

WESTERNPORT WATER



WESTERNPORT WATER

Trading name for

WESTERNPORT REGION WATER CORPORATION

ABN 63 759 106 755

REQUEST for TENDER

for

TENDER NAME:

SCADA UPGRADE - STAGE 5

TENDER NUMBER:

2011/09

TENDERS CLOSE: 4pm Wednesday 21st September 2011 with

Managing Director

Westernport Water

2 Boys Home Road

NEWHAVEN, Victoria 3925

INDEX OF DOCUMENTS

The documents listed below and associated conditions of contract, contract specifications, schedules and drawings, whether attached hereto or not, constitute the Tender Documents.

The documents marked thus # are not included at tender stage but will be included in the Contract Documents.

PART A - CONDITIONS OF TENDERING	6
1 BACKGROUND	6
2 SCOPE OF WORK	7
3 CONTRACT TYPE.....	7
4 TENDER SUBMISSIONS	7
5 TENDER TIMETABLE	8
6 PRINCIPAL'S REPRESENTATIVE:.....	8
7 TENDER LODGEMENT	8
8 DISCREPANCIES IN TENDER DOCUMENTS.....	9
9 DIFFERENCES IN TENDER WORDS AND FIGURES	10
10 CORRECTIONS.....	10
11 INFORMATION MADE AVAILABLE TO TENDERERS	10
12 TENDERERS TO INFORM THEMSELVES FULLY.....	10
13 RESPONSIBILITY FOR WORKS.....	10
14 TENDERING CONSIDERATIONS	11
15 ASSESSMENT OF TENDERS RECEIVED.....	12
16 TENDER EVALUATION CRITERIA.....	12
17 ALTERNATIVE TENDERS.....	12
18 INFORMAL TENDERS	13
19 ACCEPTANCE OF TENDER	13
20 DOCUMENT OWNERSHIP AND RECORD KEEPING	13
21 VICTORIAN INDUSTRY PARTICIPATION PLAN (VIPP)	13
22 TENDERING FORMS AND SCHEDULES.....	14
SCHEDULE 1: TENDER FORM	15
SCHEDULE 2: SCHEDULE OF FIXED PRICES	16
SCHEDULE 3: SCHEDULE OF RATES FOR PLANT AND EQUIPMENT	17
SCHEDULE 4: SCHEDULE OF RATES FOR PERSONNEL	18
SCHEDULE 5: KEY PERSONNEL, SUBCONTRACTORS, EXPERIENCE & REFEREES	19
SCHEDULE 6: TENDERER'S OHS MANAGEMENT SYSTEM & QUESTIONNAIRE	21
SCHEDULE 7: TENDERER'S QUALITY ASSURANCE SYSTEM	28
SCHEDULE 8: TENDERER'S PROJECT MANAGEMENT PLAN AND RISK ASSESSMENT	29
SCHEDULE 9: TENDERER'S CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN (CEMP).....	30
SCHEDULE 10: TENDERER'S CONSTRUCTION PROGRAM AND CASH FLOW FORECAST	31

SCHEDULE 11 – TENDERER’S INSURANCE POLICIES & GST REGISTRATION	32
SCHEDULE 12: LETTER OF ACCEPTANCE#	33
SCHEDULE 13: FORM OF FORMAL INSTRUMENT OF AGREEMENT#	33
SCHEDULE 14: NOT USED	34
PART B – TECHNICAL SPECIFICATION	35
1. GENERAL	36
2. CONTRACTOR’S OBLIGATIONS	46
3. CONTRACT INTERFACES	47
4. INFORMATION TO BE PROVIDED PRIOR TO COMMENCEMENT	48
5. WORKS PROGRAM	49
6. PROJECT REPORTING	50
7. INTEGRATED MANAGEMENT SYSTEM	52
8. SERVICES	58
9. CONTRACTOR’S SITE SECURITY AND AMENITIES	60
10. CONSTRUCTION	62
11. TESTING AND COMMISSIONING	66
12. COMMISSIONING	68
13. PRACTICAL COMPLETION CRITERIA	70
14. DEFECTS LIABILITY	72
15. LIQUIDATED DAMAGES	73
16. PERFORMANCE STANDARDS	74
17. DOCUMENT OWNERSHIP AND RECORD KEEPING	76
APPENDIX 1 – WORK SITE LOCATIONS	77
APPENDIX 2 – REGIONAL PLAN OF WORKS SITES	78
APPENDIX 3 - ELECTRICAL SPECIFICATIONS	79
APPENDIX 4 – DRAWINGS	100
APPENDIX 5 – PHOTOS	101
APPENDIX 6 – PARTS LIST	102
PART C – CONDITIONS OF CONTRACT	103
ANNEXURE PART A TO AS4000-1997 GENERAL CONDITIONS OF CONTRACT	104

VERSION CONTROL	AUTHOR/DATE	REVIEW/COMMENT	DATE
Version A	M Wyzenbeek 5/08/11	R McNamara	11/08/2011
Version B	R McNamara 15/08/11	S Porter, M Wyzenbeek	19/08/11
Version C, Final	R McNamara 26/08/11		



WESTERNPORT WATER

Trading name for

WESTERNPORT REGION WATER CORPORATION

ABN 63 759 106755

PART A - CONDITIONS OF TENDERING

for

TENDER NAME:

SCADA UPGRADE - STAGE 5

TENDER NUMBER:

2011/09

Note to Tenderers:

Tenderer's requesting tender documents by email shall register their contact details at westport@westernportwater.com.au to ensure receipt of Tender Addenda.

REQUEST for TENDER DOCUMENTS

for

SCADA UPGRADE – STAGE 5

PART A - CONDITIONS OF TENDERING

Westernport Region Water Corporation (the “Principal”) is seeking Tenders from Contractors for a project to carry out the installation of the works necessary to implement the SCADA Upgrade – Stage 5.

The following information is to be read in conjunction with the Principal's **Technical Specification** contained in **Part B** of this request for tender and **Part C Conditions of Contract**. Where there is a conflict of information between clauses in the Technical Specification and the information in these 'Conditions of Tendering', the 'Conditions of Tendering' shall take precedence.

1 Background

The Principal is responsible for the provision of water supply and sewerage services to nearly 15,000 water and 14,000 sewerage customers located generally along the eastern side of Western Port, south east of Melbourne.

The Principal's region includes the mainland town areas of The Gurdies, Pioneer Bay, Grantville, Coronet Bay, Corinella, Bass, San Remo, Kilcunda, Daylston, Archie's Creek and the Phillip Island towns of Newhaven, Cape Woolamai, Sunset Strip, Surf Beach, Smiths Beach, Wimbledon Heights, Rhyll, Ventnor, Silverleaves and Cowes. The region also includes the interlinking farming areas which mainly support grazing and some horticulture.

The region is a major tourism destination for up to 3 million visitors from interstate and overseas each year. During the summer holiday period from December to February the population increases to over 50,000 on Phillip Island compared to a regular resident population of about 8,000 people.

Sewage for Phillip Island is treated at the Cowes Waste Water Treatment Plant (CWWTP) and sewage on the mainland is treated at the King Road Waste Water Treatment Plant (KRWTP). A number of pump stations in each area collect sewage from each system where it is pumped to the waste water treatment plant (WWTP) for treatment and disposal.

Over the past four (4) Years the Principal has been in the process of retrofitting all sewer pump stations with the Schneider ClearSCADA control system. This has included the installation of the SCADAPack32 Remote Terminal Units (RTUs), a Proface Human Machine Interface (HMI) and a Trio MR450 Radio.

2 Scope of Work

The Principal requires a suitably qualified and experienced contractor to undertake the Stage 5 upgrade of the existing SCADA facilities at thirty eight (38) sewage pump stations, at one (1) pressure monitoring site and at two (2) radio repeater stations (the Works).

The Works include:

- (i) the installation and commissioning of Principal supplied Programmed RTUs, HMIs, radios, hydrostatic transducers and current transducers
- (ii) the supply, installation and commissioning of batteries, uninterrupted power supplies (UPS), relays, wiring terminals, circuit breakers fuses and all other materials needed to complete the installation
- (iii) the supply, installation and commissioning of all other equipment needed to upgrade two (2) existing point-to-point depot to repeater radio sites to a full duplex system

The pricing of the Works shall be divided into two (2) categories being:-

- (a) Group one – Radio installations including all radio equipment.
- (b) Group two – Electrical installation including all other equipment and wiring

There is a significant portion of the scope of the SCADA Upgrade - Stage 5 that will be undertaken by the Principal's nominated suppliers. This, and full details on the scope of Works, and the Principal's requirements are included in **Part B – Technical Specification** of the Request for Tender documents.

3 Contract Type

All Work required for the contract is to be provided in accordance with **Part C – Conditions of Contract** in this Request for Tender document.

The contract is an Australian Standard titled **AS4000-1997 General Conditions of Contract**.

4 Tender Submissions

The Tenderer shall complete **all Tender Forms** and include them with their Tender.

All tenders shall be addressed to:

The Managing Director
Westernport Water
2 Boys Home Road
NEWHAVEN, Victoria 3925

5 Tender Timetable

The Principal advises Tenderers that the following timetable will apply for the tender process:

ACTIVITY	DAY	DATE
Advertise RFT	Wednesday	31 st August 2011
Tender Closing Date	Wednesday	21st September 2011
Tender Interviews*	Wednesday	4 th October 2011
Announcement of Successful Tender *	Monday	24 th October 2011

* Subject to the Principal's approval processes

6 Principal's Representative:

All Tenderer's enquiries during the tender period should be directed in the first instance to:

Mr Mick Wyzenbeek, Technical Officer, Maintenance
 Westernport Water
 2 Boys Home Road, Newhaven, Victoria 3925
 Telephone: (03) 5956-4160, or 0409 162 321
 Facsimile: (03) 5956-4101
 E-mail: mwyzenbeek@westernportwater.com.au

Tenderers who wish to make a site inspection during the tender period can make the necessary arrangements by contacting the Principal's Representative.

7 Tender Lodgement

Tenders not lodged in the Tender Box by the designated tender closing time will not be considered by the Principal.

Tenders may be lodged by hand delivery, or by mail, or by e-mail or by facsimile (fax):

7.1 Hand Delivery and Mail Lodgement:	
Address of Tender Box	Tender Box, 2 Boys Home Road, NEWHAVEN, VICTORIA 3925
Tender Box Hours	8:30am – 5pm, Monday - Friday
Lodgement Requirements	1. Tenderers shall include an electronic copy of the submission 2. It is the Tenderer's responsibility to ensure that mailed submissions reach the Principal in sufficient time to enable Principal staff to place them in the Tender Box before tender closing time.
7.2 Email Lodgement	
Address of Tender Box	tender@westernportwater.com.au

Lodgement Requirements	<ol style="list-style-type: none">1. The Tenderer shall ensure that the e-mail is received in sufficient time for Principal staff to print the documents and then place them in the Tender Box before the tender closing time.2. The Tenderer shall time/date stamp and post the original tender documentation to verify that the documents were emailed before the closing time.3. Confidentiality of emailed documents cannot be guaranteed	
7.3 Facsimile Lodgement		
Address of Tender Box	Fax number 03 5956 4101	
Lodgement Requirements	<ol style="list-style-type: none">1. The Tenderer shall ensure that the fax is received in sufficient time for the Principal's staff to place the documents in the Tender Box before the closing time.2. The Tenderer shall time/date stamp and post the original tender documentation to verify that the documents were faxed before the closing time.3. Confidentiality of faxed documents cannot be guaranteed	
7.4 Label on Tender Submissions		
The information to be marked on Tender submissions including envelopes, email message headers and facsimile cover sheets	Tender Name:	SCADA Upgrade - Stage 5
	Tender Number:	2011/09
	Tender Closing Time/Date	4pm 28 th September 2011

Failure to comply with these conditions will render the Tender non-conforming.

8 Discrepancies in Tender Documents

Upon receipt of the Tender documents the Tenderer shall immediately check that all pages and attachments of the Technical Specification and the accompanying documents have been received in legible form.

If a Tenderer becomes aware of any discrepancies or omissions in the documents, they shall immediately notify the Principal in writing, and such notice shall be not later than the day prior to tender closing time.

No claim will be recognised as resulting from failure to receive such documents, or receipt in incomplete or illegible conditions.

9 Differences in Tender Words and Figures

Where there is any difference between prices or amounts quoted in words and in figures, then the words shall prevail.

In the event that documentation comprising the Contract contains any discrepancy or inconsistency then the order of precedence shall be;

- i) Covering letters including any letter accompanying the tender, the tender forms, any Addenda issued to the Tenderers, and the letter of acceptance of the tender
- ii) Technical Specification
- iii) Drawings
- iv) The Conditions of Contract

10 Corrections

Any corrections made by Tenderers in any document forming part of their tender submission shall be made by ruling out the information to be omitted and inserting the corrected information. The Tenderer shall initial all such corrections.

11 Information Made Available to Tenderers

The Principal will make available any information relevant to the Works. However, this information is owned by the Principal and may not be complete or current. It is the Tenderer's responsibility to confirm and acquire any outstanding information required to complete the Tender.

12 Tenderers to Inform Themselves Fully

If a Tenderer has any doubt as to the meaning of any portion of the Tender Documents they shall either:

- (i) ask the Principal for clarification, which clarification shall be valid only if issued in writing; or
- (ii) submit the Tender and include a statement of the interpretation upon which they rely and on which their Tender has been prepared

Any clarification given pursuant to this clause may also be issued to all other prospective Tenderers.

13 Responsibility for Works

If in the opinion of the Tenderer, any specified details of the proposed Works or programming are likely to prevent them from, or prejudice them in fulfilling any of their obligations under the Contract, they shall submit details thereof with their tender, shall tender primarily in accordance with the technical specification, and shall submit price variations and full details of the changes they suggest.

14 Tendering Considerations

14.1 Rise and Fall

Rise and fall adjustments shall not apply to this tender.

All prices shall be fixed for the duration of the Contract.

14.2 Monthly Payment Arrangements

Tenderers shall allow for progress payment claims to be processed monthly and payments to be made within 30 days of approval of the claims unless described otherwise in Part C of the Request for Tender documents.

The processing of payment claims shall be subject to the requirements of the Security of Payment Act (the Building and Construction Industry Security of Payment Act 2002 Victoria) legislation.

14.3 Insurance

Tenderers shall note that Principal Controlled Contract Works Insurance applies to this Contract; therefore Tenderers shall **not** include the cost of Contract Works Insurance in the pricing of preliminaries and overheads for the Works.

Tenderers shall provide evidence of the currency of insurances listed in **Schedule 11**.

14.4 Security Deposit

The successful Tenderer shall be required to lodge a security deposit with the Principal upon being awarded the Contract and before the Commencement Date of the Contract. The amount of the security deposit is as specified in Clause 5 of the Contract and in **Item 13 (a) of the Annexure Part A** of the Contract.

The security deposit shall be refunded in full at the date of Practical Completion unless the Contractor has defaulted in the performance of the Contract, in which case the Principal shall deduct sufficient monies to remedy the default from the security deposit before refunding the balance of the security deposit.

The security deposit shall be lodged with the Principal either in cash or in the form of a guarantee from an Australian financial institution.

The security deposit shall be in addition to retention moneys held by the Principal on progress payment claims as specified in Clause 5 of the Contract and Item 13 of Annexure Part A of the Contract

14.5 Tender Validity Period

The tender shall remain valid and open for acceptance for a period up to 90 days after the tender closing date.

15 Assessment of Tenders Received

An analysis of the tender will be undertaken based on the information provided in the tender documents, the information obtained at interviews and information obtained from referees and other official sources.

16 Tender Evaluation Criteria

The Principal will evaluate tenders on the basis of how adequately they meet the requirements for the Works as outlined in the Request for Tender

The intent of the evaluation criteria is to ensure that the Principal selects the tender that offers the best value for money.

Each tender shall be scored for how well it meets each requirement on a scale of 0 to 5 (with 5 being the best score).

The Principal has established weightings for each requirement. The weighting shall be applied to each score to give an overall score for each requirement.

Tenderers shall note that in this tender the following weightings will be applied to the information submitted in the tender responses:

Tender Criteria	Weighting %
Experience, References	20
Systems: OH&S, Quality, Environment	10
Construction Program, Risk Assessment, Project Plan,	10
Tender Price	60
Total	100

The Successful Tender will be the tender that achieves the highest weighted score.

17 Alternative Tenders

An alternative, non conforming tender may be submitted and will receive consideration provided a conforming tender is also submitted by the Tenderer. The Tenderer shall provide information to adequately describe the alternative tender and submit any further information that the Principal requests for the purpose of assessing the alternative tender.

The Tenderer shall clearly state the benefits associated with the alternative tender. There shall be significant advantage to the Principal and a sound basis for the alternative proposal if an

alternative tender is to be accepted.

Alternative tenders will be assessed using the same criteria as for the conforming tenders.

18 Informal Tenders

Any Tender may be rejected which does not comply with the requirements of, or which contains provisions not required by, the Request for Tender documents.

19 Acceptance of Tender

It is anticipated that the Principal will approve the successful Tenderer on the date listed in **Section 5**. The successful Tenderer will receive written notification as soon as practicable after that date.

Following the Principal's acceptance of the tender the Successful Tenderer shall execute the Contract and return it to the Principal for execution.

The Principal will not be bound to accept, designate or nominate the lowest or any tender for this Contract.

20 Document Ownership and Record Keeping

Documents that comprise the Tender submission will become the property of the Principal, and shall be stored by both the Tenderer and the Principal for the period of time specified in **Section 12 Public Records Act 1973** (PROV).

21 Victorian Industry Participation Plan (VIPP)

This tender is **not** subject to the requirements of the Victorian Industry Participation Policy (VIPP)

REQUEST for TENDER DOCUMENTS**for****SCADA UPGRADE - STAGE 5**

22 TENDERING FORMS and SCHEDULES

The documents upon which the Tenderer is to tender are all the documents contained in Part A, Part B and Part C of this Request for Tender.

The documents that shall be completed by the Tenderer and which will form part of the executed Contract are:

- Schedule 1: Tender Form
- Schedule 2: Schedule of Fixed Prices
- Schedule 3: Schedule of Rates for Plant and Equipment
- Schedule 4: Schedule of Rates for Key Personnel
- Schedule 5: Key Personnel, Sub-Contractors and Experience
- Schedule 6: Tenderer's OHS Management System & Questionnaire
- Schedule 7: Tenderer's Quality Assurance System
- Schedule 8: Tenderer's Project Management Plan and Risk Assessment
- Schedule 9: Tenderer's Construction Environment Management Plan
- Schedule 10: Tenderer's Construction Program and Cash Flow Forecast
- Schedule 11: Tenderer's Evidence of Insurances and GST Registration
- Schedule 12: Letter of Acceptance[#]
- Schedule 13: Form of Formal Instrument of Agreement[#]
- Schedule 14: Not Used

Note: Tenderers shall complete all the Tender forms, except those marked [#], and lodge them as per Clause 5 of these Conditions of Tendering.

