Lara Henley

From: Rebecca Carter
Sent: Thursday, 5 May 2022 9:21 AM
To: Andrew.Kneebone@tasirrigation.com.au
Cc: Eric.Shegog@tasirrigation.com.au; jacob.gerke@tasirrigation.com.au; Caroline Wykamp; Adam Gall; Prajit Parameswar; Dianna Shearer
Subject: Correspondence from Hydro Tasmania regarding the Northern Midlands Scheme
Attachments: 22-05-05 Correspondence to Tasmanian Irrigation re Northern Midlands Irrigation Scheme - Request for Water.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Good Morning Andrew
Please find attached the final version of correspondence from Hydro Tasmania regarding the request for water for the Northern Midlands Scheme.
We look forward to receiving a finalised, signed version by reply email.
Thank you and kind regards

Rebecca Carter

Hydro Tasmania

t +61 3 6240 4603 | **m** +61 [redacted]
e rebecca.carter@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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5 May 2022

Mr Andrew Kneebone
Tasmanian Irrigation
PO Box 84
EVANDALE TAS 7212

By email: Andrew.Kneebone@tasirrigation.com.au,
CC: Eric.Shegog@tasirrigation.com.au; jacob.gerke@tasirrigation.com.au

Dear Mr Kneebone

Northern Midlands Irrigation Scheme - Request for Water

We refer to Tasmanian Irrigation's (TI) request for 25,500ML per annum of water from the Poatina Tailrace to facilitate the proposed Northern Midlands Irrigation District (the New District). We also refer to the subsequent letters and conversations about the above scheme over the last two months.

This request represents a significant increase in the volume of water that is currently taken from the first drop structure of the Poatina Tailrace. Accordingly, we have made a preliminary assessment of the environmental, operational and commercial impacts of the request on energy generation at Poatina Power Station.

Hydro Tasmania (HT) understands the importance of water supply for irrigation and has been (and continues to be) supportive of increased water use for irrigation in the South Esk catchment. For example, HT has entered into agreements for more than 120,000ML per annum to support irrigation below the Poatina Power Station, which is in addition to HT's obligation to supply approximately 65,000ML per annum to the Lake River Irrigation District.

As you know, HT charges for foregone revenue associated with water passing through power stations downstream of take locations. For water takes in the South Esk River the relevant station is the Trevallyn Power Station. For most of the 50 years since the Poatina Power Station was commissioned, foregone revenue was reasonably straightforward to calculate. However, the electricity market is going through a period of rapid transition and this is leading to periods where HT may be required to pay to run its power stations in order to deliver irrigation water. Such costs are in addition to foregone revenues calculated via the existing water fee methodology.

These changes to our operating environment mean that HT must update it's current methodology for calculating the water fees to a model that is designed to recover costs resulting from the forced running of the Poatina Power Station. The forced running concept is currently limited only to water exiting the Poatina tailrace. There is currently no contractual mechanism in any existing scheme that allows TI to request forced running of any of our stations.

My team has enjoyed working with TI to help understand and analyse the Poatina outflows. It is pleasing to hear that TI may be able to utilise the proposed buffer storage dam to minimise the

possibility of forced running to ensure reliability of supply. As you can foresee the possibility of forced running from Poatina power station, which could come at a cost to HT, HT would like to seek an acknowledgement from TI that it supports continuation of work on pricing methodologies that account for recovery of HT's forced running costs.

Against this background, the purpose of this letter is to set out in broad terms certain conditions that HT seek to include in any new Water Transfer Agreement with TI associated with the Northern Midlands Irrigation Scheme (noting our current intention is to finalise an agreement before the end of 2022) and seek TI's in-principle agreement to the following conditions.

In broad terms, the conditions are as follows:

1. TI agrees to work with Hydro Tasmania on a new pricing methodology (to be completed prior to execution of Water Transfer Agreement) that facilitates a costs recovery regime to account for the forced running of the Poatina Power Station to supply water whereby:

    a. TI will pay the current price per megalitre for water taken during the 'ordinary' running of the Poatina Power Station; and

    b. where TI seeks additional flows outside of 'ordinary' generation, an additional fee for costs that arise from the forced running of the Poatina Power Station be paid.

2. In order to allow sufficient water to reach the Poatina Re-Regulation Pond (thereby enabling HT to meet its existing water release commitments) a minimum flow or water level would be set at drop structure 1 of the Poatina Tailrace which will restrict TI from taking water below that level (similar to clause 2.5 of the Whitemore Irrigation Scheme water agreement between HT and TI).

3. The final terms of any contract would be subject to HT Board approval, and a dam safety and design process would need to be followed for any construction works and/or structures affecting the Poatina Tailrace (similar to Annexure 3 – the Design Approval Process in the Midlands Irrigation Scheme agreement between HT and TI).

If TI indicates it's in-principle agreement to the above, HT will be in a position to conclude that there would be no material adverse impact caused by the establishment of the New Scheme (and NRET can be informed accordingly). Such agreement can be given by completing the execution clause at the end of this letter and returning same to me.

We look forward to working together on the above to find a solution that works for both parties. We remain committed to work with you to achieve a reasonable solution for the Northern Midlands Irrigation Scheme.

Yours sincerely



Ian Brooksbank
Acting Chief Executive Officer
e Ian.Brooksbank@hydro.com.au

Acting for and on behalf of Tasmanian Irrigation, I hereby indicate that Tasmanian Irrigation agrees in-principle to the inclusion of the conditions set out in this letter in any Water Transfer Agreement that may be entered into between Hydro Tasmania and Tasmanian Irrigation regarding the New Scheme.

Andrew Kneebone
CEO Tasmanian Irrigation

Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Tuesday, 3 May 2022 10:28 AM
To: Chris Masters
Subject: FW: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites
Attachments: Northern Midlands Irrigation Scheme HV and Earthing Design Proposal.pdf; Tas Irrigation Purchase Order v3_4747_1_E_1.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Chris

See attached, it was attached to my award email but easily missed

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

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From: Jacob Gerke
Sent: Friday, 1 April 2022 4:19 PM
To: Chris Masters <Chris.Masters@entura.com.au>
Cc: Jeremy Kearney <Jeremy.Kearney@entura.com.au>; Matt Simmons <matt.simmons@entura.com.au>; Graeme Vertigan <graeme@asceng.com.au>; Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>; Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Subject: RE: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Hi Chris

An email to say we would like to proceed with Entura complete the HV and Earthing Design.

I suggest we catch up early next week to kick things off.

Thanks again for the quote and look forward to working with you.

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Chris Masters <Chris.Masters@entura.com.au>
Sent: Monday, 28 March 2022 4:51 PM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Jeremy Kearney <Jeremy.Kearney@entura.com.au>; Matt Simmons <matt.simmons@entura.com.au>; Graeme Vertigan <graeme@asceng.com.au>
Subject: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

> You don't often get email from chris.masters@entura.com.au. Learn why this is important

Good afternoon Jacob,
Please find attached Entura's proposal for the HV primary and earthing design of the proposed Poatina and Valleyfield Pump Stations.

Let me know if you have any queries about the details within the proposal.

Thanks and regards,
Chris Masters | Electrical Engineer

entura

m [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 89 Cambridge Park Drive, Cambridge TAS 7170, Australia
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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Thursday, 17 March 2022, 3:47 pm
To: Graeme Vertigan
Cc: Michael Holmes
Subject: Tas Irrigation - Northern Midlands - HV and Earthing Design

Hi Graeme

As discussed yesterday we are looking for a proposal for completing HV design works and earthing.

We would like a proposal to complete the following:

1. Complete design of HV connections from TasNetworks Augmentation from the Poatina and Valleyfield Pump Stations as per ownership boundary within the TasNetworks Connection Capability Report
2. Complete earthing design including step and touch assessments

Details:

- A customer-owned 22 kV /400 V 2000 kVA kiosk substation is required at Poatina Pump Station (Note loads reduced since TasNetworks Report)
- A customer-owned 22 kV /400 V 1500 kVA kiosk substation is required at Valleyfield Pump Station
- Both kiosk substations are to be connected to the TasNetworks distribution network and are to be specified from standard approved products of TasNetworks to promote familiarity for local contractors engaged by TI for the installation and maintenance of the substations.
- HV electrical design from the TasNetworks interface boundary through to the kiosk substations, including:
  - HV electrical design report outlining the design basis, proposed equipment, design process for proposed earth systems and safety in design considerations (documented in risk assessment format).
  - HV electrical drawings including underground cabling plans, HV and LV single line diagrams (within substations), details of precast plinths, conduit locations and equipment selection
  - Earthing and bonding drawings for each of the substations
    - Organise / complete soil resistivity testing
  - Specify and design of HV metering

Site Layouts
See the attached General Site Arrangements.

Poatina Pump Station – The Feeder Line nearby the pump station will need to be realigned something similar as to what is marked in red, with suggested pole locations – This would be TasNetworks assests.







Figure 1: Poatina Pump Station



Figure 2: Valleyfield Pump Station

Can you please provide pricing in line with the following:

- Pricing to Complete HV Design
- Pricing to Complete Earthing
- Timeframe to complete works

If there are other details you require to quote then please don't hesitate to ask.

Regards

Jacob Gerke

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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entura

TASMANIAN IRRIGATION NORTHERN MIDLANDS IRRIGATION SCHEME

HV and Earthing Design Proposal

28 March 2022

Prepared by Hydro-Electric Corporation
ABN48 072 377 158

t/a Entura 89 Cambridge Park Drive,
Cambridge TAS 7170 Australia







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Document information

Document title	Tasmanian Irrigation Northern Midlands Irrigation Scheme
	HV and Earthing Design Proposal
Client organisation	Tasmanian Irrigation
Client contact	Jacob Gerke
ConsultDM number	TBD
Project Manager	Chris Masters
Project number	TBD

Revision history

Revision 0

Revision description			
Prepared by	Chris Masters	Electronically signed	28/03/22
Reviewed by	Matthew Simmons	Electronically signed	28/03/22
Approved by	Jeremy Kearney	Electronically signed	28/03/22
	(name)	(signature)	(date)
Distributed to	Jacob Gerke (name)	Tasmanian Irrigation (organisation)	28/03/22 (date)

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A Single Consultancy Contract – General Conditions of Contract

1. Why work with us?

Entura have significant experience working with HV distribution substations and switchgear for both private and utility customers. Overseeing the design for Entura will be Daniel De Groot and Matthew Simmons, who have had significant experience undertaking these specific types of jobs.

2. Our understanding of your needs

Entura understands that Tasmanian Irrigation (TI) is developing the Northern Midlands Irrigation Scheme (NMIS). The scheme includes the Poatina Pump Station (PPS) and the Valleyfield Pump Station (VPS), which shall supplied from the TasNetworks (TN) 22 kV distribution network.

TI intended to install and operate a 22 kV /400 V 2000 kVA kiosk substation at the Poatina Pump Station and a 22 kV /400 V 1500 kVA kiosk substation at the Valleyfield Pump Station.

Both kiosk substations are to be connected to the TasNetworks distribution network and are to be specified from standard approved products of TasNetworks to promote familiarity for local contractors engaged by TI for the installation and maintenance of the substations.

Both pump stations have two options for the TasNetworks point of connection, either via overhead conductor or underground cable from the TasNetworks recloser pole. TI have the option to install a new Recloser including HV metering on an overhead pole or a ground mounted switching station complete with HV main circuit breaker and HV metering.

3. Our approach

Entura will provide design and test services to ensure the delivered package of works meshes with TI requirements. The following services are offered:

3.1 Primary electrical design

3.1.1 Connection arrangement selection and procurement support

- Assist TI to decide on pole or ground mounted interconnection and HV metering arrangements
- Liaise with TN standard suppliers for confirmation of arrangements and quotations of major equipment

3.1.2 Design

- Entura will undertake the HV electrical design from the TasNetworks interface boundary at the TI recloser/MCB through to the kiosk substations
- Prepare layout and details drawings utilising TN standards and previous TI project drawings
- For the interconnection between the metering and kiosk substation Prepare HV cable ratings calculations and basic cable specifications for procurement, based on assumed typical soil thermal resistivity values.

3.1.3 Deliverables

Entura will undertake/deliver the following specific items as part of this offer:

- HV electrical drawings including underground cabling plans, HV and LV single line diagrams (within substations), details of precast plinths, conduit locations and equipment selection
- HV electrical design report outlining the design basis and proposed equipment

3.2 High Voltage Earth system design

3.2.1 Soil resistivity measurements

Entura will conduct soil resistivity measurements at each site, to ascertain the soil electrical characteristics at each location as an input into the design. These soil measurements will be undertaken using the Wenner 4 probe method (up to a probe spacing of 132m) in line with industry accepted standards.

3.2.2 Design

To ensure the earthing design complies with the appropriate standards and is fit for purpose, Entura will design each earthing system to a target impedance, based on protection system modelling. This target impedance will be selected to ensure the protection systems will operate under a minimum fault scenario with an accepted level of tolerance. After this initial design constraint is met, consideration will be given to minimise or eliminate potential step-touch voltages that may occur

under the anticipated worst case fault scenario. The design will be modelled for compliance with safety criteria set out in AS-2067.

3.2.3 Deliverables

Entura will undertake/deliver the following specific items as part of this offer:

- Soil resistivity testing
- Earthing analysis and modelling in CDEGS to AS-2067
- HV Earthing layout construction drawing for each site, detailing the earth grid layout and directions on the LV MEN arrangement and equipotential earthing of building, fences and gates.
- High level bill of materials (cable lengths, earth rods etc)
- A short report detailing inputs, assumptions, modelled outputs and a standards compliance statement
- Engineering construction support - 4hrs design engineer (via phone/email)

3.3 Protection and metering design

3.3.1 Design

- Specification and design of HV metering
- Protection design
    - Specification of new protection relay for the main circuit breaker/recloser
    - Coordinated overcurrent and earth fault settings with upstream and downstream protection units.

3.3.2 Deliverables

- Protection settings report
- Protection settings files

3.4 Safety in design

- Safety in design document (documented in risk assessment format)

3.5 Inputs

To allow Entura to deliver this project efficiently and remain on schedule we anticipate the following critical design inputs (CDI) will be required from TI. In most cases if CDI is not made available Entura will be able to work with TI to determine if educated engineering assumptions can be made to keep the project on track:

- TI will provide existing site survey, and design drawings for proposed site layout (including pump station details), operational clearance zones, and preferred electrical infrastructure locations (in CAD format).
- TI will provide TN's augmentation/connection design prior Entura's layout of the design
- TI will provide TasNetworks design contacts for coordination of protection settings between the TasNetworks recloser and any downstream limitations
- TI will provide minimum and maximum HV fault levels for the Poatina Pump Station and the Valleyfield Pump Station.
- TI to co-ordinate access with landowners for the purpose of site testing.

3.6 Additional services

A provisional price for the items below can be provided on request

- Earth system pre-commissioning
- HV pre-commissioning
- Protection relay pre-commissioning
- HV certification
- As-installed drafting and engineering signoff

4. Our people

Our staff are suitably trained and have the appropriate experience in carrying out the works.

- Adam Youd – Drafting
- Andrew Baird – Engineer (Design)
- Chris Masters – Senior Engineer (Design)
- Dan De Groot – Senior Engineer (Design)
- Matthew Simmons – Specialist Engineer (Design)

5. Delivery schedule

A delivery schedule can be developed based on milestone dates to be mutually agreed between Tas Irrigation and Entura.

The design is proposed to be issued in two stages; an initial package of design drawings for TI review/acceptance, followed by the construction package addressing TI comments.

Proposed milestones (duration after providing Entura with required inputs, refer Section 3.5):

- Arrangement selection and procurement support: within three weeks
- Soil resistivity testing: within three weeks
- Primary design drawings and report for TI acceptance: within six weeks
- Earthing design drawings and report for TI acceptance: within three weeks of soil resistivity test
- Specification and design of HV metering: within three weeks
- Protection settings report and settings files: within six weeks

6. Clarifications and exclusions

- The scope is design services only and does not include installation
- Specification of LV main ACB within the kiosk substation is to be specified by others
- LV protection settings will be the scope of others
- Detail design of pump station LV and equipment equipotential earthing
- Secondary integration with the connection equipment for SCADA monitoring and/or remote operation is excluded
- The HV earthing system design has not allowed for staged construction and energisation of the site.
- Our design assumes that the TI riser main is predominantly HDPE and that conductive sections of pipe, if any, are restricted to shorter section localised at each site above ground.
- For the purpose of soil resistivity testing Entura have allowed for two sites to be covered in one trip.
- Site testing considers free unfettered access to site and immediate surrounds.
- Additional site visits or mobilisation to site for re-testing, due to circumstances outside Entura's control (e.g. site availability or weather).

7. Fees, terms and management systems

7.1 Proposed fees

The combined fee to complete both sites is given below:

Cost (ex GST)	Condition
$[redacted]	[redacted]

7.2 Contract terms and conditions

This proposal is subject to administration under the Entura Single Service Consultancy Arrangements. It is provided in Appendix A.

7.3 Insurances

Entura is covered by the Hydro-Electric Corporation's general liability insurance with QBE 386 (Lead). The insurance is placed through our broker AON and a copy of their 'Certificate of Currency' is available on request. The policy is current to 30 September 2022 and is for:

- public liability (policy # CSINT2001856)
- professional indemnity (policy # CSINT2001856).

Workers compensation policies are also in place in Tasmania, Victoria, New South Wales, South Australia, and Queensland and are current until 30 June 2022.

7.4 Management systems

To us, quality means meeting or exceeding your requirements on all projects.

We're continually improving and refining our systems and processes in all areas of our business for the benefit of our people, the environment and our clients.

Our quality management system meets the requirements of ISO 9001:2015, which is continually maintained and improved. Standard operating procedures are supplemented if necessary to meet the requirements of a particular project.

We consider quality to be everyone's personal responsibility. All our employees are responsible for performing their work in accordance with our management system, and for taking the initiative to ensure that we consistently provide reliable services.

Our processes are reviewed and certified by independent experts to ensure we maintain our high standards. Certifications we currently hold include:

7.4.1 Quality

Entura complies with AS/NZS ISO 9001 in our quality manual, plans, procedures and instructions, a certified quality management system. Quality compliance is managed through an internal and external audit program and certified by Bureau Veritas.

7.4.2 Environmental management

Entura operates under an ISO 14001 certified environmental and sustainability management system. We ensure our activities, products and services comply with environmental legislation as well as relevant environmental commitments and agreements. Compliance is certified by NCS International Certification.

7.4.3 Occupational health and safety management

Entura operates under an organisation safety management system certified to OHSAS 18001, an internationally recognised standard for managing occupational health and safety.

Entura employs an integrated Health, Safety and Environment system (HSE) to ensure that there is seamless interaction between these two standards.

8. About Entura

Entura is one of the world's most experienced specialist power and water consulting firms.

We own. We operate. We consult. And that's what makes us different.

From strategy, planning, design and construction through to operation, maintenance, risk management and training, we create safe and sustainable power and water solutions that make a positive and enduring contribution to our clients and communities.

Due to our unique asset-owner heritage, our technical expertise is grounded in more than 100 years of experience contributing to the development, operation and maintenance of renewable energy and water infrastructure.

We have first-hand insights and a deep understanding of the real-life pressures that asset owners face. That's why our clients trust us to deliver practical and commercially sound solutions across the whole lifecycle of their assets, helping them to manage risks and achieve valuable outcomes.

And we do so with one purpose: to create a sustainable future through better power and water solutions.

Appendices

A Single Consultancy Contract – General Conditions of Contract

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

2. RESPONSIBILITIES AND OBLIGATIONS OF THE CONSULTANT

2.1 The Consultant shall:

(a) comply with all reasonable directions of the Client given pursuant to a provision of the Contract;

(b) employ staff with appropriate qualifications and experience to carry out the Services;

(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

(c) provide the Consultant with such access to premises or sites of the Client as is necessary for the Consultant to carry out the Services; and

(d) bear the cost of all fees and charges required to comply with legislative requirements incurred in connection with carrying out the Services.

4. INSURANCE

4.1 From the Commencement Date, the Consultant must effect and have in place the following insurances:

(a) a professional indemnity insurance policy for the Services with a total aggregate cover of not less than $2,000,000.00 which shall:

(i) include provision for loss of documents; and

(ii) be maintained until the End Date and thereafter for a period of 6 years;

(b) a public liability policy until the End Date for an amount in respect of any one claim or series of claims arising from the one original cause of not less than $5,000,000.00; and

(c) a workers' compensation policy until the End Date for the maximum amount permitted by law, covering the Consultant's liability under common law and statute for death or injury to any person employed by the Consultant.

5. PAYMENT

5.1 The Client shall pay the Consultant the Contract Sum in accordance with this Contract.

5.2 The Consultant shall submit to the Client claims for payment progressively in accordance with the Contract Particulars.

5.3 All monies due and payable by the Client to the Consultant must be paid within 14 days of the receipt by the Client of a properly prepared tax invoice from the Consultant in accordance with clause 6.4.

5.4 If the Client does not pay the amount of the claim the Client shall, either with the payment or not later than the time for payment, provide the Consultant with a written statement of the reason for any difference between the amount claimed and the amount paid or to be paid.

5.5 If any moneys due and payable to either party remain unpaid after the date upon which or the expiration of the period within which they should have been paid, then interest shall be payable thereon at the then current benchmark interest rate applicable to Division 7A of Part III of the *Income Tax Assessment Act 1936* (Cth) from (but excluding) the date upon which or the expiration of the period within which they should have been paid to and including the date upon which the moneys are paid.

6. GST

6.1 Words or expressions used in this clause 6 which are defined in *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) have the same meaning in this clause.

6.2 All amounts stated in and payable under or in connection with this Contract exclude GST unless otherwise indicated.

6.3 If a payment to a party under this Contract is a reimbursement or indemnification, calculated by reference to a loss, cost or expense incurred by that party, then the payment will be reduced by the amount of any input tax credit to which that party is entitled for that loss, cost or expense.

6.4 The recipient will not be liable to pay the supplier for a taxable supply made under or in connection with this Contract until the supplier has given the recipient a tax invoice for the supply to which the payment relates.

6.5 Where an adjustment event occurs in relation to a supply made by the supplier under or in connection with this Contract, the supplier will issue an adjustment note to the party providing consideration in respect of that supply within 28 days after becoming aware of the relevant adjustment.

7. VARIATIONS

7.1 The Client may, by written notice to the Consultant, reasonably direct the Consultant to vary the Services and, provided that the variation does not change the general scope of the Services, the Consultant shall be bound to comply with that direction ("**Variation**").

7.2 The parties must use their best endeavours to agree in writing on the value of a Variation, but in the event that the parties are unable to agree within 7 days of the issue of the direction, then the value of the Variation shall be determined using reasonable rates and prices.

7.3 If a new legislative requirement or a change in a legislative requirement after the date of the Contract could not reasonably have been anticipated at the date of the Contract, then the extent to which the Services are changed by that legislative requirement shall be deemed to be a Variation pursuant to clause 7.1.

7.4 Where, due to circumstances beyond the reasonable control or anticipation of the Consultant, the Consultant is required to alter, add to or delete documents or other things previously submitted and which otherwise would have complied with the Contract, the Consultant shall inform the Client and seek directions and any subsequent alteration, addition or deletion shall be deemed to be a Variation pursuant to clause 7.1.

Entura Single Use Consultancy Contract - Entura as Consultant.doc Approved version as of Monday, 18 October 2021 Page 3 of 5

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

8. DELAYS

8.1 The Consultant shall proceed with the work under the Contract with due expedition and without delay.

8.2 When it becomes evident to a party that an act or omission of the Client, or an employee, other consultant, contractor or agent of the Client, may delay carrying out the Services, that party shall promptly notify the other party in writing with details of the possible delay and the cause.

8.3 The Client may direct the Consultant in what order and at what time the Services shall be performed and if:

(a) the Consultant:

(i) can reasonably comply with the direction the Consultant shall do so; and

(ii) cannot reasonably comply with the direction the Consultant shall so notify the Client in writing, giving reasons; and

(b) compliance with the direction causes the Consultant to incur more or less cost than otherwise would have been incurred had the Consultant not been given the direction, the difference shall be valued pursuant to clause 7.2 as though the direction was a Variation.

9. CONFIDENTIALITY

9.1 Except as required by law, the Consultant and the Client will keep confidential information which is so designated in writing by the party providing the information, or which should reasonably be known by the recipient party to be confidential. This clause 9 will survive the expiry or termination of the Contract.

10. LIABILITY OF THE CONSULTANT

10.1 The maximum liability of the Consultant arising out of the performance or non-performance of the Contract or the Services whether under the law of contract, tort or otherwise, shall be limited to 100% of the Contract Sum.

10.2 To the maximum extent permitted by law and notwithstanding any other provision of the Contract, the Consultant is not liable to the Client, whether under contract, in tort, in equity, in restitution, under statute or otherwise, in respect of any:

(a) business interruption loss;
(b) loss of actual or anticipated profit, revenue, production, opportunity or anticipated savings;
(c) loss of use; or
(d) exemplary damages.

10.3 This clause 10 shall not apply to claims in respect of personal injury or death.

11. CONSULTANT'S INDEMNITY

11.1 Subject to clause 10, the Consultant shall indemnify the Client against:

(a) loss of or direct damage to property of the Client; and
(b) claims by any person against the Client in respect of personal injury or death or loss of or damage to any other property,

arising out of or in consequence of carrying out the Services by the Consultant.

11.2 The Consultant's liability to indemnify the Client under clause 11.1 shall be reduced proportionally to the extent that the act or omission of the Client or the employees, agents or other contractors of the Client contributed to the loss, damage, death or injury.

12. DISPUTES

12.1 If a dispute arises between the Consultant and the Client in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contract or the Services, either party may give a notice in writing ("**Notice of Dispute**") to the other party specifying the nature of the dispute, the particulars of the party's reasons for being dissatisfied and the position that the party believes is correct.

12.2 The parties must meet within 14 days of the date of the Notice of Dispute and undertake genuine and good faith negotiations with a view to resolving the dispute. Unless the parties agree otherwise, the meeting must take place in Hobart, Tasmania.

12.3 If the parties are unable to resolve the dispute in accordance with clause 12.2 within 14 days of first meeting under clause 12.2, the dispute may be referred, by written notice of either party, to mediation, which is to be conducted in accordance with the Institute of Arbitrators and Mediators Australia Mediation Rules.

13. INTELLECTUAL PROPERTY

13.1 Unless the Contract otherwise provides, the Consultant retains all Intellectual Property Rights in the Services and in any design, materials, documents and methods of working used or produced in relation to the Services. The Consultant grants to the Client an irrevocable, royalty free, non-exclusive, transferable, perpetual licence to exercise all rights of the owner of the Intellectual Property Rights associated with the Services, for any business purpose of the Client, including additions or alterations or entering into any agreement with any third party which is associated with or uses the Services or things produced in the course of performing the Services.

14. ASSIGNMENT

14.1 The Consultant may assign, novate or otherwise transfer any of its rights, remedies, powers, duties and obligations under this Contract without approval from the Client to another entity that is financially and technically able to conduct the Consultant's engineering and consulting business, Entura ("**Other Entity**") provided that all, or a substantial part, of the Consultant's engineering and consulting business, Entura is transferred to the Other Entity. The Client agrees to do anything the Consultant asks to give effect to the above, including signing any documents, to transfer the rights, remedies, powers, duties and obligations to the Other Entity.

15. NOTICES

15.1 A notice (and other documents) must be in writing, legible, in English and delivered in person, by email or by post.

15.2 A notice (and other documents) shall be deemed to have been given and received:

(a) if addressed or delivered to the relevant address listed in the Contract Particulars or last communicated in writing to the person giving the notice; and
(b) on the earliest date of:

(i) actual receipt if delivered in person;
(ii) the notice being recorded as having been first received at the electronic mail destination; or
(iii) 3 days after posting.

16. TERMINATION

16.1 The Contract may be terminated:

(a) at any time by mutual agreement;
(b) for the convenience of the Client, upon the giving of not less than 7 days notice, in which case the Client shall pay the Consultant:

(i) that portion of the Contract Sum payable to the date of termination;
(ii) any direct costs incurred by the Consultant to the date of termination; and
(iii) an amount equal to 2% of the Contract Sum;

(c) upon a substantial breach of the Contract by either party which is not remedied within a reasonable time (and in any case within 7 days) of notice by the non-breaching party of the substantial breach; or
(d) immediately by either party in the event the other party becomes insolvent or financially unable to proceed with the Contract.

16.2 Upon termination of the Contract, the Consultant shall, as soon as possible, return to the Client the Client's property provided to the Consultant in carrying out the Services.

16.3 If a party breaches (including repudiates) the Contract, nothing in this clause 16 shall prejudice the right of the other party to recover damages or exercise any other right or remedy.

17. MODERN SLAVERY

17.1 Warranty

Both the Consultant and the Client warrant that:

(a) it has not, and will not engage in any Modern Slavery practices;

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

(b) it does and will continue to comply with all laws relating to Modern Slavery;
(c) it does and will continue to take reasonable steps to ensure that there is no Modern Slavery in its supply chains or in its sub-contractor's supply chains;
(d) neither they or any any of their Personnel:
(i) has been convicted of any offence involving Modern Slavery; and
(ii) having made reasonable enquiries, to the best of its knowledge, has been or is the subject of any investigation, inquiry or enforcement proceedings by any Government Agency regarding any offence or alleged offence of or in connection with Modern Slavery.

17.2 Compliance

Both Parties must:
(a) implement and maintain throughout the Term appropriate due diligence procedures for its own suppliers and sub-contractors to ensure that there is no Modern Slavery in its supply chains; and
(b) do all things necessary to immediately rectify or avoid any Modern Slavery risk in its supply chains.

17.3 Notification

The Consultant and Client must promptly notify the other party as soon as it becomes aware of any actual or suspected Modern Slavery in a supply chain which has a connection with this agreement.

17.4 Records

Both Parties must:
(a) maintain a complete set of records to trace the supply chain of all goods and services provided to it and in connection with this agreement; and
(b) provide all information reasonably required by the other party to comply with any law or legal requirement to provide a compliance statement in relation to Modern Slavery.

18. FORCE MAJEURE

18.1 Consequences of Force Majeure

The relevant party is not liable for any delay or failure to provide the services caused by a Force Majeure Event.

18.2 Notification of Force Majeure

The relevant party must notify the other party in writing as soon as practical of any anticipated or actual (if not already notified as anticipated) delay or failure caused by a Force Majeure Event.

18.3 Remedy Force Majeure

(a) The relevant party must remedy the Force Majeure Event to the extent reasonably practicable and resume performance of its obligations as soon as practicable.
(b) The relevant party is not required under this clause to settle any labour dispute against its will or to test the validity or refrain from testing the validity of Federal, State, Territory or local law, order, rule or regulation.

18.4 Suspension of obligations

The provision of the services by the relevant party is suspended for the period of delay caused by the Force Majeure Event.

18.5 Termination right

If:
(a) performance of the services is prevented by a Force Majeure Event for more than one month; or
(b) a delay caused by the Force Majeure Event exceeds three months,
the relevant party may terminate this Contract at the expiration of not less than 30 days written notice to the other party.

19. GOVERNING LAW

19.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

20. DEFINITIONS

20.1 In this Contract, the following capitalised terms have the meanings given in this clause 20.1:

"Force Majeure Event" means an event or cause listed below to the extent that the event or cause is beyond the reasonable control of the relevant party:
(a) act of God, lightning, storm, flood, fire, earthquake or explosion, cyclone, tidal wave, landslide or adverse weather conditions;
(b) strike, lockout, or other labour difficulty but not a strike or lockout at the premises of the party claiming force majeure; or
(c) act of public enemy, war (declared or undeclared), terrorism, sabotage, blockage, revolution, riot, insurrection civil commotion, epidemic or pandemic;
(d) the enactment or amendment of any laws, rules, regulations, orders or decrees of the Australian Federal Government, State or Territory Government, any local government or of any statutory authority, not resulting from the wrongful act or omission of the relevant party; or
(e) travel or other restrictions imposed by the Australian Federal Government, State or Territory Government, any local government or of any statutory authority as a result of outbreak of disease or declaration of an epidemic or pandemic

"Government Agency" means any government or any public, statutory, governmental (including a local government), semi-governmental, local governmental or judicial body, entity, department or authority and includes any self-regulatory organisation established under statute.

"**Intellectual Property Right**" means any patent, registered design, trademark or name, copyright or other protected right.

"Modern Slavery" means slavery, forced labour, bonded labour, human trafficking, child labour, debt bondage and any other slavery like practices prohibited under any Modern Slavery Laws.

"Modern Slavery Laws" means the Modern Slavery Act 2018 (Cth), Divisions 270 and 271 of the Criminal Code Act 1995 (Cth), and any other laws or regulations prohibiting or regulating Modern Slavery in force in Australia.

"Personnel" means the officers, employees, secondees, agents, consultants, contractors and subcontractors of the Consultant or Client as the situation requires.

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Tasmanian Irrigation Pty Ltd
95 722 799 075
PO Box 84
EVANDALE TAS 7212

Phone: 03 6398 8433
Email: invoices@tasirrigation.com.au

PURCHASE ORDER

Entura
GPO Box 355
Hobart TAS 7001
Australia

Purchase Order #:	PU006331
Date Issued:	01/04/2022
Vendor:	10011
Required:	08/04/2022
Page:	1 of 2

Attention : Mark Reardon

Description	*Qty*	*Inc Unit Price*	*Inc Amount*
NMIS - HV and Earthing Design	1 ONLY	[redacted]	[redacted]

Order Total Inc GST	[redacted]
GST	[redacted]

Invoice To: Tasmanian Irrigation Pty Ltd
PO Box 84

Evandale Tasmania 7212

Deliver To: Tasmanian Irrigation Pty Ltd
Level 2, Terminal Buillding
Launceston Airport
Western Junction Tasmania 7212

Tasmanian Irrigation Pty Ltd Purchase Order (PO) Terms and Conditions

1. Definitions and interpretation

1.1 Definitions

In these terms and conditions, unless the contrary intention is expressed, defined terms have the meanings set out in the PO and below:

Business Day means any week day on which banks are generally open for business in Hobart, Tasmania.

GST has the meaning given in the GST Act.

GST Act means *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) and the related imposition Acts of the Commonwealth.

Legislative Requirements means any:

(a) Acts, Ordinances, regulations, by-laws, orders, awards, codes, codes of practice, standards and proclamations whether Commonwealth, State or local; and

(b) certificates, licences, consents, permits, approvals, authorisations and requirements or any body, authority, board or organisation having jurisdiction in connections with the supply of the Goods or the Services.

Purchase Order (PO) means the PO attached to these terms and conditions.

Tax Invoice means a tax invoice issued by the Supplier which:

(a) is a valid tax invoice for the purposes of the GST Act;

(b) includes the Supplier's ABN;

(c) contains a description of the Goods supplied and/or the Services provided by the Supplier; and

(d) clearly states the PO number

2. Terms and Conditions

(a) These terms and conditions apply to the PO.

(b) To the extent the Supplier's terms and conditions are supplied with the Goods or Services (including as printed on consignment notes or other documents), those terms and conditions will be of no legal effect and will not constitute part of the PO.

3. Supply

In consideration of payment of the Price by TI, the Supplier must supply TI with the Goods and/or the Services in accordance with these terms and conditions.

4. Delivery of Goods

(a) The Supplier must deliver the Goods, at its cost, to the Delivery Address by the Delivery Date, with a delivery note specifying the PO number; together with any documents required to transfer full legal and beneficial ownership of the Goods and the benefit of any warranty and licences in respect of the Goods, to TI.

(b) The Supplier must ensure that the Goods are suitably packed to avoid damage in transit or in storage.

5. Performance of Services

The Supplier must perform the Services by the Delivery Date.

6. Title and Risk

(a) Title in the Goods passes to TI upon payment of the Price.

(b) Risk in the Goods passes to TI upon TI's written acceptance of the Goods.

7. Payment

7.1 Invoices

(a) Upon delivery of the Goods and/or on completion of the Services, the Supplier must provide TI with a Tax Invoice.

(b) If TI requests, the Supplier must provide TI with all relevant records to calculate and verify the amount set out in any Tax Invoice.

(c) TI will pay Tax Invoices within 30 days from receipt of the Tax Invoice subject to the Supplier having supplied the Goods and/or performed the Services set out in the Tax Invoice to the reasonable satisfaction of TI.

7.2 Price is inclusive

(a) The Price is inclusive of all costs incurred by the Supplier in the supply of the Goods and/or performance of the Services including all charges for packing, insurance and delivery of the Goods and the cost of any items used in the performance of the Services.

(b) The Price is inclusive of all taxes and duties except GST.

7.3 Set off

TI may reduce any payment due to the Supplier under a PO by any amount which the Supplier must pay TI, including costs, charges, damages and expenses and any debts owed by the Supplier to TI on any account whatsoever. This does not limit TI's right to recover those amounts in other ways.

8. GST

(a) Unless otherwise stated in these terms and conditions, all amounts payable by TI to the Supplier under these terms and conditions are GST exclusive.

(b) If GST is imposed or payable on the supply made by the Supplier under these terms and conditions, the Supplier may recover from TI, in addition to the Price, an amount equal to the GST payable in respect of that supply.

(c) The Supplier's right to payment under clause 8(b) is subject to a Tax Invoice being delivered to TI.

9. Warranties

9.1 Warranties as at the Delivery Date

The Supplier warrants that, as at the Delivery Date:

(a) the Goods will be free from any defects;

(b) TI will have the benefit of any manufacturer's warranty or licences required to use the Goods;

(c) It has no security interest in any Goods supplied to TI;

(d) the Goods and/or the Services will:

(i) match their descriptions set out in the PO;

(ii) be fit for the purpose for which goods and/or services of the same kind are commonly supplied or bought and for the purposes to which TI intends to put the Goods and/or the Services;

(iii) be of merchantable quality and unless otherwise specified in the PO, the Goods will be new; and

(iv) comply with all applicable Australian standards and Legislative Requirements; and

(e) the Supplier will perform the Services in a proper and workmanlike manner and to a standard or professional care, skill, judgment and diligence expected of a member of the trade, industry or profession relevant to the Services.

9.2 Intellectual Property (IP) warranty

The Supplier warrants that, in providing the Goods and performing the Services, the Supplier has not and will not infringe upon any IP (including moral) rights of any party.

9.3 Survival

This clause 9 survives the termination or expiration of the PO and these terms and conditions.

10. Defective Goods or Services

(a) If TI determines (acting reasonably) that any of the Goods are defective ("**Defective Goods**") and/ or any of the Services are defective ("**Defective Services**"), TI may, in its absolute discretion:

(i) reject the Defective Goods;

(ii) reject the Defective Services;

(iii) require the Supplier to repair or make good the Defective Goods; or

(iv) require the Supplier to re-perform or make good the Defective Services.

(b) TI must give notice to the Supplier of the Defective Goods and/or the Defective Services and the action to be taken by the Supplier.

(c) On receipt of notice from TI under clause 10(b), the Supplier must comply with that notice and at its cost: (as directed by TI):

(i) collect the Defective Goods and replace the Goods;

(ii) repair or replace the Defective Goods;

(iii) re-perform or make good the Defective Services; or

(iv) reimburse TI for any expenses incurred in repairing, replacing, re-performing or making good (as the case may be) any Defective Goods and/or Defective Services.

11. Intellectual Property

Ownership of all intellectual property in the Goods and/or any material produced as part of the Services passes to TI upon delivery of Goods and/or performance of the Services.

12. Cancellation and change

(a) If the Supplier is unable to supply the Goods and or the Services as specified in the PO, it must promptly notify TI. Subject to TI's approval on the price and quality, the Supplier may offer other Goods and/or Services in substitution.

