduled lump sum for “Establishment” will include full compensation for all transport, establishment of accommodation, shelters and the provision of facilities and for all costs incurred in the Contractor fully establishing on site including construction of the contractor’s camp.

25% of the scheduled lump sum for “Establishment” will be paid once the Contractor has fully established on site and has substantially commenced construction work. The balance of the lump sum will be paid progressively throughout the duration of the Contract.
48.3 Disestablishment

The Contractor will arrange for and provide such transport of employees and plant away from site and will reinstate any land used for the contractor’s camp, accommodation, shelters and other facilities. All plant and equipment will be removed from site and the site reinstated to pre-establishment condition or better.

The scheduled lump sum for “Disestablishment” will include full compensation for all transport, disestablishment of accommodation, shelters and facilities, reinstatement of land used and for all other costs incurred in the Contractor fully disestablishing from site. The schedule lump sum for “Disestablishment” will not be paid until the Contractor has returned the project site to pre-establishment condition.

49.0 CONSTRUCTION ENVIRONMENTAL MANAGEMENT

49.1 Construction Environmental Management Plan

The Contractor will submit to the Superintendent for direction as to its suitability an Environmental Management Plan including (but not limited to) consideration of the items included in Clause 15.8 of this Job specification – Non Technical.

The plans will be prepared by a professional experienced in the field of environmental management, and will be amended to the satisfaction of the Superintendent prior to commencement of work on site.

The Environmental Management Plan will contain/address:

- A description of the project and existing environment.
- The Contractor’s environmental policy and the objectives to be attained.
- A listing of applicable licences and their conditions.
- A statement of the role and responsibilities of supervisory personnel, with particular reference to responsibility for dealing with environmental incidents.
- The process for dealing with incidents, including clean-up and mitigations.
- Procedures for training and awareness of all site personnel.
- Construction procedures to minimise the risk of environmental harm.
- A management plan for each environmental element.
- A monitoring program. The monitoring program will identify each issue, the action and parameter to be monitored and the frequency of monitoring, and the reporting mechanism for monitoring results.
- Revegetation of the site after construction, including grass and plant types, application method (e.g., turfing, hydromulch, seagrass etc.) and watering methods and schedule.
- Pruning and clearing of vegetation (native and re-growth).
- Weed and pest invasion.
- Storage and handling of chemicals.
- Soil contamination.
- Noise, dust and air quality.
- Flora and fauna.
- Cultural Heritage.
- Bank stabilisation.
- Waste management.
• Storage and handling of fuels, including dealing with fuel spills.

Environmental management records will be made available to the Superintendent for auditing on request.

Full compensation for preparation and amendment of the Construction Environmental Management Plan and in complying with its requirements (except where specifically allowed for elsewhere in the Contract) will be deemed to be included in the scheduled lump sum for “Construction Environmental Management Plan”. No work will be allowed on site until this plan is reviewed by the Superintendent.

50.0 PROVISION FOR EROSION AND SEDIMENT CONTROL

50.1 General

Refer the FNQROC Development Manual Construction Procedures Clause CP1.05. This Clause describes the work to be carried out where erosion and sediment control measures are required to be constructed under the Contract or where the Contractor elects to use erosion and sediment control measures as temporary control measures.

The Contractor shall be responsible for the installation of measures for the control of erosion and sediment throughout the construction zone to ensure construction works do not result in erosion and sedimentation that cause environmental nuisance or harm outside the construction zone.

The Contractor should consider at least the following erosion and sediment control strategies:

• Minimise clearing
• Minimise the extent and duration of soil exposure
• Divert clean waters from areas of disturbance
• Early installation of all drainage, erosion and sediment control measures
• Protect exposed soil surfaces from erosion
• On-site capture of sediment
• Manage topsoil
• Progressive stabilisation and revegetation of disturbed areas
• Control practices for erosion and sediment control should be determined by considering –
  • Seasonal conditions
  • Soil types, particularly dispersive, sodic and saline soils
  • Local hydrology affecting the construction zone
  • Local drainage, including temporary and overland flow paths.

50.2 Erosion and Sediment Control Plan

Before the natural surface is disturbed on a section of the Works, the Contractor shall submit a design for erosion and sediment control measures. The Contractor shall be responsible for all temporary erosion and sediment control measures. The Contractor shall submit to the Superintendent their Erosion and Sediment Control Plan (ESCP) prior to commencement of works. The Contractor shall allow to revise the Erosion and Sediment Control Plan in accordance with the Superintendent’s comments.

The lump sum for the “Erosion and Sediment Control Plan” shall include full compensation for preparation of an approved Construction Sediment and Erosion Control Plan, for any and all environmental protection measures, all site management issues, testing, monitoring, investigations, reporting and all other costs incurred in executing and completing the works in accordance with the Contract.
50.3 Implementation of Erosion and Sediment Control

50.3.1 Temporary Silt Fence

The Contractor shall install a silt fence at the toe of earthworks embankments and temporary stockpiles or in other locations across the site in accordance with the Contractor’s Erosion and Sediment Control Plan.

Temporary silt fence systems shall be proprietary products manufactured for the capture of sediment expected to be generated from the construction zone. Storage and handling of silt / sediment fence materials shall be in accordance with the manufacturer’s recommendations.

Silt fences and supporting wire fences, where applicable, shall be installed and maintained with the main body of the silt/sediment fence on the contour with ends turned uphill in accordance with the manufacturer's recommendations.

Any tearing or puncturing of the silt / sediment fence material shall be repaired in accordance with the manufacturer's recommendations and to the satisfaction of the Superintendent.

50.3.2 Temporary Sand Bag Check Dams

The Contractor will install sand bag check dams on the pavements and around drainage structures or in other locations across the site as documented in the Contractor’s Erosion and Sediment Control Plan.

Fill material will be clean sand or clean aggregate.

Bags should be filled to approximately 2/3 capacity, and be stitched or tied so that the filling material does not spill or break from the bag during service.

Sand bags will be placed in regular rows with a tapering vertical face, to form a stable structure. Sand bags will also be placed to keep voids between the bags to a minimum.

50.3.3 Temporary Rock Check Dams

The Contractor will install rock check dams in drainage swales or in other locations across the site as documented on the Principal’s Erosion and Sediment Control Strategy and the Contractor’s Erosion and Sediment Control Plan.

Rock or equivalent material employed to construct rock structures will be of a size not less than 150 mm and not greater than 300 mm and well graded. Rock will be clean, hard, dense and durable to the satisfaction of the Superintendent.

Rock structures will be placed in a manner that ensures that the larger rocks are uniformly distributed throughout the protection work, and that the smaller rocks effectively fill the spaces between the large rocks without leaving any voids. The layers of placed rock will be of even thickness and of even grading and include a defined spillway within the crest of the structure.

The placing operations will minimise the chances of rock running loose and damaging adjacent areas.

Rock deposited in areas outside the rock protection zone will be recovered.

50.3.4 Measurement and Payment

The scheduled lump sum for “Implementation of Sediment and Erosion Control” shall provide full compensation for all costs incurred in executing and completing the work in accordance with the Contract.

25% of the scheduled lump sum for “Implementation of Sediment and Erosion Control” shall be paid once the Contractor has established the sediment and erosion control devices. The balance of the lump sum shall be paid progressively throughout the duration of the Contract (proportional to progress payments) for maintenance of the devices.
51.0 DEMOLITION

51.1 General

The Contractor will undertake the demolition, removal and disposal of the existing Mogor Well pump station structure and associated internal pipework, fittings, external access stairs and external, aboveground pipework identified on the Project Drawings to be abandoned.

The Contractor will carefully plan and stage the infrastructure designated for demolition. Demolition work will not commence until the Contractor has considered the impact of its demolition and make arrangements for continued service where necessary.

The pump station is required to remain in operation throughout the construction works and the Contractor shall arrange for a temporary supply where the existing water supply equipment is impacted by the construction works.

Reference should be made to Clause Error! Reference source not found. for further details of the temporary water supply arrangements. The switchboard will then be relocated to the new pump station building.

Safety and OH&S issues will be an integral consideration of demolitions. Prepare Safe Work Method statements for personnel and the Superintendent prior to commencement.

The disconnection of utilities such as electricity and water will also be carefully planned and co-ordinated with the Utility. The utility infrastructure will be relocated and reconnected, where required by the Utility or for the work of this contract, in accordance the Utility’s regulation.

Disconnected terminations will be capped and sealed at their ends and, in the case of electrical cables, disconnected at source.

All remaining demolished materials will be removed from the islands as there is limited space at Council landfills. The Contractor shall allow for the cost of removal, transportation to the mainland and legal disposal of demolished material.

51.2 Decommissioning of Existing Water Infrastructure

The Contractor shall abandon the existing water infrastructure as indicated on the Project Drawings.

The Contractor will undertake the work in accordance with the FNQROC Development Manual Operational Works Specification S5 – Water Reticulation Mains unless otherwise required by this Job Specification.

Once the new water main has been tested and is operational and the water services have been transferred over to the new water main, the contractor will decommission and abandon the existing water main and service lines.

The disconnection point shall be identified on the as-constructed drawings.

The Contractor shall isolate the section of water main where the disconnection is proposed. Disconnection of the water main will occur a minimum of seven (7) days after the installation of the connection to the new water main to enable the thrust blocks on the valves and fittings to cure.

The Contractor shall install an end cap and thrust block at the disconnection point. Once the existing line is disconnected, the abandoned water main and service lines are to be grout plugged and backfilled.

51.3 Payment

The scheduled lump sum for “Demolition” will include full compensation for the breaking up, dismantling or salvage where directed, removal, transportation to the mainland and disposal of all demolished material, decommissioning of existing water mains and services in accordance with the Contract including pipes, fittings, connections, thrust blocks, grout plugging of lines, testing, backfilling, compaction, restoration and for all other works and materials necessary to undertake the works in accordance with the Contract and Project Drawings.
52.0 CLEAN EXISTING WELL

The Contractor shall remove existing tree roots that have penetrated inside the Mogor Well structure. Roots shall be cut back to the internal surface of the well. See below for a photograph of the well.

Figure 1 Existing Mogor Well

For the purposes of their tender, the Contractor shall assume the structure is 3m deep and 1.5m in diameter.

The scheduled lump sum for “Clean Existing Well” shall include full compensation for supply of all materials, plant, equipment, labour and for all other costs incurred in completing the works in accordance with the Contract.

53.0 CLEARING AND GRUBBING

Vegetation shall be cleared within the limits of the works unless they are denoted on the drawings to be retained.

Refer to FNQROC Specification S1 – Earthworks.

Notwithstanding this, the following will apply.

The Contractor will not commence clearing of any trees from the sites without the direction of the Superintendent. Only trees marked for removal on the drawings will be removed. No trees will be removed outside the project site boundaries. Clearing will not be commenced until protective fencing is provided to those trees that are to be retained.

All cleared materials will be disposed of at a location nominated by Council. The Contractor will allow to cut trees up as directed by Council.

The scheduled lump sum for “Clearing and Grubbing” will include full compensation for:

- Removing trees, shrubs and overhanging branches;
- Setting aside marketable timber;
- Setting aside vegetative material suitable for cutting up for firewood;
- Removing stumps and roots (including any subsequent regrowth) to a depth not less than 300mm below ground surface;
- Removing noxious weeds, crops and other vegetable matter from the ground surface (including any subsequent regrowth);
- Removing rocks, buildings and artificial obstructions from the ground surface;
- Removing and/or demolishing existing drainage infrastructure and roadside furniture including barriers;
- Removing abandoned public utilities to a depth not less than 300mm below natural ground surface;
- Removing existing stockpiles of soil and vegetation located on the allotment;
- Disposing of all cleared and grubbed materials which are not to be reused. The Contractor shall allow to cut up trees for reuse by the community for firewood and to store in a location directed by the Superintendent (within 10km of the project site). Roots and other materials may be spread outside the footprint of works on direction by the Superintendent;
- Trimming and lightly compacting area within the limits of clearing and grubbing by outside the limits of earthworks operations, and
- for all other works and materials incurred in executing and completing the works in accordance with the Contract.

54.0 PIPEWORK – EXTERNAL TO PUMP STATION BUILDING

54.1 General

The contractor will undertake the work in accordance with FNQROC Standard Specification S5 – Water Reticulation unless otherwise required by this Job Specification.

Water mains will be constructed using the materials and in the locations identified on the project drawings.

Pipework will be backfilled in accordance with FNQROC Standard Drawing S2016 “Bedding Details”.

54.1.1 Pipework

mPVC


PVC pressure pipe, installed external to the pump station building shall be mPVC (Series 2) and shall be manufactured and in accordance with AS 4765-2007. Pipes shall be Class PN16, flexible jointed and have an external diameter compatible with ductile iron pipe to AS 2280.

DICL

Reference should be made to FNQROC Development Manual Operational Works Specification S5 – Water Reticulation Clause S5.06.

Pipe restraints, including thrust blocks, will be designed to accommodate a test pressure of 1200 kPa. Flange insertion sets shall comprise gasket, bolts, nuts and washers. Gaskets shall be in accordance with WSA 109 and be suitable for the pressures and sealing stresses of the nominated flange class. Bolts shall be galvanised steel and of a strength grade sufficient to provide the necessary sealing stress for the gasket supplied, to a maximum working pressure of 1.6 MPa. Flange insertion sets shall be individually bagged and tagged.

HDPE

Unless otherwise noted, all Polyethylene (PE) pipe and fitting materials used in the works shall be manufactured using PE100 High Performance Polyethylene (HPPE) material in accordance with AS 4310 and AS 4131, and shall have a pressure rating of PN16 (SDR 11), unless otherwise noted. Polyethylene stub flanges shall be PN16, unless otherwise noted.
Backing rings shall be hot-dip galvanised steel, suitable for pressure class PN16 and drilled in accordance with AS 4087.

Flange jointing sets shall comprise gaskets, bolts, nuts and washers. Gaskets (where required) shall be full faced EPDM rubber drilled to AS 4087 PN16. Bolts, nuts and washers shall be hot dip galvanised, complying with AS 1111 and AS 1214 and sized to match the flange specifications. Bolt length shall be selected by the Contractor to match the adjoining fitting(s).

Provide galvanised steel backing plates compatible with AS 2129 Table C, where required. Bolts, nuts and washers will be galvanised.

**Fittings**

Reference should be made to FNQROC Development Manual Operational Works Specification S5 – Water Reticulation Clause S5.06.

Fittings for mPVC pipe will be DICL.

Ductile Iron Cement Lined (DICL) fittings used in the works shall be as specified below, unless otherwise noted:

- DICL pipe and fittings shall comply with AS 2280;
- DICL fittings shall have a minimum pressure rating of PN16;
- Joints shall be as indicated on the Drawings:
  - Spigot and socket pipe shall be supplied complete with rubber ring jointing material.
- DICL fittings shall be internally and externally lined with a fusion bonded epoxy coating;

Installation, and jointing of all ductile iron fittings shall be in accordance with this specification and the manufacturer’s recommendations.

### 54.2 Trenched Water Pipeline Installation

The Contractor shall install the new water pipeline below ground in trenches as indicated on the Drawings.

The scheduled lump sum for “Trenched Water Reticulation Mains Installation” will include: bends, fittings (excluding valves and hydrants which are measured separately), appurtenances, materials, clearing and grubbing, excavation in all materials excluding rock, removal and disposal of surplus excavated material, dewatering, shoring, supply, placement and compaction of bedding material, supply, laying and jointing of pipe and pipe surround, concrete stops, anchor and thrust blocks, trench bulkheads, backfill, restoration / reinstatement, traffic management, marker posts and for all other works and materials incurred in executing and completing the works in accordance with the Contract.