REQUEST for TENDER DOCUMENTS
For
SCADA UPGRADE - STAGE 5

SCHEDULE 1: TENDER FORM

Name of company tendering	.....
Name of person(s)	.....
At Address	.....
ABN	.....
	Hereby tender(s) to perform the Work for Westernport Region Water Corporation ABN 63 759 106 755
Description of Works	Tender No. 2011/09: –SCADA UPGRADE – STAGE 5
For the Fixed Price Lump Sum of (GST Exclusive)	The amount of \$.....(figures) .....words)
List Documents	All documents, including tender forms, Technical Specifications, drawings and contract conditions detailed in the <i>Request for Tender, SCADA Upgrade – Stage 5, Tender No. 2011/09.</i>
If the Tenderer is a firm, two (2) individual members full names (and sign below)	..... .....
Dated	This..... day of .....2011
Signature(s) of Tenderer	..........

REQUEST for TENDER DOCUMENTS

For

SCADA UPGRADE - STAGE 5

SCHEDULE 2: SCHEDULE of FIXED PRICES

Tenderers shall complete the Schedule shown in the attached Excel format spreadsheet:

Item	Description	Amount (\$) (GST Exclusive)
	Preliminaries, site surveys	
1	Upgrade Radio Base Stations and Repeaters	
2	Install electrical control equipment and wiring at all SPS sites	
3	Install radio equipment and wiring at all SPS sites	
4	Test and commission all installed equipment at all sites	
5	Radio Operations Manuals and As-Constructed Drawings	
6	Total Lump Sum Price(GST Exclusive)	

Notes to Tenderers:

- (i) Tenderers must give a detailed listing of all exclusions, including elements of costs which may be excluded from the tendered rates.
- (ii) The dollar amounts shown on the Schedule shall:
 - a. Be in Australian dollars and GST exclusive
 - b. Include the Contractor's general obligations, overheads, profit, liabilities, excluding the cost of Contract Works Insurance
 - c. Include the cost of complying with the provisions of the Conditions of Contract, where not separately itemised in another Schedule
- (iii) Payment Claims made under the Contract shall be based on the proportion of each item in the Schedule of Prices that is supplied, installed and commissioned during the Claim period.

REQUEST for TENDER DOCUMENTS**for**

SCADA UPGRADE - STAGE 5

SCHEDULE 3: SCHEDULE of RATES for PLANT AND EQUIPMENT

The Tenderer is required to state its charges per hour for the various classifications of plant and equipment it proposes to use.

The rates set out in this Schedule will be used to determine the value of Contract Variations.

1. All rates shall to be in Australian dollars exclusive of GST.
2. All rates and charges shall include on-costs and all associated allowances, including allowances for profit and overheads.

Description of Plant or Equipment	Make / Model	Rate(\$/hr) Excl GST

REQUEST for TENDER DOCUMENTS**for****SCADA UPGRADE - STAGE 5**

SCHEDULE 4: SCHEDULE of RATES for PERSONNEL

The Tenderer is required to state its labour charges per hour for the various classifications of personnel it proposes to use, including those who may undertake training of the Principal's staff.

The rates set out in this Schedule will be used to determine the value of Contract Variations.

1. All rates shall to be in Australian dollars exclusive of GST.
2. All rates and charges shall include on-costs and all associated allowances, including allowances for profit and overheads.

Name of Personnel	Title	Role	Rate(\$/hr) Excl GST

REQUEST for TENDER DOCUMENTS**for**

SCADA UPGRADE - STAGE 5

SCHEDULE 5: KEY PERSONNEL, SUBCONTRACTORS, EXPERIENCE & REFEREES

Tenderers are required to submit details of their proposed Key Personnel, the parts of the works that will be performed by sub-contractors and the Tenderers relevant experience in the following tables.

Tenderers shall also provide:

- (i) a chart of their company structure showing the relevant personnel
- (ii) a list of relevant recent projects

Schedule 5.1: Key Personnel

The Tenderer shall describe the specific classification and skills of their team members who are deemed necessary to be engaged on the Works.

Role	Name of Person	Qualifications, Accreditations, Experience:

Schedule 5.2: Nominated Sub-Contractors

The Tenderer is required to nominate those parts of the Works it proposes to subcontract and details of the Sub-contractors it proposes to engage:

Work/Role Sub-Contracted	Sub-Contractor,	Contact Person	Contact Person Phone

Schedule 5.3: Experience and Referees

The Tenderer shall provide a list of recent projects of a similar nature it has undertaken and provide names and contact details of three (3) referees for the Tenderer's company and the nominated sub-contractors (if applicable):

Tenderer's Client	Project Description	Referee	Phone No
Sub-Contractor's Clients	Project Description	Referee	Phone No

REQUEST for TENDER DOCUMENTS**For**

SCADA UPGRADE - STAGE 5

SCHEDULE 6: TENDERER'S OHS MANAGEMENT SYSTEM & QUESTIONNAIRE

Tenderers shall provide their company Occupational Health and Safety Management System with the Tender response including evidence of any accreditations for the system (eg AS/NZ 4801 OH&S Management System).

Tenderers shall complete the certification schedule and the questionnaire on the following pages. This questionnaire forms part of the tender evaluation process.

Tenderers shall complete the questionnaire to provide an overview of the status of the Tenderers' OHS Management System which shall form the basis of audits during the Works.

TENDERER OHS CERTIFICATION**Certification**

The information provided in this questionnaire is an accurate summary of the Tenderer's OHS Management System.

Tenderer's Name:

.....

Status of Health & Safety Management System (please tick as appropriate)

1. ☐ Pre-qualified Department of Infrastructure (DOI) Construction Supplier Register
2. ☐ Pre-qualified VicRoads Registration Scheme
3. ☐ 3rd Party Accredited OHSMS (specify.....)

Provide a copy of current certificate of accreditation

If any of the above apply, then complete only Parts 6.3 and 7 of the questionnaire

If none of the above apply, then complete all items of the questionnaire

4. ☐ Assessment of Tenderer's system to be made by Westernport Water

Signed:

Name:

.....

.....

Position:

.....

Date:

Contract Details

Contract Name:

Contract Number:

SCADA Upgrade – Stage 5

2011/09

TENDERER OHS MANAGEMENT SYSTEM & QUESTIONNAIRE

Tenderers shall provide detailed responses about their OHS Management System in the following questionnaire.

		Yes	No
1	OHS Policy and Management		
1.1	Is there a written OHS policy?		
	<i>If yes provide a copy of policy. Comments.</i>		
1.2	Has the Contractor previously had an OHS Management System certified/accredited by a recognised independent authority (eg: SafetyMAP, NSCA, etc)?		
	<i>If Yes provide details</i>		
1.3	Is there an OHS Management System manual or plan?		
	<i>If yes provide a copy of contents page(s). Comments</i>		
1.4	Are OHS responsibilities clearly identified for all levels of staff?		
	<i>If Yes provide details:</i>		

		Yes	No
2	Safe Work Practices and Procedures		
2.1	Has the Contractor prepared safe operating procedures or specific safety instructions relevant to its operations?		
	<i>If yes, provide a summary listing of procedures or instructions.</i> <i>Comments</i>		
2.2	Does the Contractor have any permit to work systems?		
	<i>If Yes, provide a summary listing of permits:</i>		
2.3	Is there a documented incident investigation procedure?		
	<i>If Yes provide a copy of a standard incident report form.</i>		
2.4	Are there procedures for maintaining, inspecting and assessing the hazards of plant operated/owned by the Contractor or supplied to the Contractor?		
	<i>If Yes, provide details</i>		
2.5	Are there procedures for storing and handling hazardous substances?		
	<i>If Yes, provide details</i>		

		Yes	No
2.6	Are there procedures for identifying, assessing and controlling risks associated with manual handling?		
	<i>If Yes, provide details</i>		
3	OHS Training		
3.1	Describe how OHS training is conducted in your organisation		
3.2	Is a record maintained of all training and induction programs undertaken for employees in your organisation?		
	<i>If Yes, provide examples of safety training records</i>		
4	OHS Workplace Inspection		
4.1	Are regular OHS inspections at worksites undertaken?		
	<i>If Yes, provide details:</i>		

		Yes	No
4.2	Are standard workplace inspection checklists used to conduct OHS inspections?		
	<i>If Yes, provide details or examples:</i>		
4.3	Is there a procedure by which employees can report hazards at workplaces?		
	<i>If Yes, provide details</i>		
5	OHS Consultation		
5.1	Is there a workplace OHS committee?		
.2	Are employees involved in decision making over OHS matters?		
	<i>If Yes, provide details</i>		
5.3	Are there employee elected representatives?		
	<i>Comments</i>		

		Yes	No
6	OHS Performance Monitoring		
6.1	Is there a system for recording and analysing OHS performance statistics?		
	<i>If Yes provide details:</i>		
6.2	Are employees regularly provided with information on your organisation's OHS performance?		
	<i>If Yes, provide details:</i>		
6.3	Has the Contractor ever been convicted of an occupational health and safety offence?		
	<i>If Yes, provide details:</i>		
7	References for OH&S		
7.1	Please provide information for three (3) recent projects in the table below which the Principal shall contact for reference purposes		
	Project 1	Project 2	Project 3
Project Description			
Client Name			
Client Contact			
Client Phone No			
Number of person days on contract			
Number of lost time injuries			
Total person days lost due to injuries			

REQUEST for TENDER DOCUMENTS**For**

SCADA UPGRADE - STAGE 5

SCHEDULE 7: TENDERER'S QUALITY ASSURANCE SYSTEM

Tenderers shall provide their company Quality Assurance System with the Tender response including evidence of any accreditations for the system (eg AS/NZS ISO 9001 Quality System).

Tenderers shall provide evidence of the following in their tender response:

1. How the Contractor shall maintain procedures and processes that ensure the accuracy of work and the immediate communication of any problems in the performance of the Works described in the ***Technical Specification***.
2. Evidence of all quality accreditations held by the Contractors, the Contractor's employees and the sub-Contractors.

REQUEST for TENDER DOCUMENTS**For**

SCADA UPGRADE - STAGE 5

SCHEDULE 8: TENDERER'S PROJECT MANAGEMENT PLAN and RISK ASSESSMENT

Tenderers must provide their company Project Management System with the Tender response and the proposed draft Project Management Plan for the Works which must include:

- i) work methodologies and construction techniques proposed; and
- ii) procedures applicable to risks associated with implementing the Works outside of Quality, OH&S and Environmental Management

The Successful Tenderer shall also establish a detailed Project Management Plan specific to the Works.

(To be inserted after the Contract is awarded)

The detailed Project Management Plan shall be submitted to the Superintendent for review within two (2) weeks of Commencement Date of the Contract.

REQUEST for TENDER DOCUMENTS**For**

SCADA UPGRADE - STAGE 5

SCHEDULE 9: TENDERER'S CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN (CEMP)

Tenderers must provide their company Environmental Management System with the Tender response.

The CEMP shall identify and document potential environmental hazards and the corresponding measures for prevention and management. Documentation must be developed and included in the Plan to evidence this process.

The Contractor shall implement procedures to avoid environmental damage during construction of the Works as detailed in the CEMP.

(To be inserted after the Contract is awarded)

CEMP Content

The CEMP shall cover, but shall not be limited to, the following items in the Construction works:

- i) Works Environmental Policy;
- ii) Flora and Fauna protection;
- iii) Environmental Complaints, Training and Audits;
- iv) Landscaping/Remediation Works;
- v) Water Quality, Erosion and Sedimentation Control;
- vi) Air Quality and Dust Suppression;
- vii) Expected noise levels and attenuation measures;
- viii) Prevention of waste entering any surface water environments;
- ix) Waste disposal and management;
- x) Emergency/Contingency Action Plans;
- xi) Cleanup of spills and site remediation;
- xii) Ground Vibration; and
- xiii) Statutory Approvals

The Contractor's CEMP shall be submitted to the Superintendent for review at least two (2) weeks prior to the planned date of commencement of Works on the site.

REQUEST for TENDER DOCUMENTS**For**

SCADA UPGRADE - STAGE 5

SCHEDULE 10: TENDERER'S CONSTRUCTION PROGRAM and CASH FLOW FORECAST

Tenderers are to provide a preliminary Construction Program (MS Project or equivalent) that outlines the proposed construction and commissioning timetable as well as any other significant dates such as hold points and milestone dates with the Tender.

Also, the Tenderer must provide a forecast of monthly cash flows up to, and including, Practical Completion for the Works.

(To be inserted after the Contract is awarded)

The Contractor shall submit a Construction Program and cash flow to the Superintendent within two (2) weeks of Commencement Date of the Contract.

REQUEST for TENDER DOCUMENTS**For****SCADA UPGRADE - STAGE 5**

SCHEDULE 11 – TENDERER'S INSURANCE POLICIES & GST REGISTRATION**11.1 GST**

Tenderers shall provide proof of registration for GST.

11.2 Insurances

The Tenderer is required to provide evidence and currency of its insurance policies in the following table.

Insurance Type	Insured Amount (\$)	Expiry Date	Insurer
Public Liability			
Workers' Compensation (Work Cover)			
Long Service Leave & Superannuation			

Note to Tenderers:

The Principal shall provide Principal Controlled Contract Works Insurance for the Works. Tenderers **shall exclude** the cost of Contract Works insurance from their Tender prices.

The Successful Tenderer shall supply the Principal's Representative with the current policy details for each Insurance Type within two (2) weeks of the Commencement Date

REQUEST for TENDER DOCUMENTS

For

SCADA UPGRADE - STAGE 5

SCHEDULE 12: LETTER OF ACCEPTANCE#

Letter of Acceptance (Not Attached)

(To be inserted, when contract is awarded)

SCHEDULE 13: FORM of FORMAL INSTRUMENT OF AGREEMENT#

Form of Formal Instrument of Agreement AS 4950-2006 (Not Attached)

(To be inserted, when contract is awarded)

REQUEST for TENDER DOCUMENTS

For

SCADA UPGRADE - STAGE 5

SCHEDULE 14: NOT USED



WESTERNPORT WATER

Trading name for

WESTERNPORT REGION WATER CORPORATION

ABN 63 759 106755

PART B – TECHNICAL SPECIFICATION

TENDER NAME:

SCADA UPGRADE - STAGE 5

TENDER NUMBER:

2011/09

REQUEST for TENDER DOCUMENTS

For

SCADA UPGRADE – STAGE 5

PART B – TECHNICAL SPECIFICATION

This **Part B – Technical Specification** describes the scope of works required and standards applicable in the installation of the SCADA UPGRADE – Stage 5 (the Works).

1. GENERAL

1.1 Works Overview

Westernport Water is upgrading its existing Telemetry and SCADA network to utilise the Distributed Network Protocol v3 (DNP3) comprising of Schneider SCADAPack Remote Terminal Units (RTUs), a ClearSCADA web enabled system, Proface Human Machine Interface (HMI) and Digital Trio radios. The RTUs and radios will be located at all SCADA connected sites, including sewer pump stations, water pump stations, treatment plants, tanks, pressure reducing valves, and monitoring sites.

The upgrade at controlled sites has significant implications for the site control, as the RTU is not only the “vehicle” for SCADA communications, but also performs much of the site automatic and remote manual control. The RTUs and DNP3 protocol will radically change and improve the way the sites and the network are controlled and monitored.

Their environmental sensitivity makes Sewer Pump Stations (SPS) particularly suited to the increased monitoring and control integrity offered by the SCADA upgrade.

The purpose of the Works is for the Principal to be able to control, monitor, report, alarm and trend the performance of its equipment at remote sites on the ClearSCADA HMI/RTU System.

This Specification provides details of the automation and SCADA integration of a Sewer Pump Station that is necessary to achieve the Principal's objectives. It contains the Control Philosophy, the Functional Description and the SPS Operation using the local HMI.

The Works required by this Technical Specification shall be provided in accordance with the contract conditions defined in **AS4000-1997 General Conditions of Contract**.

1.2 Scope of Works

The Contractor shall provide all labour, plant, materials and equipment, other than equipment supplied by the Principal, required to undertake the SCADA Upgrade – Stage 5.

The upgrade of the SCADA facilities applies to thirty nine (38) sewage pump stations, and one (1) pressure monitoring station, giving a total of forty (39) sites, at the locations shown in the tables in **Appendix 1** and on the regional plan contained in **Appendix 2**. The upgrade applies

specifically to the existing control, radio and telemetry systems which are being converted to a ClearSCADA, SCADAPack, and Trio Radio system

The Contractor shall supply all materials and activities necessary for the installation of telemetry systems for 38 No Sewage Pump Stations and one (1) only pressure monitoring site, the upgrade of 2 No new full duplex base station radios at the Newhaven Depot as follows:

- (i) Upgrade the radio system at the SPS including, but not be limited to; the supply of base antenna masts, cables, relays, timers, terminals and contacts
- (ii) Upgrade the two (2) radio base stations at Newhaven Depot connecting to San Remo Basin and Cowes Basin to a full duplex system
- (iii) Install all electrical equipment in accordance with the Principal's Electrical Specification as shown in **Appendix 3** and in accordance with the drawings shown in **Appendix 4**.
- (iv) Supply an 39 No Uninterrupted Power Supply (UPS) with the capability of monitoring the RTU system, the instruments and the controllers at all sites for a minimum period of 6 Hours
- (v) Interface each required input and output to gain full monitoring and control functionality to all plant on site including Pumps and Generators as listed in the Input/Output drawings shown in **Appendix 4**.
- (vi) Install all new equipment within the existing cabinet (refer to photographs of existing cabinet configurations in **Appendix 5**) for type A and type B sites, totalling 30 No sites, as described in **Appendix 1**. At 8 No Type C sites the new equipment will not fit within the existing control cabinet, and the Contractor shall provide a new Ip56 rated powder coated stainless steel enclosure of minimum size 800mmH x 600mmW x 350mmD with CL001 locking t-bar handles. This new enclosure shall be sized to accommodate the additional equipment and installed to be as unobtrusive as practically possible.
- (vii) Supply and install all other new equipment not supplied by the Principal. The lists of Principal and Contractor supplied equipment is shown in **Appendix 6**. The existing telemetry and control system is to be removed after the establishment of the new monitoring and control equipment at each site and returned to the Principal.
- (viii) Undertake the change-over of all existing controls to the new controls, including the testing and commissioning of the Works. All Works are located at operational sites and there is limited down time available for pump change-overs. The Contractor, in conjunction with the Principal's Operations' staff, shall assess the down time and then schedule works to avoid any sewage spill. A small number of SPS sites have only one pump. Most SPS sites have 2 pumps, so it is important to keep the existing controller running, then swap one of the pumps to the new controller, check its operation and if correct change the 2nd and or 3rd pumps.

-
- (ix) Prepare a risk assessment for each site taking into account OH&S requirements and operational risks, for approval prior to commencement of Works at each site.