(b) TI may (at any time before delivery) cancel or change the PO.

13. Termination

(a) TI may terminate the PO at any time by notifying the Supplier in writing.

(b) TI will only pay the Supplier that portion of the Price attributable to those Goods delivered or Services performed prior to the date of the notice of termination given under clause 13(a).

14. Indemnity and Insurance

(a) The Supplier is liable for and indemnifies TI against any and all liability, loss, damage or claims arising directly or indirectly from:

(i) the breach of any provision of these terms and conditions or the PO by the Supplier; or

(ii) any act or omission, negligence, or default of the Supplier in respect of these terms and conditions or the PO.

The Supplier agrees to take out and maintain such insurance coverage as is specified in the PO (if any) for at least two (2) years after the Delivery Date.

15. General

(a) If any provision in these terms and conditions is illegal, invalid or unenforceable, that provision will, as far as possible, be read down, or if it cannot be read down, that provision or part of the provision will be deemed to be void and severed from these terms and conditions. That will not affect the validity of the remaining terms and conditions.

(b) The Supplier must not assign, either in whole or in part, any rights under the PO or these terms and conditions, without the prior written consent of TI.

(c) TI may assign the PO or these terms and conditions, at its discretion.

(d) The agreement constituted by these terms and conditions will be governed by the laws of the State of Tasmania and the parties submit to the non-exclusive jurisdiction of the courts of Tasmania.

(e) The parties confirm that the relationship established by these terms and conditions, is that of principal and independent contractor.

(f) Any notice which is required or permitted to be given to either party must be in writing and, unless otherwise agreed, be addressed to the following address of the intended recipient:

Name of Party	Address	Email
TI	Level 2, Launceston Airport Terminal Building	invoices@tasirrigation.com.au
The Supplier	The address stated on the PO	The email stated on the PO

Lara Henley

From: Rebecca Carter
Sent: Tuesday, 16 May 2023 11:46 AM
To: Lara Henley
Subject: Correspondence from Tasmanian Irrigation
Attachments: Correspondence - Northern Midlands Irrigation Scheme- Hydro.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

From: Dianna Shearer <dianna.shearer@tasirrigation.com.au>
Sent: Tuesday, 10 May 2022 10:56 AM
To: Rebecca Carter <Rebecca.Carter@hydro.com.au>
Cc: Eric Shegog <Eric.Shegog@tasirrigation.com.au>; James Hipwood <james.hipwood@tasirrigation.com.au>
Subject: Correspondence from Tasmanian Irrigation

Good morning Rebecca

Please find attached correspondence from Tasmanian Irrigation

Thanks

Di

Dianna Shearer
Executive Assistant
(9am-2pm Monday-Friday)

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: dianna.shearer@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

HELPING TO GROW THE WEALTH OF TASMANIA

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Help stop the spread of Covid-19 Download the COVIDSafe app COVIDSAFE

COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

Disclaimer: This message (and its attachments) may contain confidential, proprietary or legal privileged information and is intended solely for the use of the addressee named above. If you are not the intended recipient of this message (or responsible for delivery of the message to that person) you must not use, print, store, copy it in any form, or disclose the information contained in it. If you have received this message in error, please delete it, and notify the sender immediately.

Tasmanian Irrigation

ABN: 95 722 799 075 / ACN 133 148 384

Via Email

Mr Ian Brooksbank

Hydro Tasmania

Dear Ian

Northern Midlands Irrigation Scheme - Request for Water

Thank you for your latest letter of 5 May in relation to the water supply for our Northern Midlands Irrigation Scheme and the associated pricing principles including the recovery of the costs of forced running.

Tasmanian Irrigation is critically aware of the changing operating and market environment facing Hydro Tasmania and understands the desire to protect the interests of Hydro in relation to the out of sequence running of power stations to facilitate irrigation water supply. We remain committed to working with Hydro to

Tasmanian Irrigation reluctantly agrees in principle to the conditions outlined in your letter of 5 May, including that these principles are limited in application to the Northern Midlands water supply arrangements. Our agreement is on the proviso that there is a reciprocal agreement and commitment for Hydro Tasmania to actively work to mitigate and minimise the cost and application of any forced running charge.

As outlined in previous correspondence Tasmanian Irrigation has sought to mitigate the risk of requiring Hydro Tasmania to run the Poatina Power station to solely deliver water to support the Northern Midlands Irrigation Scheme through the integration of a holding dam into the scheme design.

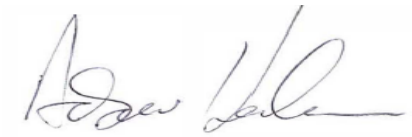
We remain concerned as to Hydro Tasmania's intentions in respect of water supplies to existing irrigation schemes where the ability to mitigate any change to pricing of water supply is limited to non-existent, other than passing through to irrigators and eroding the economic viability of these schemes.

I am of the view that there is a need to balance the overall economic interests of the state in developing the associated water use and pricing policies and principles and that the risks should sit with those who are in the best overall position to manage them.

This will be an issue for the state through our respective Ministers to ultimately adjudicate and determine the overall economic balance of interest for the state and therefore who should bear any benefits and or losses associated with supplying water for irrigation via Hydro systems.

I look forward to working with you and your team in relation to moving the Northern Midlands water supply agreement and pricing methodology forward.

Yours Sincerely



Andrew Kneebone

Lara Henley

From: Phillip Ellerton
Sent: Tuesday, 26 July 2022 7:23 PM
To: Melanie Durham
Subject: FW: [External]Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites
Attachments: TASMANIAN Irrigation.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Mel,
Just chasing up a few loose ends. I don't recall receiving the countersigned copy of the attached?
Regards,

Phillip Ellerton | National Business Development Manager – Water
Dip.PM

entura

m [redacted] **p** +61 3 6245 4500
e phillip.ellerton@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
Connect with us on Facebook, Twitter and LinkedIn

We own. We operate. We consult.

Please consider the environment before printing my email
This e-mail and any attachments may contain confidential, proprietary or legally privileged information. If you are not the intended recipient, you must not keep, forward, disclose, adapt or copy the material and any such action is unauthorised and prohibited. If you have received this e-mail in error, please immediately advise the sender by return email and delete this e-mail and any attachments from your system. Hydro-Electric Corporation ABN 48 072 377 158

From: Phillip Ellerton
Sent: Thursday, 7 July 2022 6:04 PM
To: Melanie Durham <Melanie.Durham@tasirrigation.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Chris Masters <Chris.Masters@entura.com.au>
Subject: RE: [External]Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Hi Mel,
Please find attached. [redacted]
Could you or Jacob please countersign and return.
Regards,
Phil

Phillip Ellerton | National Business Development Manager – Water
Dip.PM

entura

m [redacted] **p** +61 3 6245 4500
e phillip.ellerton@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
Connect with us on Facebook, Twitter and LinkedIn

We own. We operate. We consult.

Please consider the environment before printing my email
This e-mail and any attachments may contain confidential, proprietary or legally privileged information. If you are not the intended recipient, you must not keep, forward, disclose, adapt or copy the material and any such action is unauthorised and prohibited. If you have received this e-mail in error, please immediately advise the sender by return email and delete this e-mail and any attachments from your system. Hydro-Electric Corporation ABN 48 072 377 158

From: Melanie Durham <Melanie.Durham@tasirrigation.com.au>
Sent: Tuesday, 5 July 2022 1:22 PM
To: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: RE: [External]Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Hi Phil

Just following up on the below email.

Kind regards

Mel Durham
Procurement & Contracts Lead

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: melanie.durham@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation Pty Ltd | PO Box 84 | Evandale | TAS 7212

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From: Melanie Durham
Sent: Tuesday, 28 June 2022 9:36 AM
To: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: RE: [External]Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Good morning Phil

As discussed yesterday, rather than enter into negotiations on TI's other contract terms, [redacted]

[redacted]

Can you please let me know if this is acceptable to Entura.

Kind regards

Mel Durham
Procurement & Contracts Lead

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: melanie.durham@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Sent: Friday, 24 June 2022 5:19 PM
To: Melanie Durham <Melanie.Durham@tasirrigation.com.au>
Subject: [External]Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

You don't often get email from phillip.ellerton@entura.com.au. Learn why this is important

Good afternoon Mel,
In regards to the above package of work I noticed we are yet to execute the final contract. The team were looking to deliver under the attached previously agreed to ShortForm Conditions of Contract used late last year.
As this package although includes design I have been asked by legal if we could please use your design T&Cs, incorporating our ShortForm changes.
Would that be ok?
Regards,

Phillip Ellerton | National Business Development Manager – Water
Dip.PM

entura

m [redacted] **p** +61 3 6245 4500
e phillip.ellerton@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
Connect with us on Facebook, Twitter and LinkedIn

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From: Melanie Durham <Melanie.Durham@tasirrigation.com.au>
Sent: Wednesday, 1 June 2022 10:41 AM
To: Chris Masters <Chris.Masters@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: FW: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Good morning Chris

Please find attached a mark up of TI's ShortForm Conditions of Contract amended as previously agreed between TI and Entura on 28/10/2021.

Can you please confirm that Entura are happy for these conditions to cover the HV and Earthing Design works currently being undertaken and I'll forward a find version for signing.

Many thanks

Mel Durham
Procurement & Contracts Lead

<image001.png>

T: 03 6398 8433
M: [redacted]
E: melanie.durham@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Tuesday, 31 May 2022 4:07 PM
To: Melanie Durham <Melanie.Durham@tasirrigation.com.au>
Subject: RE: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

From: Chris Masters <Chris.Masters@entura.com.au>
Sent: Friday, 6 May 2022 3:50 PM

To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: RE: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Good afternoon Jacob,
I have just found out that I we cannot accept TI's standard T&Cs without some tweaks.
Apparently this has been picked up before and we have a couple of options, are you happy to accept Entura's T&C attached to our proposal, or alternatively we can dig up and review previously agreed contract prepared from a previous engagement between TI and Entura.

Let me know your preference.

Thanks,
Chris Masters | Electrical Engineer

<image005.png>

m +[redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
Connect with us on Facebook, Twitter and LinkedIn

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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Tuesday, 3 May 2022 10:28 AM
To: Chris Masters <Chris.Masters@entura.com.au>
Subject: FW: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Hi Chris

See attached, it was attached to my award email but easily missed

Regards

Jacob Gerke

<image003.png>

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

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From: Jacob Gerke
Sent: Friday, 1 April 2022 4:19 PM
To: Chris Masters <Chris.Masters@entura.com.au>
Cc: Jeremy Kearney <Jeremy.Kearney@entura.com.au>; Matt Simmons <matt.simmons@entura.com.au>; Graeme Vertigan <graeme@asceng.com.au>; Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>; Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Subject: RE: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Hi Chris

An email to say we would like to proceed with Entura complete the HV and Earthing Design.

I suggest we catch up early next week to kick things off.

Thanks again for the quote and look forward to working with you.

Regards

Jacob Gerke

<image003.png>

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Chris Masters <Chris.Masters@entura.com.au>
Sent: Monday, 28 March 2022 4:51 PM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Jeremy Kearney <Jeremy.Kearney@entura.com.au>; Matt Simmons <matt.simmons@entura.com.au>; Graeme

Vertigan <graeme@asceng.com.au>
Subject: [External]RE: Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

> You don't often get email from chris.masters@entura.com.au. Learn why this is important

Good afternoon Jacob,
Please find attached Entura's proposal for the HV primary and earthing design of the proposed Poatina and Valleyfield Pump Stations.

Let me know if you have any queries about the details within the proposal.

Thanks and regards,
Chris Masters | Electrical Engineer

<image005.png>

m [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 89 Cambridge Park Drive, Cambridge TAS 7170, Australia
Connect with us on Facebook, Twitter and LinkedIn

<image007.png>

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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Thursday, 17 March 2022, 3:47 pm
To: Graeme Vertigan
Cc: Michael Holmes
Subject: Tas Irrigation - Northern Midlands - HV and Earthing Design

Hi Graeme

As discussed yesterday we are looking for a proposal for completing HV design works and earthing.

We would like a proposal to complete the following:

1. Complete design of HV connections from TasNetworks Augmentation from the Poatina and Valleyfield Pump Stations as per ownership boundary within the TasNetworks Connection Capability Report
2. Complete earthing design including step and touch assessments

Details:

- A customer-owned 22 kV /400 V 2000 kVA kiosk substation is required at Poatina Pump Station (Note loads reduced since TasNetworks Report)
- A customer-owned 22 kV /400 V 1500 kVA kiosk substation is required at Valleyfield Pump Station
- Both kiosk substations are to be connected to the TasNetworks distribution network and are to be specified from standard approved products of TasNetworks to promote familiarity for local contractors engaged by TI for the installation and maintenance of the substations.
- HV electrical design from the TasNetworks interface boundary through to the kiosk substations, including:
    - HV electrical design report outlining the design basis, proposed equipment, design process for proposed earth systems and safety in design considerations (documented in risk assessment format).

- HV electrical drawings including underground cabling plans, HV and LV single line diagrams (within substations), details of precast plinths, conduit locations and equipment selection
- Earthing and bonding drawings for each of the substations
    - Organise / complete soil resistivity testing
- Specify and design of HV metering

Site Layouts

See the attached General Site Arrangements.

Poatina Pump Station – The Feeder Line nearby the pump station will need to be realigned something similar as to what is marked in red, with suggested pole locations – This would be TasNetworks assests.

<image033.png>
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Figure 1: Poatina Pump Station

<image038.png>
<image039.jpg>

Figure 2: Valleyfield Pump Station

Can you please provide pricing in line with the following:

- Pricing to Complete HV Design
- Pricing to Complete Earthing
- Timeframe to complete works

If there are other details you require to quote then please don't hesitate to ask.

Regards

Jacob Gerke

<image003.png>

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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<NMIS-210083 ShortForm Conditions of Contract (mark up

Phillip Ellerton | National Business Development Manager – Water
Dip.PM

entura

m [redacted] **p** +61 3 6245 4500
e phillip.ellerton@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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Single Use Consultancy Contract

entura

Client:	Entura as Consultant	Consultant:
Name: Tasmanian Irrigation Pty Ltd ABN: 95 722 799 075 Address: PO Box 84 Evandale TAS 7212	**Contract Particulars** (to be read in conjunction with the General Conditions of Contract here attached)	Hydro-Electric Corporation T/A Entura ABN 48 072 377 158 4 Elizabeth Street Hobart TAS 7000

Project Number	Contract Description
TBA	Tasmanian Irrigation Northern Midlands Irrigation Scheme HV and Earthing Design

1. The Parties:

Client's representative: Jacob Gerke	Consultant's representative: Phillip Ellerton
Position: [title]	Position: National Business Development Manager - Water
Phone Number (03) 6398 8433 / [redacted]	Phone Number: [redacted]
E-mail address: Jacob.gerke@tasirrigation.com.au	E-mail address: phillip.ellerton@entura.com.au

2. The Services:

The "**Services**" means the whole of the work to be carried out and completed in accordance with the Contract, including variations provided for by the Contract, which is to be completed by the Consultant and includes:

Undertake HV electrical design from the TasNetworks interface boundary at the TI recloser/MCB through to the kiosk substations. Deliverables include layout and details drawings utilising TasNetworks standards and previous TI project drawings. For the interconnection between the metering and kiosk substation Prepare HV cable ratings calculations and basic cable specifications for procurement, based on assumed typical soil thermal resistivity values.
For further details please refer to the attached Tasmanian Irrigation Northern Midlands Irrigation Scheme HV and Earthing Design Proposal dated *28th March 2022*

3. The Contract Sum:

The "**Contract Sum**" is: (click the applicable box/boxes and insert either a lump sum and/or state the applicable schedule of rates and delete as appropriate) *All prices stated exclude GST	[redacted] ☐ The following schedule of rates: [Insert role] hours @ $[insert amount] per hour; [Insert role] hours @ $[insert amount] per hour; Expenses shall be reimbursed by the Client at cost plus 10 percent (%). ☐ The attached schedule of rates
The time for claiming payment is:	[Insert time period, e.g. fortnightly for work performed, or insert milestones] [If nothing stated, on the 20th day of each month or the next business day thereafter.]

4. Time:

The "**Commencement Date**" is:	07/07/2022
The "**End Date**" is:	30/06/2023

5. Governing Law:

The Laws of the State of Tasmania.

EXECUTED as an Agreement

Executed for and on behalf of the **Client** by:

Signature	Signature of witness *(A witness is only required when signing in hard-copy)*
Full name	Full name of witness
Date:	Date:

Executed for and on behalf of the **Consultant** by:

Signature	Signature of witness *(A witness is only required when signing in hard-copy)*
Phillip Ellerton	**Matt Ferguson**
Full name	Full name of witness
Date: 07.07.2022.	Date: 7/7/2022

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

2. RESPONSIBILITIES AND OBLIGATIONS OF THE CONSULTANT

2.1 The Consultant shall:

(a) comply with all reasonable directions of the Client given pursuant to a provision of the Contract;

(b) employ staff with appropriate qualifications and experience to carry out the Services;

(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

(c) provide the Consultant with such access to premises or sites of the Client as is necessary for the Consultant to carry out the Services; and

(d) bear the cost of all fees and charges required to comply with legislative requirements incurred in connection with carrying out the Services.

4. INSURANCE

4.1 From the Commencement Date, the Consultant must effect and have in place the following insurances:

(a) a professional indemnity insurance policy for the Services with a total aggregate cover of not less than $2,000,000.00 which shall:

(i) include provision for loss of documents; and

(ii) be maintained until the End Date and thereafter for a period of 6 years;

(b) a public liability policy until the End Date for an amount in respect of any one claim or series of claims arising from the one original cause of not less than $5,000,000.00; and

(c) a workers' compensation policy until the End Date for the maximum amount permitted by law, covering the Consultant's liability under common law and statute for death or injury to any person employed by the Consultant.

5. PAYMENT

5.1 The Client shall pay the Consultant the Contract Sum in accordance with this Contract.

5.2 The Consultant shall submit to the Client claims for payment progressively in accordance with the Contract Particulars.

5.3 All monies due and payable by the Client to the Consultant must be paid within 14 days of the receipt by the Client of a properly prepared tax invoice from the Consultant in accordance with clause 6.4.

5.4 If the Client does not pay the amount of the claim the Client shall, either with the payment or not later than the time for payment, provide the Consultant with a written statement of the reason for any difference between the amount claimed and the amount paid or to be paid.

5.5 If any moneys due and payable to either party remain unpaid after the date upon which or the expiration of the period within which they should have been paid, then interest shall be payable thereon at the then current benchmark interest rate applicable to Division 7A of Part III of the *Income Tax Assessment Act 1936* (Cth) from (but excluding) the date upon which or the expiration of the period within which they should have been paid to and including the date upon which the moneys are paid.

6. GST

6.1 Words or expressions used in this clause 6 which are defined in *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) have the same meaning in this clause.

6.2 All amounts stated in and payable under or in connection with this Contract exclude GST unless otherwise indicated.

6.3 If a payment to a party under this Contract is a reimbursement or indemnification, calculated by reference to a loss, cost or expense incurred by that party, then the payment will be reduced by the amount of any input tax credit to which that party is entitled for that loss, cost or expense.

6.4 The recipient will not be liable to pay the Consultantfor a taxable supply made under or in connection with this Contract until the Consultant has given the recipient a tax invoice for the supply to which the payment relates.

6.5 Where an adjustment event occurs in relation to a supply made by the Consultant under or in connection with this Contract, the Consultant will issue an adjustment note to the party providing consideration in respect of that supply within 28 days after becoming aware of the relevant adjustment.

7. VARIATIONS

7.1 The Client may, by written notice to the Consultant, reasonably direct the Consultant to vary the Services and, provided that the variation does not change the general scope of the Services, the Consultant shall be bound to comply with that direction ("**Variation**").

7.2 The parties must use their best endeavours to agree in writing on the value of a Variation, but in the event that the parties are unable to agree within 7 days of the issue of the direction, then the value of the Variation shall be determined using reasonable rates and prices.

7.3 If a new legislative requirement or a change in a legislative requirement after the date of the Contract could not reasonably have been anticipated at the date of the Contract, then the extent to which the Services are changed by that legislative requirement shall be deemed to be a Variation pursuant to clause 7.1.

7.4 Where, due to circumstances beyond the reasonable control or anticipation of the Consultant, the Consultant is required to alter, add to or delete documents or other things previously submitted and which otherwise would have complied with the Contract, the Consultant shall inform the Client and seek directions and any subsequent alteration, addition or deletion shall be deemed to be a Variation pursuant to clause 7.1.

8. DELAYS

8.1 The Consultant shall proceed with the work under the Contract with due expedition and without delay.

8.2 When it becomes evident to a party that an act or omission of the Client, or an employee, other consultant, contractor or agent of the Client, may delay carrying out the Services, that party shall promptly notify the other party in writing with details of the possible delay and the cause.

8.3 The Client may direct the Consultant in what order and at what time the Services shall be performed and if:

(a) the Consultant:

(i) can reasonably comply with the direction the Consultant shall do so; and

(ii) cannot reasonably comply with the direction the Consultant shall so notify the Client in writing, giving reasons; and

(b) compliance with the direction causes the Consultant to incur more or less cost than otherwise would have been incurred had the Consultant not been given the direction, the difference shall be valued pursuant to clause 7.2 as though the direction was a Variation.

9. CONFIDENTIALITY

9.1 Except as required by law, the Consultant and the Client will keep confidential information which is so designated in writing by the party providing the information, or which should reasonably be known by the recipient party to be confidential. This clause 9 will survive the expiry or termination of the Contract.

10. LIABILITY OF THE CONSULTANT

10.1 The maximum liability of the Consultant arising out of the performance or non-performance of the Contract or the Services whether under the law of contract, tort or otherwise, shall be limited to five (5) times the value of the Contract Sum.

10.2 To the maximum extent permitted by law and notwithstanding any other provision of the Contract, the Consultant is not liable to the Client, whether under contract, in tort, in equity, in restitution, under statute or otherwise, in respect of any:

(a) business interruption loss;
(b) loss of actual or anticipated profit, revenue, production, opportunity or anticipated savings;
(c) loss of use; or
(d) exemplary damages.

10.3 This clause 10 shall not apply to claims in respect of personal injury or death

11. CONSULTANT'S INDEMNITY

11.1 Subject to clause 10, the Consultant shall indemnify the Client against:

(a) loss of or direct damage to property of the Client; and
(b) claims by any person against the Client in respect of personal injury or death or loss of or damage to any other property,

arising out of or in consequence of carrying out the Services by the Consultant.

11.2 The Consultant's liability to indemnify the Client under clause 11.1 shall be reduced proportionally to the extent that the act or omission of the Client or the employees, agents or other contractors of the Client contributed to the loss, damage, death or injury.

12. DISPUTES

12.1 If a dispute arises between the Consultant and the Client in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contract or the Services, either party may give a notice in writing ("**Notice of Dispute**") to the other party specifying the nature of the dispute, the particulars of the party's reasons for being dissatisfied and the position that the party believes is correct.

12.2 The parties must meet within 14 days of the date of the Notice of Dispute and undertake genuine and good faith negotiations with a view to resolving the dispute. Unless the parties agree otherwise, the meeting must take place in Hobart, Tasmania.

12.3 If the parties are unable to resolve the dispute in accordance with clause 12.2 within 14 days of first meeting under clause 12.2, the dispute may be referred, by written notice of either party, to mediation, which is to be conducted in accordance with the Institute of Arbitrators and Mediators Australia Mediation Rules.

13. INTELLECTUAL PROPERTY

13.1 Unless the Contract otherwise provides, the Consultant retains all Intellectual Property Rights in the Services and in any design, materials, documents and methods of working used or produced in relation to the Services. The Consultant grants to the Client an irrevocable, royalty free, non-exclusive, transferable, perpetual licence to exercise all rights of the owner of the Intellectual Property Rights associated with the Services, for any business purpose of the Client, including additions or alterations or entering into any agreement with any third party which is associated with or uses the Services or things produced in the course of performing the Services.

14. ASSIGNMENT

14.1 The Consultant may assign, novate or otherwise transfer any of its rights, remedies, powers, duties and obligations under this Contract without approval from the Client to another entity that is financially and technically able to conduct the Consultant's engineering and consulting business, Entura ("**Other Entity**") provided that all, or a substantial part, of the Consultant's engineering and consulting business, Entura is transferred to the Other Entity. The Client agrees to do anything the Consultant asks to give effect to the above, including signing any documents, to transfer the rights, remedies, powers, duties and obligations to the Other Entity.

15. NOTICES

15.1 A notice (and other documents) must be in writing, legible, in English and delivered in person, by email or by post.

15.2 A notice (and other documents) shall be deemed to have been given and received:

(a) if addressed or delivered to the relevant address listed in the Contract Particulars or last communicated in writing to the person giving the notice; and
(b) on the earliest date of:

(i) actual receipt if delivered in person;
(ii) the notice being recorded as having been first received at the electronic mail destination; or
(iii) 3 days after posting.

16. TERMINATION

16.1 The Contract may be terminated:

(a) at any time by mutual agreement;
(b) for the convenience of the Client, upon the giving of not less than 7 days notice, in which case the Client shall pay the Consultant:

(i) that portion of the Contract Sum payable to the date of termination;
(ii) any direct costs incurred by the Consultant to the date of termination; and
(iii) an amount equal to 2% of the Contract Sum;

(c) upon a substantial breach of the Contract by either party which is not remedied within a reasonable time (and in any case within 7 days) of notice by the non-breaching party of the substantial breach; or
(d) immediately by either party in the event the other party becomes insolvent or financially unable to proceed with the Contract.

16.2 Upon termination of the Contract, the Consultant shall, as soon as possible, return to the Client the Client's property provided to the Consultant in carrying out the Services.

16.3 If a party breaches (including repudiates) the Contract, nothing in this clause 16 shall prejudice the right of the other party to recover damages or exercise any other right or remedy.

17. MODERN SLAVERY

17.1 Warranty

Both the Consultant and the Client warrant that:

(a) it has not, and will not engage in any Modern Slavery practices;

(b) it does and will continue to comply with all laws relating to Modern Slavery;
(c) it does and will continue to take reasonable steps to ensure that there is no Modern Slavery in its supply chains or in its sub-contractor's supply chains;
(d) neither they or any any of their Personnel:
(i) has been convicted of any offence involving Modern Slavery; and
(ii) having made reasonable enquiries, to the best of its knowledge, has been or is the subject of any investigation, inquiry or enforcement proceedings by any Government Agency regarding any offence or alleged offence of or in connection with Modern Slavery.

17.2 Compliance

Both Parties must:
(a) implement and maintain throughout the Term appropriate due diligence procedures for its own suppliers and sub-contractors to ensure that there is no Modern Slavery in its supply chains; and
(b) do all things necessary to immediately rectify or avoid any Modern Slavery risk in its supply chains.

17.3 Notification

The Consultant and Client must promptly notify the other party as soon as it becomes aware of any actual or suspected Modern Slavery in a supply chain which has a connection with this agreement.

17.4 Records

Both Parties must:
(a) maintain a complete set of records to trace the supply chain of all goods and services provided to it and in connection with this agreement; and
(b) provide all information reasonably required by the other party to comply with any law or legal requirement to provide a compliance statement in relation to Modern Slavery.

18. FORCE MAJEURE

18.1 Consequences of Force Majeure

The relevant party is not liable for any delay or failure to provide the services caused by a Force Majeure Event.

18.2 Notification of Force Majeure

The relevant party must notify the other party in writing as soon as practical of any anticipated or actual (if not already notified as anticipated) delay or failure caused by a Force Majeure Event.

18.3 Remedy Force Majeure

(a) The relevant party must remedy the Force Majeure Event to the extent reasonably practicable and resume performance of its obligations as soon as practicable.
(b) The relevant party is not required under this clause to settle any labour dispute against its will or to test the validity or refrain from testing the validity of Federal, State, Territory or local law, order, rule or regulation.

18.4 Suspension of obligations

The provision of the services by the relevant party is suspended for the period of delay caused by the Force Majeure Event.

18.5 Termination right

If:
(a) performance of the services is prevented by a Force Majeure Event for more than one month; or
(b) a delay caused by the Force Majeure Event exceeds three months,
the relevant party may terminate this Contract at the expiration of not less than 30 days written notice to the other party.

19. GOVERNING LAW

19.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

20. DEFINITIONS

20.1 In this Contract, the following capitalised terms have the meanings given in this clause 20.1:

"Force Majeure Event" means an event or cause listed below to the extent that the event or cause is beyond the reasonable control of the relevant party:
(a) act of God, lightning, storm, flood, fire, earthquake or explosion, cyclone, tidal wave, landslide or adverse weather conditions;
(b) strike, lockout, or other labour difficulty but not a strike or lockout at the premises of the party claiming force majeure; or
(c) act of public enemy, war (declared or undeclared), terrorism, sabotage, blockage, revolution, riot, insurrection civil commotion, epidemic or pandemic;
(d) the enactment or amendment of any laws, rules, regulations, orders or decrees of the Australian Federal Government, State or Territory Government, any local government or of any statutory authority, not resulting from the wrongful act or omission of the relevant party; or
(e) travel or other restrictions imposed by the Australian Federal Government, State or Territory Government, any local government or of any statutory authority as a result of outbreak of disease or declaration of an epidemic or pandemic.

"Government Agency" means any government or any public, statutory, governmental (including a local government), semi-governmental, local governmental or judicial body, entity, department or authority and includes any self-regulatory organisation established under statute.
"**Intellectual Property Right**" means any patent, registered design, trademark or name, copyright or other protected right.
"Modern Slavery" means slavery, forced labour, bonded labour, human trafficking, child labour, debt bondage and any other slavery like practices prohibited under any Modern Slavery Laws.
"Modern Slavery Laws" means the Modern Slavery Act 2018 (Cth), Divisions 270 and 271 of the Criminal Code Act 1995 (Cth), and any other laws or regulations prohibiting or regulating Modern Slavery in force in Australia.
"Personnel" means the officers, employees, secondees, agents, consultants, contractors and subcontractors of the Consultant or Client as the situation requires.

entura

TASMANIAN IRRIGATION NORTHERN MIDLANDS IRRIGATION SCHEME

HV and Earthing Design Proposal

28 March 2022

Prepared by Hydro-Electric Corporation
ABN48 072 377 158

t/a Entura 89 Cambridge Park Drive,
Cambridge TAS 7170 Australia







WE OWN. WE OPERATE. WE CONSULT.

Entura in Australia is certified to the latest version of ISO9001, ISO14001, and OHSAS18001.

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Document information

Document title	Tasmanian Irrigation Northern Midlands Irrigation Scheme
	HV and Earthing Design Proposal
Client organisation	Tasmanian Irrigation
Client contact	Jacob Gerke
ConsultDM number	TBD
Project Manager	Chris Masters
Project number	TBD

Revision history

Revision 0

Revision description			
Prepared by	Chris Masters	Electronically signed	28/03/22
Reviewed by	Matthew Simmons	Electronically signed	28/03/22
Approved by	Jeremy Kearney	Electronically signed	28/03/22
	(name)	(signature)	(date)
Distributed to	Jacob Gerke (name)	Tasmanian Irrigation (organisation)	28/03/22 (date)

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A Single Consultancy Contract – General Conditions of Contract

1. Why work with us?

Entura have significant experience working with HV distribution substations and switchgear for both private and utility customers. Overseeing the design for Entura will be Daniel De Groot and Matthew Simmons, who have had significant experience undertaking these specific types of jobs.

2. Our understanding of your needs

Entura understands that Tasmanian Irrigation (TI) is developing the Northern Midlands Irrigation Scheme (NMIS). The scheme includes the Poatina Pump Station (PPS) and the Valleyfield Pump Station (VPS), which shall supplied from the TasNetworks (TN) 22 kV distribution network.

TI intended to install and operate a 22 kV /400 V 2000 kVA kiosk substation at the Poatina Pump Station and a 22 kV /400 V 1500 kVA kiosk substation at the Valleyfield Pump Station.

Both kiosk substations are to be connected to the TasNetworks distribution network and are to be specified from standard approved products of TasNetworks to promote familiarity for local contractors engaged by TI for the installation and maintenance of the substations.

Both pump stations have two options for the TasNetworks point of connection, either via overhead conductor or underground cable from the TasNetworks recloser pole. TI have the option to install a new Recloser including HV metering on an overhead pole or a ground mounted switching station complete with HV main circuit breaker and HV metering.

3. Our approach

Entura will provide design and test services to ensure the delivered package of works meshes with TI requirements. The following services are offered:

3.1 Primary electrical design

3.1.1 Connection arrangement selection and procurement support

- Assist TI to decide on pole or ground mounted interconnection and HV metering arrangements
- Liaise with TN standard suppliers for confirmation of arrangements and quotations of major equipment

3.1.2 Design

- Entura will undertake the HV electrical design from the TasNetworks interface boundary at the TI recloser/MCB through to the kiosk substations
- Prepare layout and details drawings utilising TN standards and previous TI project drawings
- For the interconnection between the metering and kiosk substation Prepare HV cable ratings calculations and basic cable specifications for procurement, based on assumed typical soil thermal resistivity values.

3.1.3 Deliverables

Entura will undertake/deliver the following specific items as part of this offer:

- HV electrical drawings including underground cabling plans, HV and LV single line diagrams (within substations), details of precast plinths, conduit locations and equipment selection
- HV electrical design report outlining the design basis and proposed equipment

3.2 High Voltage Earth system design

3.2.1 Soil resistivity measurements

Entura will conduct soil resistivity measurements at each site, to ascertain the soil electrical characteristics at each location as an input into the design. These soil measurements will be undertaken using the Wenner 4 probe method (up to a probe spacing of 132m) in line with industry accepted standards.

3.2.2 Design

To ensure the earthing design complies with the appropriate standards and is fit for purpose, Entura will design each earthing system to a target impedance, based on protection system modelling. This target impedance will be selected to ensure the protection systems will operate under a minimum fault scenario with an accepted level of tolerance. After this initial design constraint is met, consideration will be given to minimise or eliminate potential step-touch voltages that may occur

under the anticipated worst case fault scenario. The design will be modelled for compliance with safety criteria set out in AS-2067.

3.2.3 Deliverables

Entura will undertake/deliver the following specific items as part of this offer:

- Soil resistivity testing
- Earthing analysis and modelling in CDEGS to AS-2067
- HV Earthing layout construction drawing for each site, detailing the earth grid layout and directions on the LV MEN arrangement and equipotential earthing of building, fences and gates.
- High level bill of materials (cable lengths, earth rods etc)
- A short report detailing inputs, assumptions, modelled outputs and a standards compliance statement
- Engineering construction support - 4hrs design engineer (via phone/email)

3.3 Protection and metering design

3.3.1 Design

- Specification and design of HV metering
- Protection design
    - Specification of new protection relay for the main circuit breaker/recloser
    - Coordinated overcurrent and earth fault settings with upstream and downstream protection units.

3.3.2 Deliverables

- Protection settings report
- Protection settings files

3.4 Safety in design

- Safety in design document (documented in risk assessment format)

3.5 Inputs

To allow Entura to deliver this project efficiently and remain on schedule we anticipate the following critical design inputs (CDI) will be required from TI. In most cases if CDI is not made available Entura will be able to work with TI to determine if educated engineering assumptions can be made to keep the project on track:

- TI will provide existing site survey, and design drawings for proposed site layout (including pump station details), operational clearance zones, and preferred electrical infrastructure locations (in CAD format).
- TI will provide TN's augmentation/connection design prior Entura's layout of the design
- TI will provide TasNetworks design contacts for coordination of protection settings between the TasNetworks recloser and any downstream limitations
- TI will provide minimum and maximum HV fault levels for the Poatina Pump Station and the Valleyfield Pump Station.
- TI to co-ordinate access with landowners for the purpose of site testing.

3.6 Additional services

A provisional price for the items below can be provided on request

- Earth system pre-commissioning
- HV pre-commissioning
- Protection relay pre-commissioning
- HV certification
- As-installed drafting and engineering signoff

4. Our people

Our staff are suitably trained and have the appropriate experience in carrying out the works.

- Adam Youd – Drafting
- Andrew Baird – Engineer (Design)
- Chris Masters – Senior Engineer (Design)
- Dan De Groot – Senior Engineer (Design)
- Matthew Simmons – Specialist Engineer (Design)

5. Delivery schedule

A delivery schedule can be developed based on milestone dates to be mutually agreed between Tas Irrigation and Entura.

The design is proposed to be issued in two stages; an initial package of design drawings for TI review/acceptance, followed by the construction package addressing TI comments.

Proposed milestones (duration after providing Entura with required inputs, refer Section 3.5):

- Arrangement selection and procurement support: within three weeks
- Soil resistivity testing: within three weeks
- Primary design drawings and report for TI acceptance: within six weeks
- Earthing design drawings and report for TI acceptance: within three weeks of soil resistivity test
- Specification and design of HV metering: within three weeks
- Protection settings report and settings files: within six weeks

6. Clarifications and exclusions

- The scope is design services only and does not include installation
- Specification of LV main ACB within the kiosk substation is to be specified by others
- LV protection settings will be the scope of others
- Detail design of pump station LV and equipment equipotential earthing
- Secondary integration with the connection equipment for SCADA monitoring and/or remote operation is excluded
- The HV earthing system design has not allowed for staged construction and energisation of the site.
- Our design assumes that the TI riser main is predominantly HDPE and that conductive sections of pipe, if any, are restricted to shorter section localised at each site above ground.
- For the purpose of soil resistivity testing Entura have allowed for two sites to be covered in one trip.
- Site testing considers free unfettered access to site and immediate surrounds.
- Additional site visits or mobilisation to site for re-testing, due to circumstances outside Entura's control (e.g. site availability or weather).

7. Fees, terms and management systems

7.1 Proposed fees

The combined fee to complete both sites is given below:

Cost (ex GST)	Condition
[redacted]	[redacted]

7.2 Contract terms and conditions

This proposal is subject to administration under the Entura Single Service Consultancy Arrangements. It is provided in Appendix A.

7.3 Insurances

Entura is covered by the Hydro-Electric Corporation's general liability insurance with QBE 386 (Lead). The insurance is placed through our broker AON and a copy of their 'Certificate of Currency' is available on request. The policy is current to 30 September 2022 and is for:

- public liability (policy # CSINT2001856)
- professional indemnity (policy # CSINT2001856).

Workers compensation policies are also in place in Tasmania, Victoria, New South Wales, South Australia, and Queensland and are current until 30 June 2022.

7.4 Management systems

To us, quality means meeting or exceeding your requirements on all projects.

We're continually improving and refining our systems and processes in all areas of our business for the benefit of our people, the environment and our clients.

Our quality management system meets the requirements of ISO 9001:2015, which is continually maintained and improved. Standard operating procedures are supplemented if necessary to meet the requirements of a particular project.

We consider quality to be everyone's personal responsibility. All our employees are responsible for performing their work in accordance with our management system, and for taking the initiative to ensure that we consistently provide reliable services.

Our processes are reviewed and certified by independent experts to ensure we maintain our high standards. Certifications we currently hold include:

7.4.1 Quality

Entura complies with AS/NZS ISO 9001 in our quality manual, plans, procedures and instructions, a certified quality management system. Quality compliance is managed through an internal and external audit program and certified by Bureau Veritas.

7.4.2 Environmental management

Entura operates under an ISO 14001 certified environmental and sustainability management system. We ensure our activities, products and services comply with environmental legislation as well as relevant environmental commitments and agreements. Compliance is certified by NCS International Certification.

7.4.3 Occupational health and safety management

Entura operates under an organisation safety management system certified to OHSAS 18001, an internationally recognised standard for managing occupational health and safety.

Entura employs an integrated Health, Safety and Environment system (HSE) to ensure that there is seamless interaction between these two standards.