### 54.3 Aboveground Water Pipeline Installation

The Contractor shall install new water pipeline above ground on pedestals as indicated on the Drawings. Concrete works shall be undertaken in accordance with Clause 46.2.

The lump sum for “Aboveground Water Pipeline Installation” shall include supply, freight and installation of all materials including pipes, bends, fittings, appurtenances and reinforced concrete for the pipe support pedestals, connections between the pipework and the pedestals and for all other works and materials incurred in executing and completing the works in accordance with the Contract.

### 55.0 INTERNAL PLANT ROOM PIPEWORK AND EQUIPMENT

#### 55.1 Pipework, Supports and Jointing

The Contractor shall construct the internal plant room pipework in accordance with the drawings.

Pipe material shall be Series 1 PVC-U (SWJ) Class 18 installed and supported in accordance with AS 2032 and the manufacturer’s recommendations.
Support Types include:

- pipework up to 50mm diameter - use 316SS bolted clips or an approved alternative system;

Support spacing shall be in accordance with the manufacturer’s recommendations.

Clips, shanks and bolts:

- use 316SS, shanks and bolts throughout. Where fixing to steel work is necessary, use 316SS bolts;
- provide isolation between dissimilar metals;
- protect pipes/hoses against mechanical damage.

Flanges to pipework, pumps, valves, flow meter and other equipment shall:

- be to AS 4087, Figure B7, PN16 (compatible with Class C of AS 2129);
- be full face;
- be drilled off centre;
- have 3mm thick insertion rubber gaskets; and
- backing (slip) flanges shall be 316 stainless steel. Galvanised backing flanges are not acceptable.

55.2 Ball and Non-Return Valves

Ball and non-return valves shall be either S/S Grade 316 or other material not susceptible to corrosion and compatible with the proposed Series 1 PVC-U (SWJ) Class 18 internal pipework.

55.3 Tapping Saddles

Tapping saddles shall be Class 316 stainless steel (fully passivated) complete with a Nitrile rubber gasket with female threaded BSP offtake and installed in the locations nominated on the project drawings. The diameter of the tapping saddle shall match the pipe and offtake diameter. Tapping saddles shall be Wang Components KT1 style or similar approved equivalent.

55.4 Pressure Relief Valves

Pressure Relief Valves shall be Bronze with a male BSP inlet x female BSP outlet (1” Diameter) and installed in the locations nominated on the project drawings. The pressure relief valve shall be spring loaded and capable of operating at pressures ranging from 2 – 10 bar. Pressure Relief valves shall be Braeco Model HL9BP-25 or similar approved equivalent. Pressure relief valves are to operate against a back pressure no less than 800 kPa.

55.5 Manual Pressure and Vacuum Gauges

Manual pressure and vacuum gauges shall be installed on pump suction and discharge pipework as indicated on the project drawings. The gauges shall be having a 100mm diameter face, glycerine filled with a ½” BSP male threaded inlet bottom connection. Pressure and vacuum gauges shall be protected from corrosive or possibly damaging fluids through the use of diaphragm protection devices. Pressure gauges shall operate at 3/4-range on the gauge scale. Pressure and Vacuum Gauges shall be Ambit or similar approved equivalent.

55.6 Flow Switches

Flow switches shall be glass reinforced polypropylene and suitable for installation in potable water pipework. Flow switches shall be supplied as normally open that close when flow starts. Flow switches shall have a 25mm BSP male threaded inlet and suitable for an operating pressure of up to 1200kPa. The flow switch shall provide a minimum of 15 seconds to prime before shutting down. Flow switches shall be installed in the locations nominated on the Project Drawings and hardwired to the switchboard. The flow switch shall be Kelco F25B or similar approved equivalent.
55.7 Magnetic Flow Meter

The Contractor shall supply and install the magnetic flow meter downstream of the proposed positive displacement pump set.

The flow range to be provided shall be up to 5 times that provided by the proposed positive displacement pump set. The magnetic flow meter shall display both the instantaneous flow (L/s) and the totalised flow in cubic meters (minimum 10,000 cubic meters), though the display shall have the capability to display operator selectable units. The display shall be LCD with numbers a minimum of 7 mm high. Power to the meter shall be by cable in DN40 mm PVC conduit, supplied from the switchboard and the generated 4-20 mA signal shall be transmitted back to the switchboard by shielded cable in its own dedicated DN25 mm PVC conduit. The display shall be located in the switchboard.

The magnetic flow meter shall:

- Have a calibrated accuracy of +/- 0.5% of actual flow (between 1.0% and 100% range) with a repeatability of +/- 0.1% or better;
- Be supplied with a six point NATA certified calibration certificate, with the test points being 10%, 25%, 50%, 60%, 80% and 100% of the flow range of the instrument. The test equipment and procedures are to be traceable to NATA or NATA accredited standards. The test certificate shall be forwarded to the Superintendent;
- For flow meters calibrated overseas, the test certificate received from overseas laboratories must bear the logo and endorsement of one of the laboratory accreditation bodies listed in NATA’s Mutual Recognition Agreement (NATA’s Mutual Recognition Agreement Partners Revised Oct 04; NATA’s Mutual Recognition Agreements (MRA) Network - Revised Jun 04) which are available from the NATA website at www.nata.asn.au;
- Have the facility to verify correct operation of the flow meter by comparison of an onsite verification test and characteristics with original factory calibration and NATA or equivalent flow test certification;
- Be supplied from a reputable manufacturer with a demonstrated history of rapid response to rectifying meter failures in the North Queensland area;
- Have a backup power supply so as not to lose information during a power outage;
- Be compatible with telemetry systems to allow remote reading and checking that they are operational (i.e. 4-20mA); and
- The inside diameter of the flow meter shall match the adjacent pipework to within a tolerance of less than 5%.

The flow meter shall be installed a sufficient distance upstream and downstream of any bends fittings etc so as to minimise interference as per the manufacturer’s recommendations.

The magnetic flow meter shall be an “ABB Water Master V” or similar approved equivalent. The flow meter shall be installed in accordance with the Manufacturer’s requirements.

55.8 Payment

The scheduled lump sum for “Internal Plant Room Pipework and Equipment” shall include full compensation for design, supply of all materials, plant, equipment, labour, fabrication, transportation, installation, connection to equipment and for all other costs incurred in completing the works in accordance with the Contract.
56.0 HYDROSTATIC TESTING

56.1 General


Notwithstanding this, pipework shall be tested to a pressure of 900kPa.

At least 7 days before commencing the hydrostatic pressure testing of the pipeline, the Contractor shall submit to the Superintendent for review full details of the proposed testing procedures, measuring and recording equipment and any other equipment and pipe fittings proposed to be used.

The Contractor shall provide labour for installation and dismantling of test equipment and shall supply all pumps, engines, pipes, temporary valves, plugs or blank flanges and other items that may be necessary. Such plant shall remain the property of the Contractor.

The hydraulic pipeline test shall be carried out as soon as possible after laying, jointing and backfilling, or, in lines containing anchor blocks, not less than seven (7) days after anchor blocks are cast.

Temporary end caps shall be removed at the completion of a satisfactory test procedure.

The Contractor shall ensure blank flanges are fitted to the pipe outlets whilst hydrostatically testing and removed after successful completion.

If the pressure has dropped at the end of the test period the volume of water needed to restore the original test pressure shall be measured. If the pressure losses exceed the limits specified in the Water Supply Code of Australia (WSA) 03-2002, Clause 19.4.3, the Contractor shall be responsible at its own cost for locating and repairing any leaks in the section of pipeline constructed under this contract and for retesting the section until the results are satisfactory. Repair, retesting and payment for faulty works and services provided by the Principal shall be made as a variation to this Contract as directed by the Superintendent.

The scheduled Lump Sum for “Hydrostatic Testing” will include supply of all material, labour, undertaking of test and all other costs incurred in executing and completing the work in accordance with the Contract.

57.0 FLUSHING


The scheduled Lump Sum for “Flushing” will include supply of all material, labour, undertaking of test and all other costs incurred in executing and completing the work in accordance with the Contract.

58.0 CONNECTIONS TO EXISTING MAINS

58.1 General

The Contractor will be required to connect the new water mains to Council’s existing distribution system. Connections will be constructed in the locations indicated on the Drawings.

The diameter and material type of the existing mains is unknown and the Contractor shall provide fittings to enable connection to either a DN80/DN100 pipeline (material unknown).

The Contractor shall investigate the existing main at the connection point to confirm the water main size.

Prior to commencing work at each connection the Contractor will submit a plan for the coordination of the connection to the Superintendent. The plan must demonstrate how the connection will be constructed so as to cause the shortest disruption of service practicable.
The Contractor will liaise with Council and other critical water consumers and the Superintendent regarding the timing of the proposed cut-ins and will be flexible with respect to the cut-ins such that it minimises the interruptions to the town’s water supply. The Contractor shall provide temporary measures for continuous access to water where required.

Comply with FNQROC Standard Specification S5 - Water Reticulation. Connection of new mains to existing reticulation will be constructed in accordance with FNQROC Standard Drawing S2020 – Main Connection Details.

58.2 Payment

The Scheduled Lump Sum for “Connections to Existing Mains” will include: potholing/hand excavation to find the existing pipe and connection point and exposing the entire point, to confirm the water main diameter and material type prior to procurement of fittings, excavation, bedding, removal and disposal of surplus excavated material, dewatering, pipework, bends, fittings, joints, thrust blocks/anchors including: reinforcing bars, formwork supply and placement of concrete; marker posts, backfill, compaction, reinstatement and for all other works and materials necessary to execute the works to provide a complete connection in accordance with the Contract.
59.0 PUMPS

59.1.1 General

The Contractor shall supply and install new duty and standby raw water pumps to transfer water from the Mogor Well to the tank at the water treatment plant. Pumps shall be positive displacement type “Mono” pump model ASP 420 1200 rpm or similar approved equivalent.

Each pump shall be able to be isolated individually for maintenance and removal and shall be soft wired to allow removal and replacement without the need to disconnect wires from the switchboard. That is, there shall be an all weather three pin socket and switch mounted on a stainless steel grade 316 post at the located indicated on the drawings. The three pin plug and socket, when fitted together shall have an enclosure rating of IP56.

The socket shall also be fitted with a hinged (or similar) cover such that when not connected to the three pin plug, the socket enclosure remains IP56. The connection shall also be spring loaded to provide for instant disconnection of power.

Pumps start/stop shall be controlled by water level in the adjacent well. Existing pressure sensors are installed in the well and the contractor shall connect the control wiring from this to the new switchboard.

59.1.2 Payment

The scheduled lump sum for “Pumps” shall include full compensation for supply of all materials, plant, equipment, labour, fabrication, transportation, installation and for all other costs incurred in completing the works in accordance with the Contract.

60.0 PUMP STATION STRUCTURE

60.1 General

The Contractor shall install the pump station structure in accordance with the Project Drawings.

60.2 Entry Slab and Concrete Edge Beam

Refer to Specification G15 – Concrete 1.

The concrete entry slab and edge beam and shall be constructed to the lines, levels and details as indicated on the Drawings.

Concrete slump and compressive strength testing shall be carried out in accordance with the attached Specification G15 – Concrete 1 and the Schedule of Compliance Assessment Testing, and all costs for testing shall be met by the Contractor.

60.3 Structural Timber Framing

The Contractor shall supply and install structural timber as indicated on the Drawings.

60.4 Aluminium Sheeting

The Contractor shall supply and install aluminium sheeting (including flashings) as indicated on the Drawings.

Sheeting shall be high strength marine grade aluminium alloy 5251 or 5052 (H38 temper) in accordance with AS 1734, to minimum thickness of 0.90mm with a BlueScope PERMALITE LT7® profile unless noted otherwise.

The surface finish of aluminium sheeting and flashing shall be pre-painted “glacier white”.

All fasteners shall be manufactured from Grade 316 stainless steel and shall be isolated so as not to induce electrolytic action. Fasteners shall be in accordance with the Manufacturer’s recommendations.
Sheeting shall be installed in accordance with the Manufacturer’s recommendations. Where aluminium sheeting is to be in contact with structural timber, a suitable isolating medium shall be applied in accordance with the Manufacturer’s recommendations.

On completion the whole roof shall be swept clean of all debris and waste materials and washed down to check for leaks. Make good as required to ensure roof and accessories are water tight.

60.5 Soffits
The Contractor shall supply and install soffits for all buildings as indicated on the Drawings. Soffits shall be 6mm thick painted FC sheeting.

60.6 External Timber Doors and Hardware
The Contractor shall install external quality timber doors, door hardware, locks and sundry door hardware to the building as indicated on the Drawings.

60.7 FC Sheeting Ceiling and Timber Beading
The Contractor shall install internal FC sheeting ceiling lining (6mm thick) in the buildings as indicated on the Drawing.

60.8 Payment
The scheduled lump sum for “Pump Station Structure” shall include full compensation for supply of all materials, plant, equipment, labour, fabrication, transportation, installation and for all other costs incurred in completing the works in accordance with the Contract.

61.0 ELECTRICAL WORKS

61.1 Switchboard Replacement

61.1.1 General
The Contractor shall supply and install a replacement switchboard and associated fittings in the location indicated by the Project Drawings. The switchboard shall comply with the attached Specification (W5) - Electric Motors and Switchboards.

All electrical work and workmanship shall comply with the relevant Local Authority requirements and the latest relevant Australian Standards including AS 3000.

All cabling shall be installed within heavy duty rigid PVC-u to AS 2053 for underground and heavy duty seamless galvanised steel screwed type to AS 2052 for above ground. All conduits shall be sealed with a permanent plastic waterproof compound. All above ground conduit shall be suitably secured in place.

61.1.2 Switchboard Cubicle
The pump station switchboard cubicle shall be weather proof and vandal proof and pedestal mounted. The base of the cubicle shall be a minimum 900 mm above concrete slab level. Cubicles shall be manufactured from either 1.6 mm Grade 316 stainless steel or 3.0 mm marine grade aluminium, and shall be powder coated white on completion of fabrication.

Cubicles shall be ventilated using approved style louvers with stainless steel gauze retained by metal framing, to prevent the ingress of insects and vermin, and achieve a degree of protection equal to IP56.

The Contractor shall provide separate cubicles with minimum following internal dimensions in the existing switchboard:
- Pump control (750 mm x 1197 mm)
- Telemetry (600 mm x 634 mm)
- Supply authority metering (600 mm x 560 mm).

All cables shall enter the control panel through the base, and shall be glanded via a removable gland plate. Direct entry of conduits into the control panel will not be accepted.

### 61.1.3 Switchboard

The switchboard shall be suitable for connection to 415 volt three phase power supply.

The Contractor shall provide surge diverters on the incoming consumer mains within the control panel. Enclose the surge diverters in a metallic enclosure to achieve complete segregation from the remainder of the board.

All power and control wiring shall be neatly laid out and tied / grouped together (by item of plant or other suitable grouping) for ease of maintenance.

A 15 amp weather proof (IP56) 3-phase power outlet shall be provided on the external side or back wall of the switchboard, with dedicated 30mA RCD protection.

A double GPO shall be provided on the on escutcheon panel inside the switchboard.

An outlet suitable for connection of a generator to the switchboard shall be provided. The outlet shall be capable of withstanding the electrical loads from the generator necessary to maintain the pump station operation in the event of a power outage.