The detailed Scope of Works comprises the following:

1.2.1 Radio Frequency (RF) Works

- (i) The upgrade of the 2 Trio ER 450 radios at the Newhaven Depot base station to the repeater Sites at Cowes Basin and San Remo Basin to full duplex including all materials and necessary to complete the Works
- (ii) Wiring and installation of 39 No Principal supplied Trio radios at the Sewer Pump Stations sites and pressure monitoring site (remote sites) including all associated equipment including but not limited to Yargi antenna, Suppressors, co-axial cables, earthing and mounting brackets to achieve a minimum fade margin of 25dB
- (iii) Testing and commissioning of all installations

1.2.2 Electrical Equipment Installation and Hard Wiring Works

- (i) Installation and wiring of 38 No Principal supplied pre programmed SCADAPack RTUs
- (ii) Wiring of all I/O to SCADAPack RTUs Units including all necessary hardware as required for complete control and monitoring of sites as shown in the I/O drawings
- (iii) Installation and wiring of 39 No Principal supplied pre programmed Proface Human Machine Interfaces (HMIs) to the Sewage Pump Stations
- (iv) Installation of 38 No Principal supplied hydrostatic transducer level sensors at the Sewage pump stations
- (v) The installation of the 66 No Principal supplied current transducers (CTs) to one phase of each pump
- (vi) The supply and installation of all interface relays, auxiliary contacts, wiring, terminals, surge diverters and all consumables related to the installation of the equipment in accordance with the Principal's **Electrical Specifications** as required for the Works
- (vii) Supply and installation of relays and timers for hard wired high level operation at 38 No SPS sites
- (viii) Supply and installation of interface cable to gather I/O from generators at 3 No sites
- (ix) The supply and installation of a UPS with a 65 Amp Hour Battery and a DC Voltage 12-24 V DC converter at 38 No sites

-
- (x) Supply and installation of additional cabinets required to house equipment where there is not sufficient room in the existing cabinets for 7 No Type C sites as described in **Appendix 1**.
 - (xi) Coordination of the Principal's SCADA programming services into the Works program to achieve the Contractor's testing, commissioning and handover dates
 - (xii) Removal of all redundant devices and their return to the Principal
 - (xiii) Testing and commissioning of all installations

All Works are to be installed in accordance with the Principal's **Electrical Specifications** as attached in **Appendix 2**.

1.3 Structure of this Specification

For the convenience of administration of the Contract, the Specification of the Works has been separated into parts. The main body of the Specification contains the elements that are specific to the SCADA Upgrade. The Principal's generic electrical switchboard specification is contained in **Appendix 2** of the Specification.

The details in the Appendices are not "stand-alone" specifications; they must be read and actioned in conjunction with the main body of the Specification.

1.4 Work by Others

There are several items of work associated with this Contract which are to be undertaken by others, inclusive of the following:

- (i) The Principal supplied equipment (Refer **Appendix 6**)
- (ii) The Principal will arrange the upgrade of the SCADA Licence to accommodate the additional tags
- (iii) The Principal's nominated contractor will provide SCADA RTU programming and HMI programming. The contractor is Mr Michael Saunderson of Victorian Automation and Integration Services (VAIS) www.vais.com.au
- (iv) The Principal's nominated contractor VAIS will provide Electrical as-built drawings and manuals
- (v) The Principal's nominated contractor CommSite will provide the Radio Frequency Survey at each Works site
- (vi) The Principal will decommission existing ELPRO telemetry links between San Remo Basin, Dwyers Road SPS (Site No 10) and Ian Bartlett Water Purification Plant (Site No 3) in conjunction with the SCADA Upgrade Stage 5 works. The ELPRO communication link

will be replaced by a Microwave communication link, and this is a critical part of the Principal's control infrastructure.

1.5 Control Philosophy

In order to provide the high level of reliability and security appropriate to a sewer pump station, the SCADAPack RTU has been selected to provide site process control and automation as well as highly reliable SCADA communications via the Trio digital radio network using the DNP3 protocol to provide the following advantages:

- (a) The SCADAPack RTU provides comprehensive process control at each site, supporting the 5 IEC 61131-3 open programming languages, as well as floating point math and an extensive instruction set to enable the effective management of all sites.
- (b) DNP3 is a protocol designed to operate in harsh communications environments and as such will reliably deliver critical, time stamped telemetry information to the SCADA system.
- (c) The time stamping features of DNP3 allows trend back-filling, which minimises data loss during communications interruption.
- (d) Designing the radio network with reliability and redundancy as critical criteria allows the pump station to be simplified, with all automatic functions being performed by the RTU. This minimises hard wiring and discrete components in the local control system and simplifies pump station operation.

The control system will provide full operator access to all SPS functions and equipment both locally and remotely via SCADA, including:

- (i) Pump duty management including alternation and single duty selection.
- (ii) Setpoints for first and second duty pump start and stop level, referenced to actual wet well level as measured by a level transducer.
- (iii) Remote manual control of pumps, valves and associated equipment.
- (iv) Alarm setpoints and configuration.
- (v) Pump station enable/disable control.
- (vi) Off peak functionality.
- (vii) Derived, estimated flow rate and volume calculations (by integration of wet well level during inflow).
- (viii) Pump efficiency monitoring to detect changes in pump performance, based on average cycle times.

-
- (ix) Peak flow monitoring to provide indicative burst main alarming.
 - (x) Wet well self checking/cleaning routine to suck well dry once a day.

The following functionality will apply to the SPS control system:

- (A) SCADA monitoring of:
 - (i) Wet well level (ultrasonic or hydrostatic transducer).
 - (ii) High and low level float switch status.
 - (iii) Equipment alarms and status indicators such as overload, circuit breaker/supply, drive, thermistor and pump current
 - (iv) Pump service status (Auto, Manual, Isolated and Running)
 - (v) Derived alarms for all analogue devices (wet well level, motor current etc. to provide High-High, High, Low and Low-Low alarms for each device.
 - (vi) Local switch status alarming to alarm if pumps are left isolated for a length of time.
- (B) Hard-wired protection for:
 - (i) Overload.
 - (ii) Drive Fault.
 - (iii) Thermistor fault.
 - (iv) Pump circuit breaker fault.
 - (v) Mains supply and phase integrity.
 - (vi) High and/or spill level float switches to provide overriding pump control.
 - (vii) Remote fault reset (via SCADA).
 - (viii) Hard wired control of each pump and generator providing overriding Manual Run, Isolation and Auto operation.

1.6 Functional Description

1.6.1 Hardware Upgrade Requirements.

To effect implementation, each pump station will require the following alterations:

-
- (i) Replacement of the RTU and radio network with Principal supplied SCADAPack RTU and Trio Radio
 - (ii) Installation of Proface touch screen HMI (Principal supplied) for local operator control and data display.
 - (iii) Replacement of the current level control system with a new hydrostatic level transmitter (Principal supplied) for wet well level measurement.
 - (iv) Reworking the electrical wiring to the Principal's supplied drawing
 - (v) Installation of Principal supplied analogue current transformers (CTs)
 - (vi) Circuit Breaker state indication contacts.
 - (vii) Aligning I/O with the SCADA tag database.

1.6.2 Selector Switches

The local control panel will be fitted with a selector switch to control Manual-Off-Auto operation of each pump as follows:

- (i) "Manual" allows for total manual operation of each pump, and overrides all level and SCADA controls.
- (ii) "Off" Isolates the pumps from both Manual and Auto control (i.e. pump out of service).
- (iii) "Auto" allows RTU control of the pump, either automatically based on well level or by HMI/SCADA Manual control.

1.6.3 Float Switches

Float switches will be fitted to each wet well to provide:

- (i) SCADA alarming of high levels only.
- (ii) Overriding automatic pump operation in the event of a wet well high level.
- (iii) Pump protection from low level during normal pump operation.
- (iv) Hard wired pump control using the high level float and a discreet hysteresis timer to provide emergency high level pump operation in the event of an RTU failure.

1.6.4 Backup Power Supply (UPS).

Each remote site shall be fitted with a battery backup and associated UPS power supply to provide 12VDC power to the RTU and associated I/O and telemetry equipment, as well as 24VDC to the HMI (interlocked with the control cabinet door switch to conserve power when the door is closed).

1.7 Sewer Pump Station Operation

The pump station shall operate in a fully automatic reciprocation Duty/Standby mode by using the RTU/SCADA system setpoints and duty logic to allow full pump station control with remote (SCADA) Manual/Off/Automatic control of each pump.

The pump station will be operated from the RTU using setpoints for duty and standby pump start and stop levels as well as SCADA selected Remote Auto/Off/Manual settings for each pump, to allow remote pump control in the same manner as is available using local control and hardware.

“Remote Manual” operation will allow each pump to be individually started or stopped from SCADA or HMI, regardless of the wet well level (as long as the low level cut off point has not been reached).

“Remote Off” mode will prevent the pump from starting automatically, allowing remote pump shutdown for situations where a pump fault may be resolved by a **“shutdown→reset→restart”** sequence of operation by remote before attending the site, or similar situation.

“Remote Auto” mode allows fully automatic pump station operation using the analogue level measurement in the RTU and setpoints from SCADA for duty and standby pump start levels ("Site"_STN_000_DVL) and ("Site"_STN_000_SLV) and pumps stop level ("Site"_STN_000_SPL) to regulate the wet well level. Pump duty will alternate between starts to equalize pump usage. Pump sequencing is as follows:

- (i) Wet well level reaches the duty pump start level ("Site"_STN_000_DVL),
- (ii) Duty pump starts.
- (iii) Wet well level drops to the stop level ("Site"_STN_000_SPL), duty pump stops.
- (iv) In the event of the wet well level rising to the standby pump start level ("Site"_STN_000_SLV), standby pump starts.
- (v) Both pumps run until the wet well level drops below the stop level ("Site"_STN_000_SPL).

If a level signal conflict occurs and the high level float is activated while the ultrasonic level sensor does not indicate that a high level is present, the system will assume a high level is indeed present and run the duty pump. As with remote manual mode however, the pump run time will be limited, as the integrity of the low level indication and thus low level pump protection would be in doubt.

In the event of a duty pump failure, the standby pump will assume duty operation until such time as the fault is rectified, and the pump reset.

The hard wired Manual/Off/Auto selector for each pump allows individual overriding local control. Designed primarily for maintenance purposes or for use in extraordinary circumstances such as RTU or ultrasonic level sensor failure, the local selectors must be used with care, particularly in Manual mode, as no low level protection is available to prevent the pump running dry.

“Manual” mode will start the pump regardless of wet well level for the purpose of maintenance and to pump the pit down in case of automatic control failure.

“Off” mode will prevent pump operation, regardless of control conditions.

“Auto” mode enables all of the automatic control methodologies described above.

Note: In all modes of pump operation, hard-wired protection for motor overload and thermistor faults, as well as the remote SCADA controlled Station Disable function (regardless of operational mode) will prevent the pump from starting. The Off mode is for control isolation and must not be used for OHS lock-out/tag-out purposes.

1.7.1 RTU I/O & Memory Listing, MODBUS and DNP3 Address Mapping

The RTU physical I/O has been assigned in modular groups, providing all necessary I/O for a 2 pump SPS with generator in the SCADAPack base unit, requiring expansion I/O only for 4 pump SPS implementation.

Physical inputs are connected to the RTU in both failsafe (active, low, or normally closed) and non-failsafe (active high or normally open) modes for critical and non-critical devices respectively as follows:

- (i) Failsafe Inputs (active low):
 - (a) Pump 1 Drive Fault.
 - (b) Pump 1 Thermistor.
 - (c) Pump 1 Overload.
 - (d) Pump 1 Circuit Breaker Trip.
 - (e) Pump 2 Drive Fault.
 - (f) Pump 2 Thermistor
 - (g) Pump 2 Overload
 - (h) Pump 2 Circuit Breaker Trip.
 - (i) Station Intrusion Alarm.

-
- (j) Wet Well High Level Float.
 - (k) Telemetry Power Fail.
 - (l) Mains Phase/Power Fail.
- (ii) All remaining inputs are considered non-critical, and are to be wired in a non-failsafe (active high) mode.

2. CONTRACTOR'S OBLIGATIONS

2.1 General

The work under the Contract includes construction of the Works. The Principal is relying upon the Contractor to carry out this work.

2.2 Conflicts in Principal's Documents

If a provision (other than an omission) in the Principal's documents conflicts with any other requirement in this Specification, then before commencing that aspect of the Work, the Contractor shall notify the Superintendent in writing of the conflict. The Superintendent will then give a direction to the Contractor on which document takes precedence.

In the event of any discrepancy or inconsistency in the documents, then the order of precedence shall be:

- (i) Covering letters including the letters accompanying the Tender, the Tender forms, Tender Addenda, and the Letter of Acceptance of the Tender,
- (ii) Specification
- (iii) Drawings
- (iv) AS4000-1997 General Conditions of Contract

2.3 Impact of the Works

The Contractor shall ensure that the stability of the Principal's sewerage system is not compromised by the programming of the Works, and the Contractor shall prepare work methods and risk assessments in consultation with the Principal's Operations staff before commencing any shut down or change-over procedure at any site.

The Work Method Plan must include the start date, duration and the process for liaison, and shall be endorsed by Principal's Operations staff prior to submission to the Superintendent for approval. Work shall not commence until approval has been granted by the Superintendent.

The Contractor shall also prepare and submit to the Superintendent a Works Method Plan for approval by the Principal's Operations staff for the coordination of SCADA works at the sites where the existing ELPRO system is to be decommissioned.

The Superintendent will provide details of the Principal's Operations staff to the Contractor as soon as practicable after Commencement Date.

3. CONTRACT INTERFACES

3.1 Interfacing with the Principal's Operations

Where interfacing is required with existing Principal's assets the Contractor must make full preparation and seek approval of the Superintendent at least 5 working days in advance of the work being undertaken. Preparation shall include liaison with Principal's Operations staff and documentation of a comprehensive Work Method Plan.

All interfacing works are to be shown on the Works Program and shall include the Contract Hold Points.

All costs incurred in the interfacing Works shall be borne by the Contractor.

3.2 Contract Works Interfaces

3.2.1 SCADA Programming

The Contractor shall program the Works to include the integration of the works being undertaken by the SCADA Programming Contractor (VAIS) for the Principal. In particular the Contractor shall coordinate the Works under this Contract with the works being undertaken for the Principal by VAIS, and shall allow:

- (i) Time for VAIS to programme the RTUs and HMI before electrical installation commences at each site
- (ii) Time for the Contractor to confirm that SCADA programming has been completed before the Contractor commences testing and commissioning of the installations at each site

The Contractor shall immediately provide the Superintendent with copies of all correspondence and communications between the Contractor and the Principals' SCADA Programming Contractor.

3.2.2 ELPRO Telemetry Decommissioning

The Contractor shall make due allowance in the Works Program to coordinate the installation of SCADA Work at San Remo Basin (SRB), Dwyers Road SPS and Ian Bartlett Water Purification Plant (IBWPP) with the removal by the Principal of the existing ELPRO telemetry at the three sites.

The ELPRO system will be replaced by a Microwave service that will bypass Dwyers Road, leaving Dwyers Rd with a typical Type B SCADA installation. However, there is likely to be insufficient space at Dwyers Rd and IBWPP to have both SCADA and ELPRO installed concurrently.

4. INFORMATION TO BE PROVIDED PRIOR TO COMMENCEMENT

Within Two Weeks of Commencement Date

The Contractor shall submit to the Superintendent within two (2) weeks of Commencement Date of the Contract a Project Management Plan inclusive of the following:

- (i) A Works Program including testing and commissioning schedules
- (ii) A forecast of monthly cash flows from start date to the end of Defects Liability period
- (iii) An Occupational Health and Safety Coordination Plan
- (iv) A Quality Plan (including Audit program)
- (v) Copies of Certificates of currency for all insurances
- (vi) Provide the names of the Contractor's attendees for Project Control Group meetings

Two Weeks Prior to Construction Commencement on Site

- (i) A Construction Environment Management Plan (CEMP)
- (ii) A Works and Risk Management Plan showing identified risks, proposed elimination and/or management of the risk, relevant work methodologies and JSA plans, and any other procedures applicable to the Works in addition to Quality, OH&S and Environmental Management

5. WORKS PROGRAM

5.1 Contract Hold Points

The designated hold points in this Contract are:

- (a) No change-overs shall occur between 23rd December 2011 and 29th January 2012.

A Hold Point shall apply until approval to proceed is given by the Superintendent. Approval to proceed by the Superintendent does not alleviate any responsibility of the Contractor under this Contract, nor does it cause a delay to the Contract.

5.2 Works Program Requirements

Within 10 days of Contract commencement the Contractor shall provide to the Superintendent for review, a detailed Works Program illustrating the planned sequence and timeframe of the Works.

The Program shall be in the form of a critical path work and shall include dates for starting and completion of the various activities including the planned date for Practical Completion of the Works, and meet the following minimum requirements:

- (i) Proposed order of Works activities and their planned start and completion dates
- (ii) Due allowance shall be made for Inclement weather, Annual Leave, Public Holidays, and roster days,
- (iii) Contract Hold points and the designated "Hold Points" described in **Section 5.1** above

Subsequent to written authorisation by the Superintendent to commence construction activities at the Site the Contractor shall provide not less than seven (7) days notice in writing before occupying or commencing work on the Site.

The Program shall be updated by the Contractor every four (4) weeks, or when requested by the Superintendent, to ensure that the Superintendent has available the following at all times:

- (a) The current status of the Works.
- (b) The agreed program of future work, including the Contractor's proposed action to complete the Works on time.
- (c) Action to be taken to avoid foreseeable delays.

Where the Superintendent requires changes to the Program the Contractor will be given 7 days notice in writing, and the changes to the Program shall be implemented at no extra cost to the Principal.

6. PROJECT REPORTING

The project shall have three (3) levels of meetings.

6.1 Monthly Project Control Group Meetings (PCG)

These are formal meetings with agendas and minutes prepared and distributed by the Contractor and shall be held from the date of Commencement to Practical Completion. The Contractor's Representative shall consult with the Superintendent to determine the location, date and timing and participants of the meetings

6.2 Fortnightly Progress Meetings

These are less formal meetings with agreed action points recorded and distributed to participants by the Contractor and shall be held throughout the duration of the Works.

6.3 Weekly meetings

Weekly meetings shall be held during performance testing.

6.4 PCG Meeting Guidelines

The Contractor shall provide the following information for each monthly PCG meeting for the preceding calendar month's Works and distribute it to the participants by the seventh (7th) working day of each month:

- (a) a written summary on the progress and quality of the Works completed
- (b) an assessment of performance against the Endorsed Works Program and the Target Dates;
- (c) a summary of the value of Works completed and a spreadsheet of future projected progress payments payable;
- (d) a schedule of Quality Assurance Non-conformances;
- (e) status reports, including lost time injuries, safety and environmental reports
- (f) a progress report on all commissioning activity or performance testing activity and the results thereof;
- (g) compliance with all Performance Requirements during the preceding month;
- (h) any other matter relating to the work and compliance with the Contract

For the purposes of budgetary control and assessment the Contractor shall update the forecast of monthly cash flows to match the updated Program.

The Contractor shall prepare written reports for these meetings and circulate these to all meeting attendees as an Agenda at least 5 working days before the meeting is to be held.

The Contractor shall take written minutes of the decisions made at each meeting. The minutes shall be distributed to all meeting attendees as soon as possible after each meeting.