8. About Entura

Entura is one of the world's most experienced specialist power and water consulting firms.

We own. We operate. We consult. And that's what makes us different.

From strategy, planning, design and construction through to operation, maintenance, risk management and training, we create safe and sustainable power and water solutions that make a positive and enduring contribution to our clients and communities.

Due to our unique asset-owner heritage, our technical expertise is grounded in more than 100 years of experience contributing to the development, operation and maintenance of renewable energy and water infrastructure.

We have first-hand insights and a deep understanding of the real-life pressures that asset owners face. That's why our clients trust us to deliver practical and commercially sound solutions across the whole lifecycle of their assets, helping them to manage risks and achieve valuable outcomes.

And we do so with one purpose: to create a sustainable future through better power and water solutions.

Appendices

A Single Consultancy Contract – General Conditions of Contract

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

2. RESPONSIBILITIES AND OBLIGATIONS OF THE CONSULTANT

2.1 The Consultant shall:

(a) comply with all reasonable directions of the Client given pursuant to a provision of the Contract;

(b) employ staff with appropriate qualifications and experience to carry out the Services;

(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

(c) provide the Consultant with such access to premises or sites of the Client as is necessary for the Consultant to carry out the Services; and

(d) bear the cost of all fees and charges required to comply with legislative requirements incurred in connection with carrying out the Services.

4. INSURANCE

4.1 From the Commencement Date, the Consultant must effect and have in place the following insurances:

(a) a professional indemnity insurance policy for the Services with a total aggregate cover of not less than $2,000,000.00 which shall:

(i) include provision for loss of documents; and

(ii) be maintained until the End Date and thereafter for a period of 6 years;

(b) a public liability policy until the End Date for an amount in respect of any one claim or series of claims arising from the one original cause of not less than $5,000,000.00; and

(c) a workers' compensation policy until the End Date for the maximum amount permitted by law, covering the Consultant's liability under common law and statute for death or injury to any person employed by the Consultant.

5. PAYMENT

5.1 The Client shall pay the Consultant the Contract Sum in accordance with this Contract.

5.2 The Consultant shall submit to the Client claims for payment progressively in accordance with the Contract Particulars.

5.3 All monies due and payable by the Client to the Consultant must be paid within 14 days of the receipt by the Client of a properly prepared tax invoice from the Consultant in accordance with clause 6.4.

5.4 If the Client does not pay the amount of the claim the Client shall, either with the payment or not later than the time for payment, provide the Consultant with a written statement of the reason for any difference between the amount claimed and the amount paid or to be paid.

5.5 If any moneys due and payable to either party remain unpaid after the date upon which or the expiration of the period within which they should have been paid, then interest shall be payable thereon at the then current benchmark interest rate applicable to Division 7A of Part III of the *Income Tax Assessment Act 1936* (Cth) from (but excluding) the date upon which or the expiration of the period within which they should have been paid to and including the date upon which the moneys are paid.

6. GST

6.1 Words or expressions used in this clause 6 which are defined in *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) have the same meaning in this clause.

6.2 All amounts stated in and payable under or in connection with this Contract exclude GST unless otherwise indicated.

6.3 If a payment to a party under this Contract is a reimbursement or indemnification, calculated by reference to a loss, cost or expense incurred by that party, then the payment will be reduced by the amount of any input tax credit to which that party is entitled for that loss, cost or expense.

6.4 The recipient will not be liable to pay the supplier for a taxable supply made under or in connection with this Contract until the supplier has given the recipient a tax invoice for the supply to which the payment relates.

6.5 Where an adjustment event occurs in relation to a supply made by the supplier under or in connection with this Contract, the supplier will issue an adjustment note to the party providing consideration in respect of that supply within 28 days after becoming aware of the relevant adjustment.

7. VARIATIONS

7.1 The Client may, by written notice to the Consultant, reasonably direct the Consultant to vary the Services and, provided that the variation does not change the general scope of the Services, the Consultant shall be bound to comply with that direction ("**Variation**").

7.2 The parties must use their best endeavours to agree in writing on the value of a Variation, but in the event that the parties are unable to agree within 7 days of the issue of the direction, then the value of the Variation shall be determined using reasonable rates and prices.

7.3 If a new legislative requirement or a change in a legislative requirement after the date of the Contract could not reasonably have been anticipated at the date of the Contract, then the extent to which the Services are changed by that legislative requirement shall be deemed to be a Variation pursuant to clause 7.1.

7.4 Where, due to circumstances beyond the reasonable control or anticipation of the Consultant, the Consultant is required to alter, add to or delete documents or other things previously submitted and which otherwise would have complied with the Contract, the Consultant shall inform the Client and seek directions and any subsequent alteration, addition or deletion shall be deemed to be a Variation pursuant to clause 7.1.

Entura Single Use Consultancy Contract - Entura as Consultant.doc Approved version as of Monday, 18 October 2021 Page 3 of 5

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

8. DELAYS

8.1 The Consultant shall proceed with the work under the Contract with due expedition and without delay.

8.2 When it becomes evident to a party that an act or omission of the Client, or an employee, other consultant, contractor or agent of the Client, may delay carrying out the Services, that party shall promptly notify the other party in writing with details of the possible delay and the cause.

8.3 The Client may direct the Consultant in what order and at what time the Services shall be performed and if:

(a) the Consultant:

(i) can reasonably comply with the direction the Consultant shall do so; and

(ii) cannot reasonably comply with the direction the Consultant shall so notify the Client in writing, giving reasons; and

(b) compliance with the direction causes the Consultant to incur more or less cost than otherwise would have been incurred had the Consultant not been given the direction, the difference shall be valued pursuant to clause 7.2 as though the direction was a Variation.

9. CONFIDENTIALITY

9.1 Except as required by law, the Consultant and the Client will keep confidential information which is so designated in writing by the party providing the information, or which should reasonably be known by the recipient party to be confidential. This clause 9 will survive the expiry or termination of the Contract.

10. LIABILITY OF THE CONSULTANT

10.1 The maximum liability of the Consultant arising out of the performance or non-performance of the Contract or the Services whether under the law of contract, tort or otherwise, shall be limited to 100% of the Contract Sum.

10.2 To the maximum extent permitted by law and notwithstanding any other provision of the Contract, the Consultant is not liable to the Client, whether under contract, in tort, in equity, in restitution, under statute or otherwise, in respect of any:

(a) business interruption loss;
(b) loss of actual or anticipated profit, revenue, production, opportunity or anticipated savings;
(c) loss of use; or
(d) exemplary damages.

10.3 This clause 10 shall not apply to claims in respect of personal injury or death.

11. CONSULTANT'S INDEMNITY

11.1 Subject to clause 10, the Consultant shall indemnify the Client against:

(a) loss of or direct damage to property of the Client; and
(b) claims by any person against the Client in respect of personal injury or death or loss of or damage to any other property,

arising out of or in consequence of carrying out the Services by the Consultant.

11.2 The Consultant's liability to indemnify the Client under clause 11.1 shall be reduced proportionally to the extent that the act or omission of the Client or the employees, agents or other contractors of the Client contributed to the loss, damage, death or injury.

12. DISPUTES

12.1 If a dispute arises between the Consultant and the Client in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contract or the Services, either party may give a notice in writing ("**Notice of Dispute**") to the other party specifying the nature of the dispute, the particulars of the party's reasons for being dissatisfied and the position that the party believes is correct.

12.2 The parties must meet within 14 days of the date of the Notice of Dispute and undertake genuine and good faith negotiations with a view to resolving the dispute. Unless the parties agree otherwise, the meeting must take place in Hobart, Tasmania.

12.3 If the parties are unable to resolve the dispute in accordance with clause 12.2 within 14 days of first meeting under clause 12.2, the dispute may be referred, by written notice of either party, to mediation, which is to be conducted in accordance with the Institute of Arbitrators and Mediators Australia Mediation Rules.

13. INTELLECTUAL PROPERTY

13.1 Unless the Contract otherwise provides, the Consultant retains all Intellectual Property Rights in the Services and in any design, materials, documents and methods of working used or produced in relation to the Services. The Consultant grants to the Client an irrevocable, royalty free, non-exclusive, transferable, perpetual licence to exercise all rights of the owner of the Intellectual Property Rights associated with the Services, for any business purpose of the Client, including additions or alterations or entering into any agreement with any third party which is associated with or uses the Services or things produced in the course of performing the Services.

14. ASSIGNMENT

14.1 The Consultant may assign, novate or otherwise transfer any of its rights, remedies, powers, duties and obligations under this Contract without approval from the Client to another entity that is financially and technically able to conduct the Consultant's engineering and consulting business, Entura ("**Other Entity**") provided that all, or a substantial part, of the Consultant's engineering and consulting business, Entura is transferred to the Other Entity. The Client agrees to do anything the Consultant asks to give effect to the above, including signing any documents, to transfer the rights, remedies, powers, duties and obligations to the Other Entity.

15. NOTICES

15.1 A notice (and other documents) must be in writing, legible, in English and delivered in person, by email or by post.

15.2 A notice (and other documents) shall be deemed to have been given and received:

(a) if addressed or delivered to the relevant address listed in the Contract Particulars or last communicated in writing to the person giving the notice; and
(b) on the earliest date of:

(i) actual receipt if delivered in person;
(ii) the notice being recorded as having been first received at the electronic mail destination; or
(iii) 3 days after posting.

16. TERMINATION

16.1 The Contract may be terminated:

(a) at any time by mutual agreement;
(b) for the convenience of the Client, upon the giving of not less than 7 days notice, in which case the Client shall pay the Consultant:

(i) that portion of the Contract Sum payable to the date of termination;
(ii) any direct costs incurred by the Consultant to the date of termination; and
(iii) an amount equal to 2% of the Contract Sum;

(c) upon a substantial breach of the Contract by either party which is not remedied within a reasonable time (and in any case within 7 days) of notice by the non-breaching party of the substantial breach; or
(d) immediately by either party in the event the other party becomes insolvent or financially unable to proceed with the Contract.

16.2 Upon termination of the Contract, the Consultant shall, as soon as possible, return to the Client the Client's property provided to the Consultant in carrying out the Services.

16.3 If a party breaches (including repudiates) the Contract, nothing in this clause 16 shall prejudice the right of the other party to recover damages or exercise any other right or remedy.

17. MODERN SLAVERY

17.1 Warranty

Both the Consultant and the Client warrant that:

(a) it has not, and will not engage in any Modern Slavery practices;

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

(b) it does and will continue to comply with all laws relating to Modern Slavery;
(c) it does and will continue to take reasonable steps to ensure that there is no Modern Slavery in its supply chains or in its sub-contractor's supply chains;
(d) neither they or any any of their Personnel:
(i) has been convicted of any offence involving Modern Slavery; and
(ii) having made reasonable enquiries, to the best of its knowledge, has been or is the subject of any investigation, inquiry or enforcement proceedings by any Government Agency regarding any offence or alleged offence of or in connection with Modern Slavery.

17.2 Compliance

Both Parties must:
(a) implement and maintain throughout the Term appropriate due diligence procedures for its own suppliers and sub-contractors to ensure that there is no Modern Slavery in its supply chains; and
(b) do all things necessary to immediately rectify or avoid any Modern Slavery risk in its supply chains.

17.3 Notification

The Consultant and Client must promptly notify the other party as soon as it becomes aware of any actual or suspected Modern Slavery in a supply chain which has a connection with this agreement.

17.4 Records

Both Parties must:
(a) maintain a complete set of records to trace the supply chain of all goods and services provided to it and in connection with this agreement; and
(b) provide all information reasonably required by the other party to comply with any law or legal requirement to provide a compliance statement in relation to Modern Slavery.

18. FORCE MAJEURE

18.1 Consequences of Force Majeure

The relevant party is not liable for any delay or failure to provide the services caused by a Force Majeure Event.

18.2 Notification of Force Majeure

The relevant party must notify the other party in writing as soon as practical of any anticipated or actual (if not already notified as anticipated) delay or failure caused by a Force Majeure Event.

18.3 Remedy Force Majeure

(a) The relevant party must remedy the Force Majeure Event to the extent reasonably practicable and resume performance of its obligations as soon as practicable.
(b) The relevant party is not required under this clause to settle any labour dispute against its will or to test the validity or refrain from testing the validity of Federal, State, Territory or local law, order, rule or regulation.

18.4 Suspension of obligations

The provision of the services by the relevant party is suspended for the period of delay caused by the Force Majeure Event.

18.5 Termination right

If:
(a) performance of the services is prevented by a Force Majeure Event for more than one month; or
(b) a delay caused by the Force Majeure Event exceeds three months,
the relevant party may terminate this Contract at the expiration of not less than 30 days written notice to the other party.

19. GOVERNING LAW

19.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

20. DEFINITIONS

20.1 In this Contract, the following capitalised terms have the meanings given in this clause 20.1:

"Force Majeure Event" means an event or cause listed below to the extent that the event or cause is beyond the reasonable control of the relevant party:
(a) act of God, lightning, storm, flood, fire, earthquake or explosion, cyclone, tidal wave, landslide or adverse weather conditions;
(b) strike, lockout, or other labour difficulty but not a strike or lockout at the premises of the party claiming force majeure; or
(c) act of public enemy, war (declared or undeclared), terrorism, sabotage, blockage, revolution, riot, insurrection civil commotion, epidemic or pandemic;
(d) the enactment or amendment of any laws, rules, regulations, orders or decrees of the Australian Federal Government, State or Territory Government, any local government or of any statutory authority, not resulting from the wrongful act or omission of the relevant party; or
(e) travel or other restrictions imposed by the Australian Federal Government, State or Territory Government, any local government or of any statutory authority as a result of outbreak of disease or declaration of an epidemic or pandemic

"Government Agency" means any government or any public, statutory, governmental (including a local government), semi-governmental, local governmental or judicial body, entity, department or authority and includes any self-regulatory organisation established under statute.

"**Intellectual Property Right**" means any patent, registered design, trademark or name, copyright or other protected right.

"Modern Slavery" means slavery, forced labour, bonded labour, human trafficking, child labour, debt bondage and any other slavery like practices prohibited under any Modern Slavery Laws.

"Modern Slavery Laws" means the Modern Slavery Act 2018 (Cth), Divisions 270 and 271 of the Criminal Code Act 1995 (Cth), and any other laws or regulations prohibiting or regulating Modern Slavery in force in Australia.

"Personnel" means the officers, employees, secondees, agents, consultants, contractors and subcontractors of the Consultant or Client as the situation requires.

.

Lara Henley

From: Rebecca Carter
Sent: Tuesday, 3 May 2022 5:05 PM
To: Andrew.Kneebone@tasirrigation.com.au
Cc: Eric.Shegog@tasirrigation.com.au; jacob.gerke@tasirrigation.com.au; Caroline Wykamp; Adam Gall; Prajit Parameswar
Subject: Draft correspondence from Hydro Tasmania regarding the Northern Midlands Scheme
Attachments: 22-05-03 Draft Correspondence to Tasmanian Irrigation re Northern Midlands Irrigation Scheme - Request for Water.docx

Follow Up Flag: Follow up
Flag Status: Completed

Dear Andrew
Please find attached draft correspondence from Hydro Tasmania regarding the request for water for the Northern Midlands Scheme.
When your feedback is received and agreement is reached we will executed and forward back to you for finalisation.
Thank you and kind regards

Rebecca Carter

Hydro Tasmania

t +61 3 6240 4603 | m +61 [redacted]
e rebecca.carter@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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3 May 2022

Mr Andrew Kneebone
Tasmanian Irrigation
PO Box 84
EVANDALE TAS 7212

By email: Andrew.Kneebone@tasirrigation.com.au,
CC: Eric.Shegog@tasirrigation.com.au; jacob.gerke@tasirrigation.com.au

Dear Mr Kneebone

Northern Midlands Irrigation Scheme - Request for Water

We refer to Tasmanian Irrigation's (TI) request for 25,500ML per annum of water from the Poatina Tailrace to facilitate the proposed Northern Midlands Irrigation District (the New District). We also refer to the subsequent letters and conversations about the above scheme over the last two months.

This request represents a significant increase in the volume of water that is currently taken from the first drop structure of the Poatina Tailrace. Accordingly, we have made a preliminary assessment of the environmental, operational and commercial impacts of the request on energy generation at Poatina Power Station.

Hydro Tasmania (HT) understands the importance of water supply for irrigation and has been (and continues to be) supportive of increased water use for irrigation in the South Esk catchment. For example, HT has entered into agreements for more than 120,000ML per annum to support irrigation below the Poatina Power Station, which is in addition to HT's obligation to supply approximately 65,000ML per annum to the Lake River Irrigation District.

As you know, HT charges for foregone revenue associated with water passing through power stations downstream of take locations. For water takes in the South Esk River the relevant station is the Trevallyn Power Station. For most of the 50 years since the Poatina Power Station was commissioned, foregone revenue was reasonably straightforward to calculate. However, the electricity market is going through a period of rapid transition and this is leading to periods where HT may be required to pay to run its power stations in order to deliver irrigation water. Such costs are in addition to foregone revenues calculated via the existing water fee methodology.

These changes to our operating environment mean that HT must update it's current methodology for calculating the water fees to a model that is designed to recover costs resulting from the forced running of the Poatina Power Station. The forced running concept is currently limited only to water exiting the Poatina tailrace. There is currently no contractual mechanism in any existing scheme that allows TI to request forced running of any of our stations.

My team has enjoyed working with TI to help understand and analyse the Poatina outflows. It is pleasing to hear that TI may be able to utilise the proposed buffer storage dam to minimise the

DRAFT

possibility of forced running to ensure reliability of supply. As you can foresee the possibility of forced running from Poatina power station, which could come at a cost to HT, HT would like to seek an acknowledgement from TI that it supports continuation of work on pricing methodologies that account for recovery of HT's forced running costs.

Against this background, the purpose of this letter is to set out in broad terms certain conditions that HT seek to include in any new Water Transfer Agreement with TI associated with the Northern Midlands Irrigation Scheme (noting our current intention is to finalise an agreement before the end of 2022) and seek TI's in-principle agreement to the following conditions.

In broad terms, the conditions are as follows:

1. TI agrees to work with Hydro Tasmania on a new pricing methodology (to be completed prior to execution of Water Transfer Agreement) that facilitates a costs recovery regime to account for the forced running of the Poatina Power Station to supply water whereby:

    a. TI will pay the current price per megalitre for water taken during the 'ordinary' running of the Poatina Power Station; and

    b. where TI seeks additional flows outside of 'ordinary' generation, an additional fee for costs that arise from the forced running of the Poatina Power Station be paid.

2. In order to allow sufficient water to reach the Poatina Re-Regulation Pond (thereby enabling HT to meet its existing water release commitments) a minimum flow or water level would be set at drop structure 1 of the Poatina Tailrace which will restrict TI from taking water below that level (similar to clause 2.5 of the Whitemore Irrigation Scheme water agreement between HT and TI).

3. The final terms of any contract would be subject to HT Board approval, and a dam safety and design process would need to be followed for any construction works and/or structures affecting the Poatina Tailrace (similar to Annexure 3 – the Design Approval Process in the Midlands Irrigation Scheme agreement between HT and TI).

If TI indicates it's in-principle agreement to the above, HT will be in a position to conclude that there would be no material adverse impact caused by the establishment of the New Scheme (and NRET can be informed accordingly). Such agreement can be given by completing the execution clause at the end of this letter and returning same to me.

We look forward to working together on the above to find a solution that works for both parties. We remain committed to work with you to achieve a reasonable solution for the Northern Midlands Irrigation Scheme.

Yours sincerely

Ian Brooksbank
Acting Chief Executive Officer
e Ian.Brooksbank@hydro.com.au

DRAFT

Acting for and on behalf of Tasmanian Irrigation, I hereby indicate that Tasmanian Irrigation agrees in-principle to the inclusion of the conditions set out in this letter in any Water Transfer Agreement that may be entered into between Hydro Tasmania and Tasmanian Irrigation regarding the New Scheme.

Andrew Kneebone
CEO Tasmanian Irrigation

DRAFT

[redacted]

[redacted]

From: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Sent: Monday, 3 May 2021 12:36 PM
To: Claire Myers <Claire.Myers@hydro.com.au>
Subject: RE: Tasmanian Irrigation - query

Hi Claire,
Reply from TI below.
Regards,
Phil

Hi Celeste

Please see response to your clarifications below;

1. While the information provided for NMIS is sufficient, in order to develop a resource loading diagram for the other 4 schemes, as required in Schedule 3, we would like to confirm the scope of work and program as follows:

- Fingal:
    - Program: Noting this is currently pre-water sales, the program indicates a detailed design being completed in June and July of this year. Should we assume detailed design would commence in July to provide sufficient time for TI to confirm Post Water Sales design options?
      A: Please assume end of July for detailed design to proceed
- Tamar
    - Scope: We will base our scope on details on TI's website, unless more detail can be provided. https://www.tasmanianirrigation.com.au/schemes/tamar

A: Please accept this position as preferred option engineering report is under internal development and not yet confirmed

- SWISA

  Scope: We will base our scope on details on TI's website, unless more detail can be provided. https://www.tasmanianirrigation.com.au/schemes/sassafras-wesley-vale-enhancement
  A: Please accept this position as preferred option engineering report is under internal development and not yet confirmed

- SE Integration
  - Scope: We will base our scope on details on TI's website, unless more detail can be provided. https://www.tasmanianirrigation.com.au/schemes/south-east-integration

  A: Please accept this position as preferred option engineering report is under internal development and not yet confirmed

2. Could we also please confirm the timing for the start of NMIS.
   A: Detailed design post business case estimated to proceed on contract award/commencement.

3. Could Tasmanian Irrigation please clarify if it is their intention to put a new, 'Project Specific Consultant Agreement' in place for each scheme?
   A: A Project specific agreement is required to be executed for each and every scheme.

Kind regards

Mel Durham
Contracts & Procurement Specialist

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: melanie.durham@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation Pty Ltd | PO Box 84 | Evandale | TAS 7212

Phillip Ellerton | National Business Development Manager - Water
Dip.PM

entura

f +61 3 6245 4550 | m [redacted]
e phillip.ellerton@entura.com.au | w entura.com.au
a 89 Cambridge Park Drive, Cambridge TAS 7170, Australia
Connect with us on Facebook, Twitter and LinkedIn

WE OWN. WE OPERATE. WE CONSULT.

[redacted]

Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Tuesday, 9 August 2022 10:38 AM
To: Adam Gall
Cc: Aaron Cassidy
Subject: FW: [External]2022 Poatina Outage

Importance: High

Hi Adam

Just touching base regarding this outage.

TI would like to take the opportunity to complete a detailed survey in and around drop structure 1 during this period.

Can you please advise what we need to do to schedule this and any induction type requirements that would be required?

Thanks

Regards

Jacob Gerke

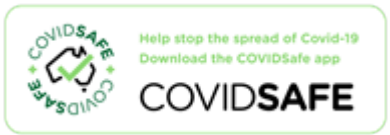
Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

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From: David Skipper <david.skipper@tasirrigation.com.au>
Sent: Wednesday, 30 March 2022 11:59 AM
To: Dean Anyon <dean.anyon@tasirrigation.com.au>; Brett Bennett <brett.bennett@tasirrigation.com.au>; Tim Gray <clis@live.com.au>
Cc: Troy Wells <Troy.Wells@tasirrigation.com.au>; Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>; James Hipwood

<james.hipwood@tasirrigation.com.au>; Eric Shegog <Eric.Shegog@tasirrigation.com.au>; Michael Holmes <Michael.Holmes@tasirrigation.com.au>; Paul Davis <paul.davis@tasirrigation.com.au>
Subject: FW: [External]2022 Poatina Outage
Importance: High

Hi All,

Heads up.

A month's outage on the tailrace in late August to late September.

David Skipper
General Manager - Water Delivery

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: david.skipper@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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From: Adam Gall <Adam.Gall@hydro.com.au>
Sent: Wednesday, 30 March 2022 11:19 AM
To: David Skipper <david.skipper@tasirrigation.com.au>
Subject: [External]2022 Poatina Outage
Importance: High

Morning David,

Just advising that the dates we have scheduled for the Poatina Outage for this year.

29/08/2022 (morning) to 25/09/2022 (afternoon)

There will be no water in the Poatina Tailrace during this time.

To avoid lengthy outages in the lead up to the irrigation season we have moved a major part of the works to a later date (aiming for winter months). We will provide further updates once know more.

Please let me know if you have any queries about the above.

Kind Regards,

Adam Gall
Operational Contracts Advisor

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Wednesday, 19 June 2019 12:30 PM
To: Bill Cohen
Subject: Northern Midlands proposal

Bill,
A question in relation to the Tassy model to 2007. Is it possible, and what would the likely impact to your proposal be to extend the TASY to current – ie bring the model to 2017 / 18?

Regards

Ian



Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Monday, 21 March 2022 12:41 PM
To: Adam Gall
Cc: Prajit Parameswar; Eric Shegog
Subject: RE: [External]NMIS: Confidentiality Deed & forecast modelling
Attachments: Confidentiality Agreement DRAFT.docx

Hi Adam

We have a comment on the agreement around allowing us to report through government and ministers through our approval process for funding etc.

Our legal's have proposed the following suggestion to allow this:

New definition

> "**Authorised Recipient**" means any State or Commonwealth Minister, department or authority including the Minister of the Crown for the time being administering the Irrigation Company Act 2011, Department of Natural Resources and Environment Tasmania and Nation Water Grid Authority.

Amended clause 3.1

> 3.2 Disclosure to an Authorised Recipient
>
> > The Recipient may disclose any Confidential Information to any Authorised Recipient without the Discloser's prior written consent but only if the disclosure is made to the Authorised Recipient in connection with the proposed Northern Midlands Irrigation Scheme and before the disclosure the Recipient has informed the Minister of the confidential nature of the Confidential Information to be disclosed.

Additional comment was that although Confidential Information is defined as the Discloser's Information, the terms Discloser's Confidential Information and Confidential Information of the Discloser are also used. The second references to the Discloser are unnecessary. It would avoid potential confusion if the agreement just used the defined term Confidential Information.

I proposed we talk through the intention at 1pm to ensure we are clear on the intent.

Regards

Jacob Gerke

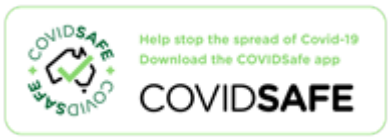
Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Adam Gall <Adam.Gall@hydro.com.au>
Sent: Wednesday, 16 March 2022 3:33 PM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Prajit Parameswar <Prajit.Parameswar@hydro.com.au>
Subject: [External]NMIS: Confidentiality Deed & forecast modelling

Hi Jacob,

As discussed yesterday, commonly when we hand out our internal modelling data, our lawyers ask us to arrange a confidentiality deed.

It will need to be handed over confidentially upon execution of the attached deed.

I've attached a draft copy, for you to review.

Let us know TI's thoughts on it, and we can arrange execution and exchange of data.

Cheers,

Adam Gall
Operational Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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CONFIDENTIALITY DEED

Details

Date ___/___/2022

	Hydro Tasmania (Discloser)		Tas Irrigation (Recipient)
Name	Hydro-Electric Corporation (trading as Hydro Tasmania) (ABN 48 072 377 158)	Name	Tasmanian Irrigation Pty Ltd (ACN 133 148 384)
Address	4 Elizabeth Street, Hobart, Tasmania, 7000	Address	2 Terminal Building, Launceston Airport, Western Junction, Tasmania, 7250
Contact	[Insert]	Contact	[Insert]
Phone	[Insert]	Phone	[Insert]
Email	[Insert]	Email	[Insert]

Executed by the parties as a Deed

Executed by the **HYDRO-ELECTRIC CORPORATION trading as Hydro Tasmania (ABN 48 072 377 158)** by its duly authorised signatories:

.....

Signature of IAN BROOKSBANK

Chief Executive Officer

Signed under Power of Attorney bearing registration no PA126992 who hereby declares that no notice of alteration or revocation of the said Power of Attorney has been received in his capacity as A/Chief Executive Officer

.....

Director/Secretary Signature*

.....

Full name of Director/Secretary*

Executed by **TASMANIAN IRRIGATION PTY LTD (ACN 133 148 384**) pursuant to the Formal Instrument of Delegation approved 4 April 2020 by:

.....

Delegate's Signature

.....

Full name and role of Delegate

.....

Company Secretary's Signature

.....

Full name of Company Secretary

* delete inapplicable part

PART A - Confidentiality and Privacy

1. Acknowledgment and no obligation

1.1 Acknowledgement

Each party acknowledges that the Confidential Information is secret and confidential to the Discloser.

2. Obligation of Confidence

2.1 Maintain confidentiality

Subject to clause 3 (Permitted Disclosures), clause 4 (Exclusions) and clause 5 (Return or destruction of Confidential Information), the Recipient must:

(a) keep the Confidential Information confidential and not disclose, or permit the disclosure of, Confidential Information to any person other than an employee or officer of the Recipient with a genuine need to know the information for the Purpose, without the prior written approval of the Discloser;

(b) take those steps it uses to secure and protect its own confidential information (and at least reasonable steps) to keep the Confidential Information secure and protected from any use, disclosure or access that is inconsistent with this document; and

(c) not memorise, modify, reverse engineer or make copies, notes or records of the Confidential Information for any purpose other than in connection with the Purpose.

2.2 Use of Confidential Information

The Recipient may use the Discloser's Confidential Information only for the Purpose.

3. Permitted Disclosures

3.1 Affiliate Disclosure

(a) The Recipient may disclose the Discloser's Confidential Information to its Affiliate without the Discloser's prior written consent but only if the disclosure is made to the Affiliate on a 'need to know basis' and before the disclosure the Recipient:

(i) has informed the Affiliate of the confidential nature of the Confidential Information to be disclosed; and

(ii) has ensured that the Affiliate will observe all the Recipient's obligations under this document as if those obligations were imposed on that Affiliate.

(b) The Recipient is liable for any act or omission of any of its Affiliates which would constitute a breach of this document if it was the conduct of the Recipient.

3.2 Required Disclosures

(a) The Recipient may disclose Confidential Information of the Discloser without the Discloser's prior written consent if the disclosure is required by any applicable law, legally binding order, Government Agency, requirement of a regulator, rules of any stock exchange or as a result of a court order provided:

(i) where it is legally permitted to do so, the Recipient provides the Discloser with reasonable prior written notice of the required disclosure to allow the Discloser to take such steps as the Discloser considers necessary to prevent or minimise the disclosure or maintain the confidentiality of the Confidential Information;

(ii) the Recipient provides the Discloser with that assistance and co-operation which the Discloser considers necessary to prevent or minimise that disclosure of the Confidential Information; and

(iii) the Recipient limits the disclosure to that Confidential Information that must be disclosed by law, order, Government Agency, requirement or rule.

4. Exclusions

The Recipient's obligations of confidence in this document do not apply to Confidential Information that:

(a) is in the public domain other than as a result of a breach of this document;

(b) is provided to the Recipient (without restriction as to its use or disclosure by the Recipient) by a third party whom the Recipient knows and can demonstrate is legally entitled to possess the Confidential Information and provide it to the Recipient; or

(c) is independently developed by the Recipient or the Recipient's Affiliate.

5. Return or destruction of Confidential Information

5.1 Return or destruction

Where requested by the Discloser, the Recipient agrees to:

(a) immediately cease using the Discloser's Confidential Information;

(b) promptly return to the Discloser, or at the option of the Discloser, destroy or alter so as not to contain any Confidential Information, all material in the possession of the Recipient or its Affiliates which contain any Confidential Information and provide written confirmation to the Discloser that such destruction or alteration has been completed; and

(c) permanently delete Confidential Information from all electronic media on which it is stored, so that it cannot be restored or in any way reconstructed or reconstituted.

5.2 Return or destruction exception

Despite clause 5.1 (Return or destruction), a Recipient is not required to return, destroy or alter documents or other materials to the extent that:

(a) the Recipient is required by law to keep them;

(b) they are legal advice, internal working papers, legal opinions or materials used for the purpose of providing legal opinions;

(c) they are directors' papers of the Recipient or its Related Entities, or the minutes of the board of the Recipient or its Related Entities or any committee of such board; or

(d) they are included in working papers for the purpose of and in submissions to internal board, board committee or senior executive meeting papers for the purpose of evaluating any proposed transaction and for making decisions in relation to any proposed transaction.

5.3 No release

The Recipient is not released from its obligations under this document as a result of returning, destroying or deleting any documents or other information under clause 5.1 (Return or destruction).

6. No representation or warranty

6.1 No representations or warranties given

Each partyRecipient hereby acknowledges that, except as may be subsequently agreed in writing by the parties, neither the Discloser nor any of its Affiliates:

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(b) is under any obligation:

(i) to notify the Recipient or its Affiliates; or

(ii) to provide any further information to the Recipient or its Affiliates,

if the Discloser or its Affiliates become aware of any inaccuracy, incompleteness or change in the Confidential Information; or

(c) has made or makes any representation or warranty, express or implied, that the Confidential Information does not infringe the Intellectual Property Rights or any other right of any person.

6.2 Recipient to make its own assessment

The parties agrees and acknowledge that:

(a) the Recipient must make its own assessment of all Confidential Information and satisfy itself as to the accuracy, content, legality and completeness of that information;

(b) any forecasts or estimates in the Confidential Information may not prove to be correct or be achieved; and

(c) the Recipient will rely solely on its own investigations and analysis in evaluating any transaction, project or similar.

7. Ownership unaffected

This document does not transfer to the Recipient any right, title or interest in the Discloser's Confidential Information or Intellectual Property Rights in the Confidential Information.

PART B - Term

8. Term

This document will remain in force for a period of six (6) years from the date of its execution. Upon expiry of the term of this document the obligations of the parties under this document will cease.

PART C - Breach of Confidentiality

9. Remedies

The Recipient acknowledges that:

(a) damages may not be an adequate remedy for the Discloser for any breach of this document; and

(b) as a remedy for any breach or threatened breach by the Recipient or its Affiliates of this document, the Discloser will be entitled to seek injunctive relief or specific performance, in addition to any other remedies available at law or in equity.

PART D - General

10. Notices

10.1 Form

Any communications (**Notice**) to be given under or in connection with this document must be in writing, signed by the sender and marked for the attention as set out or referred to in the Details or, if the recipient has notified otherwise, then marked for attention in the way last notified.

10.2 Delivery

A Notice must be:

(a) sent by email to the email address set out or referred to in the Details;

(b) left at the address set out or referred to in the Details; or

(c) sent by prepaid post to the address set out or referred to in the Details.

10.3 When effective

A Notice will be taken to be duly given or made:

(a) if sent by email, they are taken to be received at the time the email message is sent, unless:

(i) the sender receives automated email notification that the email transmission has failed or has been delayed within twelve (12) hours of sending the notice; or

(ii) the sender receives automated email notification to the effect that the recipient is not likely to receive the notice until a later date, which will then become the deemed date of receipt; or

(b) if sent by post, they are taken to be received six (6) days after posting (or ten (10) days after posting if sent to or from a place outside Australia),

but if the result is that a Notice would be taken to be given or made on a day that is not a Business Day in the place to which the Notice is sent or is later than 4pm (local time), it will be taken to have been received at 9am on the next Business Day.

11. Miscellaneous

11.1 Amendments

An amendment or variation to this document is not effective unless it is in writing and signed by the parties.

11.2 Assignment

A party cannot assign or otherwise transfer any of its rights under this document without the prior written consent of each other party.

11.3 Counterparts

This document may be entered into in any number of counterparts, and counterparts may be exchanged by electronic transmission, each of which will be deemed an original, but all of which, taken together, constitute one and the same instrument.

11.4 Entire Agreement

This document constitutes the entire agreement between the parties in relation to its subject matter and supersedes all previous deeds, negotiations and understandings between the parties in relation to its subject matter.

11.5 Severance

If anything in this document is unenforceable, illegal or void then it is severed and the rest of this document remains in force, unless the severance would change the underlying principal commercial purpose or effect of this document.

11.6 Waivers

A right under this document may only be waived in writing, signed by the party granting the waiver.

12. Governing law and jurisdiction

The laws of Tasmania govern this document. The parties submit to the non-exclusive jurisdiction of the courts of Tasmania.

PART E - Defined terms and interpretation

13. Definitions

In this document unless the contrary intention appears:

Affiliate of a party means an auditor or adviser of the party.

Business Day means any week day on which banks are generally open for business in Hobart, Tasmania.

Confidential Information means:

(a) the Discloser's forecast modelling data showing the estimated hourly flow rates exiting the Poatina Power Station between March 2022 and July 2027 (inclusive); and

(b) any other data related to the information referred to in paragraph (a) above which may be supplied by the Discloser to the Recipient on a confidential basis.

Details means the section of this document headed 'Details'.

Discloser means the Hydro-Electric Corporation (trading as Hydro Tasmania) (ABN 48 072 377 158), as set out in the Details.

Government Agency means any governmental, semi-governmental, administrative, judicial or quasi-judicial body, department, commission, authority, tribunal, agency or entity.

Intellectual Property Rights includes all present and future intellectual and industrial property rights conferred by statute, at civil, common law or in equity including:

(a) copyright;

(b) design, patent, trademark, semiconductor, circuit layout, database rights or plant breeder rights (whether registered, unregistered or applied for);

(c) trade, business, company or domain name; and

(d) know how or inventions, processes (whether in writing or recorded in any form).

Purpose means negotiations between the parties regarding entry into a Water Transfer Agreement and associated dam construction works intended to supply the proposed Northern Midlands Irrigation Scheme.

Recipient means the Tasmanian Irrigation Pty Ltd (ACN 133 148 384), as set out in the Details.

14. Interpretation

(a) "Including" and similar expressions are not words of limitation.

(b) A provision of this document must not be construed to the disadvantage of a party merely because that party was responsible for the preparation of this document or the inclusion of the provision in this document.

(c) If an act must be done on a specified day which is not a Business Day, it must be done instead on the next Business Day.

(d) All references to time are to Eastern Standard time.

Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 12 August 2019 4:16 PM
To: Bill Cohen
Subject: RE: Lake River yield investigation - status update

Thanks Bill



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Monday, 12 August 2019 4:15 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Ian,

Please find attached our invoice for the Lake River hydrological reliability assessment, relating to Tas Irrigation Purchase Order PU001511. Note that the dates appear to be in American format (month/date/year) – something is up with our invoicing system, apologies for any inconvenience.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Bill Cohen
Sent: Monday, 12 August 2019 12:16 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Ian,

OK, thanks for the advice. Social challenges appear to be a common theme across all developments these days. From what I know of Tas Irrigation, you guys seem to be all across stakeholder management and would have a good idea of what's worth looking into and what's going to be difficult.

I'll follow up with the invoice later on today.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Friday, 9 August 2019 3:46 PM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Bill,
Yes, given that we are likely to discard this option on other grounds, I am comfortable with the eflow assessment. Particularly given that there is the hydro commitments underlying everything too.
If we were to progress the option then I think we would want to drill further, sadly while a good technical solution there is a lot of social challenges.

Cheers

Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Friday, 9 August 2019 12:02 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Ian,

Thanks for the feedback; I've made the edits more or less as you have specified. I have also corrected the description of how the average baseflows were calculated: they are calculated as the mean of daily discharge, not monthly discharge; because it is the mean, there is no difference in these values.

However, before I issue the final, I'd like to reconfirm with you the basis for selecting the average (mean) discharge to pass as eflow. In previous projects, the typical DPIPWE fallback eflow is the 20/30 rule, which would be much lower than the average flow. Therefore, we have stated that the assumption is quite conservative.

Can you confirm that this approach suits your requirements?