The following electrical components shall be used:

<table>
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<tr>
<th>Item</th>
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<tr>
<td>Contactors</td>
<td>Sprecher &amp; Schuh CA7</td>
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<tr>
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<td>Sprecher &amp; Schuh D5M Series</td>
</tr>
<tr>
<td>Selector Switches</td>
<td>Sprecher &amp; Schuh D5M Series</td>
</tr>
<tr>
<td>Isolators</td>
<td>K &amp; N or Clipsal 56 Series</td>
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<tr>
<td>Indication lamps</td>
<td>Sprecher &amp; Schuh D5M Series with LED Cluster</td>
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<tr>
<td>Ammeters &amp; Voltmeters</td>
<td>IME RQ 72E – AAC</td>
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<tr>
<td>Terminal Strips</td>
<td>Sprecher &amp; Schuh VU4-25 Series</td>
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<tr>
<td>Wire Identification</td>
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<tr>
<td>Circuit Breakers</td>
<td>Terasaki DINT6 series</td>
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<tr>
<td>Main Switch</td>
<td>Terasaki DTMS</td>
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<tr>
<td>RCD/MCB</td>
<td>Terasaki DS MCB 2030</td>
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<tr>
<td>Transient Protection</td>
<td>Novaris SD Series</td>
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<tr>
<td>Cable Glands</td>
<td>Utilux Chrome Plated Brass</td>
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<tr>
<td>GPO Outlets</td>
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<tr>
<td>Plug and Switched Socket Outlets</td>
<td>Clipsal 2000 series</td>
</tr>
<tr>
<td>Light Switches</td>
<td>Clipsal 2000 series</td>
</tr>
</tbody>
</table>
Motor starters shall be of a type approved for use at the site. Ergon Energy has a load limit of 10 kW per electric motor, with soft starters required for motors greater than 1.5 kW and these requirements shall be catered for in the selection of appropriate motor starters. Where a motor size greater than 2.5 kW is required, the current shall be limited to no more than 30% of the direct-on-line starting current using VSDs. The Contractor shall comply with Ergon’s requirements with respect to electric motor sizing/starting as per the attached Guidelines for Electrical Systems in Isolated Locations.

All equipment shall be neatly and logically laid out on the internal hinged escutcheon of the control panel. The following minimum equipment shall be provided:

- One main switch rated for the total connected load of the installation;
- ‘Run’, ‘Water Void’ ‘Motor Overload’, ‘Phase Failure” and ‘Fault’ indicators for each pump;
- Well level collecting signal from an existing pressure sensor in the well.
- Ammeter for each pump;
- Voltmeter and 7 position selector switch;
- Hours run and number of starts counter for each pump;
- Start, stop and fault reset pushbutton for each pump;
- Switch for selection of automatic or manual pump operation;
- Switch for selection of the duty pump for automatic operation; and
- Lamps test pushbutton.

The above items shall be clearly labelled with suitable permanent labels (stickers shall not be used). Indicating lights shall be industrial type with transformers and extra low voltage lamps. Three spare lamps shall be provided in a suitably labelled container inside the switchboard.

The switchboard and control panels shall include all relays, rectifiers, transformers and other equipment including conduit and wiring necessary for completing the control and power circuits between the incoming mains terminals and the motors including earthing of the installation.

The magnetic flow meter (mag meter) installed shall be powered out of the pump station switchboard and the flow signal that is generated by the mag meter shall be displayed in the switchboard cubicle. Refer to clause 55.7 for details.

### 61.1.4 Control Circuitry

Control circuitry shall be designed for ‘fail safe’ operation, and sufficient space shall be allowed within the cubicle for all equipment to be accommodated in a neat and logical manner, with a minimum of 25% spare space for future use.

Wiring shall be run without crossovers to ensure final wiring arrangement remains easily traceable. All wiring shall be numbered and all equipment labelled using machine engraved traffolyte labels coded to match the “as-constructed” wiring diagrams.

The Contractor shall supply and install all underground cabling in conduits to the relevant Australian Standards, to supply power to the pumps and security light, as indicated on the Drawings.

The power control system shall automatically restart the duty pumps and equipment, subject to the specified controls, on resumption of power following a power supply failure. Standby pumps and equipment shall have an adjustable 0 - 10 minute delay timer incorporated to prevent simultaneous starting of units.

No two motors shall be capable of starting simultaneously, and no more than ten (10) pumps / drives shall be able to operate simultaneously.

### 61.1.5 SCADA Interface

Contractor shall provide a numbered terminal strip within the control panel and wire volt free signals for future SCADA interface. Signals shall include:
• Monitoring
  - Well level;
  - Flow rate;
  - Auto pump 1/2 control selected
  - Pump available
  - Pump run
  - Pump fault
  - Motor overload
  - Water void

• Control
  - Remote Pump Start/Stop;
  - Remote Fault Reset; and
  - Remote Pump Inhibit.

61.1.6 Testing and Commissioning

Unless otherwise detailed, site testing of equipment (including pumps) shall be required for “running in” and checking that all equipment sensibly performs in accordance with the Specification, the tender and the guarantees.

Requirements regarding temperature rise, vibration and mechanical operation shall be met in all circumstances.

After the plant has been erected, electrical connections completed and the plant ready to run, the Contractor shall notify the Superintendent accordingly. Thereafter, if desired, the Contractor shall be given four (4) days within to carry out preliminary tests and make any necessary adjustments.

When the installation of the equipment is complete the Contractor shall fill the pump well with water and the Contractor shall carry out further testing under full hydraulic conditions to confirm that the equipment performs in accordance with the Specification, the tender and the guarantees.

After preliminary running of the units the plant shall be subjected to the following tests during which no adjustment shall be made unless by permission of the Principal or the Superintendent. These tests shall be conducted by the Contractor at their sole expense, and no previous tests at the work or elsewhere nor any approval for dispatch issued by the Principal shall in any way waive the responsibility of the Contractor for the performance of the erected plant up to the full specified duties and to the guarantees offered by them in their tender or elsewhere.

Pumps shall be tested for operation with duty only, duty and standby combined, and standby only. During these tests, and details of the pressure and flow performance of the sewage pumps shall be recorded by the Contractor and furnished to the Superintendent.

The pump manufacturer’s technical information and commissioning instructions shall be made available to the Superintendent prior to testing and commissioning.

61.1.7 Defective Plant

Should the equipment after installation not perform in accordance with the requirements of this Job Specification and the guarantees offered, then the Contractor shall alter, repair or replace the equipment or any part thereof, so that it shall conform in every respect with the Specification and the guarantees.

Such further tests as may be necessary to prove the conformance of the equipment with the Specification and guarantees after it has been altered, amended or replaced shall be made, the cost of which shall be borne by the Contractor.
61.1.8 Payment

The scheduled lump sum for “Switchboard Replacement” shall include full compensation for all labour, plant and materials necessary for the supply and installation complete of all works as described under this Clause and all sub-clauses therein and for all other costs incurred in carrying out the works in accordance with the Contract.

61.2 Power and Lighting

The Contractor shall be responsible for all electrical installations for the pump station building. In addition to lights and GPO’s the building shall house the pump station switchboard.

The electrical installations shall include all power points, lights and light switches as indicated on the Drawings.

All electrical works shall be undertaken in accordance with AS3000 and all cables shall be suitably protected in conduit. All cables shall be concealed in a manner that will allow ease of access.

The new power and lighting shall be connected to separate circuits in the existing switchboard. If there is insufficient space, the Contractor shall construct and install a new distribution board located inside the plant room building. The Contractor shall provide shop drawings of the distribution board to the Superintendent for review. The Contractor shall update the drawings based on comments provided by the Superintendent.

The scheduled lump sum for “Power and Lighting” shall include full compensation for supply, plant, equipment, labour and materials and for all other costs incurred in completing the works in accordance with the Contract.

62.0 STAIRS, PLATFORMS AND HANDRAILS

62.1 General

The Contractor shall design and construct the stairs, platform and handrails for the proposed Mogor Well Pump Station.

The stairs, platform and handrails shall be fabricated from marine grade aluminium and be installed in the located indicated on the drawings. All fixings shall be Grade 316 stainless steel. Dissimilar metals shall be separated to protect galvanic corrosion.

The Contractor shall provide an RPEQ certified design and submit drawings and a completed Form 15 to the Superintendent for review and comment prior to ordering materials.

62.2 Design of Stairs, Platforms and Handrails

62.2.1 Professional Indemnity Insurance

Before the Contractor commences work under the Contract, the Contractor shall effect a professional indemnity insurance policy with a total aggregate cover of not less than $5,000,000. The policy and such level of cover shall be maintained until the Final Certificate is issued and thereafter for 5 years.

The Contractor shall ensure that every Consultant is insured for professional indemnity with a cover not less than $5,000,000. Each Consultant’s policy shall be maintained until the Final Certificate is issued and thereafter for a period of 5 years.

62.2.2 Intellectual Property Rights Granted to the Principal

The Contractor grants to the Principal an irrevocable license to use the Design Documents for the work under the Contract. Such licence shall also include any subsequent repairs to, maintenance or servicing of (including the supply of replacement parts), or additions or alterations to, the Works.
62.2.3 Design Requirements

The Contractor shall submit RPEQ certified design drawings adequate for construction of the alternate proprietary system. The Principal shall provide the survey information in AutoCad format which may be used for design of the alternate proprietary system.

The design shall satisfy the following:

- obligations
  - Ensure that the health and safety of all persons will not be affected detrimentally
  - Use every practicable endeavour to minimise detrimental effects of the work on the environment

- Methods. Use adequate data and competent personnel, as appropriate to the case; use (as applicable):
  - Trade standards and manufacturers’ standard data; if there is cause for doubt, confirm applicability
  - Manufacturers’ competent design services
  - Or (if neither of the above is applicable) a professional engineer (including, if the nature of the case indicates, to supervise construction and to certify compliance with his design)

62.2.4 Effect of Principal’s Approval of Contractor’s Documentation

Approval or acceptance by the Principal of any proposal for executing the work under the Contract, including Drawings, Specifications or resources to be employed under the Contract shall not relieve the Contractor of its responsibility for any errors therein and shall not be regarded as an assumption of risks or liability by the Principal, and the Contractor shall have no claim under the Contract on account of the failure or partial failure or inefficiency of any plan or method of work or material or equipment so approved or accepted. Such approval or acceptance shall be considered to mean only that the Principal has no objection to these proposals.

Notwithstanding any approval or acceptance of documentation by the Principal, the Contractor shall remain fully responsible for delivering up the works complete and correct in every detail.

62.2.5 Design Responsibility

Without limiting anything else in the Contract, the Contractor acknowledges and agrees that the Contractor is responsible for and that the Principal will be relying upon the warranties, skill and judgement of the Contractor for the design and documentation of work under the Contract, the choice of materials, systems and services to be used and the construction, completion and commissioning of the whole of the work under the Contract.

The Contractor warrants that all design, materials and workmanship will be proper and adequate for their respective functions and purposes and that work under the Contract will be constructed in a proper and correct manner under adequate and competent supervision and quality assurance.

All services and equipment shall comply with all relevant Australian, State and Local Government Rules, Regulations and applicable Australian Standards where such exist.

62.2.6 Design Personnel

All design work undertaken on behalf of the Contractor shall be performed by fully qualified and experienced engineers eligible for corporate membership of the Institution of Engineers Australia. All designs are to be RPEQ certified.

62.2.7 Contractor’s Drawings

General

The following requirements shall apply to all materials to be supplied under this Contract, including the work of all Sub-Contractors.

The Contractor shall, at the earliest practical date but not later than four (4) weeks prior to the commencement of manufacture of equipment, or placing firm orders for any components, submit to
the Principal for approval three (3) copies of drawings as herein specified. Work shall not proceed on
the manufacture or supply of equipment, components, or structure until the relevant drawings have
been submitted and accepted.

Should the Principal require additional information and/or drawings or any amendments to the
previously submitted drawings, the Contractor shall supply in triplicate the additional information
and/or drawings or amended drawings within a period of two (2) weeks of being requested to do so.

Drawings, Size and Title Block

All drawings associated with this Contract shall be the same size as the full size Contract Drawings
(A3). Title blocks may be arranged to suit the requirements of the Contractor, but each title block shall
carry the following information:

- Name of Principal – Torres Strait Island Regional Council
- Name of Project – Mogor Well Pump Station Upgrade
- Description of work to which drawing refers (including equipment item number where applicable)
- Drawing Number
- Contractor Name

Drawing Numbers

The Contractor shall allocate drawing numbers for use on its own drawings. While other drawing
numbers may be shown in the title block the number allocated by the Contractor shall be the prime
and prominent drawing number and shall be located in the bottom right hand corner of the title block.
This drawing number shall be the reference used in all communications.

Design Drawings

All drawings shall be clearly drawn on AUTOCAD to scale by competent drafters, for the particular
application of this project. The Contractor shall provide a drawing schedule of all drawings associated
with the project.

Acceptance of Contractor's Drawings

Acceptance by the Contractor of any drawing, method of work or any information regarding materials
and equipment the Contractor proposes to supply shall not relieve the Contractor of its responsibility
for any errors or omissions therein, and shall not be regarded as an assumption of risks or liability by
the Principal, and the Contractor shall have no claim under the Contract on account of the failure or
partial failure or inefficiency of any plan or method of work or material and equipment so accepted.

Such acceptance shall be considered to mean that the Principal has no objection to the Contractor
using, upon its own full responsibility, the plan or methods of work proposed or supplying the materials
and equipment proposed.

The Principal may alternatively mark documents as "Not Accepted" or "Accepted as Noted" in which
case revise the documents and re-submit to the Principal until such stage as the documents are
accepted. Where a document is marked "Accepted as Noted" it may be used for provisional ordering
of materials only but the document must still be resubmitted.

Acceptance of the Contractor's drawings shall not relieve the Contractor of its full responsibility to
comply with the requirements of the Contract Drawings and Specification.

Prior to commencement of construction two copies of drawings marked "ISSUED FOR
CONSTRUCTION" shall be forwarded to the Principal.

62.2.8 Design Phases and Documentation

General

The Services in Design Phase shall include but are not be limited to:
FNQROC DEVELOPMENT MANUAL

SPECIFICATION

S1

EARTHWORKS

Version No. 03/17

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GENERAL

S1.01 SCOPE

1. This specification details all requirements pertaining to earthworks operations associated with construction sites. This specification excludes earthworks associated with roadworks construction.

2. Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

S1.02 REFERENCE DOCUMENTS

Note: Where Acts or reference documents are updated, reference should be made to the current version.

Australian Standards

- AS 3798 Guideline on Earthworks for Commercial and Residential Developments.
- AS4373 Pruning of Amenity Trees
- AS4970 Protection of Trees on Development Sites

All documents referenced in this specification shall be the current edition
MATERIALS

S1.03 TOPSOIL

1. Topsoil is defined as surface soils normally high in organic matter and contaminated by residual grass seed and grass roots. Topsoil shall be free from large roots, stones, rocks and unsuitable material as defined below.

S1.04 UNSUITABLE MATERIAL

1. Reference is made to AS 3798 Section 4.2 "Unsuitable Materials" for definitions and guidelines regarding unsuitable materials with regard to earthworks operations.

S1.05 SUITABLE MATERIAL

1. Reference is made to AS 3798 Section 4.3 "Suitable Materials" for the definition and guidelines regarding acceptable materials for earthworks operations.
CONSTRUCTION

S1.06 GENERAL

1. Specific reference is made to AS 3798 in relation all activities pertaining to earthworks operations. Specific construction details are noted in Section 6 of AS 3798 and all appropriate methods of testing, frequency of testing and reporting procedures are to be in accordance with this Australian Standard.