Within two (2) weeks of the Commencement of the Contract the Contractor and the Principal's Representative shall agree on those people who shall attend the meetings.

The meetings will be held at the Principal's Administrative Offices in Newhaven

7. INTEGRATED MANAGEMENT SYSTEM

The Contractor shall prepare and maintain an Integrated Management System that incorporates the Contractor's Quality, Safety, Environmental, Project and Risk Management plans.

7.1 Accreditations

The Contractor must, at a minimum, supply evidence of accreditation and/or membership with an appropriate industry body such as the National Electrical Contractors' Association

A quality accreditation such as AS/NZS ISO 9001 Quality System is desirable but not mandatory.

7.2 General Requirements

The Contractor must also:

- (i) nominate an appropriately qualified quality representative;
- (ii) develop project specific quality and environmental plans for this project and audit compliance with these plans;
- (iii) certify the quality of work undertaken;
- (iv) demonstrate compliance with all conditions of the Victorian Occupational Health and Safety Act 2004 and the Victorian Construction Industry Code
- (v) ensure that any sub-Contractors engaged by the Contractor comply with the requirements of the Contract and the Quality Assurance and Environmental Management Programs; and
- (vi) accept the Superintendent's role as a customer of the Contractor and as a second party auditor of the Contractor's Quality System

7.3 Works Quality Plan

The Works Quality Plan for the Contract shall incorporate Quality Assurance and Quality Control procedures, but not necessarily be limited to, the following:

- (i) Material supply, manufacture and construction carried out by the Contractor and any of its sub-Contractors. Materials and equipment shall be new and of a quality at least equal to that specified. Wherever practicable, materials and equipment shall be of Australian manufacture.
- (ii) All work shall be carried out by suitably qualified persons having experience and training in the particular types of work to be executed.

-
- (ii) A procedure for internal auditing of the Quality Assurance Plan by the Contractor;
 - (iii) The Quality Control tests and inspections regime to ensure the quality of a product as required by the Contract;
 - (iv) Traceability procedures which shall include a means of identifying in the Works, the location of all materials represented by a sample which has undergone a quality test.

The Contractor's Quality Assurance Plan must provide for the verification and certification of the quality of all construction, installation, operations, and maintenance and/or repair activities undertaken by the Contractor as part of the Contract.

The Contractor shall submit an audit program to the Superintendent for endorsement and implement the endorsed audit program and provide regular audit reports to the Superintendent.

The Contractor shall develop a Works Quality Plan as detailed in **Schedule 8 Part A, Conditions of Tendering**.

7.3.1 Quality in the Absence of Detailed Specification

Whenever the Contractor supplies materials or manufactured articles or does work for which no detailed Specifications are provided, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable in the market from firms of established good reputation or, if not ordinarily carried in stock, shall conform to the best accepted standard of the relevant trade for articles of the kind required with due consideration of the use to which these are to be put. In general, the work performed shall be in full conformity and harmony with the intent to secure the best accepted standard of construction and equipment of the Works as a whole or in part.

All materials used for the Works shall be new and fit for the intended purpose. The Contractor shall supply and deliver all materials required for construction of the Works under this Contract. Materials and coatings not covered under the Specification shall be verified by the Contractor as to their suitability to achieve the required design life. The Superintendent may request evidence of such verification from the Contractor.

7.4 Occupational Health and Safety Coordination Plan

7.4.1 General

The Contractor shall be responsible for any accidents or incidents arising from activities carried out under this Contract. Incident Management or Emergency Response Plans (ERP) shall follow Principal's procedures which are set out in **"Incident and Emergency Management Plan", reference INT09-05772** which the Superintendent shall supply to the Contractor at Commencement.

The Contractor's ERP shall be prepared in liaison with, and co-ordinated through, a

Principal's representative, as agreed with the Superintendent. Any liaison with Regulators or Authorities shall be undertaken by the Contractor.

The Contractor shall accept responsibility for control of safety at the workplace. Knowledge of the current Victorian and Australian Occupational Health and Safety Acts, Regulations, Codes of Practice, Australian Standards and other relevant legislation applicable to the health and safety for the Works must be held by persons nominated to undertake the safety responsibilities for the Works. Such persons must:

- (a) be currently qualified as an OH&S Officer in Victoria;
- (b) have experience and background in the Building and Construction Industry;
- (c) have up to date knowledge of Australian safety legislation (Act and Regulations as well as legislation pertinent to the Construction Industry);

7.4.2 Occupational Health and Safety Plan

The Contractor shall adopt the philosophy of having no "Lost Time Injuries" whilst carrying out its obligations under the Contract.

The Contractor shall establish and implement a detailed OH&S Management Plan for the Works that is consistent with the provisions of AS4801, and is consistent with the Principal's requirements outlined in ***Schedule 7, PART A, Conditions of Tendering***.

The Contractor's OH&S Plan shall be submitted to the Superintendent for review within two (2) weeks of Commencement of the Contract.

7.4.3 Incident Notification Procedure

If the Contractor is required by the relevant Safety legislation or by any other regulations to give any notice of an accident or dangerous occurrence during the performance of the Works, the Contractor shall at the same time or, as soon thereafter as possible in the circumstances, give a copy of the notice to the Superintendent.

The Contractor shall promptly notify the Superintendent of any accident, injury, property or environmental damage that occurs during the carrying out of the Works. The Contractor shall immediately notify the Superintendent of all lost time incidents.

Within three (3) days of any such incident, the Contractor shall provide a report giving complete details of the incident, including results of investigations into its cause, and any recommendations or strategies for prevention of similar incidents in the future.

7.4.4 Safety Equipment

The Contractor shall supply, maintain and replace as necessary, all trade tools, personal protective equipment and personal protective clothing and Specialist Safety Equipment in

sufficient quantities to ensure safe working conditions, safe working practices and the safe execution of the work under the Contract.

7.5 Environmental Management Plan

7.5.1 General

The Contractor shall undertake construction of the Works in accordance with an approved Construction Environmental Management Plan (CEMP). The Contractor shall submit the CEMP to the Superintendent for review and approval at least two (2) weeks before commencing work at the Site.

The CEMP shall identify and document potential environmental hazards and the corresponding measures for prevention and management. The Contractor shall implement procedures to avoid environmental damage during construction of the Works and the on-going operation of the Works. The CEMP shall be in the form of the document described in ***Schedule 9 of Part A, Conditions of Tendering.***

On approval by the Superintendent, the Contractor shall prepare 3 final copies of the CEMP in A4 size 2 hole loose leaf ring folder. The CEMP documents will be distributed as follows:

- (a) 1 copy issued to the Superintendent;
- (b) 1 copy to be kept at a location near the construction site to be readily available to the Superintendent's Representative or nominated representative on a day to day basis;
- (c) 1 copy kept at the Contractor's administrative office remote from the Contractor's site.

Note that the Superintendent's agreement to the CEMP does not release the Contractor from full responsibility for adopting all necessary environmental protection measures for the duration of the Contract, whether or not such measures are explicitly or implicitly included in the CEMP.

7.5.2 Protection of Sewer System

The Works shall be planned and conducted so as to avoid damage to or pollution of the environment due to spillages from the sewer system. The Contractor shall undertake its own assessment of all sites as part of the construction works planning process to verify if/if not any particular protection measures are required.

7.5.3 Protection of Land & Vegetation

The sites of the proposed Works have no impact on vegetation. The Contractor shall undertake its own assessment of the Works' sites as part of the construction planning process to verify if/if not any particular land, flora and fauna protection and remediation

measures are required.

The Works **shall not** require a Cultural Heritage Management Plan.

7.5.4 Noise Levels

The Contractor shall ensure that noise emissions generated by the Works under this Contract shall comply with the requirements of the Victorian EPA in relation to allowable noise limits within the Works area and for the area surrounding the Works site

In particular, where soundproofing of plant and equipment is required to limit equipment noise, those areas shall have mandatory hearing protection signs in place and should be risk managed using the hierarchy of control measures. In addition, noise levels must conform to the EPA Plant Licence requirements.

In all circumstances of noise control, noise shall be attenuated at its source.

Equipment vibration must be minimised in accordance with AS 2625.

7.6 Risk Management Plan

The Contractor shall prepare a Risk Management Plan for the Works that identifies potential risks and describes how they will be mitigated and managed.

The Contractor shall submit the Risk Management Plan to the Superintendent for review and approval at least 2 weeks prior to commencement of Works at the Site.

7.7 Compliance Monitoring

The Superintendent may from time to time undertake monitoring activities to determine the degree of compliance of the Contractor with the requirements of the:

- (i) Contract;
- (ii) Works Quality Plan;
- (iii) Construction Environmental Management Plan;
- (iv) OH&S Management Systems;
- (v) Risk Management Plan

The Superintendent reserves the right to extend the monitoring activities to include any sub-Contractor engaged by the Contractor.

In the event that an activity or product has been identified as not complying with the requirements of the Contract as a result of monitoring activities undertaken by the Superintendent or its agents, the Contractor must respond in writing within 5 business days of

written notice indicating the corrective action/s taken to resolve the non compliance. The Contractor shall be responsible for all corrective action costs.

8. SERVICES

8.1 Existing Structures and Services

The Principal will assist by making available all existing plans of services it has located within the area of the Works. However it is the Contractor's primary responsibility from the perspective of Works safety to obtain and verify the location of all service authorities' assets including, electricity, water, sewerage and communications.

The Contractor shall access "Dial-Before-You-Dig" information, undertake site inspections, and access whatever other information is available, to identify and locate any existing structures or services that may be affected by the proposed Works. The Contractor shall inform itself of the responsibilities and requirements for working in the vicinity of existing structures and services, and take all actions and provide all things necessary to protect and maintain existing structures and services to the satisfaction of the relevant Authority or Owner.

Any damage to existing property, structures, or services caused by the Contractor's activities shall be repaired to the satisfaction of the relevant Authority or Owner at the Contractor's expense.

8.2 Working Near Powerlines

The Contractor must be aware of both overhead and underground powerlines when working on site and comply with "Rules for Cranes, Concrete Placing Booms and Excavating Equipment in Operating Mode in the Vicinity of Overhead Power Lines". When working near power lines (closer than 6.4 metres) the Contractor must take the following necessary precautions and observe the recommended "no go zone" safe clearances detailed below.

Work near power lines requires the Contractor to:

- (i) Notify the power authority before commencing work, and obtain written permission from the power authority.
- (ii) Conduct an on site work meeting and risk assessment prior to commencing work including written documentation. DO NOT commence work until a pre-start site/job meeting and a risk assessment have been completed.
- (iii) Provide a dedicated safety observer (certified spotter) for work between 3m and 6.4m under or beside any power line.
- (iv) No work is permitted above, or within 3m under or beside any live power line without written permission from the power authority. The permit must be available for inspection by the Superintendent when requested.

8.3 Disruption of Services

In the event of any planned disruption of services, including sewerage, water supply, power supply or communications services, the Contractor shall notify the Superintendent not less than two (2) working days prior to such disruption.

In the event that the Contractor identifies an unknown service or damages an existing service, the Contractor shall immediately notify the relevant service authority/utility company and the Superintendent, and comply with their instructions to rectify any damages or to make the service safe until repairs can be implemented.

8.4 Traffic Management

The Contractor must be aware of the hazards associated with road works and is required to submit, as part of the design, the Road Traffic Management Plans for approval by the Council. Where it is likely that Traffic Management Plans may vary during different stages of construction the Contractor shall submit plans for each stage of the Works.

All traffic plans are to comply with AS1742, and all road works shall be conducted in accordance with the Road Management Act 2004 – Worksite Safety – Traffic Management.

8.5 Road Access

The Contractor shall provide signage necessary to advise the public of the Works in accordance with the signage approval requirements of the Council. The Contractor shall not disrupt traffic on any road without the prior written approval of the Council

9. CONTRACTOR'S SITE SECURITY AND AMENITIES

The scope of works involves undertaking the Works at 42 separate locations throughout the Principal's region. Each of the sites has electrical control panels that are locked with the Principal's security key system. The only site that has existing toilet amenities is at the Newhaven Depot.

The Contractor shall be responsible for:

- (i) Defining and securing a safe working area at each Works' site for the Contractor's employees in accordance with the relevant Occupational Health & Safety regulation(s)
- (ii) Ensuring that all Works' sites are managed in accordance with site safety rules and site induction procedures
- (iii) Maintaining the security of each Works site and ensuring that all Works' sites are locked at the completion of each working day, and the Contractor shall be fully responsible for its own security within the each Works area site
- (iv) Ensuring that all Contractor's staff have access to sanitary, medical and first aid amenities as required by relevant regulations
- (v) Providing office accommodation, telephone, email and any other services necessary to undertake the Works

The Contractor shall liaise with the Superintendent regarding the requirements for notifying the Principal's Operations staff of the times and dates when the Contractor will occupy the Works' sites.

All Contractor's staff and visitors to the Works' sites must wear a VicRoads standard High Visibility Vest which includes reflective yellow stripes and Safety Boots at all times while on site. Other safety clothing and accessories such as hard hats shall be worn according to work site conditions.

The Contractor shall be responsible to establish any other facilities, such as storage, at its own cost and at a location(s) procured by the Contractor.

9.1 Access to Works' Sites

The Contractor shall obtain access to each site via a signed off **Loan Key** which will be issued by the Superintendent to the Contractor at Commencement.

The Contractor shall lodge a \$150 refundable key deposit when each key is issued. The deposit will not be refunded if the key is not returned to the Superintendent before Practical Completion.

9.2 First Aid and Medical Facilities

The Contractor shall in all respects be fully responsible for the provision of first aid services to its staff and work force, including the transport of injured personnel to hospital or other appropriate accommodation as and when required.

The provision for first aid shall be in accordance with the *Code of Practice for First Aid in the Work Place*.

9.3 Site Induction

The Contractor shall ensure that all employees, staff, sub-contractors and /or other people entering the Works' sites in relation to this contract are inducted prior to entering the Works area. The Contractor shall maintain a register of all persons who have been inducted.

The Contractor shall clearly display the Site Rules at all Works sites together with all other regulatory and statutory workplace signs.

9.4 Site Security

The Contractor shall be responsible for the security or otherwise with respect to loss, damage or theft of the Contractor's materials or equipment at the Works' sites as well as any materials or facilities of the Principal located at the sites.

The Contractor shall ensure that each site is left in a locked and secure state at the end of each working day.

9.5 Project Board and Advertising

No advertisement in any form or a Project Board shall be permitted to be erected at any of the Works' sites. The Contractor shall be permitted to install temporary signs containing its trading name on any Works sites delineation barriers with the prior authorisation of the Superintendent.

These signs shall be removed by the Contractor before the date of Practical Completion.

10. CONSTRUCTION

10.1 General

The Contractor shall be a reputable construction company with experience in the installation, testing and commissioning of electrical and communications equipment. The Contractor shall be suitably experienced and have all accreditations required under this Contract.

10.2 Scope

The Contractor shall undertake and complete all construction work required for the Contract inclusive of, but not necessarily limited to, the following:

- (i) Liaison and co-ordination with the Principal's Operations team to gain approval for access and interface activities throughout the construction period.
- (ii) Preparation of Integrated Management Plans for the construction of the Works inclusive of Quality, Environmental Management, Risk Management, and OH&S plans.
- (iii) All site preparations including, provision of temporary services for construction, site establishment, site security, setting out, identification and location of underground services, and permanent services for the Works.
- (iv) Supply of all labour, materials, plant, and equipment required to undertake and complete the Works.
- (v) All electrical, radio and associated plant and equipment for construction of the Works.
- (vi) All below ground pipework, pits, and valves associated with the Works.
- (vii) Provision of hoist and lifting equipment and other items required to comply with the standards and general requirements of the Principal, WSAA, and OHS Regulations.
- (viii) Installation of all regulatory and safety signs required by the Principal, Workcover and any other regulatory body that issues an approval requiring signage.
- (ix) Providing and recording of as-constructed details, and preparation of "As-constructed" Drawings and Operating Manuals of the **radio component only** of the Works.
- (x) Completion of Site Works inclusive of clean-up, removal of temporary services, removal of construction facilities, removal of site security, rehabilitation and landscaping.

10.3 Working Hours

Construction of the Works shall be undertaken between the hours of 7.30am and 5.30pm on weekdays (Monday to Friday), excluding Public Holidays.

No work shall occur outside the nominated working hours, including Public Holidays without the prior written approval of the Superintendent.

The Contractor shall take all reasonable measures to ensure the satisfaction of adjoining property owners affected by the Works. The Works shall be carried out in a manner that minimises inconvenience or impact on them.

The Contractor shall notify each property owner not less than forty-eight (48) hours prior to commencing works in the vicinity of their property.

10.4 Acts and Regulations

Construction Works shall be undertaken in accordance with all relevant Acts and associated Regulations including:

- (i) AS3000 and AS 3008
- (ii) Electrical Safety Act (Victoria) 1998
- (iii) Occupational Health and Safety Act 1985
- (iv) Equipment (Public Safety) Act 1994
- (v) Dangerous Goods Act 1985.

The Contractor shall accept its statutory responsibility under the Occupational Health and Safety Act 1985 as the principal Contractor of the Works.

In the implementation of the Works, the Contractor shall comply with the “Code of Practice for the Building and Construction Industry” and the relevant published Codes of Practice of the Victorian Workcover Authority including those for:

- (a) Building and Construction Workplaces
- (b) First Aid in the Work Place
- (c) Manual Handling
- (d) Manual Handling (Occupational Overuse Syndrome)
- (e) Noise
- (f) Plant

-
- (g) Provision of Occupational Health and Safety Information in Languages Other Than English
 - (h) Safe Use of Cranes in the Building and Construction Industry
 - (i) Safe Work on Roofs (Excluding Villa Constructions)
 - (j) Dangerous Goods
 - (k) Hazardous Substances
 - (l) Working in Confined Spaces
 - (m) Temporary Electrical Installations on Buildings and Construction Sites.

10.5 Standards

Construction of the Works shall be completed in accordance with the approved Design Drawings and Specification. Construction Works shall be undertaken and completed in accordance with the Principal's Standards, WSA Standards, and Australian Standards as applicable.

10.6 Explosives

The use of explosives shall not be permitted.

10.7 Tidiness and Cleaning Up

The Contractor shall keep the Site of the Works clean and tidy at all times and pay continuous attention to the removal of litter, waste materials, garbage, and recycle same where ever possible.

Under no circumstances shall the Contractor dispose of any material or goods, construction debris, rubbish or like material on or about the Site. All such materials shall be removed from the Site regularly and disposed of by the Contractor at its own expense. Clean, excavated material shall, where suitable, be used in required backfilling or shall be placed in stockpiles approved by the Superintendent, and where not required shall be disposed of at the Contractor's expense.

Prior to the issue of the Certificate of Practical Completion, the Contractor shall remove from the Site and all areas used by it for the purpose of the Works, all temporary Works, plant, buildings, rubbish, unused materials, construction facilities and other material and equipment belonging to the Contractor and its sub-Contractors or used under the Contractor's direction, and leave the Site and such other areas clean and tidy to the satisfaction of the Superintendent.