Happy to discuss, if we are all good on that point, I will get the report to you ASAP.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Friday, 9 August 2019 9:57 AM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Bill,
Happy with the content, other than the pre-amble is still not quite correct, hopefully the edits are readable in the attached.

- Scheme is a new scheme – Northern Midlands, not expanding the existing Midlands etc.
- While the hydro requirements are separate concern, one of the objectives is to replace the Arthurs Lake water if possible – ie we want hydro to participate with 4-7000ML in addition to our 12. This is the basis of looking at a 20,000ML storage.
- In its simplest form, how much water is available – 11,000ML answers the question.
- Ultimately, if water was the only hurdle, we would be seeking to build 20,000ML 95% reliable to proceed with this option. The report provides what I need at this time, with a couple of edits in the pre-amble as attached.

Cheers
Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Monday, 5 August 2019 3:11 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Ian,

Here is the draft report with the changes we discussed. My intent is that this is pretty much the final version, but I'm happy to incorporate any clarifications that may be required. I can reissue as required.

Please review and get back to me with any questions.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Saturday, 3 August 2019 11:49 AM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: Re: Lake River yield investigation - status update

Thanks Bill

Get Outlook for iOS

From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Thursday, August 1, 2019 4:44:46 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Ian,

The updated analysis and report has been completed, I am awaiting a review from my colleague. He will be able to review it Monday, I expect to get it to you sometime then.

Cheers,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Wednesday, 17 July 2019 11:18 AM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Bill,
Main comment is clarification please in terms of what we are trying to achieve;

- TI is proposing a new irrigation scheme which has a demand requirement of 12,000ML @ 95%. Our minimum requirement is circa 9,000ML. (Not meeting Hydro commitments with this volume)
- In addition, Hydro is seeking to replace circa 7,000ML which is transferred from Arthurs Lake to Woods Lake – hence the 20,000ML storage

We are not seeking to expand Hydro's irrigation delivery obligations as such (although I suppose the water is nominally ex Hydro supply).

Surface area is nominally 250ha.

See attached.



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Monday, 15 July 2019 5:16 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: Lake River yield investigation - status update

Hello Ian,

I have made some progress on the Lake River yield investigation. I have attached a preliminary report of work done to date – I would not consider it draft as the work is not complete. I estimate that we are about 80% there.

Unfortunately, I have a major report due next Monday – can we please delay our deadline for this task til the middle of next week?

In the mean-time, can you review the report and check that its what you are expecting? Things to note:

- Can you provide an estimate of the reservoir's surface area at FSL? I need to use this to add evaporation into the model
- Currently, I have estimated the reliability of the scheme as 91% to deliver 12,000ML annually – don't hang your hat on this number until I address some of the other items
- I have not yet computed the current releases from Woods Lake. As these releases need to be passed by the proposed storage, I have only included spill from Woods Lake dam as inflow to the model, that can be used to fill the reservoir
- The sustainable yields flow underestimates flow in the catchment when compared with observed discharge at the Lake River at Parknook site. While we haven't allowed for model calibration in this study, I am happy to use whatever budget we have to make bias corrections to it is more representative – lets discuss
- Using average monthly flows as passing flows/eflows is conservative – if these are decreased then the scheme reliability will increase
- I have not yet completed the sensitivity to recent years, however a review of rainfall records indicates that there is little change between the periods 1970-2007 and 2008-2018; however, for the yield analysis, it is more important to look at the low flow sequences (ie drought) than average rainfall, so I will still need to complete this

Let me know if you agree to the delay – if not, I will try to arrange someone else to deliver for you this week. Sorry for any inconvenience.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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Project Note

To	Ian Smith Tasmanian Irrigation
From	William Cohen **p** +61 3 62454513 **e** Bill.Cohen@entura.com.au
Project	Lake River Water Yield Investigations
Project reference	E308263
Date	Monday 5th August 2019
Subject	**Draft – for client feedback**

Introduction

Tasmanian Irrigation is investigating options to expand its existing Midlands Irrigation Scheme. This study focusses on one potential option, which is to develop an in-stream dam in Lake River, approximately 30 km downstream of Hydro Tasmania's existing Woods Lake Dam. The objective of this option is to deliver irrigation water with a 95% volumetric reliability. A deliverable volume of 12,000 ML is preferred, with a fall-back of 9,000 ML that may be on the verge of economic viability. A deliverable volume of 20,000 ML would be an ideal outcome for Tasmanian Irrigation for this option (pers. Comms I. Smith 17th July 2019).

Hydro Tasmania has an existing water delivery obligation in Lake River, which are a separate concern to Tasmanian Irrigation's Midlands Irrigation Scheme. Hydro Tasmania's delivery consists of three components: release from Woods Lake Dam, transfer from Poatina Power Station's re-regulation pond, and release from Arthurs Lake[1]. While these delivery requirements are in the same river and region to the Tasmanian Irrigation's Lake River expansion to the Midlands Irrigation Scheme, they are treated separately with respect to water harvesting and delivery.

This report describes a high level assessment of the viability of the Midlands Irrigation Scheme Lake River option, to determine what yield can be delivered from a 20,000 ML instream storage with a 95% volumetric reliability. This assessment has been completed as follows:

1. Review available hydrometric data and models in the region
2. Determine Hydro Tasmania's existing delivery to irrigators
3. Reinstate a Tasmanian Sustainable Yields model of Lake River (CSIRO 2009), downstream of Woods Lake, and assess its suitability

[1] NOTE: Tasmanian Irrigation's existing Midlands Irrigation Scheme also draws water from Arthurs Lake: this should not be confused with Hydro Tasmania's Arthurs Lake delivery obligations

4. Review modelled records at the proposed dam site to determine average monthly flows; these are to be considered baseflows and should be passed (Entura 2019);ie are not available for filling the storage
5. Adapt the model from Step 3 and configure it to use a future dry climate scenario (Tasmanian Sustainable Yields Scenario Cdry for the period 1970-2007) and a storage with delivery, to assess the reliability of delivering a range of volumes and reporting on the volume that has 95% volumetric reliability
6. Assess the likely impact of recent years (2008-2018) on the scheme's reliability

Data

The following data sources have been used for this study:

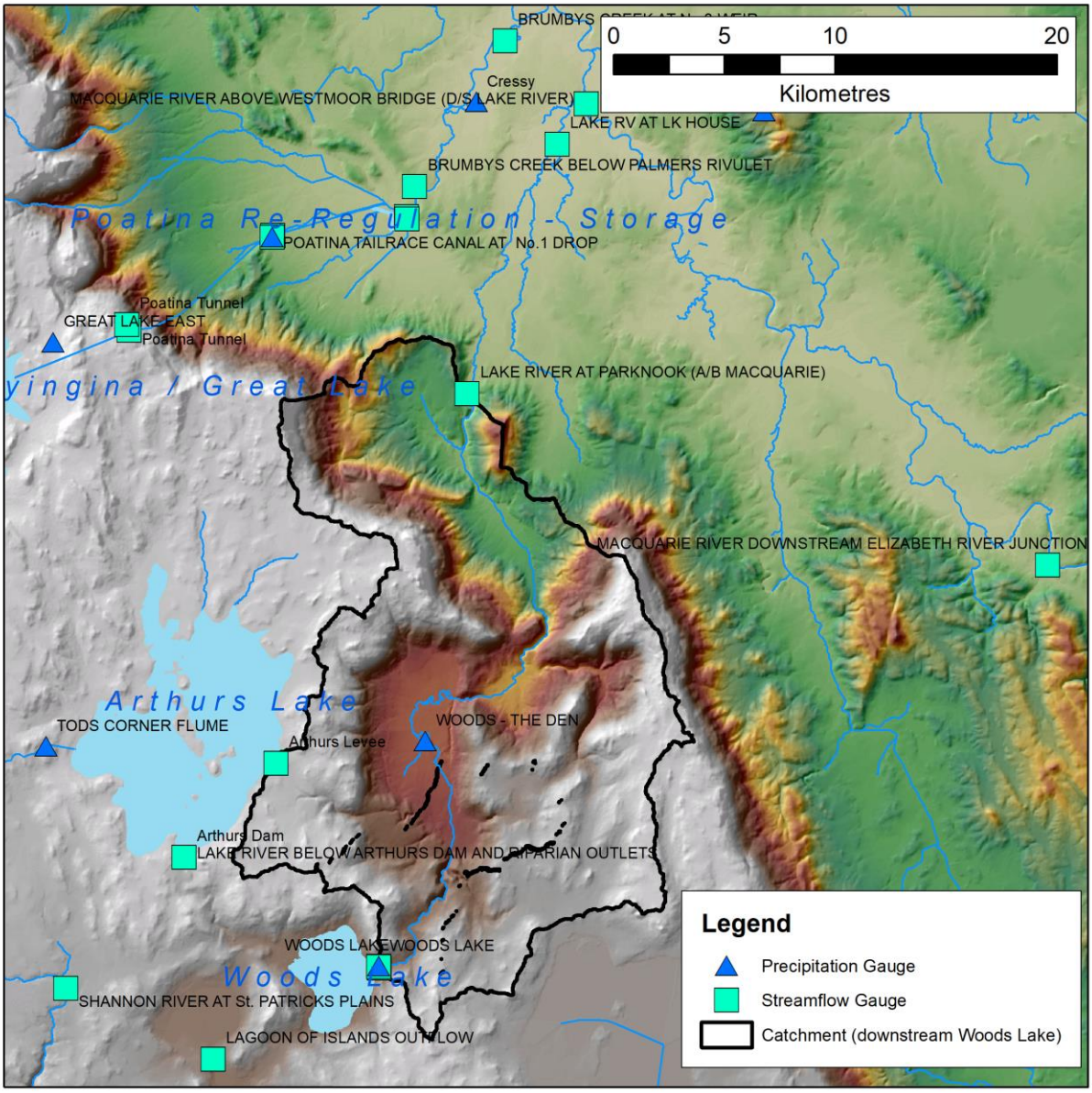
- Tasmanian Sustainable Yields modelled discharge, Scenario A and Scenario Cdry
- Hydro Tasmania hydrometric records:
    - Site 175 Lake River at Parknook discharge (1956 – current with significant data gaps); this record is understood to not have high flow gaugings (pers. Comms M. DeHoog, 17th July 2019). Therefore, it may not have a good representation for high discharges.
    - Site 462 Woods Lake spill (1968 – current)
    - Site 454 Lake River downstream of Woods Dam (various records with different availability, the current record has 1999-current)
- The Bureau of Meteorology's AWAP (Australian Water Availability Project) gridded daily rainfall (1900-2018; only the period 1970-2018 has been used in this study)

The quality of these records has not been assessed. Acknowledgements are owed to Hydro Tasmania for permission to use data for this project.

Scheme Details

The proposed dam site approximately coincides with the existing Hydro Tasmania gauging station Lake River at Parknook/above Macquarie (site 175), downstream of Arthurs Lake and Woods Lake. While Arthurs Lake naturally spills into Lake River, it has not spilled in its operational history, so it is not considered as part of this study. Woods Lake does spill, however its catchment and reservoir is not modelled as part of this study. Recorded spill from Woods Lake is considered as inflow to the proposed dam.

While operational releases from Woods Lake Dam have been addressed in this analysis, for the purposes of the proposed scheme, they are considered to be a separate, non-related scheme. Releases from Woods Lake Dam and Arthurs Lake are to be passed by the storage to downstream irrigators, as part of Hydro Tasmania's delivery obligations.



NOTE: all catchment areas exclude Arthurs Lake (which has a catchment area of 254.9 km^2), which has not spilled in its operational history.

Site	Description	Pickup catchment area (km^2)	Cumulative catchment area (km^2)
462	Woods Lake Dam	79.5	79.5
175	Lake River at Parknook (proposed dam site)	361	440.5
301	Lake River at Lake House	100.2	540.7

Water delivery requirements

Currently Hydro Tasmania delivers irrigation water to users in the Lake River catchment, between gauges 175 and 301 (pers. Comms G. Carson 11 July 2019). Delivery requirements are estimated to be 25,000 ML during summer, however it is expected that this will increase to 35,000 in the near future. The current composition of release is estimated as follows:

Source	Description	Approximate total (ML/year)
Woods Lake	Released from the dam on demand	13,000
Poatina reregulation pond	Transferred via pipeline (40 ML/day for 120 days)	5,000
Arthurs Lake release	Released to Woods Lake	7,000
TOTAL		**25,000**

From discussion with Greg Carson (pers. Comms 11 July 2019) and review of the hydrometric records at Site 454 (Lake River below Woods Lake Dam), it appears that there is no clear pattern to irrigation water delivery to downstream users. While approximating a pattern for modelling purposes could be attempted, a simpler alternative to passing Hydro Tasmania releases is available (described below).

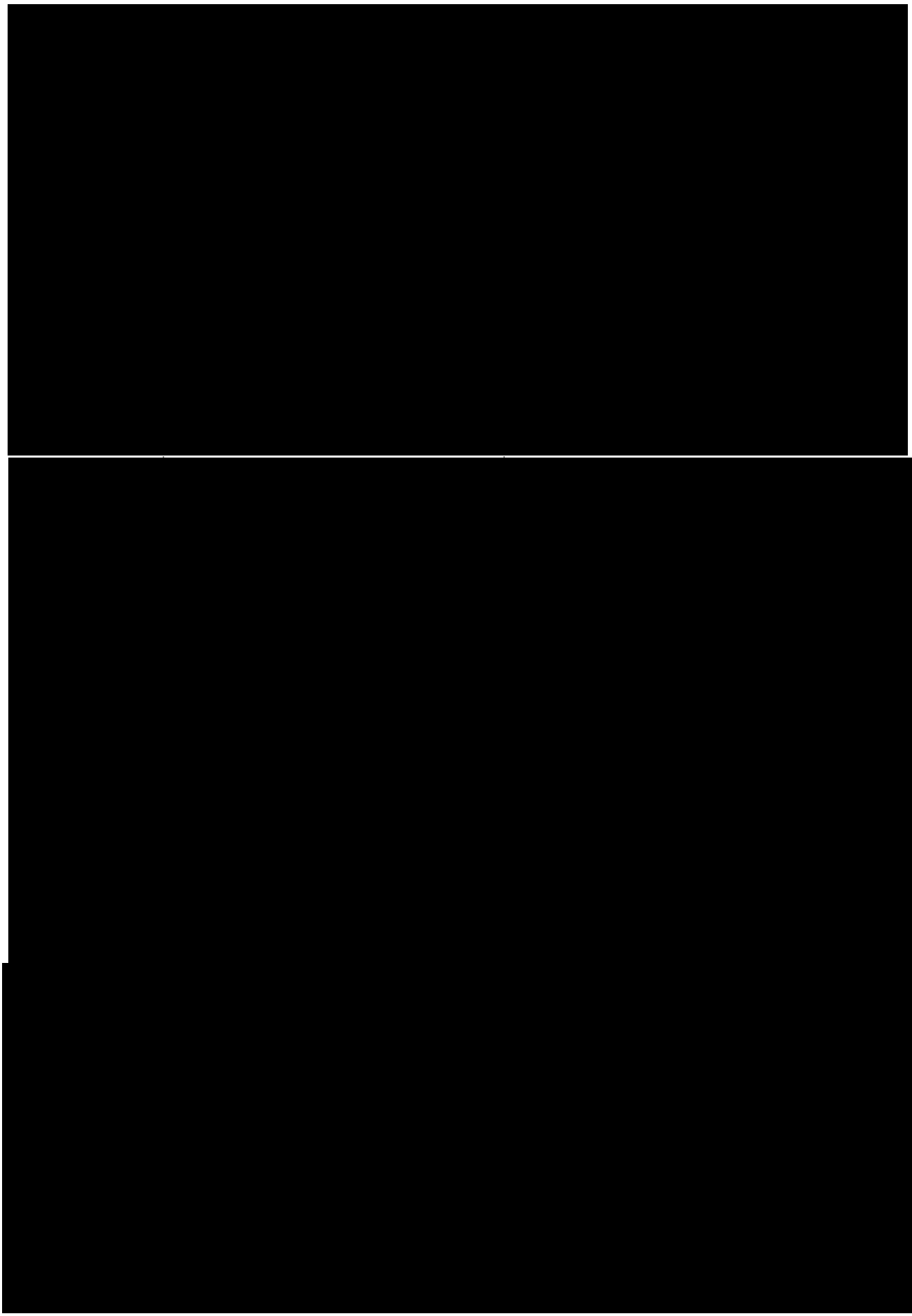
Releases from Woods Lake Dam are intended for irrigators downstream of the proposed instream dam (Entura 2019); therefore, the proposed dam is required to pass these releases. The proposed works originally intended to develop a release pattern from Woods Lake Dam, which would be bypassed by the proposed storage. However, a simpler approach has been adopted in this study, where releases from Woods Lake Dam are not included at all., spill from Woods Lake Dam is used in the model, as it can be captured by the proposed storage, should capacity be available.

Hydrological modelling

[redacted]

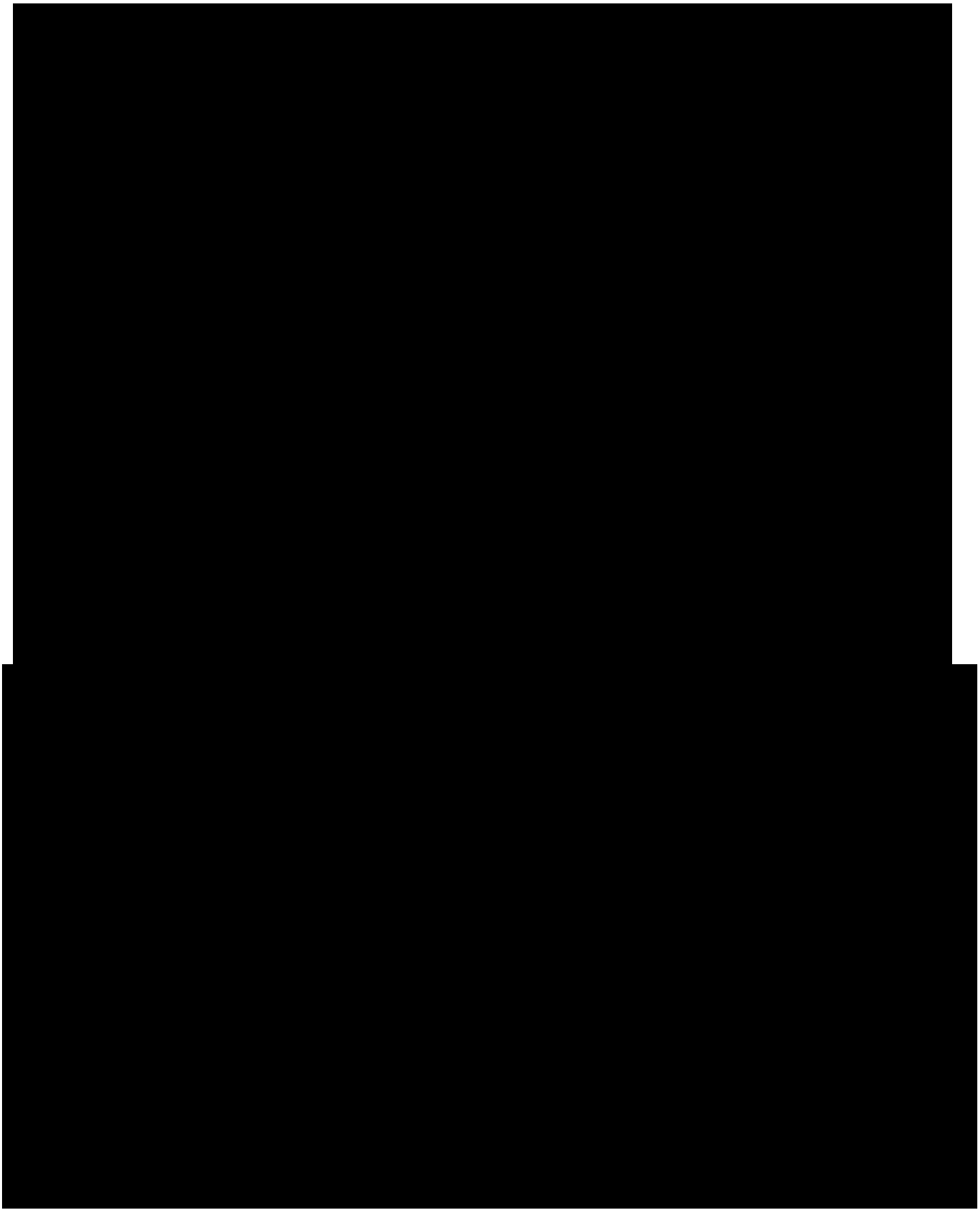
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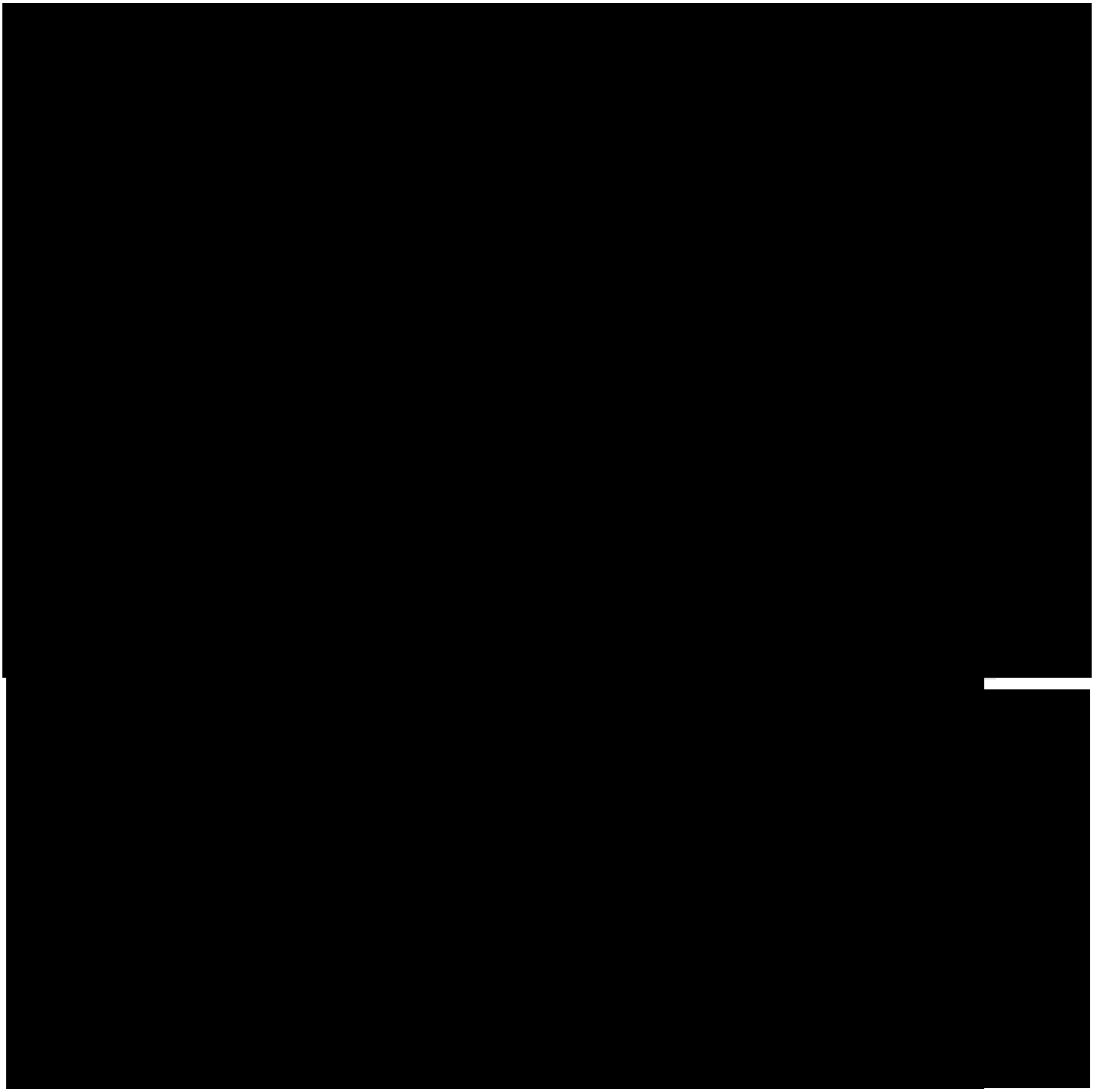






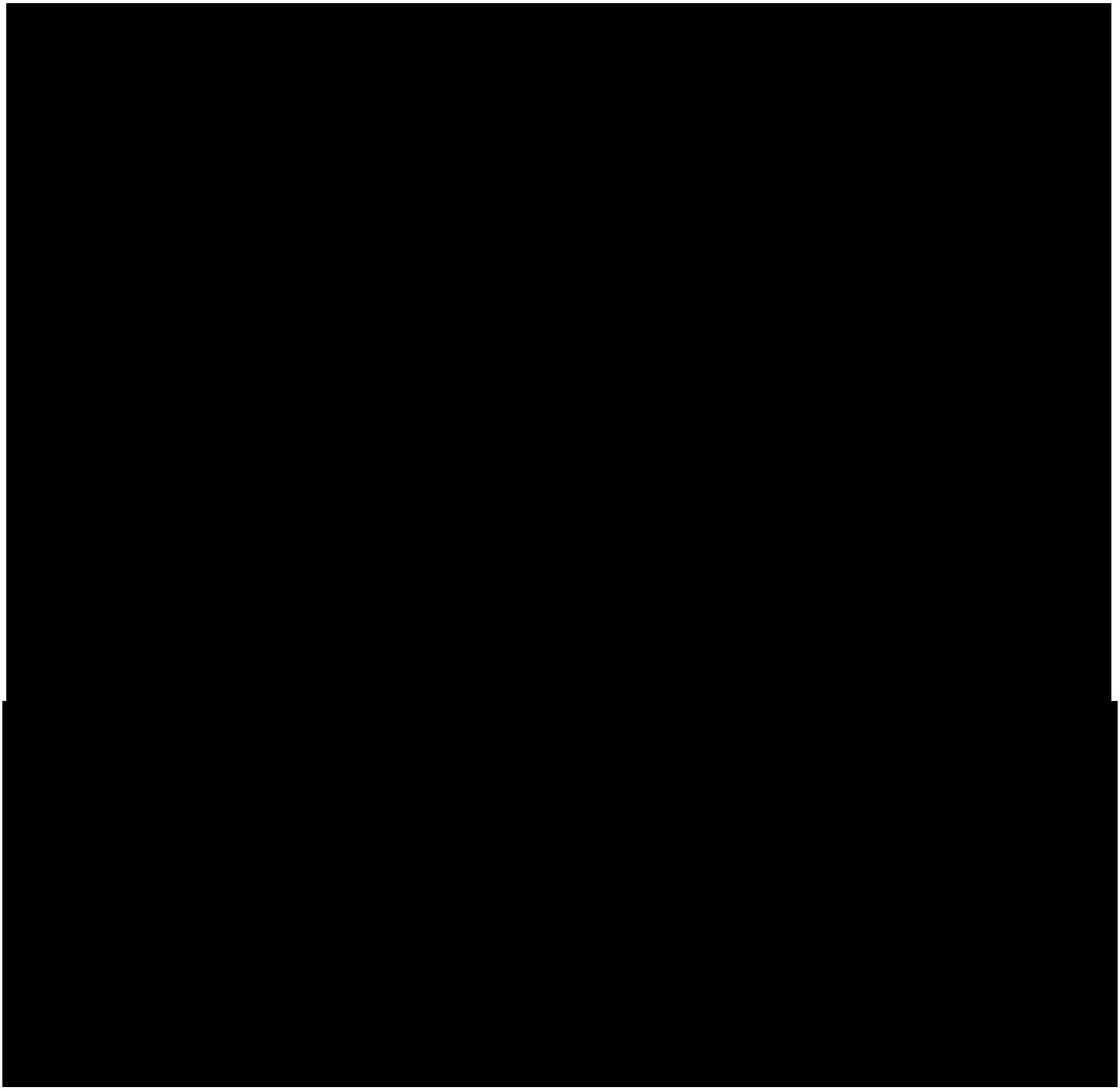
[2] Geocentric Datum of Australia 1994 (GDA94)











[redacted]

[redacted]

[redacted]

[redacted]

References

Bureau of Meteorology (BOM) 2019, Daily Rainfall Totals for Australia, http://www.bom.gov.au/jsp/awap/rain/index.jsp Accessed 14th July 2019

CSIRO 2009, Water availability for the South Esk region. Report six of seven to the Australian Government from the CSIRO Tasmania Sustainable Yields Project, CSIRO Water for a Healthy Country Flagship, Australia

Entura 2019, Proposal to establish Lake River water availability for irrigation

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Project Note

To	Ian Smith Tasmanian Irrigation
From	William Cohen **p** +61 3 62454513 **e** Bill.Cohen@entura.com.au
Project	Lake River Water Yield Investigations
Project reference	E308263
Date	Monday 5th August 2019
Subject	**Draft – for client feedback**

Introduction

Tasmanian Irrigation is investigating options ~~to expand its existing~~ Midlands Irrigation Scheme. This study focusses on one potential option, which is to develop an in-stream dam in Lake River, approximately 30 km downstream of Hydro Tasmania's existing Woods Lake Dam. The objective of this option is to deliver irrigation water with a 95% volumetric reliability. A deliverable volume of 12,000 ML is preferred, ~~with a fall-back of 9,000 ML that may be on the verge of economic viability.~~ A deliverable volume of 20,000 ML would be an ideal outcome for Tasmanian Irrigation for this option (pers. Comms I. Smith 17th July 2019).

Hydro Tasmania has an existing water delivery obligation in Lake River, which are a separate concern to Tasmanian Irrigation's Midlands Irrigation Scheme. Hydro Tasmania's delivery consists of three components: release from Woods Lake Dam, transfer from Poatina Power Station's re-regulation pond, and release from Arthurs Lake[1]. While these delivery requirements are in the same river and region to the Tasmanian Irrigation's Lake River expansion to the Midlands Irrigation Scheme, they are treated separately with respect to water harvesting and delivery.

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1. Review available hydrometric data and models in the region
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3. Reinstate a Tasmanian Sustainable Yields model of Lake River (CSIRO 2009), downstream of Woods Lake, and assess its suitability

[1] NOTE: Tasmanian Irrigation's existing Midlands Irrigation Scheme also draws water from Arthurs Lake: this should not be confused with Hydro Tasmania's Arthurs Lake delivery obligations

4. Review modelled records at the proposed dam site to determine average monthly flows; these are to be considered baseflows and should be passed (Entura 2019);ie are not available for filling the storage
5. Adapt the model from Step 3 and configure it to use a future dry climate scenario (Tasmanian Sustainable Yields Scenario Cdry for the period 1970-2007) and a storage with delivery, to assess the reliability of delivering a range of volumes and reporting on the volume that has 95% volumetric reliability
6. Assess the likely impact of recent years (2008-2018) on the scheme's reliability

Data

The following data sources have been used for this study:

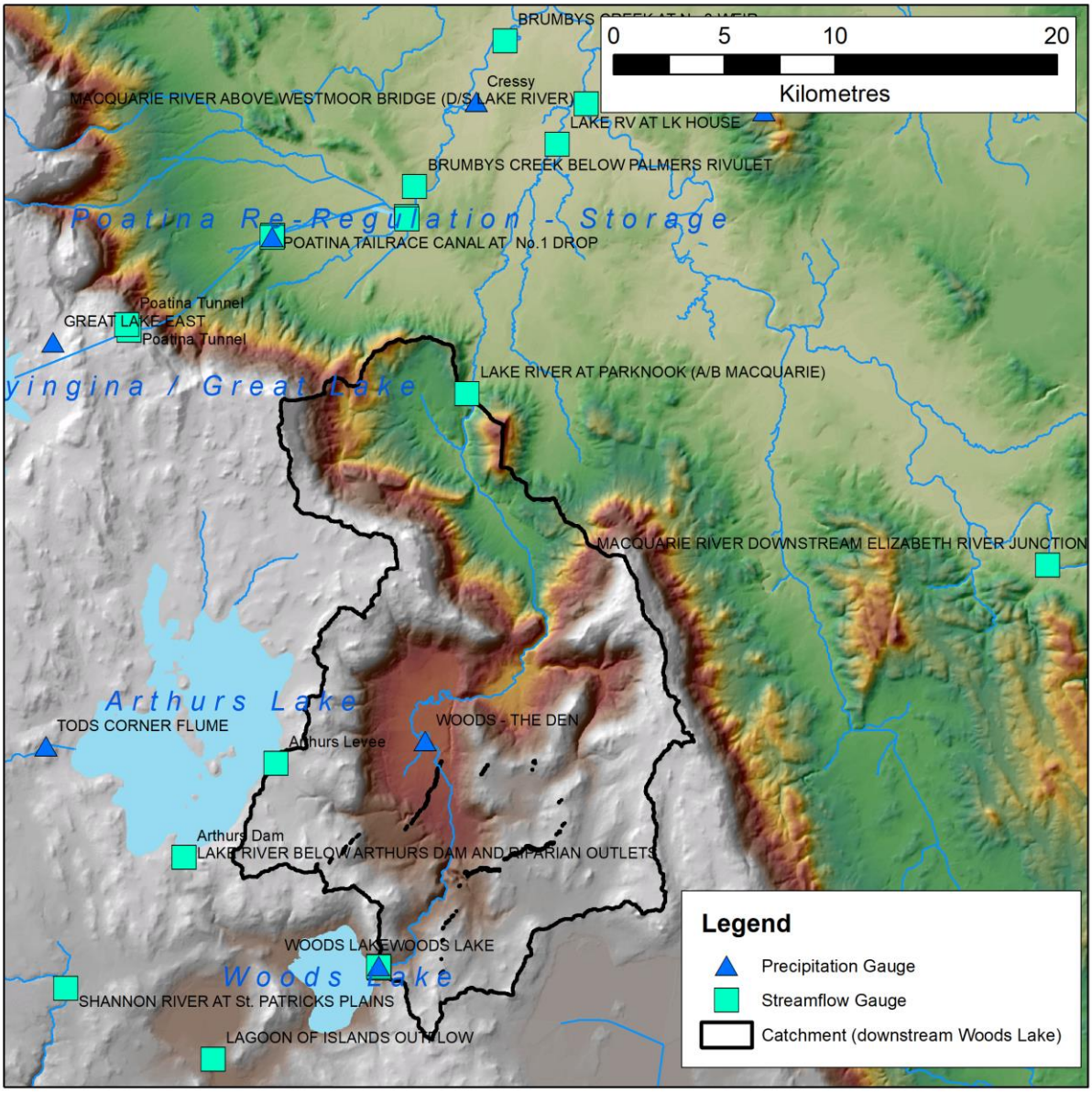
- Tasmanian Sustainable Yields modelled discharge, Scenario A and Scenario Cdry
- Hydro Tasmania hydrometric records:
    - Site 175 Lake River at Parknook discharge (1956 – current with significant data gaps); this record is understood to not have high flow gaugings (pers. Comms M. DeHoog, 17th July 2019). Therefore, it may not have a good representation for high discharges.
    - Site 462 Woods Lake spill (1968 – current)
    - Site 454 Lake River downstream of Woods Dam (various records with different availability, the current record has 1999-current)
- The Bureau of Meteorology's AWAP (Australian Water Availability Project) gridded daily rainfall (1900-2018; only the period 1970-2018 has been used in this study)

The quality of these records has not been assessed. Acknowledgements are owed to Hydro Tasmania for permission to use data for this project.

Scheme Details

The proposed dam site approximately coincides with the existing Hydro Tasmania gauging station Lake River at Parknook/above Macquarie (site 175), downstream of Arthurs Lake and Woods Lake. While Arthurs Lake naturally spills into Lake River, it has not spilled in its operational history, so it is not considered as part of this study. Woods Lake does spill, however its catchment and reservoir is not modelled as part of this study. Recorded spill from Woods Lake is considered as inflow to the proposed dam.

While operational releases from Woods Lake Dam have been addressed in this analysis, for the purposes of the proposed scheme, they are considered to be a separate, non-related scheme. Releases from Woods Lake Dam and Arthurs Lake are to be passed by the storage to downstream irrigators, as part of Hydro Tasmania's delivery obligations.



NOTE: all catchment areas exclude Arthurs Lake (which has a catchment area of 254.9 km^2), which has not spilled in its operational history.