2. Specific reference is made to AS4970 in relation to earthworks near trees selected for retention, i.e. no removal of topsoils should take place within the Tree Protection Zone as this destroys the Micorrizal root zone the tree needs for nutrient uptake.

3. Specific reference is made to AS4373 in relation to pruning work to be performed on any trees selected for retention.

S1.07 PROTECTION OF EARTHWORKS

1. The Contractor’s responsibility for care of the works shall include the protection of earthworks in accordance with the approved Erosion and Sediment Control Strategy.

2. The Contractor shall install effective erosion and sedimentation control measures, prior to commencing earthworks, and shall maintain these control measures as required.

3. Adequate drainage of all working areas shall be maintained throughout the period of construction to ensure run-off of water without ponding, except where ponding forms part of a planned erosion and sedimentation control system.

4. When rain is likely or when work is not proposed to continue in a working area on the following day, precautions shall be taken to minimise ingress of any excess water into earthworks material. Ripped material remaining in cuttings and material placed on embankments shall be sealed off by adequate compaction to provide a smooth tight surface.

5. Should in situ or stockpiled material become over wet as a result of the Contractor not providing adequate protection of earthworks, the Contractor shall be responsible for replacing and/or drying out the material and for any consequent delays to the operations.

S1.08 CLEARING AND GRUBBING

1. Clearing and grubbing operations shall be in accordance with AS 3798 Section 6.1.4.

2. The extent of clearing and grubbing shall be taken to mean the removal and disposal of:
   a. Trees, Shrubs and overhanging branches, both living and dead;
   b. Tree stumps and roots to a depth not less than 300mm below ground surface;
   c. Rocks, rubbish and other artificial obstructions from the ground surface;
   d. Abandoned services to a depth not less than 300mm below ground surface;
   e. Old foundations, buildings and structures;
   f. Minor made structures (such as fences);
   g. Other materials, which are unsuitable for use in the works.
3. Un-grubbed rocks under embankments may be left undisturbed providing there is a depth of at least 600mm of earth covering over them when the filling operations are completed.

4. Unless otherwise specified or directed, the area to be cleared is the minimum width required to construct the works plus a margin of 2m beyond tops of cuts and toes of embankments.

5. Any trees, shrubs and overhanging branches identified on the Project Drawings to be retained or protected shall be clearly marked by the contractor prior to commencing clearing operations.

6. Beyond the areas to be cleared only those trees, shrubs and over hanging branches which directly interfere with the construction of the works shall be removed or pruned as necessary.

7. Any trees, shrubs and overhanging branches identified in the project drawings to be retained or protected must be clearly fenced off as per AS4970 prior to the commencement of any clearing and grubbing. Any clearing and other works within the Tree Protection Zones must only be done under direction of the project Arborist or suitably qualified Council officer.

S1.09 TOPSOIL OPERATIONS

1. Stripping of topsoil shall be in accordance with AS 3798 Section 6.1.5.

2. For trees selected for retention and protection, no stripping of topsoil is to be done within the Tree Protection Zone as per AS4970, unless under the direction or advice of the project Arborist or suitably qualified Council officer.

3. Removal of topsoil shall only commence after erosion and sedimentation controls have been implemented and when clearing, grubbing and disposal of materials have been completed on that section of the Works.

4. Topsoil throughout the extent of the work shall be removed and stockpiled separately clear of the work with care taken to avoid contamination by other materials.

5. Topsoil material stripped from the site shall be stockpiled for later use in spreading on footpaths, allotments and parkland areas.

6. Topsoil stockpiles shall not contain any timber or other rubbish and shall be trimmed to a regular shape.

7. To minimise erosion, stockpiles are to be protected by effective usage of erosion and sediment control devises, which are to be defined within the Erosion and Sediment Control Management Plan.

8. Where seeding of stockpiles to encourage vegetation cover is specified, such work shall be carried out in accordance with the Specification S8 LANDSCAPING.

9. Nominally 75mm depth of topsoil is to be re-spread over such areas with an absolute minimum of 40mm material to be provided in any one location.

S1.10 GENERAL EARTHWORKS

1. Placement and Compaction of earthworks shall be in accordance with AS 3798 Sections 5 and 6.

2. The methods of testing and frequency of testing shall be in accordance with AS 3798 Sections 7 and 8.

3. Unless a higher level of testing is specified or directed the minimum level of geotechnical testing services to be accorded earthworks activities shall be as determined by Level 2 in Appendix B of AS 3798.

4. All testing is to be carried out by a NATA registered laboratory with appropriate accreditation and suitably qualified personnel.
S1.11 EXCAVATIONS

1. Materials encountered in excavation shall be loosened and broken down as required so that they are acceptable for incorporation in the works.

2. All excavations shall be constructed to the shape and slopes shown on the approved Project Documents.

3. Batter shall be trimmed neatly to the shapes specified and shall be free of loose or unstable material.

4. Horizontal tolerances for the excavation of batters, measured at right angles to the batter line, shall be $-50\text{mm} +250\text{mm}$ (where the $+$ tolerance is in the direction which increases the width of excavation).

5. Vertical tolerances for all excavation shall be $\pm 50\text{mm}$.

6. When completed all culvert excavations, benches, berms and drains shall be free draining.

7. At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.

8. No excavations may take place within the Tree Protection Zone of trees selected for retention and protection unless under the direction or approval of the project Arborist or suitably qualified Council officer.

S1.12 EMBANKMENTS / FILL AREAS

1. All embankments and fill areas shall be constructed to the shape and slopes shown on the approved Project Documents.

2. When completed, the average planes of the batters of embankments shall conform to those shown on the approved Project Documents.

3. Horizontal tolerances for the embankment batters, measured at right angles to the batter line, shall be $-0\text{mm} +250\text{mm}$ (where the $+$ tolerance is in the direction which increases the width of embankment).

4. Vertical tolerances for all embankments / fill areas, shall be $\pm 50\text{mm}$ except where such fill defines the subgrade level for a structure, then the vertical tolerances are to be $+15\text{mm} - 30\text{mm}$.

5. When completed all embankments / fill areas shall be free draining.

6. At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.

S1.13 TRENCHING OPERATIONS

1. The excavation for trenches shall be taken out to the exact alignment, width and level as shown on the Project Drawings and associated specifications.

2. Trenches shall not be excavated wider than the dimensions shown on these relevant drawings and the Contractor shall take all precautions as necessary to ensure that the excavation is made in a careful manner and that it is rendered secure and safe by all appropriate means.

3. At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.
4. Suitable drainage shall be accorded to all trenching activities and de-watering of trenches shall be undertaken should infiltration of water occur. All materials excavated from trenches shall be separated by material type for latter inclusion into the works or disposal from the site should these materials be deemed unsuitable in accordance with the requirements of AS 3798.

5. Excavation and trenching operations shall proceed with sufficient resources to ensure uninterrupted progress and continuance of the works with subsequent services. Completion and backfilling are to be undertaken as soon as possible so as to minimise the extent of site open to the effects of the environment.

6. No trenching operations may be performed within the Tree Protection Zone of trees selected for retention and protection unless under the direction or approval of the project Arborist or suitably qualified Council officer.

7. Where alignment of conduits or pipes cannot avoid the Tree Protection Zone (TPZ) of a tree selected for retention and protection, alternative methods of installation may be considered in consultation with Council and under direction of the project Arborist, i.e. boring under the tree, hand digging through the TPZ to create space under or between roots, or Hydro-excavation using a high volume water jet only, to avoid damage to the park roots. Any excavation past the TPZ requires refilling with good quality topsoil and watered in to remove any voids formed as a result of the excavation.
FNQROC DEVELOPMENT MANUAL

SPECIFICATION

S5

WATER RETICULATION

Version No. 03/17
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GENERAL

S5.01 SCOPE

1. This specification details all matters pertaining to the minimum requirements for Water Supply Reticulation Construction.

2. Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

3. The planning, design, construction and certification of water reticulation infrastructure is to be carried out in accordance with this Manual and the CTM Alliance Water Service Design and Construction Code Version 0.2 May 2015.


S5.02 REFERENCE DOCUMENTS

Note: Where Acts or reference documents are updated, reference should be made to the current version.

Australian Standards

• AS 1289 Methods of Testing Soils for Engineering Purposes
• AS 1432 Copper Tubes for Plumbing, Gasfitting and Drainage Applications
• AS 1646 Elastomeric Seals for Waterworks Purposes
• AS/NZS 1477 PVC Pipes and Fittings for pressure applications
• AS/NZS 1906 Retroreflective Material and Devices for Road Traffic Control Purposes
• AS 2032 Code of Practice for Installation of PVC Pipe Systems
• AS 2033 Installation of Polyethylene Pipe Systems
• AS 2129 Flanges for pipes valves and fittings
• AS/NZS 2280 Ductile Iron Pressure Pipes and Fittings
• AS/NZS 2556 Buried flexible pipelines
• AS 2638 Sluice Valves for Waterworks Purposes
• AS 3952 Water Supply - DN80 Spring Hydrant Valve for General Purposes
• AS 3992 Pressure equipment – Welding and brazing qualification
• AS 4041 Pressure Piping
• AS/NZS 4129 Fittings for polyethylene (PE) pipes for pressure applications
• AS/NZS 4130 Polyethylene (PE) pipes for pressure applications
• AS 4458 Pressure Equipment - Manufacture
• AS/NZS 4765 Modified PVC (PVC-M) pipe for pressure applications
Queensland Department of Main Roads Standard Specifications

- MRTS 11.45 Road Surface Delineation

Water Services Association of Australia

- WSA 02 – 2011 – Water Supply Code of Australia
- WSA03 – 2002 Dual Water Supply Systems – Supplement to the Water Supply Code of Australia
- WSA01 – Polyethylene Pipeline Code
MATERIALS

S5.03 PIPES GENERAL

1. All materials used shall be listed on Council’s approved products register.

2. All pipes used for water main reticulation shall be constructed from the following materials:
   (i) Polyvinylchloride (PVC)
   (ii) Polyethylene (PE)
   (iii) Ductile Iron
   (iv) Copper
   (v) Stainless steel

S5.04 POLYVINYLCHLORIDE (PVC)

1. Unplasticised PVC (PVC-U) pipes shall be manufactured in accordance with AS/NZS 1477 by an Australian Standards quality endorsed company.

2. Modified PVC (PVC-M) pipes manufactured in accordance with AS/NZS 4765 by an Australian Standards quality endorsed company may be used as an alternative to uPVC.

3. Oriented PVC (PVC-O) pipes manufactured in accordance with AS 4441 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U.

4. PVC pipes 100mm diameter and greater to be Class 16 rubber ring jointed (Ductile iron compatible).

5. Rubber Rings shall be manufactured and tested in accordance with AS 1646. Jointing lubricant in accordance with the manufacturers specification should be used to facilitate jointing.

S5.05 POLYETHYLENE PIPE (PE)

1. Polyethylene pipe shall be manufactured in accordance with AS/NZS 4130 by an Australian Standards quality endorsed company.

2. PE pipes to be minimum PE100 PN16.

3. Fittings shall comply with AS/NZS 4129.

4. All pipes and fittings shall have a co-extruded solid colour of blue for potable water supply and lilac for non-potable water.

S5.06 DUCTILE IRON

1. Ductile Iron pipes shall be manufactured and cement lined in accordance with AS/NZS 2280 by an Australian Standards quality endorsed company. The actual lining material shall be approved by Council and be suitable for potable water.

2. Socketed pipes to be Class PN35 or where cover is less than minimum, then use the patented “Tyton” type rubber ring joint or approved equivalent. Flanged pipes to be Class PN45.
3. Flanges shall comply with AS 2129 Table C. Bolts and nuts for flanged joints shall be in accordance with AS 2129.

4. All pipes and fittings shall be wrapped in a loose polyethylene sleeving 0.25mm thick and coloured blue for potable water supply and lilac for non-potable. Wrapping and taping shall be carried out in accordance with the pipe manufactures recommendations.

S5.07 COPPER

1. Copper tube shall be a minimum standard of Type B seamless tube manufactured in accordance with AS 1432 by an Australian Standards quality endorsed company.

S5.08 STAINLESS STEEL

1. Stainless steel pipe is to be 316 stainless steel spiral wound pipe to a minimum of PN16.

2. Jointing of SS pipes at bends are to be undertaken by the contractor by welding onsite.

3. Welding is to be carried out in accordance with AS 4458 – Pressure equipment - Manufacture. Qualification of welding procedures and welders is to comply with AS 3992 Pressure Equipment – Welding and Brazing Qualification.

4. Weld arrangements for jointing of stainless steel pipe is to be full penetration butt welds in accordance with AS 4041 – Pressure Piping – Class 2A.

5. On site welds are to be ground smooth removing any slag and sharp projections that may damage the plastic sleeving, but in such a way as to maintain the welds integrity.

S5.09 BEDDING MATERIAL

1. Bedding Material shall consist of a clean coarse sand or recycled glass material free from organic matter, clay, shells and deleterious material with 100% passing the 6.7mm AS sieve and not more than 5% passing a 0.150mm AS sieve.

S5.10 VALVES

1. All Valves shall be manufactured in accordance with AS 2638 by an Australian Standards quality endorsed company.

2. Valves of 100mm diameter and larger, are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

3. All 50mm diameter valves shall be DR brass construction with appropriate pressure rating or approved equivalent and certified by QAS to Standards Mark or Water Mark. All valves shall be fitted with bronze tee handles.

S5.11 HYDRANTS

1. Hydrants shall be the spring hydrant "Maxi Flow" 2000 type (DN80) manufactured in accordance with AS 3952 by an Australian Standards quality endorsed company. Hydrants are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

S5.12 BENDS AND TEES

1. All bends for mains of 100mm diameter or larger and all other associated fittings shall be constructed in accordance with AS/NZS 2280, and have flanged or spigot and socket type joints as specified on the
approved Project Drawings. Where flanges are used, bolts shall be matched sets and conform to the following criteria:

i. In above ground uses, bolts shall be Hot Dipped Galvanised

ii. In below ground uses, bolts shall be Grade 316 Stainless Steel with nuts and washers Grade 304 stainless steel.

2. All bends, tees and miscellaneous fittings shall be factory nylon powder coated unless otherwise specified.

S5.13 PAVEMENT MARKING

1. The manufacture, supply and material requirements appropriate to the specification of pavement marking shall be in accordance with Main Roads Standard Specification "MRTS11.45 Road Surface Delineation".

S5.14 RAISED RETRO REFLECTIVE MARKING

1. Raised retroreflective pavement markers used to locate hydrants shall be blue bi directional markers.

2. The material requirements of the raised retroreflective pavement markers shall be in accordance with Main Roads Standard Specification "MRTS11.45 Road Surface Delineation".
CONSTRUCTION

S5.15 SETOUT

1. The location and sizes of the mains and position of valves and hydrants shall be as stated on the approved Project Drawings.

2. Bends shall be positioned such that the correct alignment is maintained and remains within the allotted service corridor.

3. Where levels are nominated on the approved Project Drawings the Contractor shall ensure the main is laid within the given tolerances and the equipment used to level the main is approved and tested.

4. The main shall be setout from an approved datum line set by a Registered Surveyor (Consulting). The datum line may be either the road centreline, property boundary, a pegged chainage offset line, or any alternative datum suitable for the purposes of accurately setting out the works.

5. The position of hydrants, fittings, valves and water service connections / conduits shall be located within 1.0m of the side property boundary.