The Contractor shall be responsible for the rehabilitation and landscaping of the site after completion of the Works. Rehabilitation and landscaping shall involve removal of all waste materials, levelling to uniform contours to match the surrounding area, and drainage in

accordance with the general site. Additionally the Contractor shall ensure that any road that is damaged (physically or environmentally) from traffic related to the Works is reinstated immediately to a condition similar to that prior to the damage.

10.8 Salvage

The Principal retains the right to salvage any item as a result of the Works.

10.9 Demolition

The Contractor shall obtain approval from the Superintendent for any demolition required.

10.10 As Constructed Drawings

As a condition precedent to the achievement of Practical Completion, the Contractor shall issue to the Superintendent the As-Constructed Drawings for the radio components of the Works.

“As Constructed” Drawings shall be prepared in accordance with AS1100 using CAD work stations and shall be supplied in both hard copy (A3 paper sheets) and on a CD in DWG format suitable for interpretation by an AutoCAD system.

Each drawing shall be prepared on the Principal’s standard drawing format and shall include all drawings prepared during the design stage, modified to provide “as-constructed” details, and any other Drawings prepared specifically during construction.

The Superintendent will provide electronic copies (in AutoCAD format) of the standard drawing format to the Contractor upon request.

The location of all major plant and equipment shall be identified on the As-constructed Plans using Map Grid Australia (MGA 94, Zone 55) co-ordinates.

10.11 Asset Register

Prior to the Date of Practical Completion, the Contractor shall prepare a register of all assets installed during the Works in accordance with the Principal’s definitions, details and record types. The Superintendent shall provide the Contractor with an electronic version of the Asset Register template upon request by the Contractor.

The Contractor shall submit the completed Register to the Superintendent for approval, and make any alterations to the Register as required by the Superintendent.

11. TESTING AND COMMISSIONING

11.1 Scope

The Contractor shall be fully responsible for testing and commissioning of the Works. The scope of Works for testing and commissioning shall be inclusive of, but not necessarily limited to, the following:

- (i) Inspection and testing of all mechanical parts to prove their integrity, quality, operation, functionality, performance, safety, and fitness for purpose;
- (ii) Pre-commissioning tests and commissioning of the Works in accordance with the approved Commissioning Plan;
- (iii) Completion of Acceptance Testing and verification of the Works performance;
- (iv) Preparation and submission of all necessary Operations and Maintenance Manuals for the radio component of the Works

All costs associated with Testing and Commissioning shall be the responsibility of the Contractor. Subsequent to the successful completion of the Testing and Commissioning requirements the Contractor shall be granted a Certificate of Practical Completion.

11.2 Inspections and Testing

The Contractor shall, as part of its Quality Assurance Program, carry out quality control tests and inspections to ensure the Works satisfy the requirements for quality and are fit for purpose as specified in the Contract. These tests and inspections shall include, but not necessarily be limited to the following:

11.3 Acceptance Tests and Inspections

All materials and equipment delivered to the site for inclusion in the Works shall be subject to Delivery Acceptance Tests and Inspections, inclusive of the following:

- (i) the testing of all materials to be incorporated into the Works including type testing;
- (ii) the testing of all items to be incorporated into the Works during and/or upon completion of manufacture, comprising pressure tests, assembly checks, operating and performance tests;
- (iii) the inspection of all items delivered to the Site to ensure that such items are of the specified quality and workmanship and are in good order and condition at the time of delivery

The equipment may be inspected by the Superintendent at various stages throughout

manufacture and particularly prior to delivery to the Site.

11.4 Installed Tests and Inspections

As part of its Quality Assurance Plan, the Contractor shall submit to the Superintendent for acceptance, an Inspections and Testing Plan (ITP) inclusive of a detailed description of the proposed method of conducting all such tests and inspections including the materials and equipment to be used and the proposed methods of interpreting the various test results.

On the basis of the accepted Contractor's Quality Assurance Plans, the Superintendent will nominate which Tests and Inspections will be witnessed. The Contractor shall ensure that the Superintendent or his representative is afforded every opportunity to be present whilst such nominated tests and inspections are carried out. The Contractor shall cooperate with the Superintendent or his representative and shall provide assistance at all reasonable times to enable them to observe tests and carry out inspections of the work performed to ensure that all equipment is in good order and condition and in accordance with Contract requirements. The Contractor shall remove covers, operate machinery and perform any other reasonable work which, in the opinion of the Superintendent or his representative, will be necessary for them to confirm the quality or adequacy of the Works

Tests and Inspections shall include, but not be limited to inspections and tests to prove the condition of individual items of equipment, and inspections and tests to prove the integrity of the system as a whole prior to operation.

All tests and inspection shall be carried out in accordance with Occupational Health and Safety legislation and all relevant standards and codes issued by the Standards Association of Australia.

The Contractor shall maintain documentation pertaining to all tests and inspections and shall provide them to the Superintendent.

The cost of all tests and inspections carried out by the Contractor in accordance with the requirements of this Specification and the Contractor's Quality Assurance Plan, as accepted by the Superintendent, shall be borne by the Contractor.

Commissioning of any element of the Works shall not commence until all testing of that element is satisfactorily completed so as to achieve a pass in each instance and to be so certified by the Contractor's Quality Assurance Representative.

12. COMMISSIONING

12.1 General

Commissioning must not be commenced until successful completion of all Site Tests and Pre-commissioning of the Works. The Contractor shall be fully responsible for commissioning of the Works.

At least 2 months prior to commencement of commissioning the Contractor shall develop and submit to the Superintendent for acceptance a detailed Commissioning Plan for the Works. The Plan shall include, but not necessarily be limited to, the following:

- (i) Proposed work plan and Commissioning program,
- (ii) Risk assessment and contingency plans,
- (iii) Occupational Health and Safety consideration,
- (iv) Quality Assurance Program compliance
- (v) Environmental Impacts
- (vi) Performance testing criteria, validation of critical controls, and acceptance requirements for the various plant components, and varying operational modes,
- (vii) Acceptance Testing requirements
- (viii) Checklists

Commissioning of the Works comprises inspection and tests of all structures, buildings and pipelines, and operation of all equipment, systems, and processes, under actual operating conditions.

During the commissioning period, the Contractor shall have suitably qualified and experienced representatives on Site as required to be sure that all Contract requirements are fulfilled.

All calibrations supplied for instrumentation shall be provided by a NATA accredited laboratory. This shall apply to instruments such as Pressure Transducers, Pressure Gauges, Temperature and Humidity Devices, Flow Meters, Light Metering Devices, Gas Reading Devices, Timing Devices, etc.

All costs incurred during Commissioning, inclusive of all labour, materials, chemicals, and equipment costs, shall be borne by the Contractor. The Contractor shall provide the Superintendent with all results obtained during the commissioning period as soon as they become available. In addition, a commissioning report must be prepared by the Contractor and submitted to the Superintendent at the conclusion of the commissioning period.

12.2 Acceptance Testing

The Contractor shall be fully responsible for successfully completing Acceptance Testing of the Works and all costs incurred shall be borne by the Contractor inclusive of all labour, materials, chemicals, equipment, sampling, and Laboratory testing costs. The proposed Acceptance Tests and procedures shall be applied to verify that the operation, performance, and capacity

requirements of the Contract have been achieved.

The Superintendent will monitor the Acceptance Tests to ensure compliance with the Contract.

13. PRACTICAL COMPLETION CRITERIA

Practical Completion in respect of the Works is achieved, if in respect of the Works, the Superintendent is satisfied that the following has occurred:

- (i) There are no existing defects in the Works, other than defects which:
 - a) have been listed by the Contractor and approved by the Superintendent as not requiring to be rectified at Practical Completion;
 - b) are of a minor nature; and in the Superintendent's opinion:
 - do not prevent the part of the Works affected by the relevant defect from being used for its intended purpose;
 - in aggregate, are capable of being rectified within 4 months after Practical Completion;

and the rectification of which will not adversely affect the convenient use of the Works.

- (ii) Satisfactory completion of all requirements of Commissioning and Acceptance Testing.
- (iii) Provision of "as-constructed" drawings in both digital and hard copy format.
- (iv) Provision of certificates from the Contractor and key sub-Contractors that the Works have been constructed in accordance with the accepted design documents,
- (v) Provision of certificates from the Contractor and (if applicable) any key design consultants that the part of the Works that is the subject of the consultant's design has been carried out in accordance with the accepted design documents.
- (vi) Provision of an Asset Register containing value and description of each asset item. The value of the item shall be the cost of the item together with its proportional cost of the design, profits, preliminaries and overheads.
- (vii) Details of materials and equipment supplied, with supplier details, and details of any warranties applicable.
- (viii) Provision of a report defining the status and a program showing the anticipated dates for completion of any defect, including omissions and outstanding Works Under Construction
- (ix) Removal of all debris and temporary Works from the site and completion of all appropriate restoration works.
- (x) Demonstration to the satisfaction of the Superintendent that all equipment, plant, services and installations forming part of the Works function as required both under normal and simulated emergency conditions.

(xi) Provision of all Approvals required in relation to the operation and ownership of the Works.

14. DEFECTS LIABILITY

Following receipt of the Certificate of Practical Completion the Contractor shall remain responsible for the repair of any defects in the Works for a period of one (1) year. A defect is defined as any failure, breakdown, or malfunction of any plant, equipment, and/or process, provided by the Contractor, which compromises the capacity, performance, operability, integrity, redundancy, and/or safety of the Works.

Any failure, breakdown or malfunction resulting from fair wear and tear, or through cause outside of the Contractor's control, such as vandalism, extreme climatic event, will not be classed as a defect, and therefore the repair costs will be borne by the Principal.

Any defect identified by the Superintendent in the Defects Liability period shall be rectified by the Contractor in accordance with the requirements of the Contract. Where defect repair utilises spares or spare parts, those spares shall be replaced so as to be available for any future repair or replacement. All costs incurred in rectifying the defect, replacement of Spares, and subsequent proving of the adequacy of the rectification, shall be borne by the Contractor in accordance with the Conditions of Contract.

On satisfactory completion of the Defects Liability Period, the Superintendent will release to the Contractor the Security Amounts owing, and issue a Final Certificate for the Works, in accordance with the Conditions of Contract.

15. LIQUIDATED DAMAGES

Liquidated damages do not apply to this Contract.

16. PERFORMANCE STANDARDS

The Contractor's performance will be monitored at the regular meetings described in **Section 6** and by the responsiveness of the Contractor to issue resolution.

16.1 Performance Measures

The following list comprises the performance criteria that the Principal shall apply to assess the Contractor's performance of the Works:

- (i) Program; undertaking all works not later than described by the Contractor in the Works program
- (ii) Quality: performing all works to not less than the quality described in the Quality Plan
- (iii) Environment: undertaking all Works to a standard not less than that described in the CEMP
- (iv) OH&S: undertaking all Works in accordance with the Occupational Health Coordination Plan
- (v) Cost: completing all Works for the agreed Contract Sum
- (vi) Disruption to Principal's Operations; undertaking all Works in accordance with the agreed Work Methods and Risk Management Plan

16.2 Action to Remedy Non-Performance

In the event of unsatisfactory performance for any of the Performance Measures the following action will be taken:

- (i) **1st Instance**

The matter shall be discussed between the Superintendent and the Contractor. The two parties will seek to identify the cause of the matter and form remedial actions. The remedial actions will be documented and a timeline for resolution agreed.

- (ii) **2nd Instance**

The Contractor will be notified of the matter in writing by the Superintendent. The Contract Director and Contractor's Representative shall be required to attend a meeting with the Superintendent.

At this meeting the two parties will review the remedial actions documented in the *1st Instance* and seek to identify why the matter has not been resolved. The two parties will form remedial

actions and a timeline for resolution will be set by the Superintendent.

(iii) **3rd Instance**

The Contractor will be notified of the matter in writing by the Superintendent. The Contractor shall be required to attend a meeting with the Superintendent.

At this meeting the Contractor shall be required to show-cause why the contract should not be terminated. If due cause is not shown the Superintendent may recommend to the Principal that the Contract be terminated and the costs incurred, by the termination and consequent awarding of a new contract, will be recovered from any payments owing to the Contractor at the time of termination.

16.3 Termination

Further to the procedures outlined in Clause 16.2, any serious occurrences of unsatisfactory performance or major breaches of contract conditions by the Contractor may also be grounds for termination by the Principal.

17. DOCUMENT OWNERSHIP and RECORD KEEPING

In undertaking this Contract the Contractor shall maintain a full and accurate record of the business conducted under the contract in accordance with the standards and associated specifications of the Public records office of Victoria (PROV). Details of the record keeping procedures can be found on the PROV website www.prov.vic.gov.au .

APPENDIX 1 – WORK SITE LOCATIONS

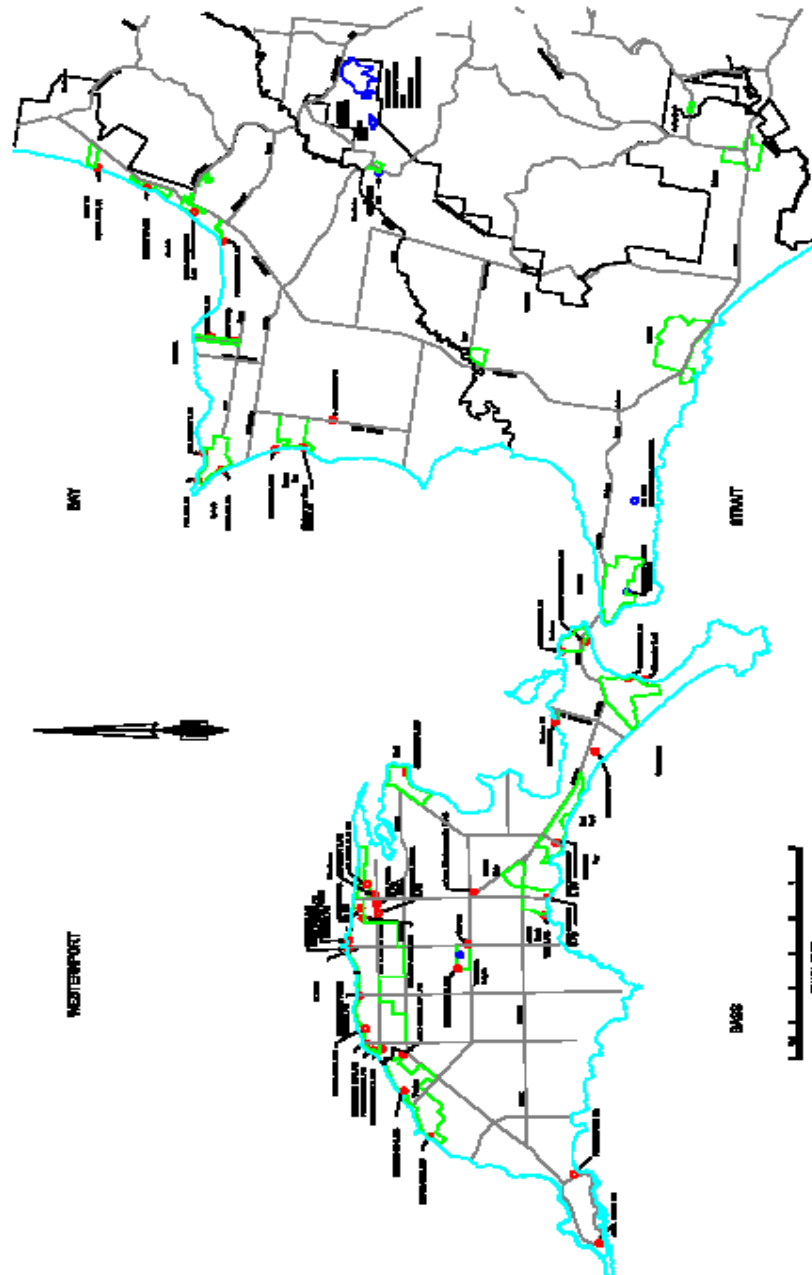
No	SITE_NAME	Type	Comments	TYPE	CT's
1	Balcombe SPS	Pump station Building	2 Pumps, 1 Blower, 1 Generator on site	A	2
2	Frederick Drive SPS	Pump station Building	2 Pumps, 1 Blower, 1 Generator on site	A	2
3	IBWPP	Control Panel	SCADA to proceed after Principal removes ELPRO connected to San Remo Basin Level control	A	0
4	Norsemens Road SPS	Pump station Building	2 Pumps, 1 Blower, 1 Generator on site	A	2
5	Anchorage Road SPS	Road side Panel	2 Pumps	B	2
6	Bayview SPS	Road side Panel	2 Pumps	B	2
7	Beach Street SPS	Road side Panel	2 Pumps	B	2
8	Boys Home Road SPS	Road side Panel	2 Pumps	B	2
9	Devon Avenue SPS	Road side Panel	2 Pumps	B	2
10	Dwyers Road SPS	Road side Panel	SCADA to proceed after Principal decommissions ELPRO	B	2
11	Flinders Road SPS	Road side Panel	2 Pumps	B	2
12	Gap Road SPS	Road side Panel	2 Pumps	B	2
13	Goldensands SPS	Road side Panel	2 Pumps	B	2
14	Grantville Central SPS	Road side Panel	2 Pumps	B	2
15	Industrial Estate SPS	Road side Panel	2 Pumps	B	2
16	Janssons Road SPS	Road side Panel	2 Pumps	B	2
17	Kramer Rise SPS	Road side Panel	2 Pumps	B	2
18	McLardy SPS	Road side Panel	1 Pump	B	1
19	McRae Avenue SPS	Road side Panel	2 Pumps	B	2
20	Moore Street SPS	Road side Panel	2 Pumps	B	2
21	Newhaven Caravan Park SPS	Road side Panel	2 Pumps	B	2
22	Pier Road SPS	Road side Panel	2 Pumps	B	2
23	Pioneer Bay SPS	Road side Panel	2 Pumps	B	2
24	Rennison Road SPS	Road side Panel	2 Pumps	B	2
25	Saltwater Creek SPS	Road side Panel	2 Pumps	B	2
26	Silvergull SPS	Road side Panel	2 Pumps	B	2
27	Southport SPS	Road side Panel	2 Pumps	B	2
28	Stewart Street SPS	Road side Panel	2 Pumps	B	2
29	Tenby Point SPS	Road side Panel	2 Pumps	B	2
30	YCW SPS	Road side Panel	2 Pumps	B	2
31	Anderson Street Boat Ramp Toilet Block SPS	Within Kiosk Building	1 Pump, Issues with Space	C	1
32	Golf Club SPS	Mounted on Golf Club B'ding	1 Pump	C	1
33	Hereward Close SPS	Road side Panel	1 Pump	C	1
34	Koala Conservation SPS	Mounted on Koala Centre	1 Pump, Issues with Space and Antenna	C	1
35	Penguin Avenue SPS	Road side Panel	1 Pump, Issues with Space	C	1
36	Penguin Pde SPS	Mounted on Penguin Parade Building	2 Pumps, 2 Macerators, Issues with Space, access to Mounting antenna	C	2
37	Red Rocks Road SPS	Road side Panel		C	1
38	Thompson Ave Toilet block SPS	Inside toilet Block	1 Pump, Issues with Space and Antenna mounting	C	1
39	San Remo Pressure	Road side Panel	No Pump, Single box telemetry unit		
	Newhaven Depot	Radio repeater Site	Boys Home Rd Newhaven		
	San Remo Basin	Radio repeater Site	In Punchbowl Road		
	Cowes Basin	Radio repeater Site	At Wimbledon Heights		

Definition of SPS types:

Type	Definition
A	Indoor with separate telemetry section
B	Outdoor with separate telemetry section
C	Small, limited space

APPENDIX 2 – REGIONAL PLAN OF WORKS SITES

A plan of the Principal's regional network is attached in PDF format



APPENDIX 3 - ELECTRICAL SPECIFICATIONS

The Works are to be installed in accordance with the following general ***Westernport Region Water Corporation Technical Specification***.