Site	Description	Pickup catchment area (km^2)	Cumulative catchment area (km^2)
462	Woods Lake Dam	79.5	79.5
175	Lake River at Parknook (proposed dam site)	361	440.5
301	Lake River at Lake House	100.2	540.7

Water delivery requirements

Currently Hydro Tasmania delivers irrigation water to users in the Lake River catchment, between gauges 175 and 301 (pers. Comms G. Carson 11 July 2019). Delivery requirements are estimated to be 25,000 ML during summer, however it is expected that this will increase to 35,000 in the near future. The current composition of release is estimated as follows:

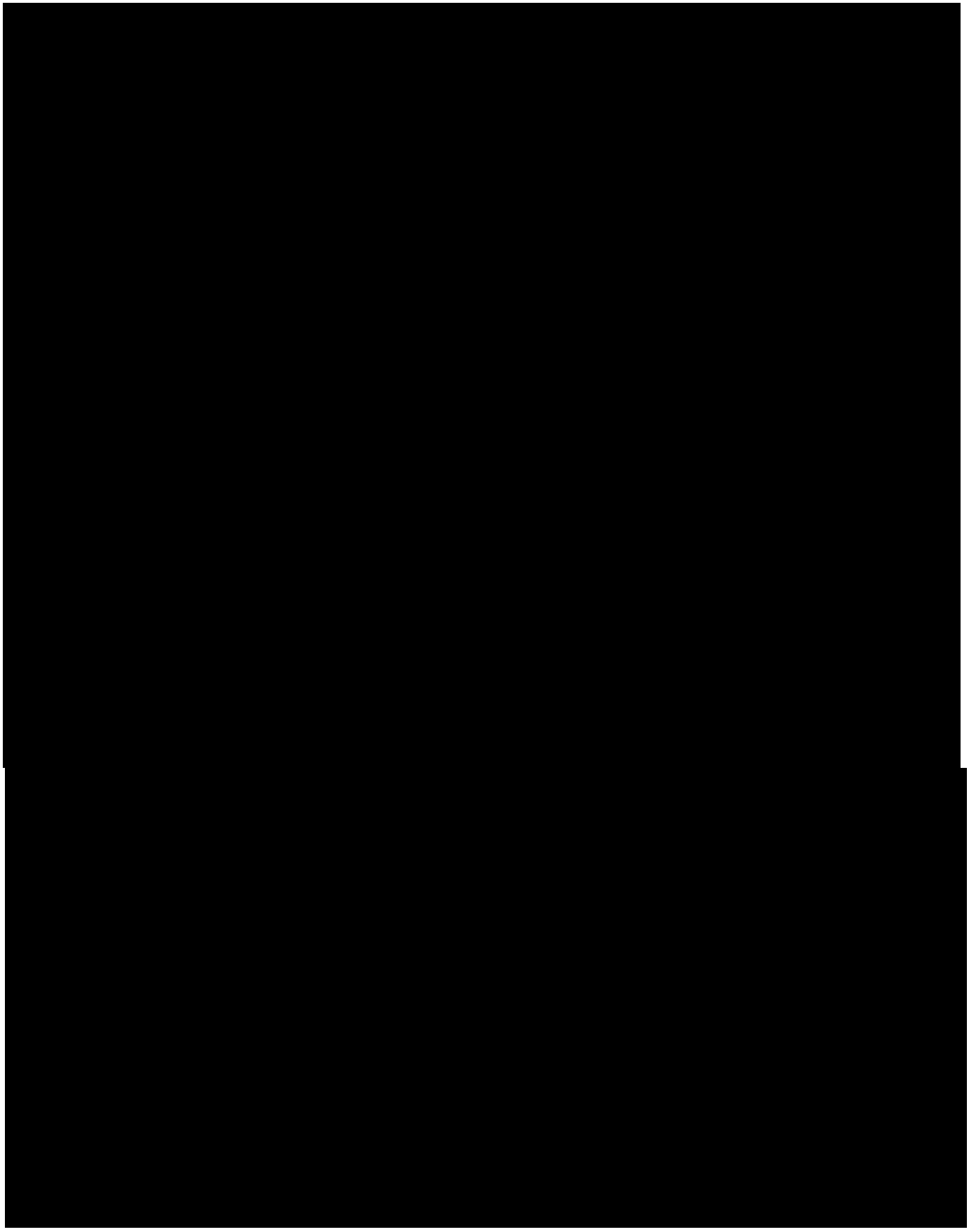
Source	Description	Approximate total (ML/year)
Woods Lake	Released from the dam on demand	13,000
Poatina reregulation pond	Transferred via pipeline (40 ML/day for 120 days)	5,000
Arthurs Lake release	Released to Woods Lake	7,000
TOTAL		**25,000**

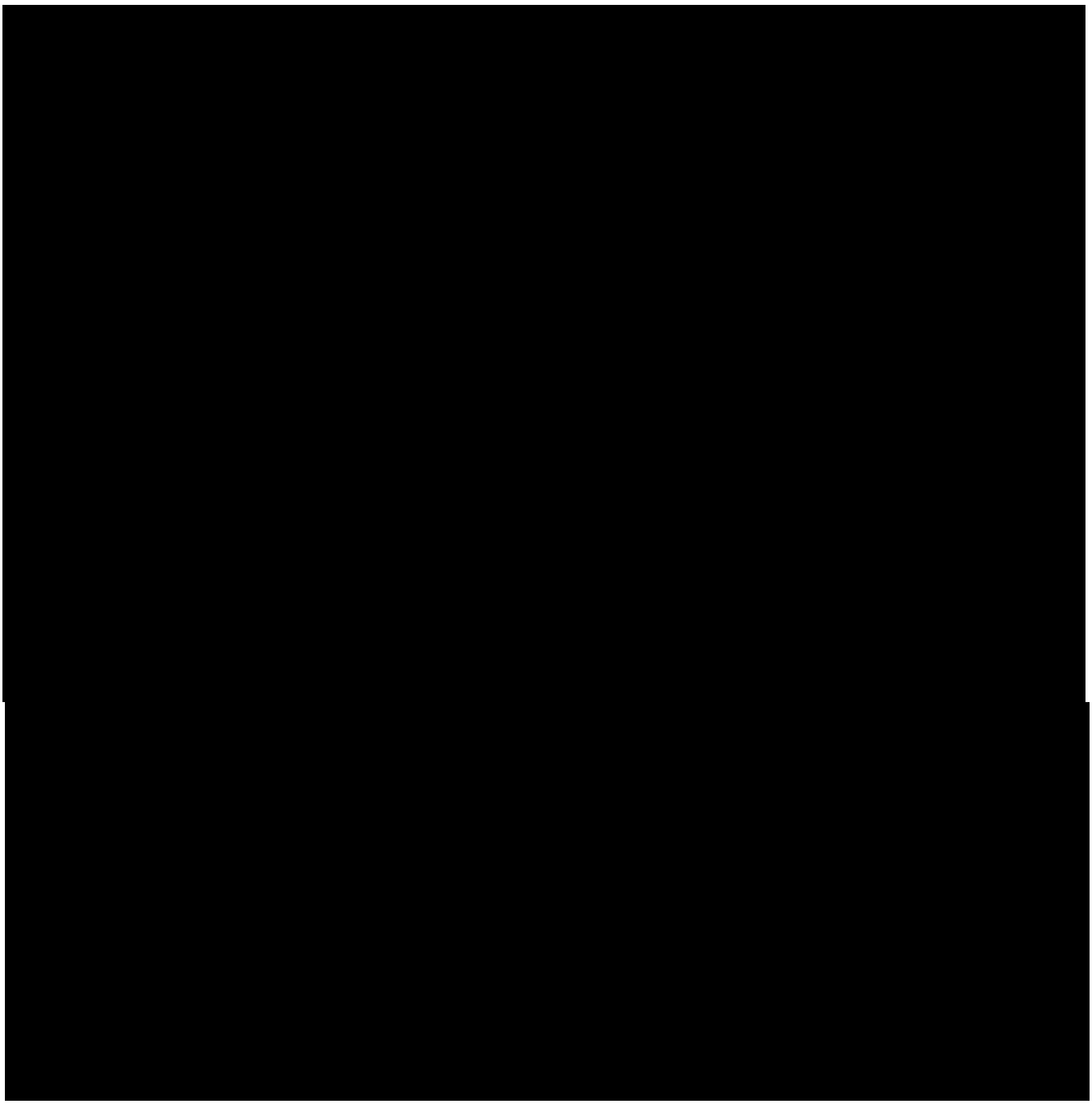
From discussion with Greg Carson (pers. Comms 11 July 2019) and review of the hydrometric records at Site 454 (Lake River below Woods Lake Dam), it appears that there is no clear pattern to irrigation water delivery to downstream users. While approximating a pattern for modelling purposes could be attempted, a simpler alternative to passing Hydro Tasmania releases is available (described below).

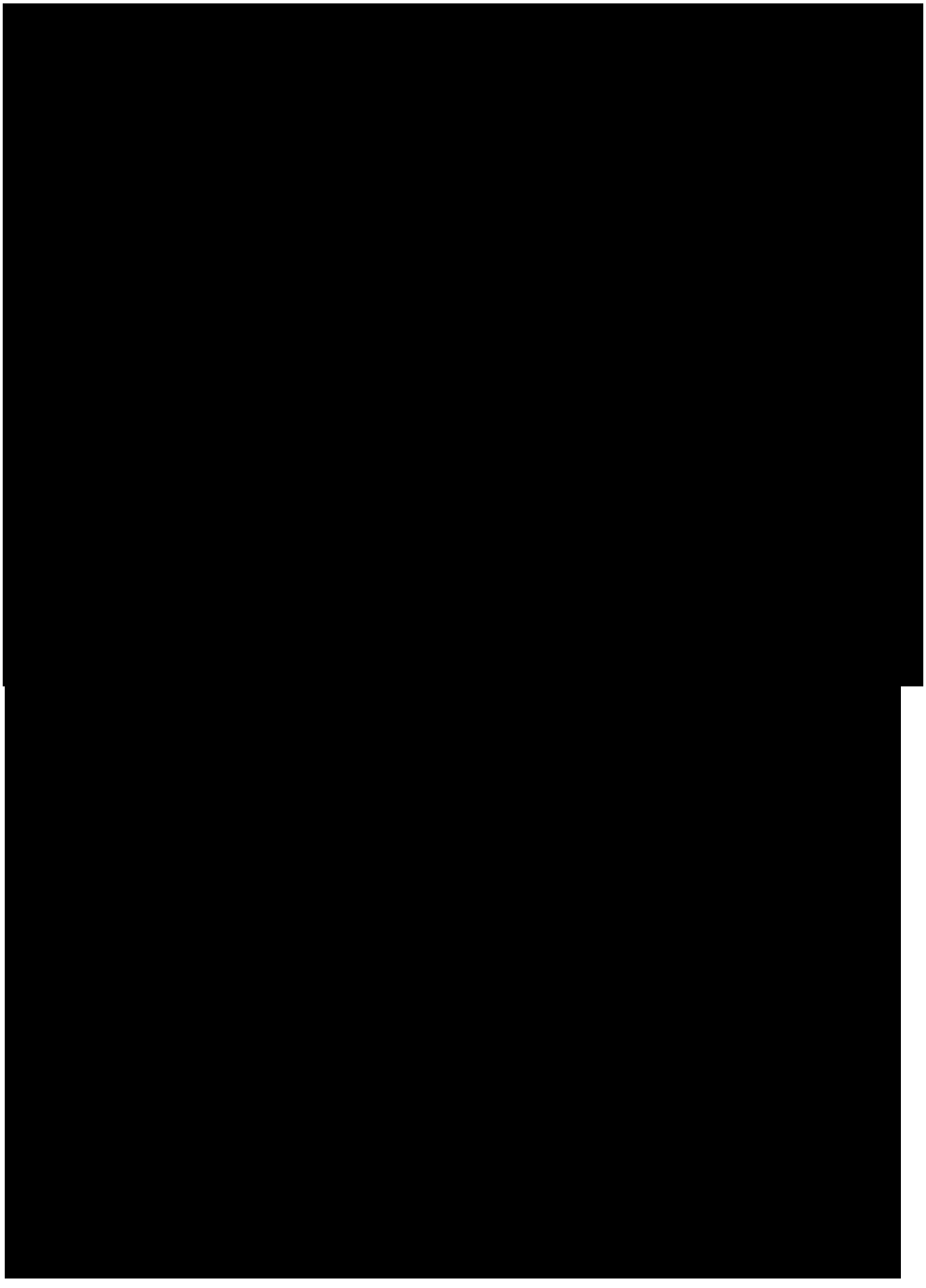
Releases from Woods Lake Dam are intended for irrigators downstream of the proposed instream dam (Entura 2019); therefore, the proposed dam is required to pass these releases. The proposed works originally intended to develop a release pattern from Woods Lake Dam, which would be bypassed by the proposed storage. However, a simpler approach has been adopted in this study, where releases from Woods Lake Dam are not included at all., spill from Woods Lake Dam is used in the model, as it can be captured by the proposed storage, should capacity be available.

Hydrological modelling

[redacted]

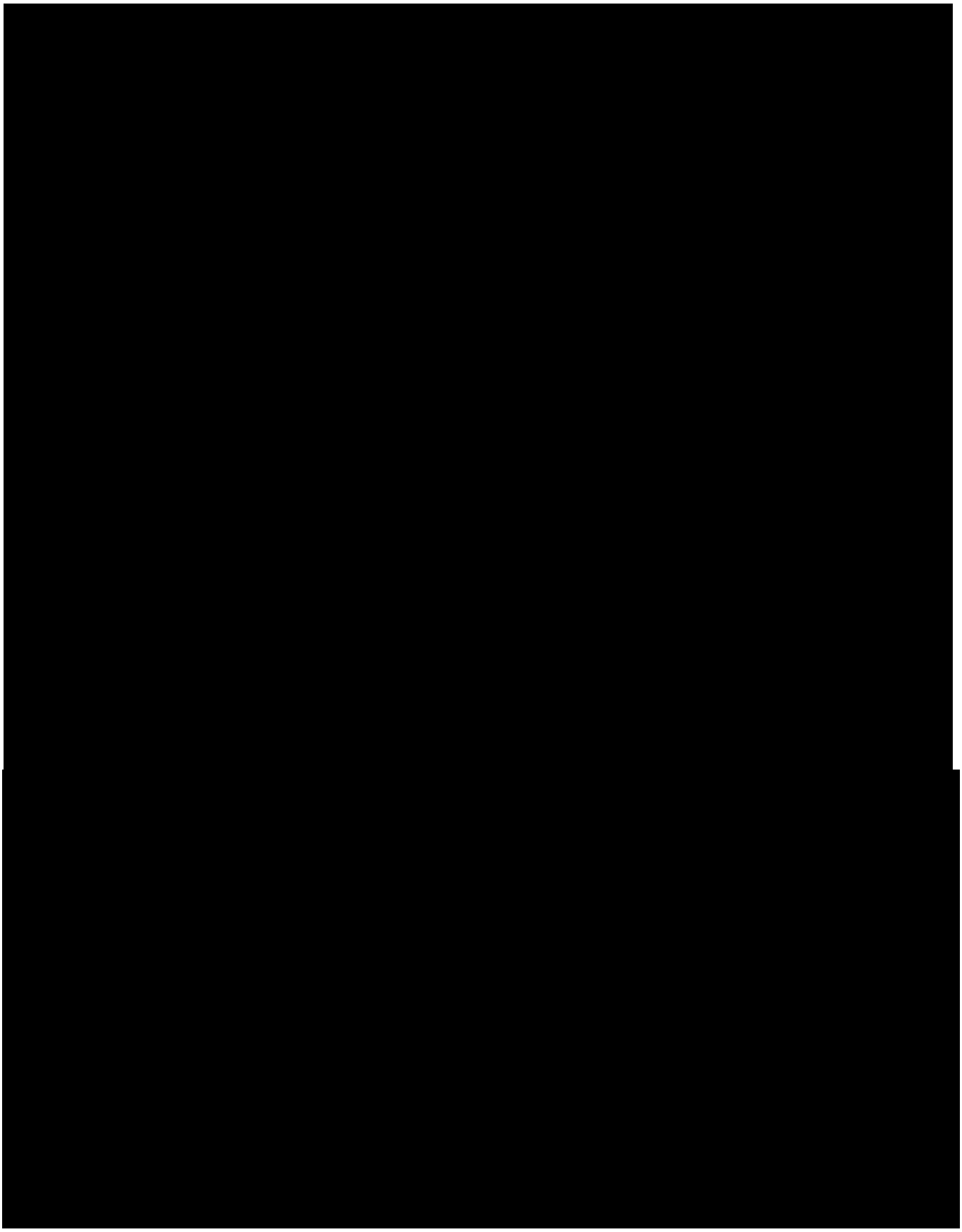






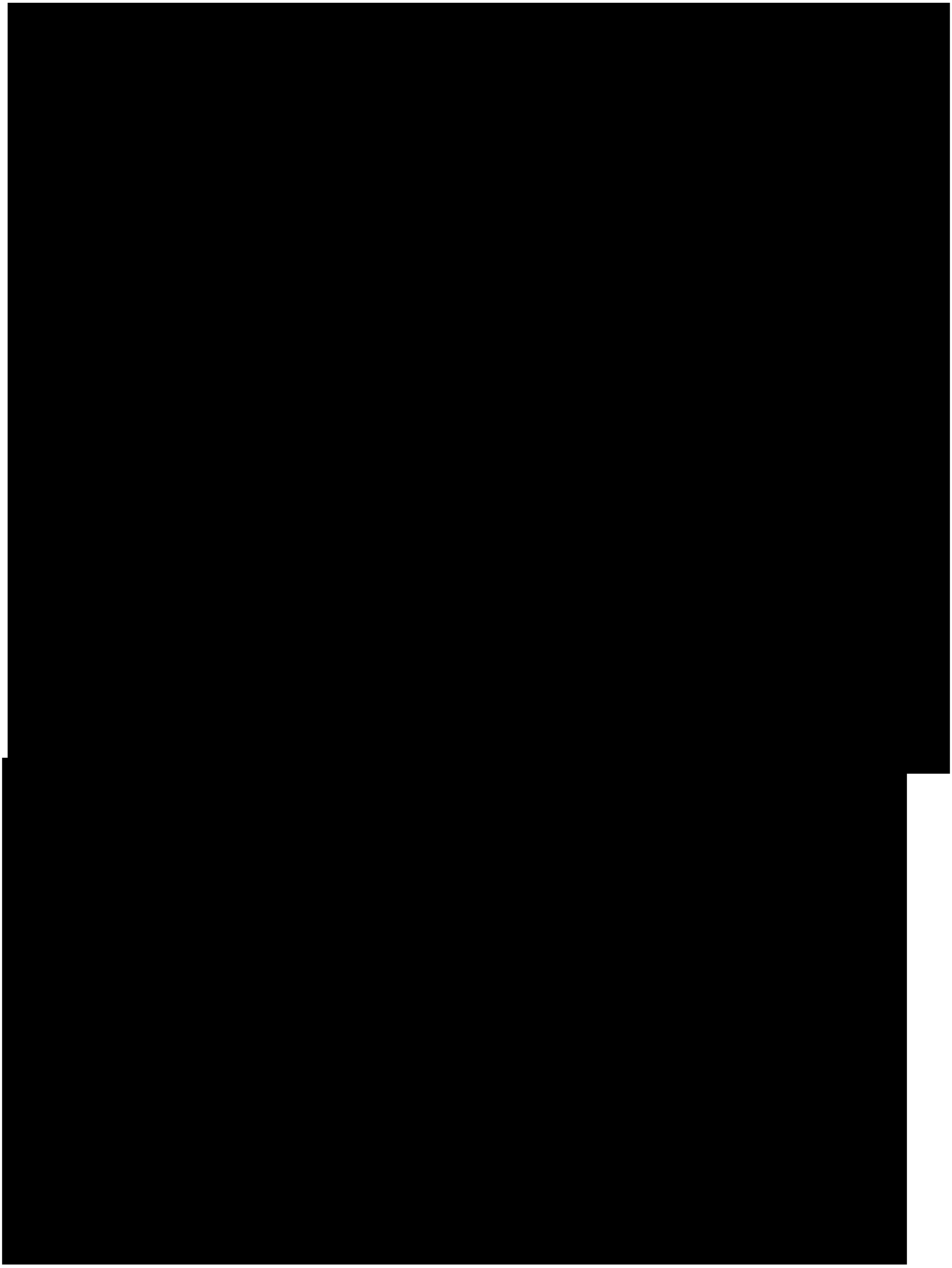


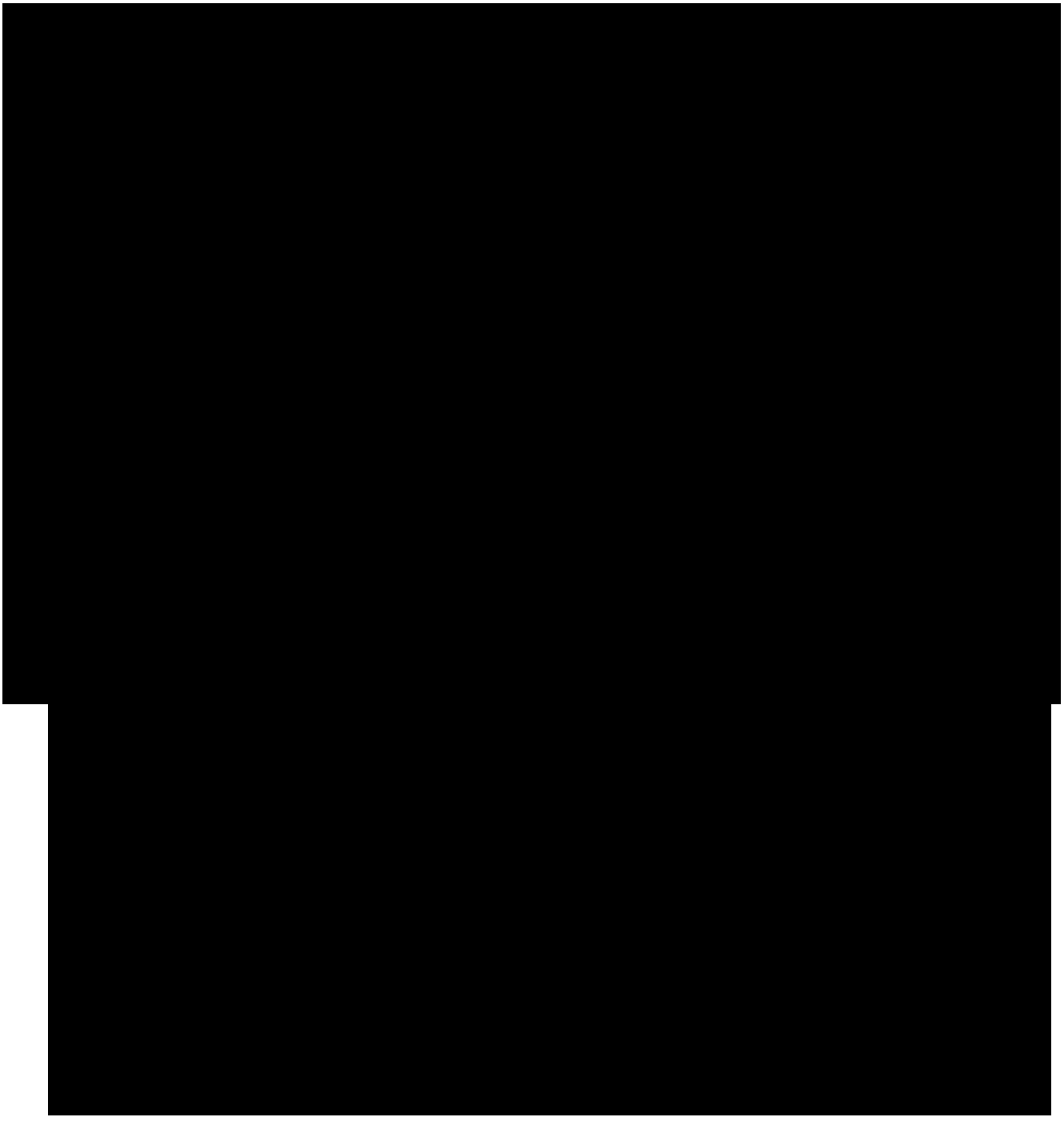
[2] Geocentric Datum of Australia 1994 (GDA94)











[redacted]

References
Bureau of Meteorology (BOM) 2019, Daily Rainfall Totals for Australia, http://www.bom.gov.au/jsp/awap/rain/index.jsp Accessed 14th July 2019
CSIRO 2009, Water availability for the South Esk region. Report six of seven to the Australian Government from the CSIRO Tasmania Sustainable Yields Project, CSIRO Water for a Healthy Country Flagship, Australia

Entura 2019, Proposal to establish Lake River water availability for irrigation

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TAX INVOICE

Invoice number	**519033**
Invoice date	8/12/2019
Billing office	External Clients
Contract	PU001511

Remit-to address: Hobart Office
Hydro Tasmania
GPO Box 355, Hobart, TAS 7001
AUSTRALIA

Terms: 30 Days

EFT Banking details:
BSB 037001 - Account Number 317228

Ian Smith
Tasmanian Irrigation Pty Ltd
PO Box 84
Evandale, Tasmania 7212
Australia

Contact:	Ian Smith
Engagement name:	1920 TI Lake River - Hydrology and Environmental Flows E308263 : 308263
Engagement Contact:	William James Cohen
Engagement Number:	308263
Service Provider:	Water Management
Contact email:	bill.cohen@entura.com.au

Fixed fee

Date	Description	Amount
8/12/2019	Lake River Reliability Assessment	[redacted]

Total [redacted]

Fixed fee	[redacted]
Subtotal	[redacted]
Total GST Amount	[redacted]
Amount due	**AUD** [redacted]

Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Wednesday, 19 June 2019 5:26 PM
To: Bill Cohen
Cc: Jayson Peterson; Prafulla Pokhrel
Subject: RE: Northern Midlands proposal

Thanks Bill,
It would not seem logical for what I am trying to do at this stage to expand the sustainable yields, however a "sniff test" alternate approach would have merit given there is quite a bit of actual data ex the three gauges. I have spoken to Hydro (Greg Carson) and they are expecting the request for data and will agree once we have determined who is doing the work.

What effort would the sensitivity assessment add?

Regards

Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Wednesday, 19 June 2019 5:14 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Cc: Jayson Peterson <Jayson.Peterson@entura.com.au>; Prafulla Pokhrel <Prafulla.Pokhrel@entura.com.au>
Subject: RE: Northern Midlands proposal

Hello Ian,

Thanks for the question, I'm afraid the answer isn't simple (see below).

Current issues with extending Sustainable Yields past 2007
While we have the routing models (which route runoff through the stream network and can be adapted for systems modelling) used for Sustainable Yields, the rainfall-runoff models (converting rainfall to runoff, as the name implies) were developed and run by CSIRO. I have contacted CSIRO who confirm this but suggest there could be some effort required to reinstate these models, and we would need to seek permission to use these models. We have other models on our system (Climate Futures Tasmania) which we may be able to reinstate, but I have not assessed the effort required for this as yet

Alternative approach
Hydro Tas has a long period of record for discharge in Lake River, up to current. Assuming we have permission to use it, we can do the system reliability modelling using this record. Although we cannot easily apply climate forcing to the historical record (ie to achieve the Scenario Cdry record), we can do a sensitivity check on yields between two periods of record (ie 1970-2007 and 1970-2019) and see if the scheme's reliability is sensitive to the additional period. Its not a perfect solution, but it could give us an indication of the impact.

Let me know if you are interested in this approach – happy to discuss further.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Wednesday, 19 June 2019 1:00 PM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: Re: Northern Midlands proposal

Thanks Bill

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From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Wednesday, June 19, 2019 12:37:25 PM
To: Ian Smith
Subject: RE: Northern Midlands proposal

Hello Ian,

Good question. I'll look into it and get back to you later this afternoon.

Cheers,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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e Bill.Cohen@entura.com.au | **w** entura.com.au
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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Wednesday, 19 June 2019 12:30 PM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: Northern Midlands proposal

Bill,
A question in relation to the Tassy model to 2007. Is it possible, and what would the likely impact to your proposal be to extend the TASY to current – ie bring the model to 2017 / 18?

Regards

Ian



Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Friday, 25 November 2022 8:50 AM
To: Adam Gall
Subject: FW: [External]RE: Northern Midlands Water Supply agreement

Follow Up Flag: Follow up
Flag Status: Completed

Hi Adam

Thanks for your work on this.

I can not see why this shouldn't allow us to progress forward.

Thanks

Jacob Gerke
Program Manager - Project Delivery

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

HELPING TO GROW THE WEALTH OF TASMANIA

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From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Friday, 25 November 2022 8:41 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: FW: [External]RE: Northern Midlands Water Supply agreement

FYi

Andrew

Andrew Kneebone
Chief Executive Officer (CEO)

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: Andrew.Kneebone@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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From: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Sent: Friday, 25 November 2022 8:31 AM
To: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: [External]RE: Northern Midlands Water Supply agreement

Hi Andrew,

Thank you for your email.

I understand that Adam and Praj have been quite busy working with your team through some challenges with the Northern Midlands Irrigation scheme. Its pleasing to hear that we may start to see a solution on the horizon soon.

In order to assist TI provide more information to NRE Tas, I'm happy to elaborate on comments previously made in my letter of 5 May 2022 where we advised the broad terms of our in principle agreement.

My letter of 5 May 2022 was written on the basis that TI were proposing to take water from drop structure 1 of the Poatina tailrace. The intent of section 2 of the letter, which reads:

> *In order to allow sufficient water to reach the Poatina Re-Regulation Pond (thereby enabling HT to meet its existing water release commitments) a minimum flow or water level would be set at drop structure 1 of the Poatina Tailrace which will restrict TI from taking water below that level (similar to clause 2.5 of the Whitemore Irrigation Scheme water agreement between HT and TI).*

was to ensure that the Northern Midlands Irrigation Scheme will not have an adverse impact on other water entities and users, including:

a. Cressy Longford Irrigation Scheme - existing 200ML/day capped flow.
b. Whitemore Irrigation Scheme - existing 50ML/day capped flow.
c. Hydro Tasmania's ability to manage Poatina Re-Regulation Pond (PRP) and other downstream commitments and obligations, such as:
    i. Meeting our Lake River Irrigation District obligations under the *Electricity Supply Industry Restructuring (Savings and Transitional Provisions) Act 1995* by pumping water from the PRP through the Macquarie Settlement Pipeline.
    ii. Continuing to deliver a 2.8 cumec flow at Cressy Pumps.
    iii. Meeting existing arrangements with Macquarie Settlement Partnership Scheme and other irrigation and commercial commitments in the PRP and further downstream.

Hydro Tasmania water transfer agreements contain standard clauses that constrain the release of any of water where, Hydro Tasmania determines it is not reasonably practicable to do so, including:

a. Equipment failure

b. Operational constraints
c. Insufficient water in storages
d. Regulatory or electricity market constraints
e. Safety; or,
f. Environmental constraints

This is an important provision in the Water Transfer Agreement as it minimises the potential adverse impacts to Hydro Tasmania as a water manager.

I can confirm that the interests of other water entities and Hydro's other water supply and environmental obligations will be taken into account in formalising the final water supply agreement. Until we get to the required level of detail I cannot state that I don't see any adverse impacts from the options TI are proposing. What I can say is that the standard clauses outlined above and our role require us to ensure there are no adverse impacts.

I hope this additional information helps provide NRE Tas the context it needs to decide on the declaration of the Northern Midlands Irrigation Scheme. As always, my team remains committed to assisting TI as we work through any challenges that may arise along the way.

Always happy to discuss.

Kind Regards,
Ian

Ian Brooksbank
Chief Executive Officer

Hydro Tasmania

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e ian.brooksbank@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000
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From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Monday, 21 November 2022 2:29 PM
To: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Subject: Northern Midlands Water Supply agremeent

Hi Ian

Hope you are well and belated congratulations on your appointment.
We are still going through a process with NRET regarding the declaration of the Northern Midlands Irrigation district. The point of concern being that our in principle agreement and all other correspondence to date in regard to the Water supply with Hydro is not explicit that it will not have an adverse impact on other water entities and users.

Can you (or one of your officers) please confirm that the interests of other water entities and Hydro's other water supply and environmental obligations have been/ or will be taken into account in formalising the final water supply agreement and that you don't see any adverse impacts from the establishment of the agreement .

Happy to discuss if required

Best regards
Andrew

Andrew Kneebone
CEO Tasmanian Irrigation
LinkedIn | Twitter | Facebook

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: Andrew.kneebone@tasirrigation.com.au
W www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

HELPING TO GROW THE WEALTH OF TASMANIA

COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

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From: Andrew Kneebone
Sent: Monday, 30 May 2022 2:07 PM
To: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Subject: RE: [External]Update

Thanks Ian Appreciate the help

From: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Sent: Tuesday, 24 May 2022 11:58 AM
To: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: [External]Update

Good morning,

Following on from our phone call this morning, I can confirm we have confirmed with NRET (formerly DPIPWE) that Hydro and Tas Irrigation have reached 'in-principle' agreement which we think will help them assess impacts of the proposed irrigation district. Our teams continue to meet every two weeks working towards finalising the formal agreement (which will include resolution of pricing methodology, some technical and dam safety conditions), over the coming months.

Hopefully that makes sense.
Regards,
Ian

Ian Brooksbank
Acting Chief Executive Officer

Hydro Tasmania

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m +61 [redacted]
e ian.brooksbank@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Tuesday, 2 July 2019 5:41 PM
To: Bill Cohen
Cc: Phillip Ellerton
Subject: Re: Proposal - Lake River hydrology

Thanks Bill
Shall return tomorrow.
Ian

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From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Tuesday, July 2, 2019 3:41:08 PM
To: Ian Smith
Cc: Phillip Ellerton
Subject: RE: Proposal - Lake River hydrology

Hello Ian,

Please find attached our contract. Please counter-sign and return to me.

I am out of the office for the next two days, back on Friday. If you have any queries, can discuss then.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 24 June 2019 2:45 PM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Cc: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Subject: RE: Proposal - Lake River hydrology

Hi Bill,
Same situation as the last assessment. The Purchase order I sent you had the standard conditions and we signed the Hydro short term agreement. Per email if you want to generate the Hydro agreement, I am fine with that.
Regards

Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Monday, 24 June 2019 2:43 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Cc: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Subject: RE: Proposal - Lake River hydrology

Hello Ian,

Thanks for sending this through. Note that our proposal was assuming Entura's Standard Terms and Conditions, however the Purchase Order has an alternative set of Terms and Conditions attached. I need to have this reviewed and accepted by our legal team before we can proceed.

I have sent it for review, I will advise ASAP if they see any issues.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 24 June 2019 12:55 PM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: RE: Proposal - Lake River hydrology

Hi Bill,
Please find attached purchase order. When you are ready, lets touch base on the items you wanted to clarify and also confirm deliverables timelines
I will leave you to update the hydro agreement as you need.
Thanks
Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Friday, 21 June 2019 12:52 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Proposal - Lake River hydrology

Hello Ian,

Good to hear, thank you for the news. Please send through the paperwork whenever you are ready and let me know if there is anything more you need from me.

Sorry to be pedantic: just to clarify, the additional work we discussed was a sensitivity run to determine if scheme reliability is adversely affected by the more recent period of record (2007-2018), not a calibration. The words 'sensitivity' and 'calibration' have fairly specific meanings in hydrological modelling.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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e Bill.Cohen@entura.com.au | **w** entura.com.au
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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Friday, 21 June 2019 12:34 PM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: Proposal - Lake River hydrology

Hi Bill,
I am waiting the approval for the works, I can advise that you are currently the preferred supplier recommended for the work, inclusive of the calibration to current data discussed.
I will confirm final award once I have receipt of final approval.

Regards

Ian Smith

Tasmanian Irrigation
p 0488 153 346
e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

Tasmanian Irrigation is a multi-award winning organisation. Achievements include winning multiple 2014 Engineering Australia, Tasmanian Engineering Excellence Awards and CCI Earth Awards. The company was also a 2014 Infrastructure Partnerships Australia Smart Project Award finalist.






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Tasmanian Irrigation Pty Ltd
95 722 799 075
PO Box 84
EVANDALE TAS 7212

Phone: 03 6398 8433
Email: invoices@tasirrigation.com.au

PURCHASE ORDER

Entura
GPO Box 355
Hobart TAS 7001
Australia

Purchase Order #:	PU001511
Date Issued:	24/06/2019
Vendor:	10011
Required:	26/06/2019
Page:	1 of 2

Attention : Mark Reardon

Description	***Qty***	***Inc Unit Price***	***Inc Amount***
Preliminary Hydrology NMIS	1 ONLY	[redacted]	
2008 -2019 Sensitivity assessment Sensitivity assessment of data 2008-2019 to c-dry assumptions	1 ONLY	[redacted]	

Order Total Inc GST [redacted]

GST [redacted]

Invoice To: Tasmanian Irrigation Pty Ltd
PO Box 84

Evandale Tasmania 7212

Deliver To: Tasmanian Irrigation Pty Ltd
Level 2, Terminal Buillding
Launceston Airport
Western Junction Tasmania 7212

Tasmanian Irrigation Pty Ltd Purchase Order (PO) Terms and Conditions

1. Definitions and interpretation

1.1 Definitions

In these terms and conditions, unless the contrary intention is expressed, defined terms have the meanings set out in the PO and below:

Business Day means any week day on which banks are generally open for business in Hobart, Tasmania.

GST has the meaning given in the GST Act.

GST Act means *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) and the related imposition Acts of the Commonwealth.

Legislative Requirements means any:

(a) Acts, Ordinances, regulations, by-laws, orders, awards, codes, codes of practice, standards and proclamations whether Commonwealth, State or local; and

(b) certificates, licences, consents, permits, approvals, authorisations and requirements or any body, authority, board or organisation having jurisdiction in connections with the supply of the Goods or the Services.

Purchase Order (PO) means the PO attached to these terms and conditions.

Tax Invoice means a tax invoice issued by the Supplier which:

(a) is a valid tax invoice for the purposes of the GST Act;

(b) includes the Supplier's ABN;

(c) contains a description of the Goods supplied and/or the Services provided by the Supplier; and

(d) clearly states the PO number

2. Terms and Conditions

(a) These terms and conditions apply to the PO.

(b) To the extent the Supplier's terms and conditions are supplied with the Goods or Services (including as printed on consignment notes or other documents), those terms and conditions will be of no legal effect and will not constitute part of the PO.

3. Supply

In consideration of payment of the Price by TI, the Supplier must supply TI with the Goods and/or the Services in accordance with these terms and conditions.

4. Delivery of Goods

(a) The Supplier must deliver the Goods, at its cost, to the Delivery Address by the Delivery Date, with a delivery note specifying the PO number; together with any documents required to transfer full legal and beneficial ownership of the Goods and the benefit of any warranty and licences in respect of the Goods, to TI.

(b) The Supplier must ensure that the Goods are suitably packed to avoid damage in transit or in storage.

5. Performance of Services

The Supplier must perform the Services by the Delivery Date.

6. Title and Risk

(a) Title in the Goods passes to TI upon payment of the Price.

(b) Risk in the Goods passes to TI upon TI's written acceptance of the Goods.

7. Payment

7.1 Invoices

(a) Upon delivery of the Goods and/or on completion of the Services, the Supplier must provide TI with a Tax Invoice.

(b) If TI requests, the Supplier must provide TI with all relevant records to calculate and verify the amount set out in any Tax Invoice.

(c) TI will pay Tax Invoices within 30 days from receipt of the Tax Invoice subject to the Supplier having supplied the Goods and/or performed the Services set out in the Tax Invoice to the reasonable satisfaction of TI.

7.2 Price is inclusive

(a) The Price is inclusive of all costs incurred by the Supplier in the supply of the Goods and/or performance of the Services including all charges for packing, insurance and delivery of the Goods and the cost of any items used in the performance of the Services.

(b) The Price is inclusive of all taxes and duties except GST.

7.3 Set off

TI may reduce any payment due to the Supplier under a PO by any amount which the Supplier must pay TI, including costs, charges, damages and expenses and any debts owed by the Supplier to TI on any account whatsoever. This does not limit TI's right to recover those amounts in other ways.

8. GST

(a) Unless otherwise stated in these terms and conditions, all amounts payable by TI to the Supplier under these terms and conditions are GST exclusive.

(b) If GST is imposed or payable on the supply made by the Supplier under these terms and conditions, the Supplier may recover from TI, in addition to the Price, an amount equal to the GST payable in respect of that supply.

(c) The Supplier's right to payment under clause 8(b) is subject to a Tax Invoice being delivered to TI.

9. Warranties

9.1 Warranties as at the Delivery Date

The Supplier warrants that, as at the Delivery Date:

(a) the Goods will be free from any defects;

(b) TI will have the benefit of any manufacturer's warranty or licences required to use the Goods;

(c) It has no security interest in any Goods supplied to TI;

(d) the Goods and/or the Services will:

(i) match their descriptions set out in the PO;

(ii) be fit for the purpose for which goods and/or services of the same kind are commonly supplied or bought and for the purposes to which TI intends to put the Goods and/or the Services;

(iii) be of merchantable quality and unless otherwise specified in the PO, the Goods will be new; and

(iv) comply with all applicable Australian standards and Legislative Requirements; and

(e) the Supplier will perform the Services in a proper and workmanlike manner and to a standard or professional care, skill, judgment and diligence expected of a member of the trade, industry or profession relevant to the Services.

9.2 Intellectual Property (IP) warranty

The Supplier warrants that, in providing the Goods and performing the Services, the Supplier has not and will not infringe upon any IP (including moral) rights of any party.

9.3 Survival

This clause 9 survives the termination or expiration of the PO and these terms and conditions.

10. Defective Goods or Services

(a) If TI determines (acting reasonably) that any of the Goods are defective ("**Defective Goods**") and/ or any of the Services are defective ("**Defective Services**"), TI may, in its absolute discretion:

(i) reject the Defective Goods;

(ii) reject the Defective Services;

(iii) require the Supplier to repair or make good the Defective Goods; or

(iv) require the Supplier to re-perform or make good the Defective Services.

(b) TI must give notice to the Supplier of the Defective Goods and/or the Defective Services and the action to be taken by the Supplier.

(c) On receipt of notice from TI under clause 10(b), the Supplier must comply with that notice and at its cost: (as directed by TI):

(i) collect the Defective Goods and replace the Goods;

(ii) repair or replace the Defective Goods;

(iii) re-perform or make good the Defective Services; or

(iv) reimburse TI for any expenses incurred in repairing, replacing, re-performing or making good (as the case may be) any Defective Goods and/or Defective Services.

11. Intellectual Property

Ownership of all intellectual property in the Goods and/or any material produced as part of the Services passes to TI upon delivery of Goods and/or performance of the Services.

12. Cancellation and change

(a) If the Supplier is unable to supply the Goods and or the Services as specified in the PO, it must promptly notify TI. Subject to TI's approval on the price and quality, the Supplier may offer other Goods and/or Services in substitution.