S5.16 CLEARING AND GRUBBING

1. All clearing and grubbing works shall be in accordance with Specification S1 EARTHWORKS.

2. Any trees or obstructions not on the line of the pipes shall be preserved.

S5.17 TRENCHING

1. All trenching and foundation works necessary for the installation of the pipeline or thrust blocks, shall be in accordance with Specification S1 EARTHWORKS.

2. The width of trenching excavation shall be in accordance with the Standard Drawing S2016 at the trench base and comply with all regulations of Workplace Health and Safety Act.

3. In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

4. Where public utilities exist in the vicinity of water reticulation works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

5. The safety of the public shall be considered at all times. Where necessary, fenced walkways and vehicular crossways shall be provided across trenches to maintain access from carriageway to individual properties or within individual properties. All such installations shall be of adequate size and strength and satisfactorily illuminated.

6. In the event of any trenching being left open for longer than one week, the Contractor shall provide erosion control measures to ensure minimal soil disturbance and material loss off the site. Some or all of these measures shall be provided immediately upon the onset of rain with an open trench.

7. The Contractor shall leave a clear space of 600mm minimum between the edge of any excavation and the inner toe of spoil banks. No excavated materials shall be stacked against the walls of any building or fence without the written permission of the owner of such building or fence. Topsoil from excavations shall be kept separate and utilised to make good the surface after backfilling.
S5.18 CROSSINGS

1. Where a water main crosses a State Controlled Road Railway line or creek, the affected work shall be carried out in accordance with the requirements of the relevant Authority / Corporation. It shall be the Contractor's responsibility to complete written notification to the Authority / Corporation of the intention to carry out the work.

2. Where a water main crosses an existing road, the affected work shall be carried out in accordance with the requirements of Council. It shall be the Contractor's responsibility to notify Council of the intention to carry out the work.

S5.19 BEDDING

1. All pipes shall be uniformly bedded in order to ensure solid and uniform support for the full length of the barrel with bell holes formed to accommodate the sockets to ensure a minimum clearance of 20mm.

2. The depth of bedding shall be as detailed on Standard Drawing S2016 with the bedding material complying with the "Bedding Material" section of this Specification.

3. For Cairns Regional Council, With the exception of Cairns Regional Council, detector tape / marker wire shall be installed above all non-metallic pipe line at a minimum of 150mm below finished surface level.

S5.20 LAYING AND JOINTING OF PIPES

1. All contractors shall have undertaken a manufacturers pipe laying accreditation course.

2. All pipe lines shall be laid to such lines, curves, gradients and levels as shown on approved Project Drawings.

3. Care shall be taken to preserve uniform gradients and correct alignments. Bends shall be used to effect horizontal and vertical changes of direction.

4. The manufacturers recommendations for maximum deflection at each joint shall be strictly adhered to.

5. Jointing of pipes, valves and fittings is to be carried out to the manufactures recommendations and in accordance with Australian Standards.

6. When the joint is made, the witness mark shall at no point be more than 1mm from the end of the socket.

7. Before being laid, all pipes, fittings, valves, etc shall be cleaned and examined by the Contractor.

8. Approved plugs shall be used to prevent foreign matter entering sections of pipeline, which are left uncompleted overnight.

9. The Contractor shall take all necessary precautions to prevent flotation of pipes during laying, backfilling and initial testing. Any temporary supports shall be removed prior to completion of backfilling.

10. Pipes shall be cut as needed to suit closing lengths, to remove damaged pipe or fittings or to remove sockets if necessary when jointing a socketed fitting.

11. For field cuts, only an approved mechanical pipe cutter shall be used, except that uPVC pipes may be cut using a power saw or a fine toothed hand saw and mitre box.

12. Any pipes cut in the field shall have their ends prepared in accordance with the manufacturer's written instructions.
13. Where pipes are cut in the field, a witness mark shall be made on the pipe at the length specified by the manufacturer from the end of the pipe. Scoring of uPVC pipes shall not be permitted.

S5.21 CONNECTION TO EXISTING

1. Connections to existing pipes carrying water shall be made at such times as will cause the least interference with the supply. The Contractor shall arrange with the Council or other Authority / Corporation concerned for the timing of the work. All works shall be carried out by the relevant Local Authority at the applicants cost.

S5.22 FITTINGS

1. The laying and jointing of mains shall include the fixing in position of all valves of any description, fire hydrants and all other fittings, which are necessary for the completion of the mains.

2. Joints to secure fittings to pipes shall be approved under Australian Standard AS1646.

3. All sluice valves, gate valves, air valves and hydrants shall be carefully placed in the final position so as to be the correct distance from the surface and installed in accordance with Standard Drawings S2000, S2001 and S2005. With air valves and hydrants, risers shall be installed where necessary and if required, trenches shall be deepened and graded in the vicinity of all valves and hydrants in order to secure the correct depth below the surface.

4. Valves, hydrants and specials shall be thoroughly cleaned out prior to installation in main.

5. The spring hydrants shall be bolted to the flange of the hydrant junction so that the bolts of the hydrants are in line with the main, and the hydrant cover box fitted with its long axis along the centre line of the main. Hydrants must be protected during backfilling in such a manner as will prevent earth or grit from damaging the seating.

6. Hydrants and valves shall be fully protected during laying and backfilling, on completion all glands shall be well screwed down, and all valves shall operate freely.

S5.23 VALVE / HYDRANT MARKERS

1. The position of all stop valve, scour valve, air valve and hydrants shall be indicated by a kerb marker plate, painted kerb marker or marker post. The type of marker to be installed shall be as stated on the approved Project Drawings.

2. Where painted “H” symbol are required to indicated hydrants they shall be in accordance with Standard Drawing S2010.

3. Where a kerb marker plate are required to indicate valve and hydrant locations they shall be fixed to the kerb face it shall be in accordance with Standard Drawing S2010.

4. Where a timber marker posts are required to indicate valve and hydrant locations they shall be in accordance with Standard Drawing S2012.

5. Where a steel marker posts are required to indicate main, valve and hydrant locations they shall be in accordance with Standard Drawing S2011.

6. In addition to painted kerb markers / marker posts, all hydrants shall have a road pavement marker to indicate the location of the hydrant. The road pavement marker shall be either a painted teardrop or blue bi directional raised retro reflective pavement marker as stated on the approved Project Drawings.

7. Where a painted teardrop is specified the teardrop shall be painted with a solid yellow enamel paint and be 630mm overall length with 200mm radius base and a 25mm radius tip. The teardrop shall be painted
across the centreline of a two-lane road or in the middle of the near side lane of a multi-laned road. The tapered end of the teardrop shall point towards the relevant hydrant.

8. Where a blue bi-directional raised retro reflective pavement marker is specified it shall be fixed securely to the road pavement 100mm offset from the centreline of the road on the side of hydrant. On two lane roads, the marker is to be positioned on the road centreline. For multi-lane roads, it is to be positioned on the lane line between the first and second lane.

9. The installation requirements of and pavement makings and raised retroreflective pavement markers shall be in accordance with Main Roads Standard Specification “MRTS11.45 Road Surface Delineation”.

S5.24 ANCHOR BLOCKS

1. Where a main is installed at a grade of 1 in 6 or steeper, concrete anchor blocks shall be provided in accordance with Standard Drawing S2016.

2. Concrete works shall comply with Specification S7 CONCRETE WORKS.

S5.25 THRUST BLOCKS

1. Thrust blocks shall be constructed where shown on the approved Project Drawings. The blocks shall be provided at valves, bends, tees, enlargers and reducers or any other point where unbalanced forces resulting from internal pressures will occur.

2. Thrust blocks, sized in accordance with the requirements detailed on Standard Drawing S2015.

3. Concrete works shall comply with Specification S7 CONCRETE WORKS.

4. Chains will not be accepted as an alternative to straps.

S5.26 WATER SERVICE CONNECTIONS

1. Water service connections shall be constructed where shown on the approved Project Drawings in accordance with and to the satisfaction of the relevant Local Authority.

2. All services shall be left turned off at the ferrule following testing.

3. Install brass kerb markers in the kerb, stamped with a “W” at locations where water services cross roads.

S5.27 BACKFILLING AND COMPACTION

1. Material for the side support and overlay of the pipe shall comply with the pipe bedding material specification. The material shall be compacted in layers of not more than 150mm to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289. Flooding of non-cohesive material shall be considered as an acceptable method of compacting bedding material.

2. The remainder of the excavation shall be backfilled with excavated material. The backfill shall be compacted in layers of not more than 150mm thick to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289. Flooding of cohesive material shall not be permitted as a means of compacting backfill.

3. Backfilling and compaction shall be carried out without damaging the pipe or its external coating or wrapping or producing any movement of the pipe.
4. Where trenches are under constructed pavements or in other situations where required, the material used for backfilling shall be approved excavated material with linear shrinkage of the fines passing a 2.36mm sieve of not greater than 6 per cent. The Contractor may elect to use imported, select fill or sand for this purpose. The backfill shall be spread in layers not exceeding 300mm in loose depth at or near optimum moisture content and compacted using mechanical vibration equipment.

5. Backfill material down to a depth of 300mm below the underside of the pavement material shall be compacted to 98 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289, and backfill material below such depth shall be compacted to not less than 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289.

6. In cases other than those covered by the above clause backfilling above the level of 300mm above the top of the pipes in open trenches may be carried out by dumping from mechanical plant into the trench providing that no rock is placed in the trench until the pipes are covered by at least 300mm of soil backfill.

7. Compaction testing shall be carried out at a rate of 1 test for each 150 metres of trench backfilled or in the case where trenches are constructed under road pavements and road shoulders, 1 test for each 25 metres of trench backfilled.

S5.28 RESTORATION OF SURFACES

1. Pavements, lawns and other improved areas shall be cleaned and left in the same order as they were at the commencement of the works. Lawns shall be restored with turf cut and set aside from the original surface and / or with imported turf.

2. All restored surfaces shall be maintained in the condition to which they are restored until the expiry of the Defects Liability Period applicable to those surfaces. Pavements shall be maintained with crushed metal, gravel or other suitable material allowing for consolidation and shall then be restored to a condition equivalent to that of the original pavement.

3. Immediately the backfilling of a trench excavated through a pavement has been completed, the pavement shall be temporarily restored. Where the trench crosses bitumen or concrete pavement, a pre-mixed asphaltic material shall be used for such temporary restoration. Temporary restoration works shall be maintained by the Contractor until final restoration is carried out.

4. Final restoration of the pavement shall be carried out to restore the pavement and its sub-base to no less than the original condition. Unless noted otherwise on the approved Project Drawings all trenches excavated through bitumen or concrete pavement shall be sawcut each side to facilitate a neat finish to the final restoration. Final restoration may include, if required, the removal of temporary restoration.

5. Backfill shall be placed sufficiently high to compensate for expected settlement and further backfilling shall be carried out or the original backfill trimmed at the end of the Defects Liability Period in order that the surface of the completed trench may then conform to the adjacent surface. Surplus material shall be removed and disposed of to areas arranged by the Contractor.

6. In locations where surplus material left in the vicinity of the trench would not be objectionable, the surplus material may be disposed by spreading neatly in the vicinity of the trench in such a way as to minimise future erosion of the backfill and adjacent ground surfaces. The Contractor shall maintain the backfill and adjacent ground until the end of the Defects Liability Period.

7. Where, within public or private property, the reasonable convenience of persons will require such, trenches to be levelled off at the time of backfilling. Any subsequent settlement shall be made good by the Contractor, as required by placing additional fill.

8. Where shown on the approved Project Drawings or where the Contractor elects to tunnel under paving, kerb and gutter or other improved surfaces in lieu of trenching, backfilling shall be so carried out as to restore full support to those surfaces. The Contractor shall remain responsible for the repair of the
improved surfaces, if subsequently damaged due to subsidence of the backfill, until the end of the Defects Liability Period.

S5.29 TESTING OF LINES

1. Hydrostatic pressure testing of all water mains shall be carried out prior to the acceptance of the works.

2. The contractor shall have carried out a successful test prior to arranging a Council witness test.

3. Pressure testing shall not be carried out during wet weather unless otherwise approved by Council.

4. Before testing a pipeline section, it shall be cleaned and filled slowly with water, taking care that all air is expelled.

5. The minimum test pressure acceptable shall be 1200 kPa unless advised otherwise by the relevant Local Authority and shall be considered to be satisfactory if:

   (a) There is no failure of any thrust block, anchor block, pipe, fitting, valve, joint or any other pipeline component;
   
   (b) There is no visible leakage; and
   
   (c) There is no loss of pressure in the 15 minute test period

6. The specified test pressure shall be maintained as long as required, while the whole section is examined, and in any case not less than 15 minutes.

7. Any failure, defect, and/or visible leakage, which is detected during the pressure testing of the pipeline or during the Defects Liability Period shall be made good by the contractor and re-tested.

S5.30 FLUSHING & DISINFECTION

1. Preliminary Flushing

   The entire new main is to be flushed until it is clean and clear

2. Disinfection (if directed)

   If directed by Council, disinfection of the entire new main is to be carried out using a sodium hypochlorite solution or other chlorine bearing agent. The dosing rate is to be 20mg/L with a contact time of 24 hours. During such time all fittings, valve and hydrants should be operated to ensure all parts are being disinfected.

3. Flushing of Disinfection Water

   After disinfection, the treated water is to be flushed from either end until the chlorine content does not exceed 1.0mg/L. Disinfection water is not permitted to enter the reticulation system or be discharged to the stormwater drains or waterways.

4. Testing

   Upon completion of the flushing and disinfection process, water samples are to be taken for testing by a Council approved testing authority. The samples are to be tested for E-coli, Total coliform and Heterotrophic Plate Count.
S5.31 TOLERANCES

1. Tolerances for the construction of water reticulation works shall comply with Table S5.1.

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APPENDIX A

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## APPENDIX A – Amendments to Standard Drawings - SEQ Water Supply Code - Standard Drawings

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APPENDIX B

Dual Water Supply Systems

Version 1.2 WSA 03-2002

Amendments to Standard Drawings
## APPENDIX B - Dual Water Supply Systems Version 1.2 – WSA 03-2002
### Amendments to Standard Drawings

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FNQROC DEVELOPMENT MANUAL

SPECIFICATION

S8

LANDSCAPING

Version No. 03/17

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GENERAL

S8.01 SCOPE

1. This specification details all requirements pertaining to Tree Planting, Grassing, Turfing, Hydromulching and Irrigation works associated with permanent and temporary revegetation works.

2. Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

S8.02 REFERENCE DOCUMENTS

Note: Where Acts or reference documents are updated, reference should be made to the current version.

Australian Standards

- AS 1432 Copper tubes for plumbing, gasfitting and drainage applications
- AS 1477 PVC pipes and fittings for pressure applications.
- AS 2032 Code of Practice for Installation of UPVC pipe systems.
- AS 2303 Tree Stock for Landscape Use
- AS 2507 The storage and handling of pesticides.
- AS 3785 Solvent cements and priming fluids for use with UPVC pipes and fittings.
- AS 4419 Soils for landscaping and garden use
- AS 4454 Composts, soil conditioners and mulches.

Crime Prevention through Environmental Design (CPTED) guidelines for Queensland Part A.
MATERIALS

S8.03 Grass Seeding

1. The grass seeding species mix shall consist of the following:
   a. 30% Cynodon Dactylon (green couch) - hulled
   b. 30% Cynodon Dactylon (green couch) - unhulled
   c. 30% Axonopus Affinis (carpet grass)
   d. 10% (Tetila Rye (in dry season)  (Japanese Millet (in wet season)

2. The accepted final mix shall be dependent upon local conditions, soil properties, and method of works.

S8.04 Turfing

1. Turf shall consist of 25mm depth of dense, well rooted, vigorous grass growth with 25mm depth of topsoil. It should be free from any material toxic to plant growth, declared weeds, seeds or roots including nut grass and oxalis. The soil attached to the turf shall be free from rubbish, sticks and other deleterious material.