**WESTERNPORT WATER**

Trading name for

WESTERNPORT REGION WATER CORPORATION**ABN 63 759 106 755**

ELECTRICAL SPECIFICATION

1. General Technical Specification

1.1 Standards and Wiring Methods

All equipment supplied, materials used and techniques used shall conform in all respects to the requirements of the latest issues of the specifications of the Standards Association of Australia, referred to herein as A.S. Electrical wiring methods shall be in accordance with the requirements of AS/NZ 3000:2008 and to the satisfaction of the "Code of Practice – 1999 - Service and Installation Rules" and the "Electrical Safety (Installations) Regulations 1999".

If there is any conflict between the terms of any of the above mentioned specifications and this specification, this specification shall preside.

1.2 Manufacturers' Brand name and Model Numbers

When brand names and model numbers are mentioned in this Specification and on the drawings, they are used only to describe the type of equipment and/or materials required and this must not be read to imply preference over any other product of equal quality and/or performance.

Where it is proposed to substitute equipment or materials different to that specified the contractor shall provide adequate verification in writing to the Superintendent that the equipment offered is equal to or better than that specified.

1.3 Contractor Drawings

Within two weeks from the date of acceptance of the contract, and prior to fabrication, the Contractor shall submit the following drawings for approval to the Superintendent.

For each Job:

- (i) Control Schematic
- (ii) Power Schematic.
- (iii) Telemetry Interface Schematic.
- (iv) Switchboard construction details with general layout and equipment arrangement details, list of equipment and materials and label schedules.

Within two weeks of final commissioning the Contractor shall supply to the Superintendent a full set of "As Constructed" reproducible drawings, three sets of prints and one file copy on disk of each drawing in DXF or DWG format. Drawings to include all final and correct information such as wire numbers, tag numbers, relay numbers, label details, etc. Line numbers to be included on each schematic with relay contact type and number and its associated line number referred to beside each relay coil.

1.4 Factory tests and inspection

The Contractor shall inform the Superintendent when the switchboard is completed prior to any equipment being mounted or wiring commenced so as the Superintendent can factory inspect for quality of manufacture and painting where applicable.

The Contractor shall inform the Superintendent prior to shipment of the completed switchboard with all equipment mounted and wired so as the Superintendent can routine test.

The tests shall be carried out by the Contractor and witnessed by the Superintendent and/or his nominated representative. The program for testing is to be formulated by the Contractor and approved by the Superintendent. Testing shall include functional testing of all equipment to verify correct operation of all control functions as per the Specification.

Costs associated with setup for testing, necessary equipment for testing and testing itself are the responsibility of the Contractor. The testing should enable thorough checking and the simulation of the normal modes of operation.

1.5 Packing and Transport

The Contractor shall be responsible for suitable packing and transportation to the delivery point. Packing and protective coverings shall be applied to avoid risk of any damage including paintwork damage during transit and any damage which does occur shall be rectified to the satisfaction of the Superintendent.

1.6 Commissioning

The Contractor shall be required to commission the equipment in accordance with provisions of Clause 31 of General Conditions of Contract. Commissioning tests will be carried out by the Contractor and witnessed by the Superintendent and/or his appointed representative and shall include tests to verify correct operation of all equipment. The Contractor is to prepare the program for commissioning and forward this program to the Superintendent for approval one week prior to commissioning.

2. SWITCHBOARD DETAILS

2.1 INDOOR SWITCHBOARDS

2.1.1 Description

Indoor switchboards shall be free standing, front connected, low voltage (415/240 V nominal), weatherproof enclosed cubicle type units incorporating protection, controls and starting equipment together with main switches and ancillary plant and other sub circuit protection and controls.

2.1.2 Construction

Switchboard construction shall comply generally with the requirements of AS 1136 for cubicle type switchgear and control gear assemblies. Adequate space including clearance distances and maintenance access shall be available for all equipment and for the accommodation of external cable entry and connections.

Internal segregation shall be provided between each compartment or section serviced by a door or a removable access panel excepting that bus or cabling compartments may be continuous. Segregation of functional unit compartments shall be as set down in AS 3439 for Form 4 switchboards.

Switchboard enclosures shall be of welded construction with internal stiffening members or framing as necessary to ensure overall strength and rigidity. Equipment mounting plates, brackets, etc. shall be provided for fixing of all internal equipment; fixings shall not be made through external panels. Panel joints and edges shall be folded or continuously seam welded and ground smooth to seal against the ingress of dust and moisture. Additional stiffening and support members shall be provided where necessary to support any heavy equipment.

2.1.3 Material

Material of the switchboard shall be marine grade aluminium free of dents, blemishes, or scale of a minimum thickness 3mm. Painting to be in accordance with Clause below.

2.1.4 Doors

Doors shall be constructed of material of same type and thickness as that specified in Clause below. They shall be of folded section and shall be fitted with stiffening members to ensure

adequate rigidity without warping. They are to be fitted with a door rim and black "Neoprene" seal arrangement as detailed on typical drawings, so as to form a dust and moisture tight seal when the door is closed.

Hinges shall be provided that adequately support the door and shall be chrome plated. They shall be the pintle type hinges with a stainless steel pin. Hinge fixing screws shall be fully concealed where hinges are exposed.

Door handles shall be a chromium plate lockable T-handle keyed to the "Lockwood" CLOOI locking system

Doors larger than 600mm high shall be fitted with a "three-way" roller latch, arranged to fasten the door at the top, bottom and mid point.

Access Doors and panel which are intended to be opened by "Authorized Electricians Only" shall be constructed as for doors described above, including "Neoprene" sealing arrangements. Fixing shall be via chromium plated "captive bolts". These doors and panels shall be suitably labelled with a white label with red letters; "ACCESS TO AUTHORISED PERSONNEL ONLY".

2.1.5 Cable Entry

Cable entry shall be from below. All cables shall enter via the bottom cable zone through suitable non-corrosive cable glands installed in a hot dip galvanized or aluminum gland plate.

Building light and power wiring entry can be via the rear of the cable zone or as directed by the Superintendent. In these instances it is where the cabling is to be "hidden" in the pump station wall cavities thus alleviating the need to install exposed conduits on the internal walls of the pump station.

The cable zone is to be partitioned from the rest of the switchboard to prevent the ingress of dust and moisture and gasses.

2.1.6 Escutcheon Plates

Escutcheon plates shall be provided within operator accessible compartments such that the operator is fully protected from all equipment when the door is opened. The escutcheon shall be neatly cut such that all switch and circuit breaker toggles, fuse carriers, etc, are accessible without removal of the escutcheon plate. Spaces to accommodate future additional switches, circuit breakers or fuses shall be pre-cut and neatly blanked by removable strips.

All escutcheon plates shall be flame resistant and affixed to flanges within the switchboard by plated knurled head screws.

2.1.7 Plastic Covers

Clear plastic covers are to be provided where contactors and control gear occupy the same

compartments as the circuit breakers and fuses. Any reset buttons required shall be mounted on this clear plastic cover. This cover shall be sufficiently strong to withstand the pressure exerted by the operator when operating the reset buttons.

Where control devices and/or instruments are mounted on doors which are open-able by the plant operator all terminals and wiring on the rear side of the door shall be fully enclosed behind a removable clear plastic cover to prevent accidental contact.

2.1.8 Plinths

All switchboards to be provided with 100mm high mild steel hot dip galvanized plinths. For the outdoor aluminium switchboards the plinth is to be electrolytically isolated via a continuous neoprene seal between the underside of the switchboard and the top of the plinth. The switchboard is to be securely fastened to the plinth with stainless steel bolts.\

2.2 PAINTING OF SWITCHBOARDS

2.2.1 Preparation

All preparation and finishing shall be executed by experienced and competent tradesmen in accordance with the paint manufacturer's recommendations." Any alternative offer shall be accompanied by a similar detailed specification and must be approved by the Superintendent before any painting work is commenced.

Switchboard surface preparation and painting shall be as follows:

- (i) Clean all surfaces with a suitable cleansing fluid.
- (ii) Wash, dry and prime with two-pot epoxy primer to a minimum film thickness of 0.05mm.
- (iii) Final finish shall be two coats of a two-pot polyurethane full gloss paint with a minimum time of 24 hours between coats, .

2.2.2 Colour and Standard of Finish

Internal switchboard and equipment mounting plates shall be white.

External switchboard colour to be beige; exact colour number will be nominated by the Superintendent.

Finished work shall be free from blemishes such as sags, runs and "orange peel" effect.

During transportation and installation every care shall be taken to avoid paint work damage; any damage, which does occur, shall be repaired to the satisfaction of the Superintendent.

2.3 OUTDOOR SWITCHBOARD

2.3.1 Power Supply

The contractor shall supply and install a three (3) phase, 415 volt, 4 wire underground service to the pump control cabinet from the nearest street distribution pillar. Overhead power lines will not be permitted.

2.3.2 Cable

The incoming power cable shall be installed underground and be protected via an underground grade conduit, as per AS 3000/2008. Entry into the switchboard shall be directly below the Supply Authority (SA) metering section of the Switchboard and Control Assembly (SCA).

2.3.3 Connections

All connections within the control cabinet shall be made or arranged by the contractor. I.e. (supply authority).

2.3.4 Fees

The contractor shall arrange for the supply authority inspection fee and connection fee to be paid and all non-compliances are to be rectified at the contractors own cost.

2.3.5 Material

Outdoor switchboards shall be generally as per details for indoor switchboards except that material is to be 3mm thick Marine Grade Aluminium and painting as per Clauses below with internal colour Gloss White and external colour Saltbush (Lysaght colour). All external joints and edges shall be continuously seam welded and ground smooth for waterproofing.

2.3.6 Roof

The roof shall slope slightly to the rear and overhang doors sufficiently to prevent ingress of moisture. End of roof overhang to be "upturned" slightly. Outdoor switchboards to be fitted with vermin proof louvers at the top and bottom of each end for ventilation purposes.

2.3.7 Gland Plates

Gland plates for outdoor switchboards shall be marine grade aluminium plate strong enough to support installed cables.

2.3.8 Access

To allow for suitable access, the plinth and control cabinet shall be positioned with a minimum of two- (2) metres clear, level standing space in front of the control panel. It shall be positioned so that this clear standing area does not include any lids or well openings but allows good visibility into well.

2.3.9 Plinth

The concrete plinth shall have bevelled edges. Conduits to control cubicle for power

supply and wet-well wiring shall rise through the plinth. The entire standing space in front of the panel shall be 100mm concrete paving.

2.3.10 Seals

Doors to the control cabinet shall be fitted with continuous sealing rubber to provide a minimum of 10mm bearing area onto the doorframe and achieve a IP rating of 56. Each door shall have self-locking lever action retainers.

All external doors must have lever action retainers fitted to prevent doors from closing while cabinet is being accessed.

2.3.11 Manual/Auto Control of Pumps

Primary control will be a MJK Hydrostatic Transducer to SCADApack 32 RTU/Controller and Proface touch screen, with level indication, a high level alarm will be effected by a float switch directly to the high level alarm relay which operates the alarm light and/or input to the telemetry unit. The telemetry high level input is to be supported by battery back up.

2.4 EQUIPMENT WITHIN THE SWITCHBOARD

2.4.1 Main Switch

The Main switch will be sized to the maximum load of the Switchboard + 25% and will be a Load brake change over switch, labelled as Normal supply/Off/Generator supply. To move from normal supply to generator supply, or in reverse, the switch will be designed so it can only be moved to the off position first. The generator supply will close contacts to the Generator Inlet socket, and be interlocked so that the normal supply and the generator supply cannot be closed together at any time. In the case of a permanent generator being part of the contract, the Contractor shall supply and install an automatic transfer switch in the switchboard.

2.4.2 Switchgear

All electrical equipment shall be internally mounted, (preferred method is by din rail mount) on panels or the panels shall only be accessible from the front (i.e. there will be no back access).

Switchgear and other apparatus fitted within the switchboard shall be arranged for total front connection. All equipment shall be neatly installed and wired such that it may be safely operated and maintained and also readily replaceable at any time.

2.4.3 Fasteners

Stainless steel fasteners must be used for the mounting of all equipment in either indoor or outdoor switchboards.

2.4.4 Bus Bars

Bus bars and bus droppers shall be of high conductivity copper complying with the requirements of AS C52 and rated such that temperature rise does not exceed 40 degrees centigrade for continuous operation at rated current.

Bus bars shall be contained in separate segregated sections of the switchboard or alternatively shall be insulated by PVC sleeving or PVC coating.

Bus bar supports and bracing shall be suitable for the required minimum short time, withstand current rating of the switchboard and shall be fabricated from heat resistant, non-hygroscopic insulating material. Uninsulated bars shall be sleeved for a distance of at least 50mm from each support. Connections to bus bars shall be carefully prepared and protected to avoid possible oxidation and/or overheating and shall be secured by bolt fixings incorporating a suitable locking washer.

The rated short time withstand current of the main bus circuits and "through fault" capacity of the switchboard as defined in AS 1136 shall be not less than six thousand ampere for 1 second.

2.4.5 Control

All Pump stations will controlled by a SCADAPack 32 P4A 105-01-0-0 RTU and Interfaced to a Proface AGP3302-B1-D24 Touch screen, the units will be installed and wired as per the attached drawings including the battery backup, the high level run on timers, and provision for telemetry Ariel cables.

All control including floats shall be at extra low voltage unless otherwise indicated.

2.4.6 Circuit Breakers

Circuit breakers shall be of the moulded case industrial class and fitted with both inverse time thermal trip elements and instantaneous magnetic trip elements. Circuit breakers shall have a symmetrical AC interrupting capacity as noted on the drawing. Circuit breakers shall comply with the provisions of AS/NZS 3947.2:2002.

The circuit breaker toggle shall be a "trip free" mechanism and the "tripped" position of the toggle shall be different from its "on" and "off" positions.

Where shown on typical drawings Residual Current Device combination circuit breakers are to be provided.

All motors, Solenoids, valves and other high current devices shall have independent circuit protection.

2.4.7 Surge Protection

All switchboards shall have MOV type surge protection of all phases.

2.4.8 Contactors

Motor contactors shall be Sprecher and Schuh series. Contactors shall be the air-break electro-magnetic type as per AS 3947.4.1:2001. The continuous through current and make/break capacity shall not be less than the required motor rating detailed in the specification or shown on the drawings. There shall be an appropriate de-rating allowance for secondary contactors in reduced current starters.

At the stated carrying capacity contacts shall have an intermittent duty rating of not less than Class 0.3 and a mechanical endurance of at least 5 million "no load" operations.

Contactor coils shall be continuously rated and easily replaced should the need arise. They shall be of the moulded block type construction incorporating double break silver alloy contacts or similar with suitable arc control enclosures. To avoid operational noise and vibration pole faces shall be fitted with suitable shading rings.

Each contactor shall have a through-fault rating compatible with the circuit breaker or HRC fuses protecting the motor circuit based on the rating for the largest motor which could be controlled by the contactor.

Contactors shall be equipped with not less than one normally open and one normally closed auxiliary contacts each having a 6A continuous rating. Additional auxiliary contacts shall be provided to suit the particular control circuit as detailed on the typical drawings.

2.4.9 Thermal Overload Relays

Thermal overload relays shall be "Sprecher & Schuh" or equivalent.

Current sensing thermal overload relays shall be employed for three phase motor protection. These shall be three element bi-metallic types complying with the requirements of AS 1023 for Class B devices. All relays shall include an adjustable, calibrated current setting and shall be selected to suit the full load current of the protected motor. Trip contacts/shall operate with a positive snap action and the current path in the trip circuit shall not include pivots or sliding elements.

The design of thermal overload relays shall include provision for tripping under conditions of excessive current unbalance such as the loss of low voltage phase or high voltage phase.

Where a separate "hold" relay is to be used in the motor protection circuit, thermal overload relays shall be auto resetting. In all other cases they shall be the manual reset types. The manual reset shall be by means of an extended rod operator with an associated door or escutcheon mounted push button. Alternatively or where shown on the schematic diagram, a solenoid-reset device shall be provided to facilitate electrical resetting.

2.4.10 Thermistors

Where motors are to be fitted with thermistor elements to monitor winding temperature the

associated control unit shall be constructed in accordance with AS 1023 for positive temperature coefficient thermistors and shall not be the auto-resetting type; arrangements involving a "hold" relay in association with auto-resetting trip relay will not be accepted. A prominent warning label shall be mounted on or near each thermistor unit warning that

Voltages in excess of 2.5 volts must not be applied to the thermistor control units. Thermistor relays shall be Sprecher and Schuh RT#-M or direct equivalent.

2.4.11 Current Transformers

Contractor is to supply and install a 4-20mA Ct Preferable an IME TT1AB252A if suitable to motor cable size;

Current transformers shall be of the fully encapsulated type constructed in accordance with the relevant section of AS 3947.3:2001 and shall have a current ratio as indicated on the typical drawings. Windings shall be capable of continuous operation at the full load rating of the installed circuit.

Instrument current transformers shall be to accuracy Class 2.0 and may be of the external primary type provided the number of primary loops is as specified by the manufacturer.

Protection circuit current transformers shall have rated secondary reference voltage and accuracy limit factor consistent with the associated protection relay and its function.

2.4.12 Control Transformers

Extra low voltage (ELV) control transformers shall be of the double wound type, continuously rated, with earthed metal internal winding screen. The current rating of the control transformer shall be to suit the associated control circuit. The minimum rating of any control transformer shall be 100VA.

The secondary circuits for all control transformers shall be fused on the active side and earthed on the neutral side of the transformer.

2.4.13 Switches

Switches shall be 'on load' switches unless otherwise specified or indicated on the typical drawings and shall comply with the requirements of AS 3947.3:2001.

All switches shall be of the independent manual operation type. The operating handle shall be all insulated and be adequately sized to allow easy operation of the switch. The 'open' and 'closed' positions of each switch must be clearly and permanently marked.

Switches serving as main switches shall have their live terminals and associated contacts effectively shielded to prevent inadvertent contact when these switches are in the "OFF" position.

The main supply switch will be an interlocked main, off, generator supply change over switch, installed at a position that has easy access and operation.