(b) TI may (at any time before delivery) cancel or change the PO.

13. Termination

(a) TI may terminate the PO at any time by notifying the Supplier in writing.

(b) TI will only pay the Supplier that portion of the Price attributable to those Goods delivered or Services performed prior to the date of the notice of termination given under clause 13(a).

14. Indemnity and Insurance

(a) The Supplier is liable for and indemnifies TI against any and all liability, loss, damage or claims arising directly or indirectly from:

(i) the breach of any provision of these terms and conditions or the PO by the Supplier; or

(ii) any act or omission, negligence, or default of the Supplier in respect of these terms and conditions or the PO.

The Supplier agrees to take out and maintain such insurance coverage as is specified in the PO (if any) for at least two (2) years after the Delivery Date.

15. General

(a) If any provision in these terms and conditions is illegal, invalid or unenforceable, that provision will, as far as possible, be read down, or if it cannot be read down, that provision or part of the provision will be deemed to be void and severed from these terms and conditions. That will not affect the validity of the remaining terms and conditions.

(b) The Supplier must not assign, either in whole or in part, any rights under the PO or these terms and conditions, without the prior written consent of TI.

(c) TI may assign the PO or these terms and conditions, at its discretion.

(d) The agreement constituted by these terms and conditions will be governed by the laws of the State of Tasmania and the parties submit to the non-exclusive jurisdiction of the courts of Tasmania.

(e) The parties confirm that the relationship established by these terms and conditions, is that of principal and independent contractor.

(f) Any notice which is required or permitted to be given to either party must be in writing and, unless otherwise agreed, be addressed to the following address of the intended recipient:

Name of Party	Address	Email
TI	Level 2, Launceston Airport Terminal Building	invoices@tasirrigation.com.au
The Supplier	The address stated on the PO	The email stated on the PO

Lara Henley

From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Monday, 7 March 2022 8:30 AM
To: Ian Brooksbank
Cc: Rebecca Carter; Eric Shegog; Jacob Gerke; Prajit Parameswar; Dianna Shearer
Subject: Hydro Letter 4th March 2022
Attachments: Hydro Letter 4th March 2022.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Good Morning Ian

Please find attached my letter in response to yours of March 3 regarding Water supply for the Northern Midlands Project.

Best Regards

Andrew Kneebone

Andrew Kneebone
CEO Tasmanian Irrigation
LinkedIn | Twitter | Facebook

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: Andrew.kneebone@tasirrigation.com.au
W www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

HELPING TO GROW THE WEALTH OF TASMANIA

COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

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Tasmanian Irrigation

ABN: 95 722 799 075 / ACN 133 148 384

Ian Brooksbank
Acting CEO
Hydro Tasmania
4 Elizabeth Street
Hobart TAS 7000

Dear Ian

Re: Tasmanian Irrigation's request for Water for the Northern Midlands Irrigation Scheme

Thank you for your letter of 3 March, outlining your request for Tasmanian Irrigation to agree in principle to changes in the pricing structure for water supply from the Poatina Tail Race for our Northern Midlands Project.

I completely understand and appreciate Hydro Tasmania's perspective around the suboptimal running of power stations and that Hydro Tasmania's operating environment is evolving and difficult to predict with future uncertainty associated with renewables penetration as well as infrastructure developments such as Project Marinus link.

I cannot however unilaterally agree to the pricing principels outlined in your letter and to expose my irrigators to what I can only assume is a significant cost risk, without a significant amount of additional information. As you know Tasmanian Irrigation is a cost recovery business, so any additional cost incurred are passed through to its customers.

Pricing certainty is a key issue for Tasmanian Irrigation, in not only developing schemes but also in managing them throughout their lifecycle. The introduction of pricing risk on a key input such as water at this stage of our development has the potential to erode the value of the business case through curtailment of on farm margins and also has the capacity to undermine the certainty that we provide customers. Tasmanian Irrigation and Hydro Tasmania have worked over time to provide a mechanism that removes the volatility from the pricing of water, this proposal just ramps that uncertainty up again and will undermine confidence.

It is simply not possible to agree in principle to such a significant change to water pricing without understanding the potential cost impact and what options there are to mitigate against the negative impacts of such a pricing approach.

In understanding the market drivers that Hydro Tasmania is facing, Tasmanian Irrigation has sought to mitigate the risk of any negative impact on Hydro Tasmania's operation and maintain the high reliability of our product ,which is the hall mark of our offering to irrigators, by investing significant capital in a buffer storage dam to be incorporated into the Northern Midlands Scheme. The purpose of this dam is, to harvest water only when the power station is operating at a significant level and

pricing up to 3 days of buffer stage for our scheme. There is seemingly little, or no consideration of this additional investment already being factored into this proposed pricing model. We are also awaiting modelling from Hydro Tasmanian to inform us as to whether the dam sizing is appropriate.

I note that the option of Hydro Tasmania being involved in the construction of a significantly larger storage has been discounted in favour of using the proposed pricing approach. My view is there a significant stakeholder management risk that has not been factored into this decision.

I note that you have made Tasmanian Irrigation's agreement to these principles' a condition precedent to HydroTasmania not objecting to the creation of the irrigation district/ creation of the new scheme with NRE Tas. Please advise what Hydro Tasmania's intentions are now as a result of this response. If it is to object to the creation of the irrigation district and or withdraw the water supply from the scheme, then I would appreciate as early advice as possible because I will be forced to escalate.

Tasmanian Irrigation made the formal request for water in May 2021 in which assurances were provided around the provision of the water. As you know, Tasmanian Irrigation has now progressed to the late stages of detailed design for this scheme. It is a significant investment of $147m, a key plank of the state Agri Growth Vision and has State and Commonwealth funding committed. To, at this late stage, put the water supply at risk I believe is untenable.

In respect to the points raise about minimum flow rates at drop structure one and design approvals for works associated with changes to the Poatina Tail Race, I have no issue with these points and understand that these have been well ventilated at officer level.

As always Tasmanian Irrigation is prepared to work with Hydro Tasmania to find pragmatic and balanced solutions to our respective issues, this option however seems to be extremely one sided.

I look forward to our ongoing dialogue in respect to this and other matters.

Yours sincerely



Andrew Kneebone
CEO
Tasmanian Irrigation

.

Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Tuesday, 18 June 2019 10:11 AM
To: Bill Cohen
Subject: RE: Request for quotation - Lake River analysis

Thanks Bill



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Tuesday, 18 June 2019 9:53 AM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Cc: David Fuller <David.Fuller@entura.com.au>; Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Subject: RE: Request for quotation - Lake River analysis

Hello Ian,

Please find attached our proposal to complete the Lake River water availability modelling as part of TI's Midlands Irrigation Scheme, as well as our standard conditions of contract.

Feel free to get in touch with me at any time to discuss or confirm our approach. I look forward to working with you again, should we be successful.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

entura

p +61 3 6245 4513 | **f** +61 3 6245 4550
e Bill.Cohen@entura.com.au | **w** entura.com.au
a 89 Cambridge Park Drive, Cambridge TAS 7170, Australia
Connect with us on Facebook, Twitter and LinkedIn

WE OWN. WE OPERATE. WE CONSULT.

Please consider the environment before printing my email
This e-mail and any attachments may contain confidential, proprietary or legally privileged information. If you are not the intended recipient, you must not keep, forward, disclose, adapt or copy the material and any such action is unauthorised and prohibited. If you have received this e-mail in error, please immediately advise the sender by return email and delete this e-mail and any attachments from your system. Hydro-Electric Corporation ABN 48 072 377 158

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Tuesday, 11 June 2019 2:02 PM

To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: Request for quotation - Lake River analysis

Good morning Bill,
Given you have done the recent work for me, please find attached brief for assessment of the Lake River. Let me know if you are not the right contact person for this. Hoping to have some indication of pricing as soon as possible, have allowed a week, let me know if this is too tight. Happy to take any questions. Have asked other organisations to price also.

Many thanks

Ian

Tasmanian Irrigation
p [redacted]
e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

Tasmanian Irrigation is a multi-award winning organisation. Achievements include winning multiple 2014 Engineering Australia, Project Award finalist.

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18th June 2019

Our ref: E308263

Ian Smith
Project Manager
Tasmanian Irrigation
PO Box 84
Evandale, Tas. 7212

Dear Ian,

Re: Proposal to establish Lake River water availability for irrigation

Thank you for the opportunity to submit our proposal for the above works.

Understanding

Our understanding of the Brief is that Tasmanian Irrigation intends to complete a high-level review of water availability in the Lake River supporting the assessment of a potential irrigation scheme development.

The fundamental requirements of the project are to:

- Establish natural flows in the Lake River downstream of Woods Lake
- Determine seasonal release patterns and volumes from Woods Lake into the Lake River by Hydro Tasmania
- Determine available flood takes into a potential in-stream 20,000 ML storage with a 95% reliability

A target of 12,000 ML/year of natural/flood pickup (in addition to Hydro Tasmania operation) is desirable (pers. Comms I. Smith 13th June 2019).

Proposed method

We propose to use Bill Cohen as the senior hydrologist on this project. Bill will oversee data preparation and capture by a graduate hydrologist and ensure modelling and reporting are completed to a high standard. Bill has worked on numerous projects with Tasmania Irrigation.

Given the preliminary nature of this project, we propose a rapid assessment methodology based on observed flow records from multiple gauges in the Lake River, existing calibrated models, and Tasmanian Sustainable Yields (CSIRO 2009) project outcomes for the period 1970 – 2007 inclusive as the basis for the analysis. We intend to use our HydstraTSM modelling package for a majority of this work.

At the commencement of this project we would seek to reconfirm with you our assumptions about the system configuration and water delivery requirements.

89 Cambridge Park Drive | Cambridge Tasmania 7170 | t +61 3 6245 4500 | f +61 3 6245 4550 | e info@entura.com.au | w entura.com.au
Entura is a business of Hydro-Electric Corporation | ABN 48 072 377 158

Steps in our method are listed below:

1. **Determine representative seasonal release patterns from Woods Lake.**
   Review Hydro Tasmania's current water delivery commitments from Woods Lake and Lake River and for use in subsequent modelling. This includes review of operating rules, discussions with Hydro Tasmania, and review of hydrometric records to approximate current irrigation deliveries.
2. **Reinstate an existing hydrological model to estimate natural inflows.**
   Use the model together with Tas Sustainable Yields data and flow routing to estimate the natural streamflows between Woods Lake and the proposed on-stream storage location above the Lake River A/B Macquarie River stream gauge (MGA Zone 55 coordinates: 506004E, 5366744N). Validate Scenario 'A' inflows against recorded streamflow at the Lake River at Parnook site ('above Macquarie', site 175). The model would then be switched to the 'Cdry' configuration to produce inflows to the reservoir for irrigation storage modelling.
3. **Use the natural inflow estimates to calculate the natural monthly average baseflows between Woods Lake and the proposed storage**
   This will be adopted as a conservative estimate of 'pass-through' flows in place of eflows.
4. **Develop an irrigation system model to estimate the reliability of increased irrigation.**
   The model will include the proposed irrigation storage, inflows obtained from Step 3, and operating rules as discussed with Tasmania Irrigation. Flood takes (i.e. discharge above baseflow) will be used to fill the reservoir throughout the year.
   The Woods Lake releases (developed in Step 1) will be bypassed from the proposed storage.
   A summer season extraction for irrigation (September – April inclusive) will be modelled as a uniform daily extraction from the reservoir.
   Model optimisation will be used to determine the highest volume available for irrigation while maintaining a 95% volumetric reliability
5. **Issue a draft report.**
   A brief report will be developed and supplied to Tasmania Irrigation for comment.
6. **Issue a final report and deliver relevant IP to Tasmania Irrigation**.
   A final report incorporating an Executive Summary will be provided. The Executive Summary will include findings and any recommended strategies to support the proposed development.

Commercials and Timeline

Our price for this work is **$**[redacted] excluding GST.

This proposal is valid for a period of 30 days from submission.

We propose to complete this work under Entura's standard Single Use Consultancy Contract (see attached).

Given sufficient notice to proceed, we can submit our draft report by Friday 19th July 2019.

We intend to manage this project in partnership with you and consequently we assume that all of our team members will manage their inputs efficiently to keep to the proposed budget and timeline.

Assumptions

We have made the following assumptions in preparing our project budget. Costs associated with deviating from these assumptions will be additional to the contract.

- Information on the proposed irrigation storage configuration will be provided to us prior to commencement of work

- No detailed environmental flows (eflows) study will be completed. Given the preliminary nature of this investigation it is understood from the brief that average monthly baseflows will be suitable to approximately account for environmental flows requirements.
- The existing hydrological model is appropriately calibrated and fit for purpose. No additional calibration is planned.
- Hydro Tasmania Operations is willing and able to disclose information pertaining to relevant Woods Lake releases and operations; and will also provide permission to use relevant hydrometric data.
- A simple irrigation storage model will be developed with the following assumptions:
  - Seepage loss will be assumed to be zero
  - The surface area at FSL (20,000 ML) will be provided by Tasmania Irrigation and linearly scaled to zero or other minimum storage level provided by Tasmania Irrigation
  - Rainfall directly incident on the storage will not be modelled
  - Any streamflows entering the storage above 20,000 ML will be spilled.
- Current downstream water allocations will be assumed to be 50 ML/day as per the study brief
- Regular project reports will be made by telephone and confirmed by email as needed to update Tasmania Irrigation on progress.
- All feedback on any report will be collated and any conflicts in advice will be resolved by you before conveying it to us.
- We have not allowed for any travel in this proposal
- We have allowed for electronic delivery and a single editing round for the Draft Report.
- We have allowed for electronic delivery of the Final Report.
- We will not be responsible for the following costs:
    - Hardcopies of reports
    - Costs associated with acquiring data from third parties where the data will be required to allow us to complete the tasks;
    - Costs associated with holding meetings of stakeholders other than our own time (e.g. stakeholders' time and travel, venue costs, etc).
- At the conclusion of the consultancy, Tasmanian Irrigation will own the intellectual property (IP) rights to the Final Report.
- Existing IP will remain the property of Hydro Tasmania or other parties as appropriate.

Written approval to incur any expenses will be sought from you before committing to the expense. We will use our standard 2019/2020 rates for any variations. Where we in the first instance pay for costs associated with these items, the total costs plus 10% for handling changes will be billed.

We trust that our proposal demonstrates a high level of efficiency and cost effectiveness, and that it demonstrates a deep understanding of your needs. We look forward to working with you on this exciting opportunity.

Yours sincerely

Bill Cohen
Senior Hydrologist
t 03 6245 4513
e Bill.Cohen@entura.com.au

References

CSIRO 2009, Water availability for the South Esk region. Report six of seven to the Australian Government from the CSIRO Tasmania Sustainable Yields Project, CSIRO Water for a Healthy Country Flagship, Australia, ISSN 1835-095X

Tasmanian Irrigation 2019, Request for Quotation – Hydrology and environmental flows (Midlands Irrigation Scheme/Lake River)

Client:
Name: [Insert name]
ABN: [Insert ABN]
Address: [Insert address]

Single Use Consultancy Contract

Consultant:
Hydro-Electric Corporation
T/A Entura
ABN 48 072 377 158
Please select street
Please select suburb

Entura as Consultant

Contract Particulars

(to be read in conjunction with the General Conditions of Contract here attached)

PROJECT NUMBER	CONTRACT DESCRIPTION
[Insert number]	[insert description]

1. The Parties:

Client's representative: [name]	Consultant's representative: [name]
Position: [title]	Position: [title]
Phone Number: [phone]	Phone Number: [phone]
E-mail address: [e-mail]	E-mail address: [e-mail]

2. The Services:

The "**Services**" means the whole of the work to be carried out and completed in accordance with the Contract, including variations provided for by the Contract, which is to be completed by the Consultant and includes:

[Insert a description of the Services and, if applicable, refer to and attach the relevant document/specification, list any reports, designs etc to be produced by the Consultant unless listed in the attachment]

3. The Contract Sum:

The "**Contract Sum**" is: (click the applicable box/boxes and insert either a lump sum and/or state the applicable schedule of rates and delete as appropriate) *All prices stated exclude GST	☐ The Lump Sum amount of: $[insert amount] ☐ The following schedule of rates: [Insert role] hours @ $[insert amount] per hour; [Insert role] hours @ $[insert amount] per hour; Expenses shall be reimbursed by the Client at cost plus 10 percent (%). ☐ The attached schedule of rates
The time for claiming payment is:	[Insert time period, e.g. fortnightly for work performed, or insert milestones] [If nothing stated, on the 20th day of each month or the next business day thereafter.]

4. Time:

The "**Commencement Date**" is:	[insert date]
The "**End Date**" is:	[insert date]

5. Intellectual Property Rights:

"**Intellectual Property Right**" means any patent, registered design, trademark or name, copyright or other protected right

6. Governing Law:

The Laws of the State of Tasmania.

EXECUTED as an Agreement	
Executed for the **Client** by:	Executed for **Hydro Electric Corporation** by:
Please print name and capacity:	Please print name and employee number:
In the presence of:	In the presence of:
Please print name and capacity:	Please print name and employee number:
DATED ..... (completed by final signatory)	

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

2. RESPONSIBILITIES AND OBLIGATIONS OF THE CONSULTANT

2.1 The Consultant shall:

(a) comply with all directions of the Client given pursuant to a provision of the Contract;

(b) employ staff with appropriate qualifications and experience to carry out the Services;

(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

(c) provide the Consultant with such access to premises or sites of the Client as is necessary for the Consultant to carry out the Services; and

(d) bear the cost of all fees and charges required to comply with legislative requirements incurred in connection with carrying out the Services.

4. INSURANCE

4.1 From the Commencement Date, the Consultant must effect and have in place the following insurances:

(a) a professional indemnity insurance policy for the Services with a total aggregate cover of not less than $2,000,000.00 which shall:

(i) include provision for loss of documents; and

(ii) be maintained until the End Date and thereafter for a period of 6 years;

(b) a public liability policy until the End Date for an amount in respect of any one claim or series of claims arising from the one original cause of not less than $20,000,000.00; and

(c) a workers' compensation policy until the End Date for the maximum amount permitted by law, covering the Consultant's liability under common law and statute for death or injury to any person employed by the Consultant.

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6. GST

6.1 Words or expressions used in this clause 6 which are defined in *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) have the same meaning in this clause.

6.2 All amounts stated in and payable under or in connection with this Contract exclude GST unless otherwise indicated.

6.3 If a payment to a party under this Contract is a reimbursement or indemnification, calculated by reference to a loss, cost or expense incurred by that party, then the payment will be reduced by the amount of any input tax credit to which that party is entitled for that loss, cost or expense.

6.4 The recipient will not be liable to pay the supplier for a taxable supply made under or in connection with this Contract until the supplier has given the recipient a tax invoice for the supply to which the payment relates.

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7.2 The parties must use their best endeavours to agree in writing on the value of a Variation, but in the event that the parties are unable to agree within 7 days of the issue of the direction, then the value of the Variation shall be determined using reasonable rates and prices.

7.3 If a new legislative requirement or a change in a legislative requirement after the date of the Contract could not reasonably have been anticipated at the date of the Contract, then the extent to which the Services are changed by that legislative requirement shall be deemed to be a Variation pursuant to clause 7.1.

7.4 Where, due to circumstances beyond the reasonable control or anticipation of the Consultant, the Consultant is required to alter, add to or delete documents or other things previously submitted and which otherwise would have complied with the Contract, the Consultant shall inform the Client and seek directions and any subsequent alteration, addition or deletion shall be deemed to be a Variation pursuant to clause 7.1.

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8.3 The Client may direct the Consultant in what order and at what time the Services shall be performed and if:

(a) the Consultant:

(i) can reasonably comply with the direction the Consultant shall do so; and

(ii) cannot reasonably comply with the direction the Consultant shall so notify the Client in writing, giving reasons; and

(b) compliance with the direction causes the Consultant to incur more or less cost than otherwise would have been incurred had the Consultant not been given the direction, the difference shall be valued pursuant to clause 7.2 as though the direction was a Variation.

9. CONFIDENTIALITY

9.1 Except as required by law, the Consultant and the Client will keep confidential information which is so designated in writing by the party providing the information, or which should reasonably be known by the recipient party to be confidential. This clause 9 will survive the expiry or termination of the Contract.

10. LIABILITY OF THE CONSULTANT

10.1 The maximum liability of the Consultant arising out of the performance or non-performance of the Contract or the Services whether under the law of contract, tort or otherwise, shall be limited to 500% of the Contract Sum.

10.2 To the maximum extent permitted by law and notwithstanding any other provision of the Contract, the Consultant is not liable to the Client, whether under contract, in tort, in equity, in restitution, under statute or otherwise, in respect of any:

a. business interruption loss;
b. loss of actual or anticipated profit, revenue, production, opportunity or anticipated savings;
c. loss of use; or
d. exemplary damages.

10.3 This clause 10 shall not apply to claims in respect of personal injury or death.

11. CONSULTANT'S INDEMNITY

11.1 Subject to clause 10, the Consultant shall indemnify the Client against:

(a) loss of or damage to property of the Client; and
(b) claims by any person against the Client in respect of personal injury or death or loss of or damage to any other property,

arising out of or in consequence of carrying out the Services by the Consultant.

11.2 The Consultant's liability to indemnify the Client under clause 11.1 shall be reduced proportionally to the extent that the act or omission of the Client or the employees, agents or other contractors of the Client contributed to the loss, damage, death or injury.

12. DISPUTES

12.1 If a dispute arises between the Consultant and the Client in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contract or the Services, either party may give a notice in writing ("**Notice of Dispute**") to the other party specifying the nature of the dispute, the particulars of the party's reasons for being dissatisfied and the position that the party believes is correct.

12.2 The parties must meet within 14 days of the date of the Notice of Dispute and undertake genuine and good faith negotiations with a view to resolving the dispute. Unless the parties agree otherwise, the meeting must take place in Hobart, Tasmania.

12.3 If the parties are unable to resolve the dispute in accordance with clause 12.2 within 14 days of first meeting under clause 12.2, the dispute may be referred, by written notice of either party, to mediation, which is to be conducted in accordance with the Institute of Arbitrators and Mediators Australia Mediation Rules.

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13.1 Unless the Contract otherwise provides, the Consultant retains all Intellectual Property Rights in the Services and in any design, materials, documents and methods of working used or produced in relation to the Services. The Consultant grants to the Client an irrevocable, royalty free, non-exclusive, transferable, perpetual licence to exercise all rights of the owner of the Intellectual Property Rights associated with the Services, for any business purpose of the Client, including additions or alterations or entering into any agreement with any third party which is associated with or uses the Services or things produced in the course of performing the Services.

14. ASSIGNMENT

14.1 The Consultant may assign, novate or otherwise transfer any of its rights, remedies, powers, duties and obligations under this Contract without approval from the Client to another entity that is financially and technically able to conduct the Consultant's engineering and consulting business, Entura ("**Other Entity**") provided that all, or a substantial part, of the Consultant's engineering and consulting business, Entura is transferred to the Other Entity. The Client agrees to do anything the Consultant asks to give effect to the above, including signing any documents, to transfer the rights, remedies, powers, duties and obligations to the Other Entity.

15. NOTICES

15.1 A notice (and other documents) must be in writing, legible, in English and delivered in person, by email or by post.

15.2 A notice (and other documents) shall be deemed to have been given and received:

(a) if addressed or delivered to the relevant address listed in the Contract Particulars or last communicated in writing to the person giving the notice; and
(b) on the earliest date of:

(i) actual receipt if delivered in person;
(ii) the notice being recorded as having been first received at the electronic mail destination; or
(iii) 3 days after posting.

16. TERMINATION

16.1 The Contract may be terminated:

(a) at any time by mutual agreement;
(b) for the convenience of the Client, upon the giving of not less than 7 days notice, in which case the Client shall pay the Consultant:

(i) that portion of the Contract Sum payable to the date of termination;
(ii) any direct costs incurred by the Consultant to the date of termination; and
(iii) an amount equal to 2% of the Contract Sum;

(c) upon a substantial breach of the Contract by either party which is not remedied within a reasonable time (and in any case within 7 days) of notice by the non-breaching party of the substantial breach; or
(d) immediately by either party in the event the other party becomes insolvent or financially unable to proceed with the Contract.

16.2 Upon termination of the Contract, the Consultant shall, as soon as possible, return to the Client the Client's property provided to the Consultant in carrying out the Services.

16.3 If a party breaches (including repudiates) the Contract, nothing in this clause 16 shall prejudice the right of the other party to recover damages or exercise any other right or remedy.

17. GOVERNING LAW

17.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

[redacted]

[redacted]

From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Thursday, 17 December 2020 8:07 AM
To: Evangelista Albertini <Evangelista.Albertini@hydro.com.au>; Paul Ellery <Paul.Ellery@tasirrigation.com.au>; Paul Davis <paul.davis@tasirrigation.com.au>
Subject: NMIS - Hydro Presentation - Dec 2020.pptx

Hi Ange

Attached is a copy of a presentation we have prepared for this afternoons meeting. Paul Ellery and I are planning to attend in person.

I look forward to meeting you

Regards

Andrew

Andrew Kneebone
CEO Tasmanian Irrigation
LinkedIn | Twitter | Facebook

T: 03 6398 8433
M: [redacted]
E: Andrew.kneebone@tasirrigation.com.au
W www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

HELPING TO GROW THE WEALTH OF TASMANIA

CovidSafe_Email_Footer (2) (003)

COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

Disclaimer: This message (and its attachments) may contain confidential, proprietary or legal privileged information and is intended solely for the use of the addressee named above. If you are not the intended recipient of this message (or responsible for delivery of the message to that person) you must not use, print, store, copy it in any form, or disclose the information contained in it. If you have received this message in error, please delete it, and notify the sender immediately.

Northern Midlands Irrigation Scheme

Hydro Tas Update

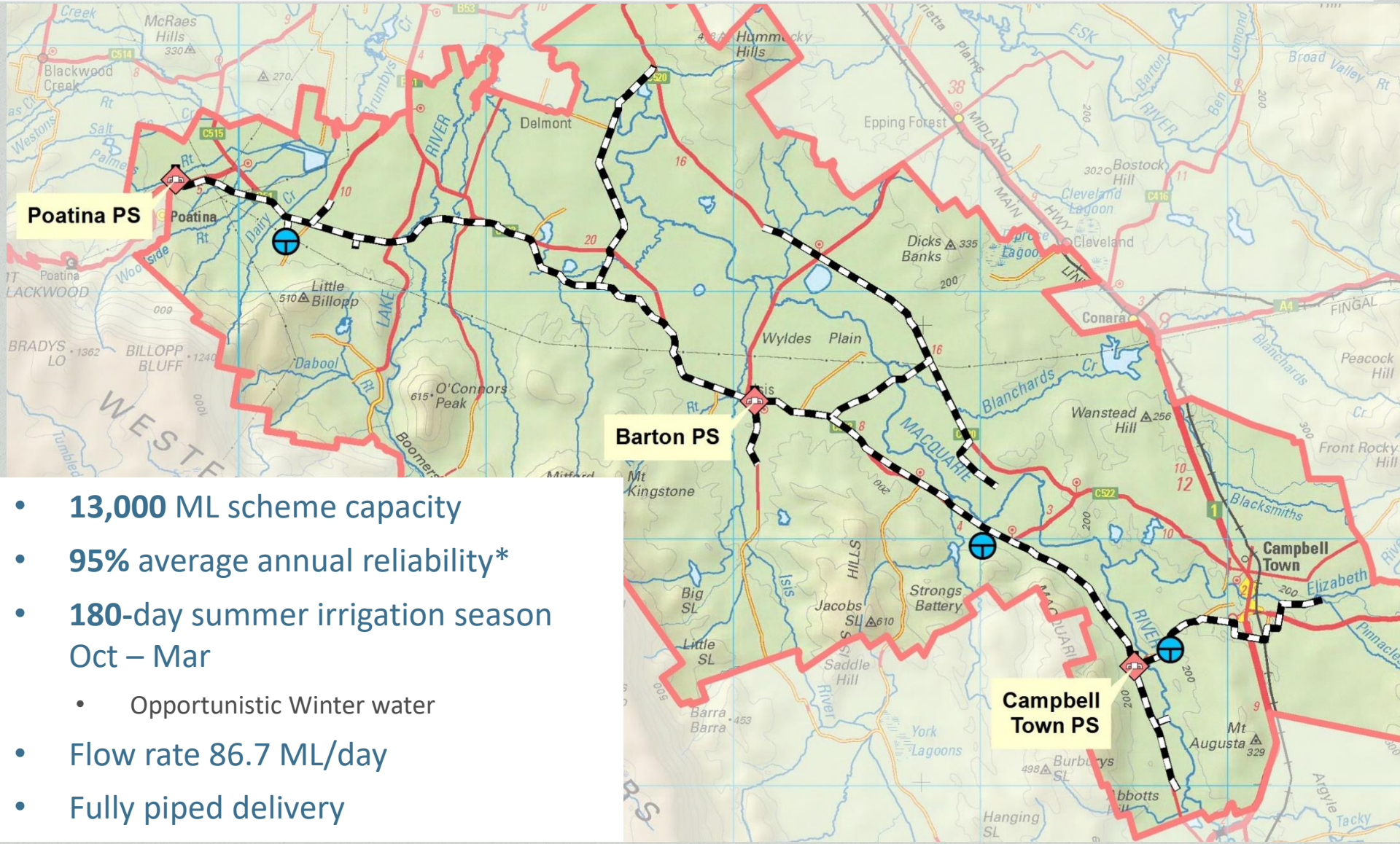
December 2020



Purpose

- Provide an update on TI Northern Midlands Scheme
  - Funding
  - Background on TI Products
  - Winter water options from Poatina
- Lake river options previously provided

Current Scheme overview



- **13,000** ML scheme capacity
- **95%** average annual reliability*
- **180**-day summer irrigation season Oct – Mar
  - Opportunistic Winter water
- Flow rate 86.7 ML/day
- Fully piped delivery

Key infrastructure

- Pump station at Poatina first drop structure
- Boost pump station at Barton
- Boost pump at Campbell Town
- 3 Balance Tanks
- 99.7km of HDPE pipelines

- **Final design** based on actual water sales and construction contracts



Funding

Irrigation Schemes Capital Cost

- 49% Commonwealth Funding
- 26% State Government Funding
- 25% Water Entitlement Sales to land holders in the District

Operating Cost

- Recovered from Irrigators
- No profit
- Asset Replacement Levy to fund asset replacements over life of scheme

TI Products

Water Entitlement Contracts

- Volume : Total volume to be provided in a season.
- Flow Rate: Maximum rate at which the Irrigator can extract from the scheme.
- Connection Point: Location in the scheme where Irrigators can access water.
- Reliability: 95% average reliability of water supply and asset performance to deliver the volume and flow rate over a season

Winter Water Options for TI

A reliable Winter Water source is important

1. Meet demand
2. Improve the utilisation of the asset
3. Poatina Tailrace
    1. Raw data –
        - Poatina Tailrace Flows
        - Reg Pond Outflows
    - Determine days that 86ML/day is available for NMIS

4. Lake River
    1. Natural Flows
        1. Unable to ascertain reliability due to only releasing when


Questions

Lara Henley

From: Chris Masters
Sent: Friday, 18 November 2022 1:29 PM
To: Hugh Abetz
Cc: Jacob Gerke; Aaron Cassidy
Subject: RE: [External]RFI - Valleyfield and Epping Forest Pump Station
Attachments: NMIS-350-DWG-4459 Substation OLD.dwg; NMIS-350-DWG-4450_4452 TasIrrigation Valleyfield Site Layout.dwg; NMIS-350-DWG-4454 4_15 Kiosk Substation Earthing.dwg.dwg; NMIS-350-DWG-4455 Substation Plinth.dwg; NMIS-350-DWG-4456 Conduit and Substation Civil Design Layout.dwg; NMIS-350-DWG-4457 Recloser Pole.dwg; NMIS-350-DWG-4458 Metering Unit Pole.dwg; TASMANIAN Irrigation.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Good afternoon Hugh,
Please find the CAD files attached.
I have been meaning to call to catch-up on progress, maybe we should catch-up early next week to run through it all.

Also, I don't think we have received a signed copy of the attached T&Cs. Do you know if it has been looked at your end?

Thanks,
Chris Masters | Electrical Engineer

entura

m +61[redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
Connect with us on Facebook, Twitter and LinkedIn

WE OWN. WE OPERATE. WE CONSULT.

Please consider the environment before printing my email
This e-mail and any attachments may contain confidential, proprietary or legally privileged information. If you are not the intended recipient, you must not keep, forward, disclose, adapt or copy the material and any such action is unauthorised and prohibited. If you have received this e-mail in error, please immediately advise the sender by return email and delete this e-mail and any attachments from your system. Hydro-Electric Corporation ABN 48 072 377 158

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Friday, 18 November 2022 12:12 PM
To: Chris Masters <Chris.Masters@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Subject: FW: [External]RFI - Valleyfield and Epping Forest Pump Station

Hi Chris,

Please see the request from TasNetworks below regarding the Valleyfield Pump Station. Can you please send through the CAD files of the HV design?

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy. For more information please refer to our website https://www.tasmanianirrigation.com.au/.

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[redacted]

Single Use Consultancy Contract

entura

Client:	Entura as Consultant	Consultant:
Name: Tasmanian Irrigation Pty Ltd ABN: 95 722 799 075 Address: PO Box 84 Evandale TAS 7212	**Contract Particulars** (to be read in conjunction with the General Conditions of Contract here attached)	Hydro-Electric Corporation T/A Entura ABN 48 072 377 158 4 Elizabeth Street Hobart TAS 7000

Project Number	Contract Description
TBA	Tasmanian Irrigation Northern Midlands Irrigation Scheme HV and Earthing Design

1. The Parties:

Client's representative: Jacob Gerke	Consultant's representative: Phillip Ellerton
Position: [title]	Position: National Business Development Manager - Water
Phone Number (03) 6398 8433 / [redacted]	Phone Number: [redacted]
E-mail address: Jacob.gerke@tasirrigation.com.au	E-mail address: phillip.ellerton@entura.com.au

2. The Services:

The "**Services**" means the whole of the work to be carried out and completed in accordance with the Contract, including variations provided for by the Contract, which is to be completed by the Consultant and includes:

Undertake HV electrical design from the TasNetworks interface boundary at the TI recloser/MCB through to the kiosk substations. Deliverables include layout and details drawings utilising TasNetworks standards and previous TI project drawings. For the interconnection between the metering and kiosk substation Prepare HV cable ratings calculations and basic cable specifications for procurement, based on assumed typical soil thermal resistivity values.
For further details please refer to the attached Tasmanian Irrigation Northern Midlands Irrigation Scheme HV and Earthing Design Proposal dated *28th March 2022*

3. The Contract Sum:

The "**Contract Sum**" is: (click the applicable box/boxes and insert either a lump sum and/or state the applicable schedule of rates and delete as appropriate) *All prices stated exclude GST	X The Lump Sum amount of: **$**[redacted] ☐ The following schedule of rates: [Insert role] hours @ $[insert amount] per hour; [Insert role] hours @ $[insert amount] per hour; Expenses shall be reimbursed by the Client at cost plus 10 percent (%). ☐ The attached schedule of rates
The time for claiming payment is:	[Insert time period, e.g. fortnightly for work performed, or insert milestones] [If nothing stated, on the 20th day of each month or the next business day thereafter.]

4. Time:

The "**Commencement Date**" is:	07/07/2022
The "**End Date**" is:	30/06/2023

5. Governing Law:

The Laws of the State of Tasmania.

EXECUTED as an Agreement

Executed for and on behalf of the **Client** by:

Signature	Signature of witness *(A witness is only required when signing in hard-copy)*
Full name	Full name of witness
Date:	Date:

Executed for and on behalf of the **Consultant** by:

Signature	Signature of witness *(A witness is only required when signing in hard-copy)*
Phillip Ellerton	**Matt Ferguson**
Full name	Full name of witness
Date: 07.07.2022.	Date: 7/7/2022

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

2. RESPONSIBILITIES AND OBLIGATIONS OF THE CONSULTANT

2.1 The Consultant shall:

(a) comply with all reasonable directions of the Client given pursuant to a provision of the Contract;

(b) employ staff with appropriate qualifications and experience to carry out the Services;

(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

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(i) can reasonably comply with the direction the Consultant shall do so; and

(ii) cannot reasonably comply with the direction the Consultant shall so notify the Client in writing, giving reasons; and

(b) compliance with the direction causes the Consultant to incur more or less cost than otherwise would have been incurred had the Consultant not been given the direction, the difference shall be valued pursuant to clause 7.2 as though the direction was a Variation.

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9.1 Except as required by law, the Consultant and the Client will keep confidential information which is so designated in writing by the party providing the information, or which should reasonably be known by the recipient party to be confidential. This clause 9 will survive the expiry or termination of the Contract.

10. LIABILITY OF THE CONSULTANT

10.1 The maximum liability of the Consultant arising out of the performance or non-performance of the Contract or the Services whether under the law of contract, tort or otherwise, shall be limited to five (5) times the value of the Contract Sum.

10.2 To the maximum extent permitted by law and notwithstanding any other provision of the Contract, the Consultant is not liable to the Client, whether under contract, in tort, in equity, in restitution, under statute or otherwise, in respect of any:

(a) business interruption loss;
(b) loss of actual or anticipated profit, revenue, production, opportunity or anticipated savings;
(c) loss of use; or
(d) exemplary damages.

10.3 This clause 10 shall not apply to claims in respect of personal injury or death

11. CONSULTANT'S INDEMNITY

11.1 Subject to clause 10, the Consultant shall indemnify the Client against:

(a) loss of or direct damage to property of the Client; and
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arising out of or in consequence of carrying out the Services by the Consultant.

11.2 The Consultant's liability to indemnify the Client under clause 11.1 shall be reduced proportionally to the extent that the act or omission of the Client or the employees, agents or other contractors of the Client contributed to the loss, damage, death or injury.

12. DISPUTES

12.1 If a dispute arises between the Consultant and the Client in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contract or the Services, either party may give a notice in writing ("**Notice of Dispute**") to the other party specifying the nature of the dispute, the particulars of the party's reasons for being dissatisfied and the position that the party believes is correct.

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13.1 Unless the Contract otherwise provides, the Consultant retains all Intellectual Property Rights in the Services and in any design, materials, documents and methods of working used or produced in relation to the Services. The Consultant grants to the Client an irrevocable, royalty free, non-exclusive, transferable, perpetual licence to exercise all rights of the owner of the Intellectual Property Rights associated with the Services, for any business purpose of the Client, including additions or alterations or entering into any agreement with any third party which is associated with or uses the Services or things produced in the course of performing the Services.

14. ASSIGNMENT

14.1 The Consultant may assign, novate or otherwise transfer any of its rights, remedies, powers, duties and obligations under this Contract without approval from the Client to another entity that is financially and technically able to conduct the Consultant's engineering and consulting business, Entura ("**Other Entity**") provided that all, or a substantial part, of the Consultant's engineering and consulting business, Entura is transferred to the Other Entity. The Client agrees to do anything the Consultant asks to give effect to the above, including signing any documents, to transfer the rights, remedies, powers, duties and obligations to the Other Entity.

15. NOTICES

15.1 A notice (and other documents) must be in writing, legible, in English and delivered in person, by email or by post.

15.2 A notice (and other documents) shall be deemed to have been given and received:

(a) if addressed or delivered to the relevant address listed in the Contract Particulars or last communicated in writing to the person giving the notice; and
(b) on the earliest date of:

(i) actual receipt if delivered in person;
(ii) the notice being recorded as having been first received at the electronic mail destination; or
(iii) 3 days after posting.