2. The turf shall be supplied as rolls in long lengths of uniform width, not less than 300mm, and shall be in sound unbroken condition.

3. The moisture level in the cut turf should be kept relatively consistent so that it is not saturated or severely dried out when laying. Both of these situations can cause turf to fall apart during laying.

4. The type of grass turf to be used shall as stated on the approved Project Drawings, where not stated broad leaf buffalo shall be used for un-irrigated areas and couch for irrigated areas.

5. Acceptable species for this region are as follows:
   a. Axonopus compresus (Broad leaf buffalo)
   b. Digitaria didactyia (Blue Couch)
   c. Cynodon dactylon (Bermuda Couch / Green Couch).

S8.05 Hydromulch

1. The hydromulching mixture shall consist of the following:

   Mulch
   Pulped Paper / Bagasse or Cane fibre

   Fertiliser
   Broad spectrum type CK55 or equivalent.

   Seed
   33% Cynodon Dactylon (Green Couch) - hulled
   33% Cynodon Dactylon (Green Couch) - unhulled
   33% Axonopus Affinis (Carpet Grass)
**Water**

Water used to establish and maintain the grassing shall have a pH of between 5.0 and 8.0, a total soluble salts concentration less than 1000mg/l and contain no chemicals or compounds toxic to growth.

**Binder / Tackifier**

Binder is to be non-toxic, inert, water soluble and non-flammable, eg. Curasol or equivalent.

Tackifier is be a non-toxic and biodegradable eg Envirotack or equivalent.

### S8.06 PLANT STOCK

1. All trees sourced for any landscaping on any existing and future Council managed land must comply with Australian Standard AS2303 – Tree Stock for Landscape Use.

2. All plant species shall be as detailed on the approved Project Drawings. There shall be no substitution of any species without Council approval.

3. All palms, trees, shrubs and groundcovers shall be true to name. The root system of each plant shall be conducive to successful transplantation, all specimens shall be free from pests and disease, especially Phytopthera, palm beetle, sooty mould and scale, and all containers shall be free from pernicious weeds.

4. All plants shall be grown in containers and shall comply with the following minimum size requirements:
   a. Trees - 25 litre /300mm container for street tree planting
   b. Trees - 45 litre container for medians, tree guards, traffic islands and roundabouts
   c. Single stemmed palms - 45 litre container
   d. Clumping Palms - 45 litre container
   e. Shrubs - 200mm container
   f. Groundcovers – 140mm container.

5. Plants shall be watered before transportation to the planting site, and shall be delivered to the site in a covered vehicle or where transporting large trees, the tree/s shall be covered adequately to prevent sun and wind scorch/burn. During loading and unloading damage in handling shall be avoided.

6. Species identified in the following are prohibited from use:
   a. Biosecurity Regulation Schedule 4 Category 3 Restricted Matter: Section 13 part 1 Invasive Plants,
   b. Species identified in the Local governments Biosecurity Plans, and
   c. Publication “Agricultural and Environmental Weeds – Far North Queensland” (Wet Tropics Management Authority and Department of Natural Resources and Mines

### S8.07 SOIL MIX

1. A good quality landscaping soil mix shall be imported from an approved source to the planting site for backfilling the planting pits.

2. Specification for the landscaping soil mix are as follows:
   a. It shall contain approximately 70% sandy loam and 30% composted or mature organic matter;
   b. It shall be friable and not contain any clay;
   c. The pH shall be between 5.5 and 7.0;
   d. It shall be free from contaminants such as the seed of declared weeds, rocks sticks and salts;
 LANDSCAPING
  e. It shall not contain any chemical fertilisers.
S8.08 FERTILISER

1. Fertiliser shall conform to the requirements stated in Table S8.01.

Table S8.01 Fertiliser Types

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<td>(Complete lawn fertiliser)</td>
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<td>P 6 to 9</td>
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<td>K 10 to 20</td>
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<tr>
<td>Turfing</td>
<td>Inorganic</td>
<td>Surface broadcast</td>
<td>N 15 to 24</td>
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<tr>
<td>(Complete lawn fertiliser)</td>
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<td>P 6 to 9</td>
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<td>K 10 to 20</td>
</tr>
<tr>
<td>Tree Planting</td>
<td>Organic or</td>
<td>Organic based</td>
<td>N 15 to 25</td>
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<tr>
<td>(Controlled Release Fertiliser)</td>
<td></td>
<td>fertiliser and water</td>
<td>P 3 to 9</td>
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<td>gell crystals, mixed</td>
<td>K 5 to 18</td>
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<td>into backfill as per</td>
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<td>structure and texture.</td>
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<td></td>
<td>Organic or</td>
<td>Granular</td>
<td>N 18 to 25</td>
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<tr>
<td>Planting Beds</td>
<td>Inorganic</td>
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<td>P 3 to 7</td>
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<tr>
<td>(Controlled Release Fertiliser)</td>
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<td>K 9 to 18</td>
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S8.10 IRRIGATION PIPEWORK

1. All below ground pipework shall be unplasticised Poly-vinyl Chloride (uPVC) unless otherwise approved. All pipes shall be Class 12 minimum with Class 18 fittings.

2. All above ground pipe work shall be copper tube (hard drawn) Type D manufactured in accordance with AS 1432 by an Australian Standards quality endorsed company.
1. Prior to grass seeding all weeds shall be killed by spraying a suitable glyphosate based herbicide. Sprayed areas shall remain undisturbed for two weeks.

2. Prior to grass seeding the ground surface shall be lightly tyned to a depth of 100mm below finished surface levels. All large stones, rubbish and other materials that may hinder germination shall be removed before topsoiling.

3. Topsoil shall be uniformly applied to provide an average thickness of 75mm with a minimum compacted thickness of 40mm at any location and graded to even-running contours, so that no ponding or waterlogging occurs across the surface of the grassed area.

4. Grass seeding applied by drill seeding at the minimum rate of 50kg per hectare using the species mix specified.

5. Fertiliser should be applied following seeding at a minimum rate of 350kg per hectare, subject to specific site conditions, soil analysis and desired outcomes.

6. Seed and fertiliser should be applied at an even rate using a calibrated disc drill seeder followed by a chain and roller.

7. Discs should cut approximately 12mm and create enough friable material for chains to cover the seed.

8. Where one pass fails to develop enough friable material a second pass should be made in a transverse direction.

9. Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the following minimum requirements:

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<thead>
<tr>
<th>Periods after grassing</th>
<th>Watering(s)</th>
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</thead>
<tbody>
<tr>
<td>Immediately</td>
<td>Once</td>
</tr>
<tr>
<td>Week 1</td>
<td>Twice / day during hot dry windy periods</td>
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<tr>
<td></td>
<td>Once / day during cool / overcast periods</td>
</tr>
<tr>
<td>Weeks 2</td>
<td>Once / day</td>
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<tr>
<td>Weeks 3 &amp; 4</td>
<td>Once every second day</td>
</tr>
<tr>
<td>Week 5 until necessary</td>
<td>Twice a week</td>
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</tbody>
</table>

or as necessary to ensure 80% minimum strike rate.

10. Acceptance shall be the achievement of a minimum vegetative cover of 80% of both the annual and perennial grass cover over the whole area. Grassed areas shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material. Maximum deviation from finished ground levels 50mm in any 2 metres.
S8.12 TURFING

1. Prior to turfing all weeds shall be killed by spraying a suitable glyphosate based herbicide. Sprayed areas shall remain undisturbed for two weeks.

2. Topsoil shall be uniformly applied to provide an average thickness of 50mm with a minimum compacted thickness of 25mm at any location and graded to even-running contours, so that no ponding or waterlogging occurs across the surface of the grassed area.

3. The prepared surface shall be watered within twenty four (24) hours prior to turfing at an application rate of 10mm of water in not less than 1 hour. Watering is to be carried out in such a way as not to cause any scouring or erosion.

4. After watering an approved lawn pesticide shall be applied at the rate specified by the supplier and in accordance with the Agricultural Chemicals Distribution Contract Act and Regulations.

5. Fertiliser should be applied prior to laying turf at a minimum rate of 350kg per hectare, subject to specific site conditions, soil analysis and desired outcomes.

6. Topsoil shall be raked before turf is laid. Turf shall be laid in straight lines with staggered cross joints on the general line of the contour of the slope. The gaps between adjacent sections of turf should not exceed 5mm.

7. A light top dressing shall be worked into the open joints between the turf and then the turf lightly rolled with one pass of a roller weighing about 80kg on a 1m width of roller.

8. On steep slopes turf may be held in position by softwood pegs or stakes, located at each end of the turf sections.

9. Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the following minimum requirements:-

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<thead>
<tr>
<th>Periods after grassing</th>
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</thead>
<tbody>
<tr>
<td>Immediately</td>
<td>Once</td>
</tr>
<tr>
<td>Week 1</td>
<td>Once every second day</td>
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<tr>
<td>Weeks 2, 3 and 4</td>
<td>Three times each week</td>
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<tr>
<td>Weeks 5 to 12</td>
<td>Twice a week</td>
</tr>
</tbody>
</table>

10. Acceptance shall be the achievement of an even green colour with a dense continuous sward over the whole area. Turf shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material. Maximum deviation from finished ground levels 50mm in any 2 metres.

S8.13 HYDROMULCHING

1. Prior to hydromulching all weeds shall be killed by spraying a suitable glyphosate based herbicide. Sprayed areas shall remain undisturbed for two weeks.

2. Batter slopes less than 20% shall then be lightly tyned to a depth of 100mm to produce a loose surface and all large stones, rubbish and other materials that may hinder germination shall be removed before topsoiling.

3. Where batters have been stepped, the steps shall be loosely filled with topsoil. Elsewhere, topsoil shall be uniformly applied to provide an average thickness of 75mm with a minimum compacted thickness of 40mm at any location.

4. Dry surfaces shall be watered by a fine spray before the application of the hydromulch.
5. The slurry mixture of mulch, binder, fertiliser and seed is to be kept in a homogenously mixed state throughout the mulching operation.

6. During preparation of the hydromulch, a liquid form pesticide may be added to the storage tank, to facilitate surface application. Application rate should be in accordance with the manufacturer’s recommendation.

7. Additional protective treatments (eg. fibre matting, anionic bitumen emulsion etc) shall be as specified on the approved Project Drawings.

8. Hydromulch shall not be applied under the following weather conditions at the site:
   a. when temperature is higher than 35°C
   b. when winds exceed 15 km/hr;
   c. where the surface is too wet or
   d. during rain periods or when rain appears imminent.

9. The rate at which the mulch is applied is dependent on slope shall be in accordance with Table S8.02.

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<thead>
<tr>
<th>Table S8.02 Hydromulching Material and Application Rates (per 1000m²)</th>
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</thead>
<tbody>
<tr>
<td>Slope</td>
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<tr>
<td>Pulped Paper</td>
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<tr>
<td>Bagasse (Wet weight)</td>
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<tr>
<td>Cane Fibre (Alternative to Bagasse)</td>
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<tr>
<td>Fertiliser</td>
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<tr>
<td>Seed</td>
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<tr>
<td>Water</td>
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<tr>
<td>Binder</td>
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<tr>
<td>Curasol</td>
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<tr>
<td>Envirotack</td>
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<tr>
<td>Mulch Thickness</td>
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</tbody>
</table>
11. Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the following minimum requirements:

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<tr>
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</tr>
</tbody>
</table>

or as necessary to ensure 80% minimum strike rate.

12. A follow up fertiliser treatment is to be applied to 4 – 6 weeks after germination has occurred. Fertilisation should be with a product that provides for the following elements: Nitrogen (N) 13%, Phosphorus (P) 4% and Potassium (K) 12%.

13. Acceptance shall be subject to the achievement of a minimum vegetative cover of 80% of both the annual and perennial grass cover over the whole area. Hydromulched areas shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material.

**S8.14 PLANTING**

1. Planting shall be carried out as soon after delivery to the site as possible. All containers, unless fully biodegradable, shall be removed at the latest point before planting.

2. All plants shall be obtained from a nursery located in an area having a similar climate to the site of the Works.

3. Shrub and ground cover planting to verges and traffic islands etc. shall be as detailed on the approved Project Drawings and unless otherwise specified the planting beds shall be in accordance with Standard Drawing S4210.

4. Prior to planting all weeds shall be killed by spraying a suitable glyphosate based herbicide. Sprayed areas shall remain undisturbed for two weeks.

5. Street trees shall be planted at the locations as shown on the approved Project Drawings.

6. During backfilling around the plants the soil shall be lightly firmed to ensure intimate contact with the roots, but with large material successive layers of soil will need to be firmed as backfilling proceeds.

7. Ensure the plants are held securely by the soil but not so that moisture penetration of the soil is restricted. After planting, damaged, dead, diseased or crossing branches shall be removed by pruning.

8. Plants should be watered directly after planting prior to spreading of mulch. The mulch shall be left just clear of the plant stem.

9. To ensure establishment all trees shall be appropriately staked with hardwood or recycled plastic stake, extending into the ground to a depth of 500mm. Do not allow the stake to penetrate the root ball. Tree to be loosely supported from each stake by hessian tree tie. Refer Standard Drawing S4210 for details.
10. Mulch shall be aged hardwood woodchip, stockpiled for a minimum of 6 weeks, free from rocks, non-biodegradable and toxic material. In paved footpath planters it shall be installed to a depth of 75mm, in tree guards, traffic islands and mulched, mass planted garden beds within parkland and reserves to a depth of 150mm depth.

11. Natural Forest mulch to be used in “natural” planting areas only, such as buffer planting or parkland planting. It should be installed to a minimum 150mm compacted depth, free from rocks, nut grass, and any other invasive weed.

12. Tea-tree mulch is prone to combustion and shall not be used unless permission is obtained from Council.

13. All plants shall be watered, immediately upon planting, and as required by soil moisture conditions for the first thirteen weeks. The use of slow release drip irrigation watering is recommended.

14. Weed and grass growth in mulched areas shall be killed by treatment with herbicide in accordance with the manufacturer's instructions at monthly intervals during the construction period and contract maintenance period. Contact of the herbicide with the new plants shall be avoided and any damage repaired or damaged plant material replaced.

15. Acceptance shall be subject to achieving the following criteria. Plants, which do not meet the acceptance criteria, shall be replaced. Replacement plants shall be of similar size and quality and of identical species and variety to the plant being replaced.
   a. Plants shall exhibiting signs of healthy growth,
   b. Plants shall be well formed,
   c. Plants shall be free from disease or insect pests,
   d. Plants shall be free of physiological disease symptoms (yellowing, wilting etc)
   e. Mulch shall be free from weeds, sticks, rubbish and other deleterious material,
IRRIGATION

S8.15 GENERAL
1. Application shall be made to Council for connection of irrigation systems to the water main for all landscaping of Council assets that require irrigation. The Contractor shall arrange with the Council for the timing of the work. All works shall be carried out by the relevant Local Authority at the applicants cost.

2. The Applicant will be responsible for the payment of all water used during construction, testing, establishment and maintenance of the irrigation system and landscape works.

S8.16 EXCAVATION
1. Do not excavate by machine within 500mm of existing underground services.

2. The standard width of trench for pipes shall be 150mm.

3. Unless noted otherwise on the approved Project Drawings or directed by Council all pipe work is to be installed with a minimum cover of 350mm.