Switches shall have a continuous current rating not less than is specified or shown on the drawings. If not shown their rating must not be less than 125% of the maximum demand current of the circuit controlled by the switch. Switches shall be suitable for utilisation category AC-23 unless otherwise noted and rated making and breaking capacities shall comply with table 4.2 of AS 3947.3:2001 for the said utilisation category.

The minimum short time withstand current shall be as nominated for the total switchboard.

Motor starter isolating switches shall be Terasaki safe 'T' circuit breakers for motor circuits 'CF Series Curve 1 Standard Rating' or equivalent for motor sizes up to 45KW. For motor sizes above 45KW Terasaki NK series or equivalent are to be used. Motor starter isolating switches are to have provision for 'locking' in the 'OFF' position for maintenance purposes.

2.4.14 Selector Switches

Rotary selector switches shall be of the cam operated oil-tight design complying with AS 3947.3:2001 and shall be suitable for flush mounting. Switches shall include engraved escutcheon plates designating both the switch function and its respective positions.

Switches shall be rated at not less than 6 ampere AC.

Auto/off/manual selector switches shall include a cylinder lock attachment so that they can be locked in the "off" position and the key removed to give true isolation of the associated motor. Key must only be removable in the 'OFF' position and the key must be unique for that switch.

2.4.15 Time Switches

Time switches shall be of the solid state type with digital time readout and easily programmed for at least six "ON/OFF" cycles per 24 hours. Battery back up or solid state backup shall be incorporated in the time switch to retain valid time in the event of a power failure.

2.4.16 Indicator Lights and Push Buttons

Indicator lights and push buttons shall comply with provisions of AS 3947.3:2001. Indicator lights push buttons shall be of the heavy-duty 'oil-tight' type.

Indicator lamps shall be extra-low-voltage, LED type, with a minimum rated life of 10,000 hours at their rated voltage. All lamps shall have a voltage rating higher than the operating voltage and shall be renewable by means of front access. The colour of lamp lenses and push buttons shall comply with Section 5 of AS 1431 Part 2 unless specified or as detailed on the typical drawings.

Indicator lights shall be the "push to test" type Sprecher and Schuh DTL3 series or direct

equivalent.

2.4.17 Control Relays

In general, control relays shall be of the moulded block construction, industrial pattern complying with AS 3947.3:2001 and incorporating double break silver alloy contacts rated at 10 ampere AC.

Relay coils shall be continuously rated and be double insulated.

2.4.18 Phase failure Relays

For all Switchboards a Phase fail relay which switches off any running pumps or plant with a delay on timer will be provided.

Phase failure relays must be able to detect loss of one or more phases or phase reversal and have a minimum sensitivity adjustment of 0 to 15% over and under voltage

2.4.19 Time Delay Relays

Time delay relays shall be of the rapid reset continuous rated solid-state electronic type with snap action contacts and calibrated time setting dial. Relays shall have a repeat accuracy of at least +/- 5% of the set time delay. Each time delay relay shall have at least one instantaneous contact and a minimum of two changeover time delayed contacts. Time delay periods to be preset as specified and adjustment range to minimally cover the specified time range.

Special reset functions must be accommodated where specified.

2.4.20 Heaters and Thermostats

Surface mount cubicle heaters rated at 20 watt at 240VAC with appropriate thermostats with adjustable heat ranges of 10 to 30 degrees Centigrade are to be provided as follows:

- (i) Each telemetry compartment of each indoor switchboard.
- (ii) Every compartment of each outdoor switchboard excepting the TXU metering compartment or the distribution compartment.

Heaters and Thermostats shall be "Rittal" or equivalent.

2.4.21 Ammeters, Voltmeters and Hour Run Meters

These shall be of the flush panel mount square type and suitable to withstand the motor starting duty of the motor circuit they are connected to.

- (i) hour run meter is to be provided for each motor starter
- (ii) voltmeters to be IME RQ72E or direct equivalent

-
- (iii) An Amp meter is provided in the Proface touch screen and to be wired to a IME TT1AB252A 4-20mA Ct

A voltmeter and phase selector switch is to be installed on the door of each MAINS/GENERATOR switch compartment and wired to each fused phase of the phase failure relay.

The switch is to be K&N CG8A004 labelled OFF; R/W; W/B; B/R or equivalent. The indicator shall be IME RQ72E or equivalent.

2.4.22 Generator Operation

For outdoor switchboards a suitable weatherproof three-phase inlet for connection of a remote generator supply into the switchboard shall be provided. This connection shall be suitably rated to suit the pump station load and the change over mains isolator to which it is connected. It is to be a 5 pin round male socket to accept a 5 pin female plug with a threaded locked ring.

2.4.23 General Purpose Outlets

Both single phase and three phase GPOs shall be provided.

Single phase and three phase outlets shall be Clipsal 56 Series.

An R.C.D will supply all general power outlets.

2.4.24 Earthing Requirements

Switchboard earthing requirements shall conform in all respects to AS 3000/2000.

Equipment required to be earthed shall be connected directly to an approved earthing conductor (earth bar) by a copper conductor having an area of at least 2.5mm. Equipment of a withdrawable type shall have either a flexible earth connection from the movable portion to the fixed portion, or a plug socket connection which makes no later and breaks no earlier than any other electrical connection between fixed and moving portions.

Where mounted on a hinged metallic door, equipment shall be earthed with a flexible conductor connected to the earth bar or stud in which case the door shall also be earthed by the same conductor.

2.4.25 Internal Wiring

Switchboard internal wiring shall be neatly arranged and contained in capped plastic open slotted ducting or where ducting is not practicable wires shall be strapped together with nylon or other strong plastic ties or spiral binding to form neat looms. Where groups of wires are required to connect to equipment which is mounted on doors or access panels, the wire loom shall be arranged so that the opening and closing of the door is not impeded and the flexing of the wiring is minimised. In these instances reinforced flexible

plastic tubing shall be used. A minimum of 10% of the installed cores within the wiring loom, shall be installed as spares.

All wiring shall be stranded copper wire insulated with Type V75 or V90 PVC insulating compound to AS 3147.

Power wiring shall be colour coded according to phase (Red, White & Blue) or neutral (Black) and sized to suit the circuit rating.

All control wiring shall be 1mm flexible (32/0.2mm) with insulation colour coding as follows:

- (i) 240V AC Active Red
- (ii) 240V AC Control Orange
- (iii) 240V AC Neutral Black
- (iv) 24V AC control Grey
- (v) 24V AC active Pink
- (vi) 24V AC Neutral Brown
- (vii) 24V DC Active Red with White Trace
- (viii) 24V DC Neutral Black with White Trace
- (ix) 12V DC Active Purple
- (x) 12V DC Neutral Black with White Trace

Wiring for current transformer secondary circuits shall be 2.5sq mm flexible (50/0.25mm).

Every wire shall be identified at each end with plastic engraved numeric ferrules "Critchley" Type Z or equivalent, with numbers as per the typical drawings.

2.4.26 Cable Termination

Cables shall be terminated in the switchboard termination partition at the bottom of each switchboard or alternatively where space is limited directly into the starter compartment.

Termination points are to be adequate for the pump motor maximum current draw and sized sufficiently to accommodate the pump motor cable. Termination points are to be easily accessible to allow disconnection when pump maintenance is necessary.

2.4.27 Terminals

Tunnel type, rail mounting moulded plastic terminal blocks equivalent to 'Klippon' shall be provided for termination of all control wiring external to the switchboard. Terminals shall carry numeric designation and shall be segregated according to voltage and function.

Terminal groups shall be arranged and spaced to facilitate easy connection of wiring and cables and spare space shall be available on each terminal rail to accommodate at least 20% additional number of terminals.

A separate terminal shall be provided for the connection of each individual wire. Bridging links as supplied by the terminal manufacturer shall be used to interconnect 'common' terminals.

2.4.28 Labels

All instruments, selector switches and all other equipment on and in the switchboard shall be clearly identified by engraved plastic labels denoting the device's description.

Details of label texts shall be confirmed with the Superintendent prior to manufacture..

All labels shall be at least 1.5mm thick and lettering shall be black on a white background accepting that warning labels shall have red lettering on a white background. Lettering size shall be appropriate to the item labelled to ensure easy readability. Labels shall be neatly affixed with stainless steel screws or stainless steel self tapers. Self adhesive labels are not permitted.

2.4.29 Circuit Identification

An index for all power and lighting circuits shall be provided on the inside of the door of the distribution compartment and shall either be laminated or sealed behind a clear Perspex sheet.

2.4.30 Telemetry

A suitable location shall be allocated in the switchboard for a modular telemetry unit, Volt free contacts shall be wire to a terminal strip near the telemetry unit. Inputs required are as the supplied I/O Sheet

All remote alarm outputs shall be terminated at labelled terminal blocks mounted within the telemetry compartment. All wires shall be marked at both ends.

2.4.31 Variable Speed Drives

All Motors over 4KW shall have soft starting.

Variable speed drives are to be suitable for driving the integral motor and pump of KW size specified.

Variable speed drives are to be Danfoss VLT Aquadrives including keypad interface or direct equivalent.

The variable speed drives are to include the following options:

- (i) Pump application software macro.
- (ii) Key pad programmable with programmable keypad locking function.
- (iii) Programmable features such as type motor, minimum and maximum hertz, direction, control location, input and output functions and acceleration and deceleration rates.
- (iv) Two programmable fixed speed contact inputs.
- (v) Two 4 to 20mA input control signals – one to be auto control signal from starter cabinet.
- (vi) Two 4 to 20mA programmable output signals – one to be programmed for motor speed.
- (vii) Output contact for available condition.
- (viii) Output contact for run condition.
- (ix) Output contact for fault condition to include for VSD fault, motor overload and motor over current.
- (x) Input contact for run enable
- (xi) Input contact for motor overload reset.
- (xii) Two inputs for analogue input selection – either from remote potentiometer or external 4 to 20mA control signal.

2.4.32 Soft Starters

All Motors over 4KW shall have reduced voltage starting.

Soft starters are to incorporate soft start and soft stop options suitable for driving the integral motor and pump of KW size specified.

Soft starters are to be Danfoss MCD 500 or direct equivalent sized to the maximum duty cycle of each motor, with the following options:

- (i) Soft Start with selectable kick start current limit and full voltage start.
- (ii) Adjustable ramp time on start from 2 to 30 seconds.
- (iii) Phase sequence protection.
- (iv) Soft stop with **pump control feature** to control stopping over an adjustable time period of 2 to 120 seconds.

-
- (v) Adjustable starting torque of 5 to 90% of locked rotor torque.
 - (vi) Energy saving option to provide power savings.
 - (vii) LED indication of starting, running, stopping and various faults.
 - (viii) Auxiliary contacts for starter logic and interlocking as required.
 - (ix) Auxiliary contacts for starter to provide “available”, “run” and “fault” status.
 - (x) Keypad HMI to be mounted on the door to eliminate the need for an amp meter
 - (xi) Internal Bypass Contactors

2.5 SPARE PARTS

The Contractor shall supply a list of recommended spares for each switchboard and detail this list in his tender. The price for these recommended spares is to be shown on The Schedule of Prices. The following list is the minimum requirement of spares for each switchboard:

- (i) 1 off contactor coil for each size contactor used
- (ii) 3 off HRC cartridges of each current rating as used
- (iii) 2 spare HRC fuse holders to suit supplied fuse bases
- (iv) 1 spare of each type of ELV control relay used
- (v) 1 spare of each type of time delay relay used
- (vi) 1 spare indicator lamp base
- (vii) 1 spare pushbutton
- (viii) 10 spare indicator lamps of each voltage rating used(selection of colours as required)
- (ix) 2 spare globes for flashing alarm lamp
- (x) 12 spare din rail mount terminals

2.6 LIGHTING AND POWER

The Contractor shall supply and install power and lighting fittings, accessories and associated wiring for general lighting and power within the switchboard or building.

Fluorescent lighting fittings within the building shall be twin tube type semi-industrial with reflective mount and complete with encapsulated ballast starter switch and power factor capacitor. These shall be Thorn type RZIP36 or direct equivalent.

Lighting switches and general purpose outlets shall be the weatherproof impact resistant moulded polycarbonate type Clipsal 56C series or equivalent. Location and quantity of GPOs and lights is as specified elsewhere in this Specification.

External lights shall be Phillips Vandalite Model VL201L with opal diffuser or equivalent and mounted above the doorways.

Industrial style spotlights of 120 watt power with suitable vandal proof mesh guards shall be provided to light access driveways to indoor type pump stations. The quantity of external lights is as specified elsewhere in this Specification.

Outdoor cubicles shall have a 15 watt fluorescent strip light installed behind each open-able door, switched by a suitable industrial type waterproof, Schmersal TS236-02Z or direct equivalent, door operated switch; one for each door.

The door switch is to contain two totally segregated volt free contacts. One set of contacts is to be used for the operation of the strip light; the other set wired to the Telemetry terminal strip as an intruder alert input that will activate and shut down the HMI

All light and power shall be protected by an RCD safety switch.

2.7 CABLING

All cables shall be 0.6/1kV PVC insulated complying with AS3147. Conductors shall be high conductivity stranded copper to AS 1125 and shall be sized as specified or if not specified of adequate rating for the equipment or circuit attached.

Multi-core cables shall be of circular section with orange sheathing. Individual conductors of power circuit cables shall have colour coded insulation to distinguish phases, neutral and earth. All cables shall be identified with numeric type cable markers as per switchboard specification. All cables that run through a pit shall be identified by a cable number with labels secured by SS Cable ties.

2.8 CONDUITS

All above ground conduit shall be heavy-duty rigid PVC type complying with AS 2053 coloured grey.

All below ground conduits shall be heavy-duty rigid PVC type complying with AS 2053 coloured

orange

Conduits to be set accurately vertical or horizontal and securely fastened to walls, ceilings, etc, by means of two hole saddles of similar material to the conduits. Saddles shall be placed at frequent intervals not exceeding 600mm and fixed with non-corrosive fasteners with stainless steel screws or pins.

Above ground conduits shall be terminated with approved glands or terminators.

All conduits that run from wet well sewer pits shall be sealed at the switchboard end with a layer of plastic or cellophane at 75mm to stop the ingress of mortar and a layer of mortar from the plastic to the end of the conduit.

A Strip of Underground Cable identification tape, coloured orange shall be placed 150mm above all underground conduits.

2.9 BRACKETS AND FIXINGS

All necessary brackets for mounting of wiring systems, etc, shall be provided by this contractor. In general brackets shall be fabricated from mild steel sections hot dipped galvanised after completion. Alternatively or where specified stainless steel brackets will be utilised.

All cables entering wet well sewer pits shall be secured on cable support brackets designed for the pump flexible cable to loop around a solid rubber cylinder that is mounted on the edge of the wet well man hole entry point. There shall be a loop in the cable below the conduit entry into the well to alleviate fluid running from the cable into the conduit and to allow a service person to pull the bracket and cable onto the Pit roof.

Fixings shall be by means of stainless steel bolts nuts and washers. Fixings into brickwork or concrete shall be by means of galvanised expansion bolts excepting that plastic plugs with stainless steel screws or

Stainless steel screw/nails may be used for securing conduit saddles. All holes for fixings shall be neatly drilled to the correct size and depth. Explosive powered fixings shall not be used.

APPENDIX 4 – DRAWINGS

The following drawings are included in the Specification and attached to it as a zip folder:

DRAWING No	PROJECT No	DRAWING NAME	DATE
E201 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010
E202 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010
E203 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010
E204 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010
E205 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010
E206 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010
E207 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010
E208 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010
E209 REV 1	09039-009	Newhaven Sewer Pump Station – Single Line Diagram	18 Oct 2010

Tenderers note:

Tenderers are advised that these drawings are typical only.

Tenderers shall satisfy themselves of the actual arrangement of control wiring, the adaptability of existing control and monitoring relays and wiring at each site.

All Tender prices shall be deemed to have allowed for existing conditions at all sites.

APPENDIX 5 – PHOTOS

The following photographs of existing sewer pump station infrastructure are included in this Specification:

SEWER PUMP STATION			
PHOTO No	SITE No	SITE NAME	Typical of These Sites

APPENDIX 6 – PARTS LIST

The following list of parts describes those supplied by the Principal and those to be supplied by the Contractor.

Make	Model	Cat Number	Comment	
Supplied by Westernport Water				
Schneider	SCADAPack 32 P4A	SCADAPack 32 P4A-105-01-0-1		Electrical
	Expansion Module 5606	I/O Module 5606-24-297328	For Pumps with Generators or 3 Pumps	Electrical
Proface	5.7" Blue-Mode Monochrome LCD QVGA 24VDC Touch screen	AGP3302-B1-D24		Electrical
Trio	Digital Data Radio Modem Half Duplex 395-520 MHz 12.5/25 KHz, 5 Watt 2400/4800bps including Diagnostics	MR 450-H002-DH0 Radio		Radio
	Antenna 6 Element Yargi 9dBd Aluminium 380-520 MHz c/w mtg Clamps	ANTY-09-4CMA		Radio
	Feeder Tail-N male to N type Male 0.5m RG223	NM/NM/TL23		Radio
	Lightning Surge Arrestor In line N Female to N Female<1000MHz	LGHTARRST		Radio
MJK	0-5 M MJK Hydrostatic level sensor Model 3400 w/12M cable	20354		Electrical
Remtron	T-ILE-50A Current to 4 to 20mA Transducer Dinrail Mount, built-in CT	CRT-ILE-50A	One per pump	Electrical
	T - ILA -100A Current to 4 to 20mA Transducer Dinrail Mount	CRT-ILA-100A	Pumps > 50 A	Electrical
To be Supplied by Contractor				
	Power Box 13.8 V DC UPS 10Amp Power Supply	PB256-1210CML		
	Battery 65 Amp Hour	GP1265		
	Limit switch			

**WESTERNPORT WATER**

Trading name for

WESTERNPORT REGION WATER CORPORATION**ABN 63 759 106755****PART C – CONDITIONS OF CONTRACT**

TENDER NAME:

SCADA UPGRADE - STAGE 5

TENDER NUMBER:

2011/09

The Conditions of Contract that will apply to the Works are **AS4000-1997 General Conditions of Contract**. The successful Tenderer will be required to execute a contract with the Principal which contains these Conditions of Contract before commencing the Works.

The Conditions of Contract are not attached to the Request for Tender documents but are available on request from the Principal's Representative during the tender period.

The Preferred Tenderer will be required to complete the following contract forms prior to the execution of the Contract;

(i) Annexure Part A to AS4000-1997

The completed forms will form part of the Contract.

REQUEST for TENDER DOCUMENTS

For

SCADA UPGRADE - STAGE 5

ANNEXURE PART A to AS4000-1997 General Conditions of Contract

This Annexure shall be completed and issued as part of the tender documents and, subject to any amendments to be incorporated into the *Contract*, is to be attached to the General Conditions of Contract and shall be read as part of the *Contract*.