16. TERMINATION

16.1 The Contract may be terminated:

(a) at any time by mutual agreement;
(b) for the convenience of the Client, upon the giving of not less than 7 days notice, in which case the Client shall pay the Consultant:

(i) that portion of the Contract Sum payable to the date of termination;
(ii) any direct costs incurred by the Consultant to the date of termination; and
(iii) an amount equal to 2% of the Contract Sum;

(c) upon a substantial breach of the Contract by either party which is not remedied within a reasonable time (and in any case within 7 days) of notice by the non-breaching party of the substantial breach; or
(d) immediately by either party in the event the other party becomes insolvent or financially unable to proceed with the Contract.

16.2 Upon termination of the Contract, the Consultant shall, as soon as possible, return to the Client the Client's property provided to the Consultant in carrying out the Services.

16.3 If a party breaches (including repudiates) the Contract, nothing in this clause 16 shall prejudice the right of the other party to recover damages or exercise any other right or remedy.

17. MODERN SLAVERY

17.1 Warranty

Both the Consultant and the Client warrant that:

(a) it has not, and will not engage in any Modern Slavery practices;

(b) it does and will continue to comply with all laws relating to Modern Slavery;
(c) it does and will continue to take reasonable steps to ensure that there is no Modern Slavery in its supply chains or in its sub-contractor's supply chains;
(d) neither they or any any of their Personnel:
(i) has been convicted of any offence involving Modern Slavery; and
(ii) having made reasonable enquiries, to the best of its knowledge, has been or is the subject of any investigation, inquiry or enforcement proceedings by any Government Agency regarding any offence or alleged offence of or in connection with Modern Slavery.

17.2 Compliance

Both Parties must:
(a) implement and maintain throughout the Term appropriate due diligence procedures for its own suppliers and sub-contractors to ensure that there is no Modern Slavery in its supply chains; and
(b) do all things necessary to immediately rectify or avoid any Modern Slavery risk in its supply chains.

17.3 Notification

The Consultant and Client must promptly notify the other party as soon as it becomes aware of any actual or suspected Modern Slavery in a supply chain which has a connection with this agreement.

17.4 Records

Both Parties must:
(a) maintain a complete set of records to trace the supply chain of all goods and services provided to it and in connection with this agreement; and
(b) provide all information reasonably required by the other party to comply with any law or legal requirement to provide a compliance statement in relation to Modern Slavery.

18. FORCE MAJEURE

18.1 Consequences of Force Majeure

The relevant party is not liable for any delay or failure to provide the services caused by a Force Majeure Event.

18.2 Notification of Force Majeure

The relevant party must notify the other party in writing as soon as practical of any anticipated or actual (if not already notified as anticipated) delay or failure caused by a Force Majeure Event.

18.3 Remedy Force Majeure

(a) The relevant party must remedy the Force Majeure Event to the extent reasonably practicable and resume performance of its obligations as soon as practicable.
(b) The relevant party is not required under this clause to settle any labour dispute against its will or to test the validity or refrain from testing the validity of Federal, State, Territory or local law, order, rule or regulation.

18.4 Suspension of obligations

The provision of the services by the relevant party is suspended for the period of delay caused by the Force Majeure Event.

18.5 Termination right

If:
(a) performance of the services is prevented by a Force Majeure Event for more than one month; or
(b) a delay caused by the Force Majeure Event exceeds three months,
the relevant party may terminate this Contract at the expiration of not less than 30 days written notice to the other party.

19. GOVERNING LAW

19.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

20. DEFINITIONS

20.1 In this Contract, the following capitalised terms have the meanings given in this clause 20.1:

"Force Majeure Event" means an event or cause listed below to the extent that the event or cause is beyond the reasonable control of the relevant party:
(a) act of God, lightning, storm, flood, fire, earthquake or explosion, cyclone, tidal wave, landslide or adverse weather conditions;
(b) strike, lockout, or other labour difficulty but not a strike or lockout at the premises of the party claiming force majeure; or
(c) act of public enemy, war (declared or undeclared), terrorism, sabotage, blockage, revolution, riot, insurrection civil commotion, epidemic or pandemic;
(d) the enactment or amendment of any laws, rules, regulations, orders or decrees of the Australian Federal Government, State or Territory Government, any local government or of any statutory authority, not resulting from the wrongful act or omission of the relevant party; or
(e) travel or other restrictions imposed by the Australian Federal Government, State or Territory Government, any local government or of any statutory authority as a result of outbreak of disease or declaration of an epidemic or pandemic.

"Government Agency" means any government or any public, statutory, governmental (including a local government), semi-governmental, local governmental or judicial body, entity, department or authority and includes any self-regulatory organisation established under statute.
"**Intellectual Property Right**" means any patent, registered design, trademark or name, copyright or other protected right.
"Modern Slavery" means slavery, forced labour, bonded labour, human trafficking, child labour, debt bondage and any other slavery like practices prohibited under any Modern Slavery Laws.
"Modern Slavery Laws" means the Modern Slavery Act 2018 (Cth), Divisions 270 and 271 of the Criminal Code Act 1995 (Cth), and any other laws or regulations prohibiting or regulating Modern Slavery in force in Australia.
"Personnel" means the officers, employees, secondees, agents, consultants, contractors and subcontractors of the Consultant or Client as the situation requires.

entura

TASMANIAN IRRIGATION NORTHERN MIDLANDS IRRIGATION SCHEME

HV and Earthing Design Proposal

28 March 2022

Prepared by Hydro-Electric Corporation
ABN48 072 377 158

t/a Entura 89 Cambridge Park Drive,
Cambridge TAS 7170 Australia







WE OWN. WE OPERATE. WE CONSULT.

Entura in Australia is certified to the latest version of ISO9001, ISO14001, and OHSAS18001.

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Document information

Document title	Tasmanian Irrigation Northern Midlands Irrigation Scheme
	HV and Earthing Design Proposal
Client organisation	Tasmanian Irrigation
Client contact	Jacob Gerke
ConsultDM number	TBD
Project Manager	Chris Masters
Project number	TBD

Revision history

Revision 0

Revision description			
Prepared by	Chris Masters	Electronically signed	28/03/22
Reviewed by	Matthew Simmons	Electronically signed	28/03/22
Approved by	Jeremy Kearney	Electronically signed	28/03/22
	(name)	(signature)	(date)
Distributed to	Jacob Gerke (name)	Tasmanian Irrigation (organisation)	28/03/22 (date)

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A Single Consultancy Contract – General Conditions of Contract

1. Why work with us?

Entura have significant experience working with HV distribution substations and switchgear for both private and utility customers. Overseeing the design for Entura will be Daniel De Groot and Matthew Simmons, who have had significant experience undertaking these specific types of jobs.

2. Our understanding of your needs

Entura understands that Tasmanian Irrigation (TI) is developing the Northern Midlands Irrigation Scheme (NMIS). The scheme includes the Poatina Pump Station (PPS) and the Valleyfield Pump Station (VPS), which shall supplied from the TasNetworks (TN) 22 kV distribution network.

TI intended to install and operate a 22 kV /400 V 2000 kVA kiosk substation at the Poatina Pump Station and a 22 kV /400 V 1500 kVA kiosk substation at the Valleyfield Pump Station.

Both kiosk substations are to be connected to the TasNetworks distribution network and are to be specified from standard approved products of TasNetworks to promote familiarity for local contractors engaged by TI for the installation and maintenance of the substations.

Both pump stations have two options for the TasNetworks point of connection, either via overhead conductor or underground cable from the TasNetworks recloser pole. TI have the option to install a new Recloser including HV metering on an overhead pole or a ground mounted switching station complete with HV main circuit breaker and HV metering.

3. Our approach

Entura will provide design and test services to ensure the delivered package of works meshes with TI requirements. The following services are offered:

3.1 Primary electrical design

3.1.1 Connection arrangement selection and procurement support

- Assist TI to decide on pole or ground mounted interconnection and HV metering arrangements
- Liaise with TN standard suppliers for confirmation of arrangements and quotations of major equipment

3.1.2 Design

- Entura will undertake the HV electrical design from the TasNetworks interface boundary at the TI recloser/MCB through to the kiosk substations
- Prepare layout and details drawings utilising TN standards and previous TI project drawings
- For the interconnection between the metering and kiosk substation Prepare HV cable ratings calculations and basic cable specifications for procurement, based on assumed typical soil thermal resistivity values.

3.1.3 Deliverables

Entura will undertake/deliver the following specific items as part of this offer:

- HV electrical drawings including underground cabling plans, HV and LV single line diagrams (within substations), details of precast plinths, conduit locations and equipment selection
- HV electrical design report outlining the design basis and proposed equipment

3.2 High Voltage Earth system design

3.2.1 Soil resistivity measurements

Entura will conduct soil resistivity measurements at each site, to ascertain the soil electrical characteristics at each location as an input into the design. These soil measurements will be undertaken using the Wenner 4 probe method (up to a probe spacing of 132m) in line with industry accepted standards.

3.2.2 Design

To ensure the earthing design complies with the appropriate standards and is fit for purpose, Entura will design each earthing system to a target impedance, based on protection system modelling. This target impedance will be selected to ensure the protection systems will operate under a minimum fault scenario with an accepted level of tolerance. After this initial design constraint is met, consideration will be given to minimise or eliminate potential step-touch voltages that may occur

under the anticipated worst case fault scenario. The design will be modelled for compliance with safety criteria set out in AS-2067.

3.2.3 Deliverables

Entura will undertake/deliver the following specific items as part of this offer:

- Soil resistivity testing
- Earthing analysis and modelling in CDEGS to AS-2067
- HV Earthing layout construction drawing for each site, detailing the earth grid layout and directions on the LV MEN arrangement and equipotential earthing of building, fences and gates.
- High level bill of materials (cable lengths, earth rods etc)
- A short report detailing inputs, assumptions, modelled outputs and a standards compliance statement
- Engineering construction support - 4hrs design engineer (via phone/email)

3.3 Protection and metering design

3.3.1 Design

- Specification and design of HV metering
- Protection design
    - Specification of new protection relay for the main circuit breaker/recloser
    - Coordinated overcurrent and earth fault settings with upstream and downstream protection units.

3.3.2 Deliverables

- Protection settings report
- Protection settings files

3.4 Safety in design

- Safety in design document (documented in risk assessment format)

3.5 Inputs

To allow Entura to deliver this project efficiently and remain on schedule we anticipate the following critical design inputs (CDI) will be required from TI. In most cases if CDI is not made available Entura will be able to work with TI to determine if educated engineering assumptions can be made to keep the project on track:

- TI will provide existing site survey, and design drawings for proposed site layout (including pump station details), operational clearance zones, and preferred electrical infrastructure locations (in CAD format).
- TI will provide TN's augmentation/connection design prior Entura's layout of the design
- TI will provide TasNetworks design contacts for coordination of protection settings between the TasNetworks recloser and any downstream limitations
- TI will provide minimum and maximum HV fault levels for the Poatina Pump Station and the Valleyfield Pump Station.
- TI to co-ordinate access with landowners for the purpose of site testing.

3.6 Additional services

A provisional price for the items below can be provided on request

- Earth system pre-commissioning
- HV pre-commissioning
- Protection relay pre-commissioning
- HV certification
- As-installed drafting and engineering signoff

4. Our people

Our staff are suitably trained and have the appropriate experience in carrying out the works.

- Adam Youd – Drafting
- Andrew Baird – Engineer (Design)
- Chris Masters – Senior Engineer (Design)
- Dan De Groot – Senior Engineer (Design)
- Matthew Simmons – Specialist Engineer (Design)

5. Delivery schedule

A delivery schedule can be developed based on milestone dates to be mutually agreed between Tas Irrigation and Entura.

The design is proposed to be issued in two stages; an initial package of design drawings for TI review/acceptance, followed by the construction package addressing TI comments.

Proposed milestones (duration after providing Entura with required inputs, refer Section 3.5):

- Arrangement selection and procurement support: within three weeks
- Soil resistivity testing: within three weeks
- Primary design drawings and report for TI acceptance: within six weeks
- Earthing design drawings and report for TI acceptance: within three weeks of soil resistivity test
- Specification and design of HV metering: within three weeks
- Protection settings report and settings files: within six weeks

6. Clarifications and exclusions

- The scope is design services only and does not include installation
- Specification of LV main ACB within the kiosk substation is to be specified by others
- LV protection settings will be the scope of others
- Detail design of pump station LV and equipment equipotential earthing
- Secondary integration with the connection equipment for SCADA monitoring and/or remote operation is excluded
- The HV earthing system design has not allowed for staged construction and energisation of the site.
- Our design assumes that the TI riser main is predominantly HDPE and that conductive sections of pipe, if any, are restricted to shorter section localised at each site above ground.
- For the purpose of soil resistivity testing Entura have allowed for two sites to be covered in one trip.
- Site testing considers free unfettered access to site and immediate surrounds.
- Additional site visits or mobilisation to site for re-testing, due to circumstances outside Entura's control (e.g. site availability or weather).

7. Fees, terms and management systems

7.1 Proposed fees

The combined fee to complete both sites is given below:

Cost (ex GST)	Condition
$[redacted]	Fixed Fee

7.2 Contract terms and conditions

This proposal is subject to administration under the Entura Single Service Consultancy Arrangements. It is provided in Appendix A.

7.3 Insurances

Entura is covered by the Hydro-Electric Corporation's general liability insurance with QBE 386 (Lead). The insurance is placed through our broker AON and a copy of their 'Certificate of Currency' is available on request. The policy is current to 30 September 2022 and is for:

- public liability (policy # CSINT2001856)
- professional indemnity (policy # CSINT2001856).

Workers compensation policies are also in place in Tasmania, Victoria, New South Wales, South Australia, and Queensland and are current until 30 June 2022.

7.4 Management systems

To us, quality means meeting or exceeding your requirements on all projects.

We're continually improving and refining our systems and processes in all areas of our business for the benefit of our people, the environment and our clients.

Our quality management system meets the requirements of ISO 9001:2015, which is continually maintained and improved. Standard operating procedures are supplemented if necessary to meet the requirements of a particular project.

We consider quality to be everyone's personal responsibility. All our employees are responsible for performing their work in accordance with our management system, and for taking the initiative to ensure that we consistently provide reliable services.

Our processes are reviewed and certified by independent experts to ensure we maintain our high standards. Certifications we currently hold include:

7.4.1 Quality

Entura complies with AS/NZS ISO 9001 in our quality manual, plans, procedures and instructions, a certified quality management system. Quality compliance is managed through an internal and external audit program and certified by Bureau Veritas.

7.4.2 Environmental management

Entura operates under an ISO 14001 certified environmental and sustainability management system. We ensure our activities, products and services comply with environmental legislation as well as relevant environmental commitments and agreements. Compliance is certified by NCS International Certification.

7.4.3 Occupational health and safety management

Entura operates under an organisation safety management system certified to OHSAS 18001, an internationally recognised standard for managing occupational health and safety.

Entura employs an integrated Health, Safety and Environment system (HSE) to ensure that there is seamless interaction between these two standards.

8. About Entura

Entura is one of the world's most experienced specialist power and water consulting firms.

We own. We operate. We consult. And that's what makes us different.

From strategy, planning, design and construction through to operation, maintenance, risk management and training, we create safe and sustainable power and water solutions that make a positive and enduring contribution to our clients and communities.

Due to our unique asset-owner heritage, our technical expertise is grounded in more than 100 years of experience contributing to the development, operation and maintenance of renewable energy and water infrastructure.

We have first-hand insights and a deep understanding of the real-life pressures that asset owners face. That's why our clients trust us to deliver practical and commercially sound solutions across the whole lifecycle of their assets, helping them to manage risks and achieve valuable outcomes.

And we do so with one purpose: to create a sustainable future through better power and water solutions.

Appendices

A Single Consultancy Contract – General Conditions of Contract

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

2. RESPONSIBILITIES AND OBLIGATIONS OF THE CONSULTANT

2.1 The Consultant shall:

(a) comply with all reasonable directions of the Client given pursuant to a provision of the Contract;

(b) employ staff with appropriate qualifications and experience to carry out the Services;

(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

(c) provide the Consultant with such access to premises or sites of the Client as is necessary for the Consultant to carry out the Services; and

(d) bear the cost of all fees and charges required to comply with legislative requirements incurred in connection with carrying out the Services.

4. INSURANCE

4.1 From the Commencement Date, the Consultant must effect and have in place the following insurances:

(a) a professional indemnity insurance policy for the Services with a total aggregate cover of not less than $2,000,000.00 which shall:

(i) include provision for loss of documents; and

(ii) be maintained until the End Date and thereafter for a period of 6 years;

(b) a public liability policy until the End Date for an amount in respect of any one claim or series of claims arising from the one original cause of not less than $5,000,000.00; and

(c) a workers' compensation policy until the End Date for the maximum amount permitted by law, covering the Consultant's liability under common law and statute for death or injury to any person employed by the Consultant.

5. PAYMENT

5.1 The Client shall pay the Consultant the Contract Sum in accordance with this Contract.

5.2 The Consultant shall submit to the Client claims for payment progressively in accordance with the Contract Particulars.

5.3 All monies due and payable by the Client to the Consultant must be paid within 14 days of the receipt by the Client of a properly prepared tax invoice from the Consultant in accordance with clause 6.4.

5.4 If the Client does not pay the amount of the claim the Client shall, either with the payment or not later than the time for payment, provide the Consultant with a written statement of the reason for any difference between the amount claimed and the amount paid or to be paid.

5.5 If any moneys due and payable to either party remain unpaid after the date upon which or the expiration of the period within which they should have been paid, then interest shall be payable thereon at the then current benchmark interest rate applicable to Division 7A of Part III of the *Income Tax Assessment Act 1936* (Cth) from (but excluding) the date upon which or the expiration of the period within which they should have been paid to and including the date upon which the moneys are paid.

6. GST

6.1 Words or expressions used in this clause 6 which are defined in *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) have the same meaning in this clause.

6.2 All amounts stated in and payable under or in connection with this Contract exclude GST unless otherwise indicated.

6.3 If a payment to a party under this Contract is a reimbursement or indemnification, calculated by reference to a loss, cost or expense incurred by that party, then the payment will be reduced by the amount of any input tax credit to which that party is entitled for that loss, cost or expense.

6.4 The recipient will not be liable to pay the supplier for a taxable supply made under or in connection with this Contract until the supplier has given the recipient a tax invoice for the supply to which the payment relates.

6.5 Where an adjustment event occurs in relation to a supply made by the supplier under or in connection with this Contract, the supplier will issue an adjustment note to the party providing consideration in respect of that supply within 28 days after becoming aware of the relevant adjustment.

7. VARIATIONS

7.1 The Client may, by written notice to the Consultant, reasonably direct the Consultant to vary the Services and, provided that the variation does not change the general scope of the Services, the Consultant shall be bound to comply with that direction ("**Variation**").

7.2 The parties must use their best endeavours to agree in writing on the value of a Variation, but in the event that the parties are unable to agree within 7 days of the issue of the direction, then the value of the Variation shall be determined using reasonable rates and prices.

7.3 If a new legislative requirement or a change in a legislative requirement after the date of the Contract could not reasonably have been anticipated at the date of the Contract, then the extent to which the Services are changed by that legislative requirement shall be deemed to be a Variation pursuant to clause 7.1.

7.4 Where, due to circumstances beyond the reasonable control or anticipation of the Consultant, the Consultant is required to alter, add to or delete documents or other things previously submitted and which otherwise would have complied with the Contract, the Consultant shall inform the Client and seek directions and any subsequent alteration, addition or deletion shall be deemed to be a Variation pursuant to clause 7.1.

Entura Single Use Consultancy Contract - Entura as Consultant.doc Approved version as of Monday, 18 October 2021 Page 3 of 5

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

8. DELAYS

8.1 The Consultant shall proceed with the work under the Contract with due expedition and without delay.

8.2 When it becomes evident to a party that an act or omission of the Client, or an employee, other consultant, contractor or agent of the Client, may delay carrying out the Services, that party shall promptly notify the other party in writing with details of the possible delay and the cause.

8.3 The Client may direct the Consultant in what order and at what time the Services shall be performed and if:

(a) the Consultant:

(i) can reasonably comply with the direction the Consultant shall do so; and

(ii) cannot reasonably comply with the direction the Consultant shall so notify the Client in writing, giving reasons; and

(b) compliance with the direction causes the Consultant to incur more or less cost than otherwise would have been incurred had the Consultant not been given the direction, the difference shall be valued pursuant to clause 7.2 as though the direction was a Variation.

9. CONFIDENTIALITY

9.1 Except as required by law, the Consultant and the Client will keep confidential information which is so designated in writing by the party providing the information, or which should reasonably be known by the recipient party to be confidential. This clause 9 will survive the expiry or termination of the Contract.

10. LIABILITY OF THE CONSULTANT

10.1 The maximum liability of the Consultant arising out of the performance or non-performance of the Contract or the Services whether under the law of contract, tort or otherwise, shall be limited to 100% of the Contract Sum.

10.2 To the maximum extent permitted by law and notwithstanding any other provision of the Contract, the Consultant is not liable to the Client, whether under contract, in tort, in equity, in restitution, under statute or otherwise, in respect of any:

(a) business interruption loss;
(b) loss of actual or anticipated profit, revenue, production, opportunity or anticipated savings;
(c) loss of use; or
(d) exemplary damages.

10.3 This clause 10 shall not apply to claims in respect of personal injury or death.

11. CONSULTANT'S INDEMNITY

11.1 Subject to clause 10, the Consultant shall indemnify the Client against:

(a) loss of or direct damage to property of the Client; and
(b) claims by any person against the Client in respect of personal injury or death or loss of or damage to any other property,

arising out of or in consequence of carrying out the Services by the Consultant.

11.2 The Consultant's liability to indemnify the Client under clause 11.1 shall be reduced proportionally to the extent that the act or omission of the Client or the employees, agents or other contractors of the Client contributed to the loss, damage, death or injury.

12. DISPUTES

12.1 If a dispute arises between the Consultant and the Client in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contract or the Services, either party may give a notice in writing ("**Notice of Dispute**") to the other party specifying the nature of the dispute, the particulars of the party's reasons for being dissatisfied and the position that the party believes is correct.

12.2 The parties must meet within 14 days of the date of the Notice of Dispute and undertake genuine and good faith negotiations with a view to resolving the dispute. Unless the parties agree otherwise, the meeting must take place in Hobart, Tasmania.

12.3 If the parties are unable to resolve the dispute in accordance with clause 12.2 within 14 days of first meeting under clause 12.2, the dispute may be referred, by written notice of either party, to mediation, which is to be conducted in accordance with the Institute of Arbitrators and Mediators Australia Mediation Rules.

13. INTELLECTUAL PROPERTY

13.1 Unless the Contract otherwise provides, the Consultant retains all Intellectual Property Rights in the Services and in any design, materials, documents and methods of working used or produced in relation to the Services. The Consultant grants to the Client an irrevocable, royalty free, non-exclusive, transferable, perpetual licence to exercise all rights of the owner of the Intellectual Property Rights associated with the Services, for any business purpose of the Client, including additions or alterations or entering into any agreement with any third party which is associated with or uses the Services or things produced in the course of performing the Services.

14. ASSIGNMENT

14.1 The Consultant may assign, novate or otherwise transfer any of its rights, remedies, powers, duties and obligations under this Contract without approval from the Client to another entity that is financially and technically able to conduct the Consultant's engineering and consulting business, Entura ("**Other Entity**") provided that all, or a substantial part, of the Consultant's engineering and consulting business, Entura is transferred to the Other Entity. The Client agrees to do anything the Consultant asks to give effect to the above, including signing any documents, to transfer the rights, remedies, powers, duties and obligations to the Other Entity.

15. NOTICES

15.1 A notice (and other documents) must be in writing, legible, in English and delivered in person, by email or by post.

15.2 A notice (and other documents) shall be deemed to have been given and received:

(a) if addressed or delivered to the relevant address listed in the Contract Particulars or last communicated in writing to the person giving the notice; and
(b) on the earliest date of:

(i) actual receipt if delivered in person;
(ii) the notice being recorded as having been first received at the electronic mail destination; or
(iii) 3 days after posting.

16. TERMINATION

16.1 The Contract may be terminated:

(a) at any time by mutual agreement;
(b) for the convenience of the Client, upon the giving of not less than 7 days notice, in which case the Client shall pay the Consultant:

(i) that portion of the Contract Sum payable to the date of termination;
(ii) any direct costs incurred by the Consultant to the date of termination; and
(iii) an amount equal to 2% of the Contract Sum;

(c) upon a substantial breach of the Contract by either party which is not remedied within a reasonable time (and in any case within 7 days) of notice by the non-breaching party of the substantial breach; or
(d) immediately by either party in the event the other party becomes insolvent or financially unable to proceed with the Contract.

16.2 Upon termination of the Contract, the Consultant shall, as soon as possible, return to the Client the Client's property provided to the Consultant in carrying out the Services.

16.3 If a party breaches (including repudiates) the Contract, nothing in this clause 16 shall prejudice the right of the other party to recover damages or exercise any other right or remedy.

17. MODERN SLAVERY

17.1 Warranty

Both the Consultant and the Client warrant that:

(a) it has not, and will not engage in any Modern Slavery practices;

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

(b) it does and will continue to comply with all laws relating to Modern Slavery;
(c) it does and will continue to take reasonable steps to ensure that there is no Modern Slavery in its supply chains or in its sub-contractor's supply chains;
(d) neither they or any any of their Personnel:
(i) has been convicted of any offence involving Modern Slavery; and
(ii) having made reasonable enquiries, to the best of its knowledge, has been or is the subject of any investigation, inquiry or enforcement proceedings by any Government Agency regarding any offence or alleged offence of or in connection with Modern Slavery.

17.2 Compliance

Both Parties must:
(a) implement and maintain throughout the Term appropriate due diligence procedures for its own suppliers and sub-contractors to ensure that there is no Modern Slavery in its supply chains; and
(b) do all things necessary to immediately rectify or avoid any Modern Slavery risk in its supply chains.

17.3 Notification

The Consultant and Client must promptly notify the other party as soon as it becomes aware of any actual or suspected Modern Slavery in a supply chain which has a connection with this agreement.

17.4 Records

Both Parties must:
(a) maintain a complete set of records to trace the supply chain of all goods and services provided to it and in connection with this agreement; and
(b) provide all information reasonably required by the other party to comply with any law or legal requirement to provide a compliance statement in relation to Modern Slavery.

18. FORCE MAJEURE

18.1 Consequences of Force Majeure

The relevant party is not liable for any delay or failure to provide the services caused by a Force Majeure Event.

18.2 Notification of Force Majeure

The relevant party must notify the other party in writing as soon as practical of any anticipated or actual (if not already notified as anticipated) delay or failure caused by a Force Majeure Event.

18.3 Remedy Force Majeure

(a) The relevant party must remedy the Force Majeure Event to the extent reasonably practicable and resume performance of its obligations as soon as practicable.
(b) The relevant party is not required under this clause to settle any labour dispute against its will or to test the validity or refrain from testing the validity of Federal, State, Territory or local law, order, rule or regulation.

18.4 Suspension of obligations

The provision of the services by the relevant party is suspended for the period of delay caused by the Force Majeure Event.

18.5 Termination right

If:
(a) performance of the services is prevented by a Force Majeure Event for more than one month; or
(b) a delay caused by the Force Majeure Event exceeds three months,
the relevant party may terminate this Contract at the expiration of not less than 30 days written notice to the other party.

19. GOVERNING LAW

19.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

20. DEFINITIONS

20.1 In this Contract, the following capitalised terms have the meanings given in this clause 20.1:

"Force Majeure Event" means an event or cause listed below to the extent that the event or cause is beyond the reasonable control of the relevant party:
(a) act of God, lightning, storm, flood, fire, earthquake or explosion, cyclone, tidal wave, landslide or adverse weather conditions;
(b) strike, lockout, or other labour difficulty but not a strike or lockout at the premises of the party claiming force majeure; or
(c) act of public enemy, war (declared or undeclared), terrorism, sabotage, blockage, revolution, riot, insurrection civil commotion, epidemic or pandemic;
(d) the enactment or amendment of any laws, rules, regulations, orders or decrees of the Australian Federal Government, State or Territory Government, any local government or of any statutory authority, not resulting from the wrongful act or omission of the relevant party; or
(e) travel or other restrictions imposed by the Australian Federal Government, State or Territory Government, any local government or of any statutory authority as a result of outbreak of disease or declaration of an epidemic or pandemic

"Government Agency" means any government or any public, statutory, governmental (including a local government), semi-governmental, local governmental or judicial body, entity, department or authority and includes any self-regulatory organisation established under statute.

"**Intellectual Property Right**" means any patent, registered design, trademark or name, copyright or other protected right.

"Modern Slavery" means slavery, forced labour, bonded labour, human trafficking, child labour, debt bondage and any other slavery like practices prohibited under any Modern Slavery Laws.

"Modern Slavery Laws" means the Modern Slavery Act 2018 (Cth), Divisions 270 and 271 of the Criminal Code Act 1995 (Cth), and any other laws or regulations prohibiting or regulating Modern Slavery in force in Australia.

"Personnel" means the officers, employees, secondees, agents, consultants, contractors and subcontractors of the Consultant or Client as the situation requires.

.

Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Friday, 22 November 2019 11:43 AM
To: Greg Carson
Subject: Northern Midlands and Hydro pipeline from Poatina to Lake River
Attachments: 20191021_WMA_Arthurs NMIS.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Greg,

[redacted]

With respect to the WMA assessment of the Arthurs Lake;

- Hydrology suggests that the additional volume is plausible

- Obviously this then means that we would like to discuss wider implications
- Kate has briefed me re concerns for EPBC implications, and I am sure that there are also Hydro production management concerns also.
- Attached is a copy of the report.

My current Northern Midlands proposal is moving back to abstraction from the Poatina tail race and pumping around to Campbell Town. Current design is for 11,000ML (excluding hydro) with a design that can take up to 18,000ML is a second stage of development down to Woodbury.
The second stage also looks to incorporate water from Floods Creek, with a preference to seek to obtain an additional 20ML/day or circa 7500ML/yr as previously discussed. At this time I am not anticipating that the Stage 2 has funding.

[redacted]

I thinking that the additional capacity I am planning to build into the scheme – ie for stage 2 may provide an interim solution worth discussing in regards win-win outcomes.

When you have some time, can we arrange to touch base?

Thanks

Ian Smith
Project Manager

Tasmanian Irrigation

p 04[redacted]
e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

Tasmanian Irrigation is a multi-award winning organisation. Achievements include winning multiple 2014 Engineering Australia, Tasmanian Engineering Excellence Awards and CCF Earth Awards. The company was also a 2014 Infrastructure Partnerships Australia Smart Project Award finalist.

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Friday, 9 August 2019 3:46 PM
To: Bill Cohen
Subject: RE: Lake River yield investigation - status update

Hi Bill,
Yes, given that we are likely to discard this option on other grounds, I am comfortable with the eflow assessment. Particularly given that there is the hydro commitments underlying everything too.
If we were to progress the option then I think we would want to drill further, sadly while a good technical solution there is a lot of social challenges.

Cheers

Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Friday, 9 August 2019 12:02 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Ian,

Thanks for the feedback; I've made the edits more or less as you have specified. I have also corrected the description of how the average baseflows were calculated: they are calculated as the mean of daily discharge, not monthly discharge; because it is the mean, there is no difference in these values.

However, before I issue the final, I'd like to reconfirm with you the basis for selecting the average (mean) discharge to pass as eflow. In previous projects, the typical DPIPWE fallback eflow is the 20/30 rule, which would be much lower than the average flow. Therefore, we have stated that the assumption is quite conservative.

Can you confirm that this approach suits your requirements?

Happy to discuss, if we are all good on that point, I will get the report to you ASAP.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Friday, 9 August 2019 9:57 AM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Bill,
Happy with the content, other than the pre-amble is still not quite correct, hopefully the edits are readable in the attached.

- Scheme is a new scheme – Northern Midlands, not expanding the existing Midlands etc.
- While the hydro requirements are separate concern, one of the objectives is to replace the Arthurs Lake water if possible – ie we want hydro to participate with 4-7000ML in addition to our 12. This is the basis of looking at a 20,000ML storage.
- In its simplest form, how much water is available – 11,000ML answers the question.
- Ultimately, if water was the only hurdle, we would be seeking to build 20,000ML 95% reliable to proceed with this option. The report provides what I need at this time, with a couple of edits in the pre-amble as attached.

Cheers
Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Monday, 5 August 2019 3:11 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Ian,

Here is the draft report with the changes we discussed. My intent is that this is pretty much the final version, but I'm happy to incorporate any clarifications that may be required. I can reissue as required.

Please review and get back to me with any questions.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Saturday, 3 August 2019 11:49 AM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: Re: Lake River yield investigation - status update

Thanks Bill

Get Outlook for iOS

From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Thursday, August 1, 2019 4:44:46 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Ian,

The updated analysis and report has been completed, I am awaiting a review from my colleague. He will be able to review it Monday, I expect to get it to you sometime then.

Cheers,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Wednesday, 17 July 2019 11:18 AM

To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: RE: Lake River yield investigation - status update

Hi Bill,
Main comment is clarification please in terms of what we are trying to achieve;

- TI is proposing a new irrigation scheme which has a demand requirement of 12,000ML @ 95%. Our minimum requirement is circa 9,000ML. (Not meeting Hydro commitments with this volume)
- In addition, Hydro is seeking to replace circa 7,000ML which is transferred from Arthurs Lake to Woods Lake – hence the 20,000ML storage

We are not seeking to expand Hydro's irrigation delivery obligations as such (although I suppose the water is nominally ex Hydro supply).

Surface area is nominally 250ha.

See attached.



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Monday, 15 July 2019 5:16 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: Lake River yield investigation - status update

Hello Ian,

I have made some progress on the Lake River yield investigation. I have attached a preliminary report of work done to date – I would not consider it draft as the work is not complete. I estimate that we are about 80% there.

Unfortunately, I have a major report due next Monday – can we please delay our deadline for this task til the middle of next week?

In the mean-time, can you review the report and check that its what you are expecting? Things to note:

- Can you provide an estimate of the reservoir's surface area at FSL? I need to use this to add evaporation into the model
- Currently, I have estimated the reliability of the scheme as 91% to deliver 12,000ML annually – don't hang your hat on this number until I address some of the other items
- I have not yet computed the current releases from Woods Lake. As these releases need to be passed by the proposed storage, I have only included spill from Woods Lake dam as inflow to the model, that can be used to fill the reservoir
- The sustainable yields flow underestimates flow in the catchment when compared with observed discharge at the Lake River at Parknook site. While we haven't allowed for model calibration in this study, I am happy to use whatever budget we have to make bias corrections to it is more representative – lets discuss
- Using average monthly flows as passing flows/eflows is conservative – if these are decreased then the scheme reliability will increase
- I have not yet completed the sensitivity to recent years, however a review of rainfall records indicates that there is little change between the periods 1970-2007 and 2008-2018; however, for the yield analysis, it is more important to look at the low flow sequences (ie drought) than average rainfall, so I will still need to complete this

Let me know if you agree to the delay – if not, I will try to arrange someone else to deliver for you this week. Sorry for any inconvenience.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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Lara Henley

From: Chris Masters
Sent: Friday, 5 August 2022 4:53 PM
To: Jacob Gerke; Hugh Abetz
Subject: RE: NMIS HV and Earthing Design
Attachments: Poatina Pump Station - Concept Connection Arrangement_Rev 2.pdf; RE: [External] Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Follow Up Flag: Follow up
Flag Status: Completed

Good afternoon Jacob, Hugh,
Please find attached the revised Poatina concept connection arrangement.
Please let me know if you need anything adjusted.

The soil resistivity testing at the Valleyfield Pump Station site on Wednesday was successful. Access was good and there was lots of clear ground to take the traverses.

Jacob, Phil Ellerton has been following up on the T&Cs for me and mentioned that he hasn't heard back from Melanie. If possible are you able to countersign the attached and flick it back. Let me know if there are any issues.

Thanks and regards,
Chris Masters | Electrical Engineer

entura

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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Monday, 1 August 2022 1:17 PM
To: Hugh Abetz <hugh.abetz@tasirrigation.com.au>; Chris Masters <Chris.Masters@entura.com.au>
Subject: RE: NMIS HV and Earthing Design

Pump Station GA

Regards

Jacob Gerke

T: 03 6398 8433
M: [redacted]

E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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-----Original Appointment-----
From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Tuesday, 19 July 2022 9:22 PM
To: Hugh Abetz; Chris Masters; Andrew Baird; Jacob Gerke
Subject: NMIS HV and Earthing Design
When: Monday, 1 August 2022 1:00 PM-1:30 PM (UTC+10:00) Hobart.
Where: Microsoft Teams Meeting

Microsoft Teams meeting

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Meeting ID: 483 340 929 228
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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 24 June 2019 4:53 PM
To: Bill Cohen
Subject: RE: Proposal - Lake River hydrology

Bill,
Suggest tear up the TI conditions page and send out the Hydro agreement. We do not need to over complicate this. TI and Entura have 10 years of working together on Hydrology, I'm sure we should not need to reinvent…

Cheers
Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Monday, 24 June 2019 4:51 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Cc: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Subject: RE: Proposal - Lake River hydrology

Hello Ian,

Understood, I should have picked up on that one earlier. HT are quite particular about this, so I need to get it resolved. I don't think it will be an issue. I'll be in touch as soon as I have advice.

Cheers,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 24 June 2019 2:45 PM

To: Bill Cohen <Bill.Cohen@entura.com.au>
Cc: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Subject: RE: Proposal - Lake River hydrology

Hi Bill,
Same situation as the last assessment. The Purchase order I sent you had the standard conditions and we signed the Hydro short term agreement. Per email if you want to generate the Hydro agreement, I am fine with that.
Regards
Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Monday, 24 June 2019 2:43 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Cc: Phillip Ellerton <Phillip.Ellerton@entura.com.au>
Subject: RE: Proposal - Lake River hydrology

Hello Ian,

Thanks for sending this through. Note that our proposal was assuming Entura's Standard Terms and Conditions, however the Purchase Order has an alternative set of Terms and Conditions attached. I need to have this reviewed and accepted by our legal team before we can proceed.

I have sent it for review, I will advise ASAP if they see any issues.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 24 June 2019 12:55 PM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: RE: Proposal - Lake River hydrology

Hi Bill,
Please find attached purchase order. When you are ready, lets touch base on the items you wanted to clarify and also confirm deliverables timelines
I will leave you to update the hydro agreement as you need.
Thanks
Ian



From: Bill Cohen <Bill.Cohen@entura.com.au>
Sent: Friday, 21 June 2019 12:52 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: RE: Proposal - Lake River hydrology

Hello Ian,

Good to hear, thank you for the news. Please send through the paperwork whenever you are ready and let me know if there is anything more you need from me.

Sorry to be pedantic: just to clarify, the additional work we discussed was a sensitivity run to determine if scheme reliability is adversely affected by the more recent period of record (2007-2018), not a calibration. The words 'sensitivity' and 'calibration' have fairly specific meanings in hydrological modelling.

Kind Regards,

Bill Cohen | Hydrologist
BGeom GradDipSc(Hons) DipPM

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From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Friday, 21 June 2019 12:34 PM
To: Bill Cohen <Bill.Cohen@entura.com.au>
Subject: Proposal - Lake River hydrology

Hi Bill,
I am waiting the approval for the works, I can advise that you are currently the preferred supplier recommended for the work, inclusive of the calibration to current data discussed.

I will confirm final award once I have receipt of final approval.