S8.17 LAYING OF PIPES
1. All pipe work to be bedded in clean fill sand with a minimum cover of 50mm all round.

2. Special precautions are to be taken to exclude dirt, sand, grit or gravel from entering pipelines.

3. The open ends of pipes shall be plugged at the end of the day's work to prevent entry of water or mud.

S8.18 PRESSURE TESTING
1. All work shall satisfy a test pressure of the nominated working pressure for a period of two (2) hours. The test shall be carried out during the coolest part of the day. The point at which the test pressure is measured shall be at the lowest point in the profile of that section of main under test.

2. All tests shall be carried out under the supervision and in the presence of the Council Inspector.

3. Any defects that arise during the tests shall be repaired in an approved manner. Any leak however small will be classed as a defect. All such repair work shall be similarly tested and approved before acceptance.

4. The Contractor shall give 48 hours notice to Council so that arrangements can be made for supervision of the testing.

5. The Contractor shall accept all risks and expenses incurred during testing and shall provide all labour together with all pumps, engines, pipes, temporary valve plugs, flanges and all other equipment as may be necessary to undertake testing.

S8.19 FLUSHING
1. After pressure testing has been carried out the new pipework shall be flushed as thoroughly as possible with the available water pressure.
S8.20 CONTROLLERS

1. All Council landscaped areas, which require irrigation systems shall be controlled by electrically, operated solid state controller.

S8.21 FILTRATION

1. All irrigation systems shall be fitted with an approved flow strainer installed in a secure enclosure.

S8.22 VALVES

1. Electrically actuated solenoid valves shall have flow control, manual bleed screw, 24 VAC solenoid, Buna N diaphragm, and be constructed of PVC and stainless steel. They shall be suitable for direct burial and have 150 psi maximum working pressure. They shall be pressure regulating solenoid valves.

2. Isolation valves shall be of bronze construction and of the BSP screwed gate type as approved by the engineer. They shall be installed on the supply side at every solenoid valve to enable isolating.

3. Protective valve boxes are to be provided for each solenoid valve. They shall be constructed of green high density polyethylene, be 450 x 300 x 300mm in dimension, and have a lockable lid with the word "Irrigation" clearly marked on it.

4. The wiring from the solenoid to the controller shall be laid in conduit and shall be of 250 volt grade and shall be installed to approved standards. The wiring shall be located with all pipework.

5. All solenoid valves shall be connected to controller by 0.05mm² solid core wire and to have seven insulated cores within a common plastic protective shield. It shall be similar in all respects to RIS multi-core 7/0.5mm electrical control wire and shall be continuous between valve and controller, and valve to valve. An additional one metre length of cable shall be provided at each wire termination. Cable shall be sized for voltage drop not exceeding four (4) volts over total route length.

S8.22 BACKFLOW PREVENTION DEVICES

1. All Council landscaped areas, which require irrigation systems, shall have a backflow prevention device installed. This device should comprise of a stand constructed fully from hard drawn copper pipe (Type D) and should have an inline strainer both before and after the backflow preventer. This should comply with AS 2845.

S8.23 PERFORMANCE TEST

1. On completion of the installation the system shall be tested in the presence of a Council Inspector.

2. The system shall be operated to demonstrate that all components function as required by the design.

3. The Contractor is responsible for making all necessary alterations to the system so that the performance is in accordance with the design specifications.
S8.24 BACKFILLING OF TRENCHES

1. Trenches shall be backfilled with the excavated material. If the excavated material is considered unsuitable for backfilling by the Council Inspector, it shall be removed from the site and replaced with clean approved backfill material.

2. All trenches so backfilled shall be compacted and lightly raked to ensure that surface levels marry with adjacent surface levels, are free draining and free from mounds or depressions. All rocks or evidence or excavated subgrade shall be raked up and removed.
## Concrete 1

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Concrete 1  
Specification G15

1.0 General

1.1 Scope of Specification

This Specification applies to plain and reinforced concrete work.

1.2 Standards

Subject to this Specification:
- the construction of concrete structures and members shall satisfy the requirements of AS 3600, "Concrete Structures";
- the design, fabrication, erection and stripping of formwork shall satisfy the requirements of AS 3610, "Formwork for Concrete".

1.3 Inspection

The Contractor shall give the Superintendent not less than 1 working day's notice so that an inspection can be made of the following work:
- foundations;
- completed formwork;
- reinforcement fixed in place;
- placing of concrete.

2.0 Formwork

2.1 General

The Contractor shall design, fabricate, erect and strip formwork.

2.2 Project Documentation Information

2.2.1 General

Refer to Section 2 of AS3610.

2.2.2 Minimum Formwork Stripping Times

Refer to Clause 2.5.4 of this Specification.

2.2.3 Stacked Materials

Stacked material shall not be placed on newly placed concrete work without the prior knowledge of the Superintendent.

The loading from stacked materials shall not exceed 4.0 kPa.

Materials shall not be stacked on newly placed concrete in the following circumstances:
- in multistorey construction where the lowest level of formwork has been stripped;
- stacked materials consisting of sand, pallets, etc. which can cause deformation between the shores;
- stacked materials which can induce concentrated loads on the concrete surface remote from the support shores.
2.2.4 Multistorey Formwork
Refer to Clause 2.5.2 of this Specification.

2.2.5 Restraint of Formwork
Formwork shall not be braced against previously cast concrete. Framed bracing shall be constructed between formwork supports.

2.2.6 Sequence of Pours
Refer to Clause 4.8.4 of this Specification.

2.2.7 Construction Joints
Refer to Clause 4.8.7 of this Specification.

2.2.8 Propping Requirements Composite Construction
Refer to Section 11 of AS 2327.1, "Composite Structures, Part 1: Simply Supported Beams".

2.2.9 Cambers for Slabs and Beams
Refer to the Drawings for details of cambers.

2.2.10 Design Loads for Permanent Structure
Refer to the Drawings for design loads for permanent structures.

2.2.11 Inserts and Penetrations
Inserts or penetrations not specifically detailed on the Drawings shall not be made without the approval of the Superintendent.

2.2.12 Foundation Information
Geotechnical information held by the Principal associated with the foundation design for the permanent structure shall be made available by the Superintendent to the Contractor on request. The Contractor shall be responsible for his interpretation of this information.

2.2.13 Permanent Formwork
Formwork that is required to remain permanently in the structure shall be incombustible and shall be free from calcium chloride.

2.2.14 Critical Face of Elements
The critical face shall be the surface exposed to view.

2.3 Surface Finishes

2.3.1 General
Refer to Section 3 of AS 3610.

2.3.2 Classes of Surface Finish
The following surface finishes shall be achieved:
- areas subject to close scrutiny (ie complete building facades, visible areas of bridgeworks etc) - 2C;
- areas viewed as a whole (eg carparks, basement walls, bridgework not readily visible etc) - 3;
- areas concealed from view (backs of retaining walls, insides of tanks or surfaces with an applied finish) - 4;
- totally concealed areas where the only requirement is structural adequacy (ie footings etc) - 5.

2.3.3 Colour Control of Untreated Surfaces
The concrete shall be grey in colour and shall comply with the tonal variations of AS 3610. Concrete designated to be with colour control shall comply with the following requirements:
- cement shall always be the same type;
- cement content shall not be less than 330 kg/m³;
- aggregates shall come from the same source;
- pozzolans, used as additives, shall come from the same source.

2.3.4 Test Panels

Refer to Clause 3.6 of AS 3610.

Each test panel shall be a minimum of 2 metres by 1 metre with construction details that contain an accurate representation of the finished work.

The test panel shall be used in evaluation of the final work.

2.4 Structural Design and Documentation

Refer to Section 4 of AS 3610.

All formwork documentation required in accordance with AS 3610, shall be supplied by the Contractor to the Superintendent prior to construction for direction on whether the documentation is suitable.

2.5 Construction

2.5.1 General

Refer to Section 5 of AS 3610.

2.5.2 Multistorey Formwork

Backpropping of multistorey formwork systems shall be in accordance with the requirements of AS 3600 and AS 3610 provided that the following criteria are complied with:

- the minimum number of levels of undisturbed supports to be in place during the time of each pour on a floor shall be in accordance with the Table below;
- if backpropping is to be done, the number of levels of the supports in the Table shall be increased by one;
- backpropping may be done only on the lowest set of formwork and it shall not be commenced until 2 days after the pour;
- the service load divided by the slab self weight shall be greater than 1.8;
- there shall be NO stacked materials on any of the floors;
- the time between pours of successive floors shall be not less than 5 days;
- the average ambient temperature shall be not less than 5°C;
- reshoring shall not be carried out;
- the proposed method of backpropping has been notified to the Superintendent.
### TABLE FOR MULTISTOREY FORMWORK - MINIMUM NUMBER OF LEVELS OF UNDISTURBED PROPS

<table>
<thead>
<tr>
<th>Time Between Pours of Successive Floors, Days</th>
<th>Minimum Number of Levels of Supports in Use, Average Ambient Temperature, °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5 10 15 20 25</td>
</tr>
<tr>
<td>7</td>
<td>4 4 3 3 3</td>
</tr>
<tr>
<td>11</td>
<td>3 3 2 2 2</td>
</tr>
<tr>
<td>14 or more</td>
<td>3 2 2 2 2</td>
</tr>
</tbody>
</table>

**2.5.3 Maintenance of Forms**

All formwork shall be cleaned before use or re-use.

Temporary openings shall be provided at the base of column and wall forms where necessary to facilitate cleaning and inspection. All forms shall be clean and free from foreign matter immediately before concrete is placed.

The interior surfaces of forms shall be treated with a release agent to prevent adhesion of mortar. Release agents shall be of non-staining type and shall be applied in a thin film before the reinforcement is placed. The reinforcement shall not be allowed to come in contact with the release agent.

Any reinforcement in contact with the release agent shall be thoroughly cleaned to remove all traces of the release agent or shall be removed and replaced by new reinforcement. Any surplus moisture shall be removed from the forms before concrete is placed.

Any formwork bolts that are to be removed from the concrete shall be coated with a concrete retarder and shall be arranged so that they can be extracted without excessive jarring or hammering and without injury to the concrete surface.

**2.5.4 Formwork Stripping**

The Contractor shall give the Superintendent not less than one working day’s notice before stripping formwork and assemblies.

Refer to Section 5.4 of AS 3610.

Notwithstanding anything to the contrary in Section 5.4 of AS 3610, the minimum formwork stripping times shall be:
MINIMUM STRIPPING TIMES

<table>
<thead>
<tr>
<th>Member Type</th>
<th>Member</th>
<th>*Effective Span mm</th>
<th>Minimum Stripping Time (Days) For Average Air Temperature During Period Prior to Stripping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>20°C and over</td>
</tr>
<tr>
<td>Vertical, unloaded</td>
<td>Wall, column, beam side slab side</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Vertical, loadbearing</td>
<td>Wall, column or loadbearing structure</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Horizontal</td>
<td>Slab</td>
<td>Under 3000</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000-6000</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 6000</td>
<td>14</td>
</tr>
<tr>
<td>Horizontal</td>
<td>Beam</td>
<td>Under 3000</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3000-6000</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21</td>
<td>28</td>
</tr>
</tbody>
</table>

* Effective span is the maximum distance between supports (either temporary or permanent).

2.5.5 Slip Formwork

Where moving formwork is used, it shall be constructed and operated by personnel experienced in the system.

During concreting the moving forms shall proceed at an average rate of 350 mm per hour. If the Contractor wishes to use a different rate the Contractor shall demonstrate that such a rate can produce a finished structure of the quality and appearance specified. The height of the forms shall not exceed 1200 mm.

The facing of the forms shall be correctly tapered and shall be free from defects that might cause scoring of the fresh concrete at the slip surfaces. The decking system shall be capable of supporting, without excessive deflection, a superimposed load of 5 kPa. Allowance shall be made for impact loading on the deck.

The method of lifting the forms during construction shall be submitted to the Superintendent with the Formwork Drawings.

The Contractor shall take precautions to prevent the formwork’s jamming against the concrete when the formwork is left stationary overnight.

A hanging scaffolding shall be provided below the moving form on all faces, from which surface treatment and inspection can be carried out.

The Contractor shall use a system that will permit continuous checks to be made on wall verticality and formwork levels.

All equipment associated with the moving form process shall be supplied and used as per the manufacturer’s specifications and their approval of the correct use of the equipment shall be obtained throughout the operation.

2.6 Tolerances of Formed Surfaces

Refer to Section 19.5 of AS 3600 and to Section 5 of AS 3610.

Where the requirements of AS 3600 and AS 3610 are in conflict, the more stringent requirements shall apply.
3.0 Reinforcement

3.1 General
Refer to Clause 19.2 of AS 3600.

3.2 Storage
Reinforcement when delivered to the Site shall be stored in a suitable steel rack. The rack shall be constructed so that the steel shall be amply protected from the weather and shall not come into contact with the ground.

3.3 Fabrication and Placement
Immediately before concrete is placed, reinforcement shall be free from loose rust, loose mill scale, grease, tar, paint, oil, mud, mortar and foreign matter.
The reinforcement shall be secured against displacement by tying at intersections with annealed wire ties not smaller than 1.25 mm diameter or by purpose made clips.
The ends of wire ties shall be bent away from nearby faces of forms and shall not project into the concrete cover.
In reinforcement in the form of a mat, each bar shall be secured at alternate intersections and at other points as required so that the specified fixing tolerances shall be maintained as concrete is placed.
Each beam ligature shall be secured to a bar in each corner of the ligature and all longitudinal column reinforcement shall be secured to all ligatures at every intersection.
Reinforcement shall not be displaced from the positions shown on the Drawings for the purpose of accommodating pipes of any description except as may be directed by the Superintendent.

3.4 Cover
Refer to the Drawings.

3.5 Supports
Reinforcement shall be supported by bar chairs, spacers and ties made from sound concrete, steel (plastic tipped) or plastic but pieces of wood, aggregate, brick etc shall not be used. Unprotected ferrous metal shall not be used in such supports where they extend to the surface of the concrete, or where they are used in conjunction with galvanised or zinc coated reinforcement.
Top and bottom slab reinforcement shall be supported at intervals sufficiently close to ensure that there shall be no undue deflection of the bars as concrete is placed. The spacing of supports shall not be greater than 60 diameters for bars and 750 mm for fabric.
Longitudinal beam and column reinforcement shall be secured by spacers or ties at spacings not greater than 1000 mm.

3.6 Splices
Splicing of reinforcement shall only be carried out in the locations shown on the Drawings, or otherwise permitted by the Superintendent. Splices shall be in accordance with AS 3600.

3.7 Welding and Heating
Heating or welding of reinforcement shall be carried out only if approved by the Superintendent.
Welding of reinforcing bars shall satisfy the requirements of AS 1554.3.

3.8 Fixing Tolerances
Refer to Section 19.5 of AS 3600.
Notwithstanding anything to the contrary in Section 19.5 of AS 3600, reinforcement shall be placed within the following tolerances.

- Bar positions controlled by cover
  - Beams, slabs, columns and walls - 0, +10 mm
  - Slabs on ground - 10, +20 mm
  - Footings cast on the ground - 20, +40 mm

A positive value indicates the amount by which the cover may be increased and a negative value the amount by which may be decreased.

- Bar positions not controlled by cover:
  - Ends of reinforcement - 0, +50 mm
  - Spacing of bars in walls and slabs and of fitments in beams and columns - 10% of specified spacing or 15 mm, whichever is greater.

3.9 Testing

The Superintendent may direct the Contractor to supply a test certificate for each grade of steel.