Item

- | | | |
|----|--|---|
| 1 | <i>Principal</i> (clause 1) | Westernport Region Water Corporation
ABN 63 759 106 755 |
| 2 | <i>Principal's address</i> | 2 Boys Home Road, NEWHAVEN, VICTORIA, 3925 |
| 3 | <i>Contractor</i> (clause 1) |
.....
ACN..... |
| 4 | <i>Contractor's address</i> | ..... ..... |
..... |
| 5 | <i>Superintendent</i> (clause 1) | Mr Steven Porter General Manager – Operations
Westernport Region Water Corporation |
| 6 | <i>Superintendent's address</i> | 2 Boys Home Road, NEWHAVEN, VICTORIA, 3925 |
| 7 | a) <i>Date for practical completion</i> (clause 1) OR
b) <i>Period of time for practical completion</i>
(clause 1) | 31 st May 2012 |
| 8 | <i>Governing law</i> (page 5, clause 1(h)) | Victoria |
| 9 | a) <i>Currency</i> (page 5, clause 1(g))
b) <i>Place for payments</i> (page 5, clause 1(g))
c) <i>Place of business of bank</i> (page 3, clause 1(d)) | Australian Dollars (\$AUD)
Principal's address
National Bank, Thompson Avenue, Cowes, Vic, 3922 |
| 10 | <i>Bills of quantities</i> (subclause 2.2)
a) <i>Alternative applying</i> (subclause 2.2)
b) <i>If Alternative 2 applies, is the bill of quantities to be priced?</i> (subclause 2.2)
c) <i>Lodgement time</i> (subclause 2.3(b)) | Alternative 2
No
Not Applicable |
| 11 | <i>Quantities in schedule of rates, limits of accuracy</i> (subclause 2.5(b)) | Not Applicable |
| 12 | <i>Provisional sum, percentage for profit and attendance</i> (clause 3) | Not Applicable |

- 13 *Contractor's security*
- a) Form (clause 5) Five percent (5%) of the Contract Sum
 - b) Amount or maximum percentage of *contract sum* (clause 5) Five percent (5%)
 - c) If retention moneys, percentage of each *progress certificate* (clause 5 and subclause 37.2) Ten percent (10%) until the amount equalling 5% of the Contract Sum
Then five percent (5%) until Practical Completion
 - d) Time for provision (except for retention moneys) (clause 5) Not Applicable
 - e) Additional *security* for unfixed plant and materials (subclauses 5.4 and 37.3) Ten Percent (10%) of the value of unfixed plant and materials
 - f) *Contractor's security* upon *certificate of practical completion* is reduced by (subclause 5.4) Two and one half percent (2.5%) of the adjusted Contract Sum
- 14 *Principal's security*
- a) Form (clause 5) Not Applicable
 - b) Amount or maximum percentage of *contract sum* (clause 5) Not Applicable
 - c) Time for provision (clause 5) Not Applicable
 - d) *Principal's security* upon *certificate of practical completion* is reduced by (subclause 5.4) Not Applicable
- 15 *Principal-supplied documents* (subclause 8.2)
- | Document | No of copies |
|--|--------------|
| 1. Request for Tender " SCADA Upgrade – Stage 5 " Tender No 2011/09 | 1 |
| 2. Incident & Emergency Management Plan INT09-05772 | 1 |
- 16 Time for *Superintendent's direction* about documents (subclause 8.3) Fourteen (14) days
- 17 Subcontract *work* requiring approval (subclause 9.2) As agreed in **Tender Form Schedule 5**
- 18 Novation (subclause 9.4) Not Applicable
- 19 Legislative requirements
- a) Those excepted (subclause 11.1)
 - b) Identified WUC (subclause 11.2(a)(ii))
- 20 Insurance of the Works (clause 16) Not Applicable, Principal Controlled Works Insurance applies
- a) Alternative applying
If Alternative 1 applies
 - b) Provision for demolition and removal of debris
 - c) Provision for consultants' fees

	d) Value of materials or things to be supplied by the Principal	
	e) Additional amount or percentage	
21	Public liability insurance (clause 17)	Required
	a) Alternative applying	Alternative 1 applies
	If Alternative 1 applies	
	b) Amount per occurrence shall be not less than	Ten Million Dollars (\$10M)
22	Time for giving possession (subclause 24.1)	Not Applicable
23	Qualifying causes of delay Causes of delay for which EOTs will not be granted (page 3, paragraph (b)(iii) of clause 1 and subclause 34.3)	Not Applicable
24	Liquidated damages, rate (subclause 34.7)	Nil
		.....per day \$per day
25	Bonus for early practical completion (subclause 34.8)	Not Applicable
	a) Rate	.....
		.....per day \$per day
	b) Limit	.....
		No waiver
26	Delay damages other compensable causes (page 1, clause 1 and subclause 34.9)	Not Applicable
27	Defects liability period (clause 35)	Twelve (12) months
28	Progress Claims (subclause 37.1)	
	a) Times for progress claims	The 1st Thursday of each month for WUC complete at the last day of the preceding month
	OR	
	b) Stages of WUC for progress claims	Not Applicable
29	Unfixed plant and materials for which payment claims may be made(subclause 37.3)	Not Applicable
30	Interest rate on overdue payments (subclause 37.5)	Eighteen (18) % per annum
31	Time for Principal to rectify inadequate possession (subclause 39.7)	Fourteen (14)days
32	Arbitration (subclause 42.3)	
	a) Person to nominate an arbitrator	The President of the Institute of Arbitrators & Mediators Australia
	b) Rules for arbitration	Rules 5-18 of the Rules of The Institute of Arbitrators, Australia for the Conduct of Commercial Arbitrations;
	c) Appointing Authority under UNCITRAL	The President of the Institute of Arbitrators & Mediators

PART B Annexure to Australian Standard General Conditions of Contract AS 4000 -1997**Deletions, amendments and additions**

- (i) The following clauses have been deleted from the General Conditions in AS 4000 – 1997

Nil deletions

- (ii) The following clauses have been amended and differ from the corresponding clauses in AS 4000 – 1997

Nil amendments

- (iii) The following clauses 44 to 53 have been added to those of AS 4000 – 1997

44. Provisional Sums

Further to Clause 3, payment for a Provisional Sum item will only be made on receipt of an invoice issued by the *Contractor* for work done in response to a specific written direction to the *Contractor* by the *Superintendent*.

Any variation to the work to which a *provisional sum* relates shall be dealt with in accordance with Clause 36 (Variations).

45. Provisional Quantity Items

If, in respect of any work included in the *Contract* as a provisional quantity item, the *Superintendent* directs that a greater or lesser quantity shall be carried out or that no work shall be carried out, the value of the difference between the *provisional quantity* and the quantity carried out pursuant to that direction, calculated at the rate for that item, shall be certified by the *Superintendent* and shall be taken into account in determining the final *Contract sum*.

46. Measurement and Payment of Extra Costs for Delay

The *Contractor* shall use all reasonable endeavours to mitigate the extent and actual cost of delay and to the extent that the *Contractor*:

- (a) incurs additional costs in doing so then the *Contractor* will be entitled to payment of those costs; and

-
- (b) does not do so, then the *Contractor's* entitlement to payment hereunder shall be reduced by the period by which the delay should accordingly have been reduced as assessed by the *Superintendent*

Payment of extra costs for delay will be in full recompense for any *compensable cause of delay*.

The *Contractor's* entitlement to payment for extra costs for delay shall be as follows:

Where the date for *practical completion* of *WUC* is varied in accordance with any provision of the *Contract*, the *Superintendent* shall determine any adjustment to the construction periods that the *Superintendent* deems reasonable consequent upon the matters resulting in that variation.

Payment for delays to non critical activities caused by any act, default or omission of the *Superintendent* or the *Principal* or its employees, professional consultants or agents will be assessed under the provisions of Clause 41.

47. Occupational Health and Safety (OHS)

The *Principal* is obligated to provide and maintain, so far as is practicable, a working environment for its employees and members of the public, that is safe and without risk to health. As a condition of this contract, the *Principal* requires that the *Contractor* or any subcontractors that may be engaged to perform *WUC* shall at all times identify and exercise all necessary precautions for the health and safety of all persons including the *Contractor's* employees, the *Principal's* employees and members of the public who may be affected by *WUC*.

The *Contractor* shall inform itself of all occupational health and safety policies, procedures or measures implemented or adopted by the *Principal* and/or the occupiers of any premises at or within which the *Contractor* shall perform *WUC*. The *Contractor* shall comply with all such policies, procedures or measures; and in the event of any inconsistency, shall comply with such procedures or measures as those that produce the highest level of health and safety.

The *Contractor* shall forthwith comply with any and all directions by the *Superintendent* relating to occupational health and safety.

47.1 Legislative Compliance

The *Contractor* shall comply with and ensure that its employees, subcontractors and agents comply with any legislation, regulations, local laws and by-laws, codes of practice, Australian Standards and local municipal OHS policy and procedures that are in any way applicable to the *Contract* or the performance of *WUC*. In particular the *Contractor* shall comply with the current Victorian Occupation Health and Safety Act, 2004.

47.2 Non Compliance

If during the performance of *WUC* the *Superintendent* informs the *Contractor* that it is the opinion of the *Superintendent* that the *Contractor* is:

- (a) not conducting the *WUC* in compliance with the *Contractor's* health and safety plan, health and safety management procedures, relevant legislation or health and safety procedures provided by the *Principal* from time to time, or
- (b) conducting the *WUC* in such a way as to endanger the health and safety of any person or property, the *Contractor* shall promptly remedy that breach of health and safety

The *Superintendent* may direct the *Contractor* to suspend *WUC* until such time as the *Contractor* satisfies the *Superintendent* that *WUC* can be resumed in conformity with applicable health and safety provisions. If the *Contractor* fails to rectify any breach of health and safety for which the *WUC* has been suspended, or if the *Contractor's* performance has involved recurring breaches of health and safety, the *Principal* may at its option terminate the *Contract* forthwith, without further obligation to the *Contractor*. In this event, the *Principal's* liability shall be limited to payment for the *WUC* performed and costs incurred by the *Contractor* up to the time of termination or an earlier suspension of works.

48. Environmental Management

The *Contractor* shall comply with the current Environment Protection Act and associated regulations and shall take all measures necessary to protect all environmental assets which may be affected by *WUC* in accordance with its approved project specific *Construction Environment Management Plan*.

49. Industrial Relations

The *Contractor* shall be responsible for industrial relations with its workforce and shall keep the *Principal* informed of any disputes with or demands by its workforce and any other circumstances which could result in industrial action affecting the progress of *WUC*. The *Contractor's* employees shall be employed in accordance with the relevant awards, site agreements and the arrangements in place from time to time between the *Contractor* and its employees.

The *Contract sum* shall be deemed to include the cost of all wages and other costs arising from the requirements of the awards, certified agreements and enterprise flexibility agreements to which it is bound. No adjustment shall be made to the contract on account of such requirements or any new matter introduced into an award or any certified agreement or enterprise flexibility agreement except if otherwise provided for in the *Contract*.

Persons below the Victorian statutory minimum school leaving age shall not be employed on

WUC.

49.1 Work bans and limitations

The *Contractor* shall keep the *Superintendent* informed concerning any industrial matter that could affect the progress of *WUC*.

The *Contractor* shall inform the *Superintendent* immediately if bans are applied to *WUC* or if *WUC* ceases due to industrial action and shall also inform the *Superintendent* of measures being taken to resolve such action.

The *Contractor* shall make no claim against the *Principal* and shall have no entitlement to any claim for any costs, loss, expense or damage arising from any industrial action outside the control of the *Contractor*.

50. Representations and Warranties

Each of the parties represents and warrants to the other that:

- (a) it has full power and authority and the legal right to sign and deliver the *Contract*, and to perform its obligations under the *Contract*;
- (b) the *Contract* has been duly signed and delivered on its behalf; and
- (c) the obligations undertaken by it are enforceable against it in accordance with the terms and conditions under the *Contract*

51. Severability

If at any time any provision of the *Contract* is or becomes illegal, invalid or unenforceable in any respect, the remaining provisions shall in no way be impaired or affected thereby.

52. Security of Payment Legislation

Both parties to the *Contract* shall comply fully with the Building and Construction Industry Security of Payment Act 2002 and associated regulations.

52.1 Definitions

Security of Payment Act means the Building and Construction Industry Security of Payment Act 2002 (Vic) legislation that has amongst its objectives the creation of a statutory entitlement to progress payments for the performance of construction work or provides procedures for

determining or securing payment of that entitlement, pending any final assessment under the Contract

52.2 Payment

52.2.1 Payment Claims

The Contractor may submit a Payment Claim to the Superintendent only on each Reference Date defined in the **time for progress claims** in **Item 28(a) Annexure Part A**.

The Contractor warrants to the Principal that Payment Claims will:

- (a) include the evidence reasonably required by the Principal of the value of work completed in accordance with the Contract and the amount claimed;
- (b) set out the total value of work completed in accordance with the Contract to the date of the Payment Claim, the amount previously paid to the Contractor and the amount then claimed;
- (c) the Reference Date for the purposes of the Security of Payment Act shall be the same day on the following month

52.2.2 Payment of Workers and Subcontractors

The Contractor warrants it will not include in a Payment Claim amounts in respect of the Contractor's workers or employees unless it has provided to the Principal:

- (a) a statutory declaration (together with any supporting evidence which may be reasonably required by the Principal) by the Contractor or, where the Contractor is a corporation, by a representative of the Contractor who is in a position to know the facts declared, that in connection with the Works up to the date of the declaration and for all periods prior to that date:
 - (i) as to whether the Contractor is a principal contractor, in that it has engaged Subcontractors to carry out some part of the Works on its behalf;
 - (ii) all workers who have at any time been employed by the Contractor have been paid all moneys due and payable to them;
 - (iii) all Subcontractors have been paid all moneys due and payable to them;
 - (iv) all payroll taxes due in respect of wages paid or payable to employees of the Contractor have been paid;
 - (v) all workers compensation premiums in respect of employees of the Contractor have been paid;

-
- (vi) all Subcontractors have provided the Contractor with a statutory declaration in the same form as required by this clause; and
 - (vii) all contributions to any portable long service leave scheme has been paid; and
 - (b) documentary evidence that:
 - (i) at the date of the claim all workers who have been employed by a Subcontractor have been paid all moneys due and payable to them in respect of their employment on the Works;
 - (ii) it has current certificates of currency in respect of relevant workers compensation policies; and
 - (iii) that it is either exempt from or has a current registration for any payroll tax legislation; and
 - (c) any additional information, statements, certifications or evidentiary material in the form of a statutory declaration, as the Principal may reasonably require or consider is desirable, to satisfy any Legislative Requirement applicable to the Principal or the Works

52.2.3 Security of Payment

The Contractor must ensure that the Superintendent immediately receives a copy of any written (including electronic) communication the Subcontractor delivers or causes to be delivered to or which the Contractor receives from any other party in relation to the Security of Payment Act.

- (a) If the Contractor makes an application under the Security of Payment Act for any form of adjudication and the parties are permitted to agree under their contract:
 - (i) on the identity of the person or organisation to carry out or to nominate to carry out the adjudication, it is hereby agreed that such adjudicator or nominating person shall be the person or organisation specified in **Annexure Part A**; and
 - (ii) on the type of security to be given by a respondent to secure payment of a determination by an adjudicator in lieu of direct payment, it is hereby agreed that such security shall be an unconditional undertaking from a recognised Australian Bank
- (b) Where the Contractor suspends the Works pursuant to the Security of Payment Act:

-
- (i) the Date for Completion shall not be effected and the entitlement to suspend shall not of itself be a Extension Event;
 - (ii) the Contractor shall not be entitled to any delay damages; and
 - (iii) the Principal may in its sole discretion invoke its right to terminate the Contract
 - (c) In the event the Contractor refers a Payment Claim to adjudication under the Security of Payment Act, then:
 - (i) the amount of any determination by an adjudicator appointed under the relevant Act in respect of that Payment Claim will be the maximum amount of the Contractor's entitlement in respect of the work, things or matters comprising the Payment Claim; and
 - (ii) the Contractor shall be bound by the determination, and forever releases and holds harmless the Principal in relation to any amount greater than that determined by the adjudicator

53. Victorian Industry Participation Plan (VIPP) Compliance

The information contained in the VIPP Plan (Plan) submitted by the Contractor as part of the Tender and the measures of the Contractor's compliance with the Plan shall be provided to the Department of Business and Innovation (DBI) to be included in a register of VIPP performance.

The Contractor shall comply with the conditions of the VIPP and with the information contained in the Contractor's certified Plan, and shall make the details of the Plan available to the Superintendent in accordance with **Clause 8** of the Contract. The outcomes to be used to measure and monitor the Contractor's compliance with the Plan shall be provided to the central agency in the (DBI) for inclusion in their register of VIPP performance by the Contractor prior to Contract Commencement date.

The Principal will monitor the Contractor's performance measured against the Plan outcomes set out in the Plan. The Superintendent will exercise his or her reasonable discretion in assessing the Contractor's performance under this Clause and shall take into account any issues raised by the Contractor which fairly represents a cause of failure to comply beyond the Contractor's reasonable control.

54 Document Ownership and Record Keeping

Documents that comprise the Tender submission will become the property of the Principal.

The Contractor shall:

-
- (a) Maintain a full and accurate record of the business conducted under the contract.
 - (b) Manage the information in (a) in accordance with the standards and associated specifications of the Public Record Office Victoria (PROV) including current, reissued, amended and new standards as though the Contractor were a public office (see www.prov.vic.gov.au for copies of these documents).
 - (c) Manage the information in (a) in accordance with the requirements of the office, in particular by complying with;
 - (i) legislative and regulatory compliance;
 - (ii) storage, maintenance and retention of records;
 - (iii) preservation of electronic records;
 - (iv) access to records;
 - (v) security of records;
 - (vi) transfer of records to the office
 - (d) Maintain a register of and index to information in (a), and provide this to the Principal at the request of a Principal's Representative
 - (e) Retain the information in (a) for the period described in the following Retention and Disposal Authorities and agree to consult with the Principal's Representative regarding any records not covered to agree on a disposal schedule.
 - (f) Provide access to the records and copies of information to the Principal's Representative on request for as long as the information is required to be in existence.
 - (g) Provide information regarding the context of the creation of the records and the system of retention as is required for the purposes of storage and retrieval of records.
 - (h) Maintain the information in (a) in formats that support its preservation and accessibility.
 - (i) Transfer all records to the Principal in (a), including physical and digital objects, in accordance with acceptable formats either during or at the conclusion of the contract

54.1 Legal and Beneficial Ownership

The Principal retains both legal and beneficial ownership of records and information created in the course of business conducted under the contract.

54.2 Loan of Records to Contractor

Any records that are loaned to the Contractor are to be retained in the custody of the Contractor until the end of contract or until they are no longer required, under arrangements for their management which meet all the conditions of PROV standards and requirements. These records remain the property of the Principal and custody will be returned to the Principal on request or by the end of contract, whichever is earlier.

54.3 Ownership of Intellectual Property

The ownership of all Intellectual Property in all information created as a result of the supply of goods or the provision of services under this Agreement shall vest in the Principal. The Contractor hereby assigns ownership of all Intellectual Property rights in such information to the Principal and will ensure that its employees, subcontractors and agents execute all documents necessary to assign those rights to the Principal.