If certificates are not available and they are required by the Superintendent, the Contractor shall have tests carried out by a NATA registered laboratory and shall supply reports of the results to the Superintendent.

4.0 Concrete Supply and Placement

4.1 General

The Contractor shall select materials and design concrete mixes.

The Contractor shall be entirely responsible for the design and production of finished concrete and concrete work that is in accordance with this Specification.

4.2 Materials

4.2.1 Cement

Cement shall be Type GP - General Purpose Portland Cement complying with AS 3972.

Cement delivered to the Site shall be contained in multi-walled bags and kept dry and undamaged in weatherproof shed/sheds.

Cement on Site shall be used in the order which it is received and storage shall be arranged to achieve this requirement. The Contractor shall keep records of the dates and quantities of the deliveries received. Cement that has been stored for more than three months shall be retested at the Contractor's expense and shall not be used if it does not then comply with AS 3972. Cement showing lumps that cannot be broken to the original fineness by finger pressure shall not be used irrespective of its age.

4.2.2 Fly Ash

Fly ash shall be used as an additive to cement, unless it can be established to the satisfaction of the Superintendent that aggregates for the concrete mix are unlikely to have the potential to create an environment for an aggregate/alkali reaction.

The proportion of fly ash shall be 25% by weight of the total combined weight of fly ash and cement.

Fly ash shall satisfy the requirements of AS 3582.1 and AS 3583.
Where the Contractor wishes to use both fly ash and an air entraining agent in a concrete mix, the Contractor shall provide to the Superintendent proof (from tests on trial mixes or previous production) that the amount of air entraining can be controlled within specified limits and that the compressive strength is satisfactory.

4.2.3 Fine and Coarse Aggregates

Fine and coarse aggregates shall satisfy the requirements of AS 1141 and AS 2758.1.

The maximum coarse aggregate size shall be 20 mm.

Aggregates shall have a well graded combined grading, free of gaps.

Batch weights and material gradings shall be supplied to the Superintendent.

The Superintendent may direct the Contractor to supply fine and coarse aggregates for testing 14 days before delivery commences to the job. The quantity of fine aggregate shall be 20 kg and the coarse aggregate 45 kg in weight. The cost of all materials supplied shall be borne by the Contractor and the cost of testing shall be borne by the Principal.

4.2.4 Water

The water used in mixing concrete shall be clean and free from injurious amounts of oils, acid, alkali, organic matter or other deleterious substances and shall be of potable quality.

4.2.5 Admixtures

Chemical admixtures in concrete shall be used only with the written approval of the Superintendent. Admixtures shall satisfy the requirements of AS 1478.

Calcium chloride shall not be used as an admixture in concrete.

Fly ash is not considered an admixture under the terms of this Clause 4.2.5.

4.3 Concrete Mix Design

The concrete mix design including details of the materials shall be submitted to the Superintendent prior to pouring of any concrete.

4.4 Ready Mixed Concrete and Pumped Concrete

Ready mixed concrete and pumped concrete may be used, provided that it satisfies the requirements of this Specification and of AS 1379.

4.5 Site Mixed Concrete

Site mixed concrete shall be batched, mixed and placed under procedures approved by the Superintendent. The procedure shall provide following details including materials storage facilities, weighing scales usage, liquid admixture volume dosing facility, batching equipments, batching sequences for various materials, mixing method, discharging methods, transport methods and placing methods. The aggregate materials shall be stored in the manner that no segregation will occur during the storing or batching processes.

All concrete shall be batched and mixed in equipment conforming to the relevant requirements of AS 1379.

A quality assurance (QA) plan shall be prepared provided to demonstrate that the specified mix proportion can be consistently achieved throughout the project period. Moisture content of all aggregates in storage facilities shall be tested before batching and the results shall be used in batching process to control the water content in concrete. All batching weight of all materials for each batch shall be recorded accurately for later QA auditing purpose.

The equipment shall be regularly inspected and maintained and the calibration of all weighing equipment shall be verified at intervals not exceeding 2 weeks.

For the proposed concrete mixes at the proposed maximum load to be adopted during the pour, minimum mixing time or minimum number of revolutions shall be determined from mixer manufacturer’s recommendations. If no recommendations are provided, the minimum mixing time or number of revolutions shall be determine by a mixer.
uniformity test as specified in AS1379 using the proposed concrete mix. The required minimum mixing time or number of revolutions to achieve an acceptable uniformity shall be complied during the entire project period.

Concrete shall be batched and mixed only in quantities required for immediate placing in the forms.

4.6 No Fines Concrete

No-fines concrete shall consist of Portland cement and coarse aggregate. The coarse aggregate for 20 mm maximum particle size, shall have the following grading:

<table>
<thead>
<tr>
<th>Sieve Size (mm)</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>37.5</td>
<td>100</td>
</tr>
<tr>
<td>19.0</td>
<td>95-100</td>
</tr>
<tr>
<td>9.5</td>
<td>0-5</td>
</tr>
<tr>
<td>4.75</td>
<td>0</td>
</tr>
</tbody>
</table>

No-fines concrete shall be proportioned as follows:
- aggregate: cement ratio in the range of 6:1 to 8:1 by weight;
- water: cement ratio in the range of 0.35 to 0.45 by weight.

4.7 Grout

Grout shall consist of Portland cement and water or of Portland cement, sand and water.

An additive designed to produce fluidity and for expansion of the grout may be used provided that additives containing aluminium powder, chlorides or nitrates shall not be used.

Sand, if used, shall satisfy the requirements of AS 2758 except that the grading may be modified to obtain increased workability.

The water content shall be the minimum necessary for proper placement.

4.8 Mixing and Placing

4.8.1 Addition of Water

After all ingredients of the concrete have been mixed the further addition of water shall not be permitted.

4.8.2 Temperature Conditions

Concrete shall not be placed when the following conditions occur:
- the temperature of the concrete is less than 10°C or exceeds 35 °C or
- the outdoor shade temperature is likely to be greater than 35 °C during placement or within 2 hours subsequent to placement, unless special precautions, to the approval of the Superintendent, are undertaken. Notwithstanding that such special precautions are taken, concrete shall not be placed when the outdoor shade temperature exceeds 38 °C.

Where the concrete temperature is less than 32°C, unless a special retarding admixture is used to delay concrete setting, concrete shall reach its final position in the forms within 30 minutes after the introduction of water to the cement and aggregate, or the cement to the aggregate, except in the case of concrete which is continuously agitated in a truck mixer, when 1.5 hours may elapse between introduction of water and final placing. In hot weather where the concrete temperature is greater than 32°C the above times shall be reduced to 15 minutes and 45 minutes respectively. Notwithstanding the above, the Superintendent may direct other times.

4.8.3 Slumps

The concrete slumps shall be as follows at the construction site:
- general concrete - 80 ± 15 mm;
- pumped concrete - 80 ± 15 mm;
- tremie concrete - 150 ± 30 mm.

4.8.4 Sequence of Pours
The proposed sequence of pours shall be submitted to the Superintendent for direction on whether it is suitable. Slabs or beams, shall not be poured integrally with supporting columns and walls.

4.8.5 Placing
The Contractor shall not cover up formwork and reinforcement by placing concrete without the prior approval of the Superintendent.

Concrete shall not be placed except in the presence of the Superintendent.

Concrete shall not be placed unless materials for curing unformed surfaces are at the site and ready for use.

Before concrete is placed, the formwork and the space into which the concrete is to be placed shall be free of contaminants and free of water.

Concrete shall be brought to the forms and placed in such a manner that there shall be no segregation of the concrete mix. Internal vibrators shall not be used to move concrete within the forms.

Concrete shall not be exposed to rain during mixing, transport or placing, until it second day.

Concrete shall be placed in daylight or under adequate artificial lighting.

Concrete shall be deposited as near as practicable in its final position without segregation. It shall not be dumped from a height greater than 2 metres nor shall it be dumped away from its final position and worked along the forms. If placing operations necessitate a drop greater than 2 metres, the concrete shall be placed using a flexible tube or chute reaching to the base of the formwork.

Chutes, if used to place concrete, shall be used in a manner that avoids segregation of the concrete. Apart from flushing prior to commencement of concreting, the use of water shall not be used to assist the movement of concrete.

Concrete shall be placed continuously between construction joints. Fresh concrete shall not be placed against concrete that has taken its initial set.

The concrete shall be placed and compacted in layers not more than 300 mm.

4.8.6 Compaction
During and immediately after placing, the concrete (other than concrete placed underwater) shall be thoroughly compacted by means of high frequency mechanical vibrators. Care shall be taken to fill every part of the formwork, to work the concrete under and around the reinforcement and embedded fixtures without displacing them to work coarse aggregate back from the formed faces and to remove all air bubbles and voids.

Vibrators and their use shall follow the descriptions and recommendations in Chapter 8 of SAA HB 64.

The number of internal vibrators provided shall be not less than 1 per four cubic metres of concrete placed per hour. In addition, at least 1 vibrator shall be provided as a reserve for emergency use.

Internal vibration shall be applied in a systematic manner in the area of freshly deposited concrete, at uniformly spaced points not further apart than one and a half times the radius of visible vibration effect. Vibration shall not be continued so as to cause segregation or to draw grout from the surround concrete.

Vibrators shall not be held against forms or reinforcing steel, nor shall they be used for spreading concrete or moving it along forms. Vibrators shall not be left stationary in one position such as to cause segregation.

The Contractor shall supply to the Superintendent details of all vibrating screeds for flat slabs and vibration of formwork that the Contractor proposes to use.

4.8.7 Joints
In general, concrete shall be placed and compacted against unset previously-placed concrete such that the finished work shall be monolithic and uniform in strength and appearance.

All construction joints shown on the Drawings shall be made.
Otherwise construction joints may be made in such locations and in such manner as may be approved by the Superintendent, who may direct the Contractor to scabble or otherwise remove laitance and provide for bond and to provide keys, steps and other means of load transfer. Any such provision, whether shown on the Drawings or directed by the Superintendent, shall be at the Contractor’s expense.

If construction joints for concrete walls are not shown on the Drawings, or specified elsewhere, they shall be incorporated at a spacing not exceeding 10 metres.

If, due to breakdown or other unforeseen contingency, a construction joint becomes necessary at a point not previously agreed to, concreting shall be continued by emergency means to a point designated by the Superintendent and a construction joint made.

4.8.8 Pumping

Pipelines used in pumping concrete shall be connected to the farthest points of delivery and shortened during pumping as work proceeds. The equipment shall be arranged so that no vibrations that may damage freshly placed concrete shall result. Before concrete is pumped the pipeline shall be primed with a 2:1 sand/cement mortar at the rate of 1 cubic metre of mortar to 300 metres of line. All priming mortar shall be discharged to waste. If pumping is stopped for more than a few minutes the pipeline shall be kept free by running the pump for two or three strokes every few minutes, otherwise the pipeline shall be emptied and cleared.

4.8.9 Sprayed Concrete

Placement of concrete by a spraying technique may be used, if approved by the Superintendent.

Sprayed concrete shall be placed in accordance with Concrete Institute of Australia, “Recommended Practice for Sprayed Concrete”.

The placing equipment shall be of an accepted type and the nozzleman shall be experienced in that type of work.

The air operating pressure at the gun outlet shall not be less than 240 KPa.

The nozzle shall be held at right angles to the receiving surface at a distance of 0.6 to 1.2 metres.

Vertical surfaces shall be worked from the bottom up.

No rebound concrete shall be mixed into any batch.

4.8.10 Placing Underwater

Concrete shall not be placed underwater without the prior knowledge of the Superintendent.

Concrete shall not be placed in running water and forms shall be watertight.

The concrete shall be placed carefully in a compact mass in its final position by means of a tremie or similar device. A tremie shall consist of a steel tube at least 200 mm in diameter and be watertight. The discharge end shall be closed at the start of work so as to prevent water entering the tube and shall be entirely sealed in fresh concrete at all other times. The level of concrete in the tremie shall be kept as close to the top of the tube as possible at all times during concreting.

A concrete pump may be used for placing concrete underwater, provided it has the same characteristics as a tremie.

Vibration or disturbance of the concrete after placing is not permitted.

The quantity of cement in the concrete placed underwater shall be increased by 25% above that normally required for that grade of concrete.

4.9 Sampling and Testing

4.9.1 General

Sampling and testing of concrete for compliance shall be in accordance with AS 1379.

4.9.2 Slump

Slump tests shall be undertaken in accordance with AS 1379. Slump shall be tested for each concrete batch to ensure the required slump limit is satisfied before concrete is placed.
4.9.3  Strength
Project assessment of each strength grade shall be undertaken in accordance with AS 1379. In addition to the minimum sampling frequency specified in AS 1379 at least one sample shall be tested for each element of the structure and for each grade of concrete placed in any one day.

4.10  Unformed Surface Finishes
Unformed surfaces shall be constructed to a smooth even surface and finished with a wooden float.

4.11  Curing and Protection
All concrete work shall be cured.

For unformed surfaces curing with plastic membrane or curing compound shall be commenced immediately finishing is complete. Water curing on thin elements (slab or wall) shall be commenced second day to avoid surface damage and thermal shock.

The wet curing period from the time of placing concrete (to be continuous) shall be not less than the following:
- Portland cement concrete - 7 days;
- cements with fly ash pozzolanic materials - 10 days.

The curing method shall include one or a combination of the following methods:
- ponding or continuous sprinkling with water;
- curing compound that is in accordance with the recommendations of AS 3799;
- absorptive cover kept continuously wet;
- impermeable membrane.

The Superintendent may direct that any curing method not be used.

The concrete shall be protected from damage during the curing period.

4.12  Rejection of Concrete
Plastic and hardened concrete that does not meet the requirements of this Specification and of AS 3600, AS 3610 or AS 1379 is not in accordance with the Contract.

4.13  Repairs of Concrete
Where repair of concrete is necessary and permitted, such repairs shall be performed by skilled workmen and shall be completed within 24 hours after removal of formwork or, in the case of unformed concrete, within 24 hours after placing of concrete.

The materials and techniques of repair that the Contractor proposes to use shall be notified to the Superintendent prior to commencement. The repairs shall be at no cost to the Principal.

5.0  Measurement and Payment
Concrete work shall be classified according to the parts of the Works or Temporary Works in which the concrete work is incorporated.

Where in the descriptions of items in the Schedule of Rates other characteristics of concrete or concrete work are identified, those descriptions are classifications for the purposes of this Clause 5.

Separate measurement shall be made and payment calculated for concrete work of each classification.

Concrete work of each classification shall be measured as the volume in cubic metres of concrete work satisfactorily completed, calculated from the dimensions indicated on the Drawings.
The scheduled rates for concrete work of each classification each shall include full compensation for excavation if there is no relevant item in the Schedule of Rates, for the supply of materials and construction of bedding or blinding layers if there is no relevant item in the Schedule of Rates, for the supply, erection and stripping of formwork and falsework, for the supply, fabrication and fixing of reinforcement, for fixing embedded items, for the design of concrete mixes and selection of concrete materials, for the supply, handling, placing, compaction, finishing and curing of concrete and for all other costs incurred in executing and completing the work in accordance with the Contract.

Alternatively, where a structure including concrete work is identified on the Drawings and in the Schedule of Rates and the Schedule of Rates shows that payment for that structure is to be calculated by way of a lump sum, that structure shall not be measured. The scheduled lump sum for that structure shall include full compensation for all costs incurred in executing and completing the work as provided for concrete work whose volume is to be measured.
JOB DRAWINGS
STANDARD DRAWINGS