Regards

Ian Smith



[redacted]

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Thursday, 17 February 2022 1:55 PM
To: Gregory Carson <Greg.Carson@hydro.com.au>
Subject: TI Items for Discussion on Monday

Hi Greg

Just thinking about a couple of things that are going to drive our decision making on our dam size/ location are the following:

- Price Hydro are proposing for water taken by NMIS
    - On a couple of occasions people have flagged a potential "Tariff" in the event Hydro need to hold back water etc in spring to allow delivery in the summer months.
    1. Can you please provide at the meeting details of any charges being proposed other than the standard forgone revenue charge on the website. Also in what circumstances and your understanding of frequency that it would be charged.
    2. Can we please discuss what are the drivers for this and would a dam of an alternative size (ie larger) mean that potential for this tariff being charged would be reduced.

- Hydro's Operational parameters for dam design

- TI have made assumptions based on our discussions with Hydro that a dam that provides 3 days of buffer storage that can be filled in 12hours of operation is a dam of sufficient volume and fill rate to "buffer" the power station operations.

1. Can we discuss and you provide any information at the meeting that will show the validity of these assumptions. This will also drive dam size and intake sizes for us.

Looking forward to discussing these through.

Regards

Jacob Gerke

Tasmanian Irrigation

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M: [redacted]
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W: www.tasirrigation.com.au

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Tuesday, 11 June 2019 2:02 PM
To: Bill Cohen
Subject: Request for quotation - Lake River analysis
Attachments: Lake River preliminary hydrology Consultancy Brief .pdf

Good morning Bill,
Given you have done the recent work for me, please find attached brief for assessment of the Lake River. Let me know if you are not the right contact person for this. Hoping to have some indication of pricing as soon as possible, have allowed a week, let me know if this is too tight. Happy to take any questions. Have asked other organisations to price also.

Many thanks

Ian

Tasmanian Irrigation
p [redacted]
e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

Tasmanian Irrigation is a multi-award winning organisation. Achievements include winning multiple 2014 Engineering Australia, Project Award finalist.

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Request for Quotation – Hydrology and environmental flows

CONSULTANCY BRIEF:

- **Establish Lake River natural flows;**
- **determine seasonal release patterns and volumes by Hydro Tasmania from Woods Lake;**
- **determine available flood take at 95% reliability.**

Background

In 2019 interested local farmers met to gauge interest in establishing further irrigation development in the Northern Midlands between Poatina and the Macquarie River. Preliminary investigations identified the Poatina Tailrace as a logical source of water for further development of Irrigation development.

Tasmanian Irrigation notes that a pumped scheme from the Poatina tailrace is one scenario, however also wish to undertake precursory investigation of a potential source from the Lake River which may provide a gravity-fed option for supply of water to the Northern Midlands region, notwithstanding that there are a number of environmental and operational challenges to the proposal.

The investigation aims to understand the potential natural flows within the Lake River which may be available to expand irrigation based on a conceptual in-river storage located on the Lake River to capture excess winter flow (if available) for distribution in summer.

Consultancy aim

The aim of this report is to determine;

1. The potential amount of irrigation water available out of the Lake River to enhance the cropping and grazing enterprises in the Northern Midlands region, assuming Hydro Tasmania have a statutory commitment to supply 30,000ML from the catchment and that eflow requirements are met by the catchment flows (excluding flood flows).
2. Derivation of "base flow" volumes within the catchment below Woods Lake.
3. Assuming that an in-river storage of 20,000ML was available for retention of winter flow above the Lake River A/B Macquarie River stream gauge
4. Existing Hydro Tasmania commitments are met as follows
    a. Delivery is variable from August to April (derivation from the Lake River A/B Macquarie River stream gauge). Verifying the releases from Wood's Lake to confirm the release pattern
    b. Assume that flows up to 50ML/day are used for existing irrigation purposes and are not available for retention in a new storage;
    c. Hydro delivery is based on maintaining 10ML flow at the lowest (northern) gauge on the Lake River
    d. 15,000ML releases of water from Woods Lake
    e. 7,000ML of flow in the lower Lake River is transferred from Brumby's Creek
    f. 5,000ML of summer water currently transferred from Arthurs Lake is not transferred and forms part of the available water to be captured;
5. No formal eflow assessment has been derived on the basis that natural flows from the catchment below Woods lake provides eflow.
6. Available water to be captured is from high flow events

A number of stream gauges exists on and immediately below the Lake River

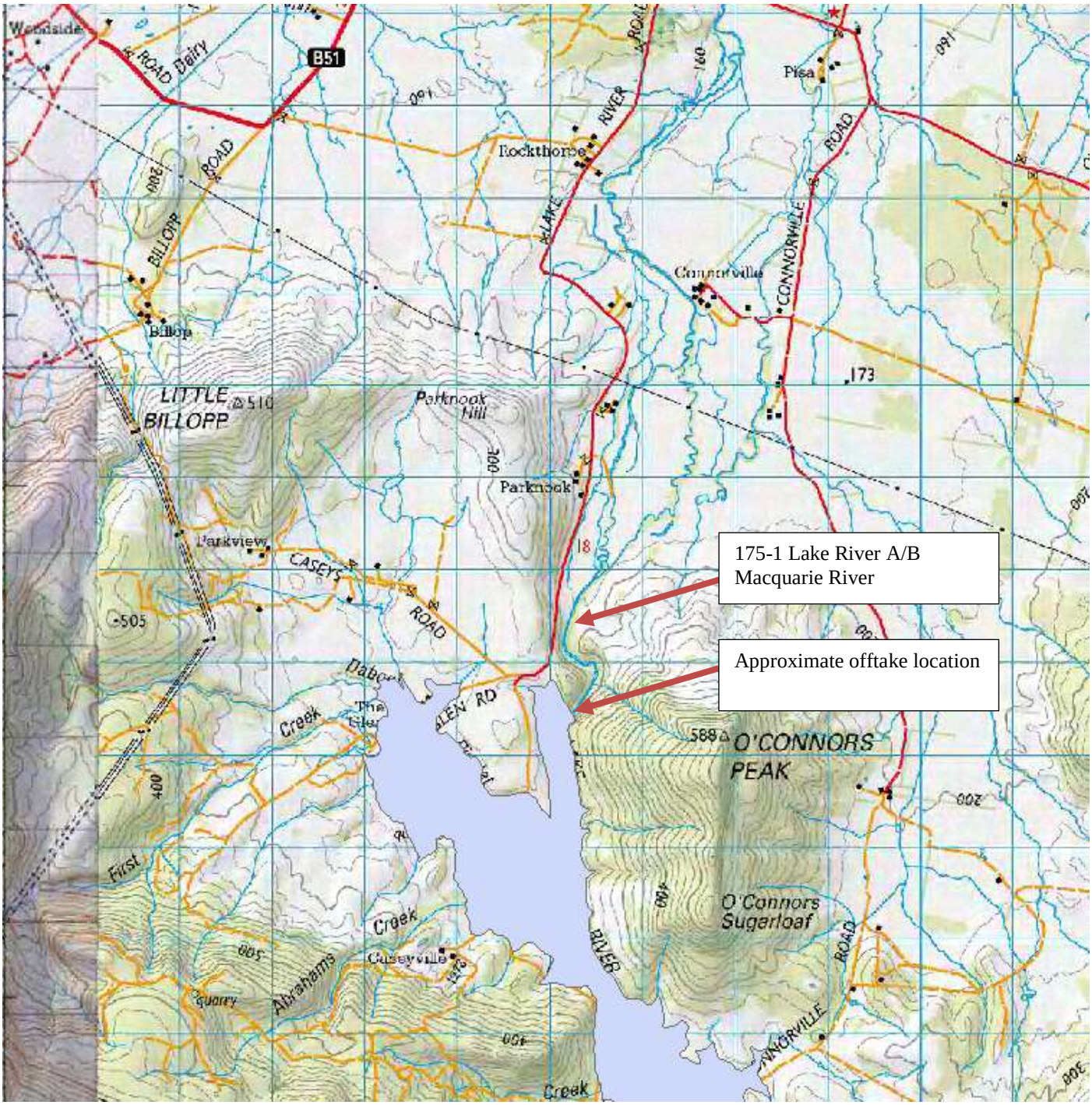
Known data to date

A number of stream gauges exist within the Lake River monitoring river levels, with the data being available from the DPIPWE Water Information Portal and Hydro Tasmania (by request).

Hydro delivery of irrigation water within the Lake River is highly variable and will need to be interpreted based on observed river dynamics. Water is released based on maintaining a minimum flow in the Lake River.

Potential Storage location

Approximate potential dam location 506004:5366744



Study location map.



Tasks

The following tasks must be completed by the consultant.

1. Determine the total amount of water available in the Lake River at the uptake point for potential irrigation purposes above the statutory requirements of Hydro Tasmania (30,000ML) and eflow.

2. Assess the available water and reliability for delivery to the region based on a September to April delivery period.

Provide:

- The proposed methods of modelling to report environmental flows and summer and winter irrigation flows, taking into account current water allocations.
- Assume that a 15,000ML / yr commitment is delivered from Wood's Lake.
- 7,000ML of water is transferred to the Lake River below the proposed storage via pumped flows from Brumby's Creek.
- A schedule for delivery of the report.

Output:

The output of the consultancy will be a public report provided to TI that provides full details of the yield modelling, including the points listed above. At the conclusion of the consultancy the Tasmanian Irrigation will own the intellectual property.

The consultant will need to liaise with the Project Manager – Ian Smith (TI) throughout the consultancy, to keep the Project Manager informed of any issues as they arise.

The consultant will need to provide a draft report outlining any identified issues that would affect the proposed report by a time that will be negotiated with the consultant. A final report will be delivered to TI. The final report must include an executive summary that provides an overall statement on the findings investigated and any strategies required.

Submission of quotation:

Quotes are to be submitted electronically 2pm Tuesday, 18 June 2019. All participants will be notified of the outcome within one week of the close of submissions.

Timeline:

The consultancy is to commence as soon as possible after the notification of acceptance of tender. Tenderer's should identify their availability to complete the project.

Key Contacts

Ian Smith –Project Manager (TI)
PO Box 84
Evandale, Tas 7212
P: 03 6398 8420
F: 03 6398 8441
M: [redacted]
E: ian.smith@tasirrigation.com.au

Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Tuesday, 8 February 2022 3:45 PM
To: Gregory Carson
Subject: FW: Tasmanian Irrigation - Northern Midlands Irrigation Scheme - Formal Request for Water
Attachments: NMIS - Dam Concept Design_Preliminary.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Greg

Can we please have an update on to how we can formalise this request and work on the water supply agreement.

The dam location may not be 100% confirmed but the requirement for the water and extraction rates etc are.

I would like to put an agreed frame work and timeframe in place.

Thanks

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

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COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

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From: Jacob Gerke
Sent: Thursday, 20 May 2021 3:51 PM
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Cc: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>; Stacey Woods <stacey.woods@tasirrigation.com.au>
Subject: Tasmanian Irrigation - Northern Midlands Irrigation Scheme - Formal Request for Water

Ian

As per the ongoing discussions regarding access to water for the Northern Midlands Irrigation, Tasmanian Irrigation would like to formally request access to the water from the Poatina Tailrace.

The specific details of the request are as follows:

Details:

Take period/ Season:	1 October – 31 March each year
Summer Season Volume:	25,500ML
Max Daily Flow Rate:	170ML/day
Offtake Location:	497766, 5374568 Upstream of Drop Structure 1 on Poatina Tailrace (exact location to be confirmed during detailed design)
Offtake Method:	Tasmanian Irrigation propose to build a dam directly to the south of drop structure No 1. beside the Tailrace. (see attachment) The Proposed dam is approximately 580ML and will be filled via an inlet channel from the tailrace. The dam is conceptually being designed to be filled at a rapid rate (<12hrs). A pump station will then pump the water from the dam into the pipeline network at the max rate of 170ML/day.
Out of Season Water:	TI would like to have access to water outside this period if Poatina is operating up to our daily flow rate - 170ML/day. This water would be additional to the 25,500ML volume stated above.
Expected First Season:	Commence October 2024

Happy to discuss as required or provide any additional information that will assist you.

Thanks

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 24 June 2019 2:26 PM
To: Gregory Carson
Cc: Bill Cohen
Subject: Request to access Hydro Tasmania - Lake River stream gauge data

Dear Greg,
Further to our meetings, Tasmanian Irrigation has engaged Entura to undertake preliminary hydrological assessment of the Lake River. Accordingly, we seek approval for Bill Cohen (Entura) to have access to data from Hydro Tasmania stream gauges located on the Lake River to inform modelling and stream characteristics.
It is likely that the best approach for this will be for Bill to deal directly with Hydro staff to ensure that the correct information and background is sought.

If you can please confirm this is acceptable and an appropriate contact person for Bill to deal with?

Many thanks

Ian Smith
Project Manager



Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Wednesday, 2 November 2022 10:07 AM
To: Adam Gall
Subject: TI - Poatina Penstock take off Locations

Hi Adam

As discussed last week could you please let me know regarding locations that could be potential for offtake locations on the Poatina Penstock. I have shown to proposed locations below

Also, if you could advise what the Static Water head and the hydraulic head would be if you are running the power station at full load at each location that will greatly assist in our conceptual planning.

Location 1 – Take Off at bottom of Penstock prior to it going underground.
I understand this requires a significant modification to implement a take off at this location and any isolation valve would be under significant pressure.
The significant benefit of this location would be that TI would not be required to build a duplicate penstock down the hill alongside your current penstock.
Therefore, we would have significant budget saving to complete this take off adequately understanding it will require significant design and construction rigour due to the pressure and location.
Approx Elevation: 360m RL



Location 2 – Take Off at top of penstock after exiting hill.
This location would obviously a lower pressure offtake but would require the construction of a penstock alongside your existing.
Approx Elevation: 840m RL



Keen to discuss as soon as practical.

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Wednesday, 3 July 2019 1:17 PM
To: Bill Cohen
Subject: Short term agreement
Attachments: 20190703121300439.pdf

Hi Bill,
Attached is engagement agreement.
Regards
Ian

-----Original Message-----
From: ricohcopier@tidb.com.au <ricohcopier@tidb.com.au>
Sent: Wednesday, 3 July 2019 12:13 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Subject: Your Scanned Document

This E-mail was sent from "RNP002673E77596" (MP C6004ex).

Scan Date: 07.03.2019 12:13:00 (+1000)
Queries to: ricohcopier@tidb.com.au

Client: **Name:** Tasmanian Irrigation **ABN:** 95 722 799 075 **Address:** Level 2, Launceston Airport Passenger Terminal Building 201, Evandale Road WESTERN JUNCTION Tasmania 7212	entura **Single Use Consultancy Contract**	**Consultant:** Hydro-Electric Corporation T/A Entura ABN 48 072 377 158 89 Cambridge Park Drive, Cambridge TAS 7170

Entura as Consultant

Contract Particulars

(to be read in conjunction with the General Conditions of Contract here attached)

PROJECT NUMBER	**CONTRACT DESCRIPTION**
E308263	Water yield reliability modelling for Lake River downstream of Woods Lake

1. The Parties:

Client's representative: Ian Smith	Consultant's representative: William Cohen
Position: Project Manager	Position: William Cohen
Phone Number: [redacted]	Phone Number: (03) 6245 4513
E-mail address: Ian.Smith@tasirrigation.com.au	E-mail address: Bill.Cohen@entura.com.au

2. The Services:

The "**Services**" means the whole of the work to be carried out and completed in accordance with the Contract, including variations provided for by the Contract, which is to be completed by the Consultant and includes:

Water yield reliability modelling for Tasmanian Irrigation's proposed Woods Lake component of the Midland Irrigation Scheme as specified in Entura's proposal dated 18th June 2019 (ref E308263).

In addition to the works described above, a sensitivity analysis of the recent period (2007-2018) is required using observed flows, as described in the email dated 19th June 2019 (pers. Comms I. Smith).

NOTE: Terms and Conditions outlined in this contract override any conditions specified in the purchase order provided by Tasmanian Irrigation, as specified in email dated 24th June 2019 (pers. Comms I. Smith).

3. The Contract Sum:

The "**Contract Sum**" is: (click the applicable box/boxes and insert either a lump sum and/or state the applicable schedule of rates and delete as appropriate) *All prices stated exclude GST	[redacted] ☐ The following schedule of rates: [Insert role] hours @ $[Insert amount] per hour; [Insert role] hours @ $[Insert amount] per hour; Expenses shall be reimbursed by the Client at cost plus 10 percent (%). ☐ The attached schedule of rates
The time for claiming payment is:	[Insert time period, e.g. fortnightly for work performed, or insert milestones] [If nothing stated, on the 20th day of each month or the next business day thereafter.]

4. Time:	
The "**Commencement Date**" is:	1 July 2019
The "**End Date**" is:	31 July 2019

5. Intellectual Property Rights:
"Intellectual Property Right" means any patent, registered design, trademark or name, copyright or other protected right
6. Governing Law:
The Laws of the State of Tasmania.

EXECUTED as an Agreement	
Executed for the **Client** by:	Executed for **Hydro Electric Corporation** by: PHILLIP ELLERTON. #7906
Please print name and capacity: Ian Smith, Project Manager.	Please print name and employee number:
In the presence of:	In the presence of:
Please print name and capacity: Tegan Lavell - Project Manager	Please print name and employee number: William Cohen #7430
DATED 2/7/2019 (completed by final signatory)	

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

2. RESPONSIBILITIES AND OBLIGATIONS OF THE CONSULTANT

2.1 The Consultant shall:

(a) comply with all directions of the Client given pursuant to a provision of the Contract;

(b) employ staff with appropriate qualifications and experience to carry out the Services;

(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

(c) provide the Consultant with such access to premises or sites of the Client as is necessary for the Consultant to carry out the Services; and

(d) bear the cost of all fees and charges required to comply with legislative requirements incurred in connection with carrying out the Services.

4. INSURANCE

4.1 From the Commencement Date, the Consultant must effect and have in place the following insurances:

(a) a professional indemnity insurance policy for the Services with a total aggregate cover of not less than $2,000,000.00 which shall:

(i) include provision for loss of documents; and

(ii) be maintained until the End Date and thereafter for a period of 6 years;

(b) a public liability policy until the End Date for an amount in respect of any one claim or series of claims arising from the one original cause of not less than $20,000,000.00; and

(c) a workers' compensation policy until the End Date for the maximum amount permitted by law, covering the Consultant's liability under common law and statute for death or injury to any person employed by the Consultant.

5. PAYMENT

5.1 The Client shall pay the Consultant the Contract Sum in accordance with this Contract.

5.2 The Consultant shall submit to the Client claims for payment progressively in accordance with the Contract Particulars.

5.3 All monies due and payable by the Client to the Consultant must be paid within 14 days of the receipt by the Client of a properly prepared tax invoice from the Consultant in accordance with clause 6.4.

5.4 If the Client does not pay the amount of the claim the Client shall, either with the payment or not later than the time for payment, provide the Consultant with a written statement of the reason for any difference between the amount claimed and the amount paid or to be paid.

5.5 If any moneys due and payable to either party remain unpaid after the date upon which or the expiration of the period within which they should have been paid, then interest shall be payable thereon at the then current benchmark interest rate applicable to Division 7A of Part III of the *Income Tax Assessment Act 1936* (Cth) from (but excluding) the date upon which or the expiration of the period within which they should have been paid to and including the date upon which the moneys are paid.

6. GST

6.1 Words or expressions used in this clause 6 which are defined in *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) have the same meaning in this clause.

6.2 All amounts stated in and payable under or in connection with this Contract exclude GST unless otherwise indicated.

6.3 If a payment to a party under this Contract is a reimbursement or indemnification, calculated by reference to a loss, cost or expense incurred by that party, then the payment will be reduced by the amount of any input tax credit to which that party is entitled for that loss, cost or expense.

6.4 The recipient will not be liable to pay the supplier for a taxable supply made under or in connection with this Contract until the supplier has given the recipient a tax invoice for the supply to which the payment relates.

6.5 Where an adjustment event occurs in relation to a supply made by the supplier under or in connection with this Contract, the supplier will issue an adjustment note to the party providing consideration in respect of that supply within 28 days after becoming aware of the relevant adjustment.

7. VARIATIONS

7.1 The Client may, by written notice to the Consultant, direct the Consultant to vary the Services and, provided that the variation does not change the general scope of the Services, the Consultant shall be bound to comply with that direction ("Variation").

7.2 The parties must use their best endeavours to agree in writing on the value of a Variation, but in the event that the parties are unable to agree within 7 days of the issue of the direction, then the value of the Variation shall be determined using reasonable rates and prices.

7.3 If a new legislative requirement or a change in a legislative requirement after the date of the Contract could not reasonably have been anticipated at the date of the Contract, then the extent to which the Services are changed by that legislative requirement shall be deemed to be a Variation pursuant to clause 7.1.

7.4 Where, due to circumstances beyond the reasonable control or anticipation of the Consultant, the Consultant is required to alter, add to or delete documents or other things previously submitted and which otherwise would have complied with the Contract, the Consultant shall inform the Client and seek directions and any subsequent alteration, addition or deletion shall be deemed to be a Variation pursuant to clause 7.1.

8. DELAYS

8.1 The Consultant shall proceed with the work under the Contract with due expedition and without delay.

8.2 When it becomes evident to a party that an act or omission of the Client, or an employee, other consultant, contractor or agent of the Client, may delay carrying out the Services, that party shall promptly notify the other party in writing with details of the possible delay and the cause.

8.3 The Client may direct the Consultant in what order and at what time the Services shall be performed and if:

(a) the Consultant:

(i) can reasonably comply with the direction the Consultant shall do so; and

(ii) cannot reasonably comply with the direction the Consultant shall so notify the Client in writing, giving reasons; and

(b) compliance with the direction causes the Consultant to incur more or less cost than otherwise would have been incurred had the Consultant not been given the direction, the difference shall be valued pursuant to clause 7.2 as though the direction was a Variation.

9. CONFIDENTIALITY

9.1 Except as required by law, the Consultant and the Client will keep confidential information which is so designated in writing by the party providing the information, or which should reasonably be known by the recipient party to be confidential. This clause 9 will survive the expiry or termination of the Contract.

10. LIABILITY OF THE CONSULTANT

10.1 The maximum liability of the Consultant arising out of the performance or non-performance of the Contract or the Services whether under the law of contract, tort or otherwise, shall be limited to 500% of the Contract Sum.

10.2 To the maximum extent permitted by law and notwithstanding any other provision of the Contract, the Consultant is not liable to the Client, whether under contract, in tort, in equity, in restitution, under statute or otherwise, in respect of any:

a. business interruption loss;
b. loss of actual or anticipated profit, revenue, production, opportunity or anticipated savings;
c. loss of use; or
d. exemplary damages.

10.3 This clause 10 shall not apply to claims in respect of personal injury or death.

11. CONSULTANT'S INDEMNITY

11.1 Subject to clause 10, the Consultant shall indemnify the Client against:

(a) loss of or damage to property of the Client; and

(b) claims by any person against the Client in respect of personal injury or death or loss of or damage to any other property,

arising out of or in consequence of carrying out the Services by the Consultant.

11.2 The Consultant's liability to indemnify the Client under clause 11.1 shall be reduced proportionally to the extent that the act or omission of the Client or the employees, agents or other contractors of the Client contributed to the loss, damage, death or injury.

12. DISPUTES

12.1 If a dispute arises between the Consultant and the Client in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contract or the Services, either party may give a notice in writing ("Notice of Dispute") to the other party specifying the nature of the dispute, the particulars of the party's reasons for being dissatisfied and the position that the party believes is correct.

12.2 The parties must meet within 14 days of the date of the Notice of Dispute and undertake genuine and good faith negotiations with a view to resolving the dispute. Unless the parties agree otherwise, the meeting must take place in Hobart, Tasmania.

12.3 If the parties are unable to resolve the dispute in accordance with clause 12.2 within 14 days of first meeting under clause 12.2, the dispute may be referred, by written notice of either party, to mediation, which is to be conducted in accordance with the Institute of Arbitrators and Mediators Australia Mediation Rules.

13. INTELLECTUAL PROPERTY

13.1 Unless the Contract otherwise provides, the Consultant retains all Intellectual Property Rights in the Services and in any design, materials, documents and methods of working used or produced in relation to the Services. The Consultant grants to the Client an irrevocable, royalty free, non-exclusive, transferable, perpetual licence to exercise all rights of the owner of the Intellectual Property Rights associated with the Services, for any business purpose of the Client, including additions or alterations or entering into any agreement with any third party which is associated with or uses the Services or things produced in the course of performing the Services.

14. ASSIGNMENT

14.1 The Consultant may assign, novate or otherwise transfer any of its rights, remedies, powers, duties and obligations under this Contract without approval from the Client to another entity that is financially and technically able to conduct the Consultant's engineering and consulting business, Entura ("Other Entity") provided that all, or a substantial part, of the Consultant's engineering and consulting business, Entura is transferred to the Other Entity. The Client agrees to do anything the Consultant asks to give effect to the above, including signing any documents, to transfer the rights, remedies, powers, duties and obligations to the Other Entity.

15. NOTICES

15.1 A notice (and other documents) must be in writing, legible, in English and delivered in person, by email or by post.

15.2 A notice (and other documents) shall be deemed to have been given and received:

(a) if addressed or delivered to the relevant address listed in the Contract Particulars or last communicated in writing to the person giving the notice; and

(b) on the earliest date of:

(i) actual receipt if delivered in person;

(ii) the notice being recorded as having been first received at the electronic mail destination; or

(iii) 3 days after posting.

16. TERMINATION

16.1 The Contract may be terminated:

(a) at any time by mutual agreement;

(b) for the convenience of the Client, upon the giving of not less than 7 days notice, in which case the Client shall pay the Consultant:

(i) that portion of the Contract Sum payable to the date of termination;

(ii) any direct costs incurred by the Consultant to the date of termination; and

(iii) an amount equal to 2% of the Contract Sum;

(c) upon a substantial breach of the Contract by either party which is not remedied within a reasonable time (and in any case within 7 days) of notice by the non-breaching party of the substantial breach; or

(d) immediately by either party in the event the other party becomes insolvent or financially unable to proceed with the Contract.

16.2 Upon termination of the Contract, the Consultant shall, as soon as possible, return to the Client the Client's property provided to the Consultant in carrying out the Services.

16.3 If a party breaches (including repudiates) the Contract, nothing in this clause 16 shall prejudice the right of the other party to recover damages or exercise any other right or remedy.

17. GOVERNING LAW

17.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

Lara Henley

From: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Sent: Wednesday, 21 October 2020 4:03 PM
To: Ian Dunbabin
Cc: Jacob Gerke; Sven Rand; Andrew Kneebone; Byron Fraser; Steven Maycock
Subject: Meeting next week

Follow Up Flag: Follow up
Flag Status: Completed

Hi Ian

Thanks for the quick catch-up this afternoon. I confirm we will have our next meeting at 2pm next Wednesday, 28 October.

The agenda items from TI's perspective are;

Northern Midlands Irrigation Scheme – Lake River winter flows. How is Lake river managed in the winter, are there natural flows that could be accessed by TI and pumped into our pipeline?
Tamar – What are the lake height fluctuations in Trevallyn Dam for pump station design? Thoughts on Taswater treated reuse going through Trevallyn PS to offset the volume TI extracts from Trevallyn Dam.
Pricing methodology – all schemes
Amalgamation of water supply agreements – establish key contacts and timeline

I will have a quick check, I don't believe there are burning questions for Don, Fingal or Sassafras.

Regards

Paul Ellery
General Manager Program Development and Delivery

Tasmanian Irrigation

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HELPING TO GROW THE WEALTH OF TASMANIA

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COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

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1 **Definitions and interpretation**

In addition to the definitions (if any) set out in the Letter of Acceptance, the following definitions apply:

"Business Day" means a day that is not a Saturday, Sunday or public holiday in the area where the Works are located.

"Claims" means all claims, demands, writs, summonses, suits, proceedings, judgements, orders, decrees, costs, losses and expenses of any nature whatsoever.

"Commencement Date" means the date specified in **Annexure A**.

"Commonwealth" means the Commonwealth of Australia.

"Completion Date" means the date or dates specified in **Annexure A**, for completion of the Works, or for completion of a stage or stages of the Works.

"Confidential Information" means any information which is confidential to the Principal, and of which the Contractor becomes aware arising out of or associated with completion of this Contract or otherwise, and includes, without limitation, information concerning or relating to past, present or contemplated activities, internal or external business operations or other information relating to the business of the Principal and also includes any compilation of otherwise public information in a form not in the public domain.

"Conflict of Interest" means having an interest (whether personal, financial or otherwise) which conflicts with or may reasonably be perceived as conflicting with the ability of the Contractor to perform its obligations under this Contract objectively**.**

"Consequential Loss" means indirect, economic, special or consequential loss or damage, loss of revenue, time, goodwill, data, anticipated savings, opportunity, loss of production and/or loss of profit.

"Contract Amount" has the meaning specified in clause 2.

"Contract Material" means Existing Contract Material and New Contract Material.

"Contractor" means the entity designated as such in the Letter of Acceptance.

"Existing Contract Material" means any material (including but not limited to software, documentation or data) which is:

a) existing at the Commencement Date; or

b) an enhancement of material (including but not limited to software, documentation or data) existing as at the Commencement Date; or

c) produced after the Commencement Date, independently of this Contract, and

which is or forms part of the Works or a deliverable under the Contract.

"Force Majeure Event" means an event or cause listed below to the extent that the event or cause is beyond the reasonable control of the relevant party:

a) act of God, lightning, storm, flood, fire, earthquake or explosion, cyclone, tidal wave, landslide or adverse weather conditions;

b) strike, lockout, or other labour difficulty but not a strike or lockout atthe premises of the party claiming force majeure; or

c) act of public enemy, war (declared or undeclared), terrorism, sabotage, blockage, revolution, riot, insurrection civil commotion, travel or other restrictions imposed by a Governmental Authority as a result of outbreak or disease or declaration of an epidemic or pandemic.

d) the enactment or amendment of any laws, rules, regulations, orders or decrees of the Australian Federal Government, State or Territory

"Fixed Lump Sum" has the meaning in clause 2.2.

"GST" has the meaning given to that term in the GST Act.

"GST Act" means *A New Tax System (Goods and Services Tax) Act 1999* (Cth).

"Good Industry Practice" means the standards (including any relevant Australian Standard), practices, methods and procedures generally followed or approved by relevant industries, contractors and suppliers in Australia with respect to the Works, and that degree of skill, diligence and prudence which would reasonably and ordinarily be expected from a skilled, competent and experienced supplier engaged in the Works.

"Guarantor" means the director of the Contractor who has executed the guarantee at **Annexure B**.

"Input Tax Credit" has the meaning given to that term in the GST Act.

"Intellectual Property Rights" includes copyright, trademark, design, patent, semi-conductor or circuit layout rights, trade, or other proprietary rights, or any rights to registration of such rights existing in Australia, or elsewhere or protected by statute from time to time, whether created before, on or after the Commencement Date.

"Joint Venture Operator" has the meaning given to that term in the GST Act.

"Legislative Requirements" includes Act, regulations, by-laws, ordinances, orders, awards, proclamations and the requirements of any government agency of the Commonwealth, State or Territory in which the Works are being undertaken, as well as any certificates, licences, approvals or requirements of any organisation having jurisdiction in connection with the provision of the Works.

"Letter of Acceptance" means the letter given by the Principal to the Contractor communicating the Principal's acceptance of the Contractor's tender or proposal for provision of the Works.

"New Contract Material" means any material (including software, documentation or data) created, written or otherwise brought into existence by or on behalf of the Contractor in the course of performing the Contract and which forms part of the Works or a deliverable under this Contract, and in which exists newly created Intellectual Property Rights, but specifically excludes Existing Contract Material.

"the Principal" means Tasmanian Irrigation Pty Ltd (ACN 133 148 384)

"the Principal's Representative" means the person named in the **Annexure A** or as nominated from time to time by the Principal.

"Party" means the Principal and the Contractor.

"Personnel" means officers, employees, contractors, subcontractors or agents.

"Prior Works" means the goods, equipment, materials or services completed or provided by the Contractor that are within the scope of Works under the Contract at any time prior to the date of the Contract.

"Recipient" has the meaning given to that term in the GST Act.

"Representative Member" has the meaning given to that term in the GST Act.

"RTI Act" means the *Right to Information Act 2009* (Tas)

"Schedule of Rates" has the meaning in clause 2.3.

"Scope of Works" means the full particulars of the Works to be performed under this Contract and is more particularly described in the Letter of Acceptance.

"Government Agency" means any of:

a) the Commonwealth;

b) the State;

c) a Minister of the State or the Commonwealth;

d) a Department of the State or the Commonwealth;

e) a State or Commonwealth company or a State or Commonwealth entity;

f) any other entity of the State or Commonwealth established under an any other Act of the State or Commonwealth Parliament;

g) any other entity which is otherwise owned or controlled by the State or Commonwealth; or

h) a trust of which any of the entities described in paragraphs (a) to (g) is a trustee or a beneficiary.

"State" means the State of Tasmania;

"Supplier" means the entity making the Supply.

"Supply" has the meaning given to that term in the GST Act.

"Tax Invoice" has the meaning given to that term in the GST Act.

"Taxable Supply" has the meaning given to that term in the GST Act.

"**tender**" means the documents relating to the Principal's request for tender (if any) and the Contractor's response.

"**Term**" means the period from the Commencement Date to the Completion Date.

"Works" means the goods, equipment, materials, and services to be provided by the Contractor as specified in and in conformity with the requirements of this Contract, together with such goods, equipment, materials, and services obviously necessary to ensure this Contract is complete whether expressly specified or not.

2 Nature of Contract

2.1 The Contract shall be:

a) a Fixed Lump Sum Contract; or

b) a Schedule of Rates Contract; or

c) partly Fixed Price Lump Sum and partly Schedule of Rates,

as stated in **Annexure A** or if not stated, as otherwise provided in this Contract.

2.2 For a Fixed Lump Sum Contract, the Contract Amount shall be the fixed lump sum amount tendered by the Contractor and accepted by the Principal (which, unless expressly stated is a lump sum covering all of the Works).

2.3 For a Schedule of Rates Contract, the Contract Amount shall be the sum of the amounts ascertained by multiplying the unit rates tendered by the Contractor and accepted by the Principal by the actual quantities required for completion of this Contract (excluding those items or activities to which the rates are not to apply).

2.4 For a partly Fixed Lump Sum and partly Schedule of Rates Contract, the Contract Amount shall be ascertained by addition of the amount(s) determined pursuant to clause 2.2 above for the Fixed Lump Sum portion and the amount(s) determined pursuant to clause 2.3 above for the Schedule of Rates portion.

2.5 All money amounts shall be in Australian currency exclusive of GST.

2.6 The Contractor agrees that:

a) all provisions of this Contract apply retrospectively to the Prior Works; and

b) the Prior Works are warranted by the Contractor to comply with this Contract.

2.7 The Contractor acknowledges that:

a) payments already made by the Principal for Prior Works (if applicable) will be taken to be payments made under the Contract; and

b) amounts for Prior Works are included in the Fixed Lump Sum stated in Annexure A (if any) unless the Contract expressly provides otherwise.

3 Legislative Requirements

3.1 The Contractor shall satisfy all relevant Legislative Requirements. The Contract Amount shall be deemed to include the costs or expenses associated with such compliance and the payment of any fees in accordance with relevant Legislative Requirements, unless stated otherwise in **Annexure A.**

4 Time and Progress

4.1 The Contractor shall commence the Work on the Commencement Date and undertake and complete the Work within the duration of the Term, subject to clauses 17 and 18.

4.2 The Term may be extended by written agreement between the parties.

4.3 The Contractor shall not be entitled to an extension of time where the delay arises because of the Contractor's failure to interface with work by other contractor or the Principal that may reasonably be expected to impact on the Works under this Contract.

4.4 Unless otherwise specified in **Annexure A**, the Contractor's working hours shall be as required for the Contractor to meet its obligations under this Contract.

5 Payment and Certificates

5.1 Where this Contract provides that payment shall be on a Schedule of Rates basis, the Contractor shall submit its Tax Invoice to the Principal at the intervals stated in **Annexure A**. Such Tax Invoices shall contain full details of each element of the Works completed and supplied in accordance with this Contract as agreed with the Principal as claimable at the date of the Tax Invoice.

5.2 Where this Contract provides that payment is on a Fixed Lump Sum basis, the Contractor shall submit its Tax Invoice to the Principal for the proportion of the Fixed Lump Sum complete in accordance with this Contract at the date of invoice in respect of Works and as agreed with the Principal as claimable.

5.3 Unless otherwise stated in **Annexure A,** the Contractor shall be deemed to have included in its rates or prices, all amounts for all travelling expenses, accommodation, costs of consumables, office, management, supervision, plant, tools and other overhead and direct costs and expenses required in completion of the Works.

5.4 If the Principal reasonably disputes any amount purportedly owed by it to the Contractor under this Contract (including any Tax Invoices rendered pursuant to this Contract) or requires further clarification, the Principal may withhold payment of the Tax Invoice, or the disputed part of that Tax Invoice or the part of that Tax Invoice that requires clarification. After the dispute or clarification is resolved (whether by agreement or in accordance with clause 19), the amount that has been agreed or determined will be paid within 14 days after the agreement or determination is made.

5.5 Subject to this Contract, the Principal shall pay the amount specified in a Tax Invoice that complies with this Contract within thirty days of receipt of the Tax Invoice.

5.6 Each claim for payment by the Contractor shall be in a form satisfactory to the Principal acting reasonably.

5.7 Without limiting the Principal's other rights under this Contract, the Principal may deduct any monies due to the Contractor, from any sum which is payable by the Contractor to the Principal under this Contract.

5.8 Payments to the Contractor are on account only and do not constitute evidence of the Principal's approval of the Works or the achievement of any stage of the Works.

6 GST

GST Exclusive

6.1 The consideration for a Supply made under or in connection with this Contract does not include GST.

Taxable Supply

6.2 If a Supply made under or in connection with this Contract is a Taxable Supply, then at or before the time the consideration for the Supply is payable:

a) the Recipient must pay the Supplier an amount equal to the GST for the Supply (in addition to the consideration otherwise payable under this Contract for that Supply); and

b) the Supplier must give the Recipient a Tax Invoice for the Supply.

Reimbursement or Indemnity

6.3 If either party has the right under this Contract to be reimbursed or indemnified by another party for a cost incurred in connection with this Contract, that reimbursement or indemnity excludes any GST component of that cost for which an Input Tax Credit may be claimed by the party being reimbursed or indemnified, or by its Representative Member, Joint Venture Operator or other similar person entitled to the Input Tax Credit (if any).

7 Variations

7.1 The Principal may give a direction to the Contractor to vary the Scope of Works including to increase, decrease or omit any part of the Scope of Works under this Contract; change the quantity or quality of any part of the Work under this Contract; perform additional works and change the design, drawing or specification for the works under this Contract, or change the timing of the provision of the Works (including by suspension) but the Contractor shall not vary the Scope of Works without a written direction of the Principal prior to undertaking any change.

7.2 If the Contractor undertakes or implements a change to the Scope of Work other than in strict accordance with the preceding clause, the Contractor shall have no claim for any extra costs, loss, expense or extension of time under this Contract or any other claims upon the Principal pursuant to this Contract or at law and shall be deemed to have effected the change for its own convenience and at its own cost.

7.3 Where the Principal directs a variation, the parties must, prior to its execution, agree the value of the variation and any extension of time.

7.4 Where a variation involves extra work for which a price has not been agreed and:

a) a scheduled rate or price has been provided within this Contract, the variation shall be valued at that rate or price; or

b) involves work for which no rate or price exists under this Contract, the ~~Principal~~ Contractor shall determine a reasonable price for the variation and may have regard to similar work to arrive at a reasonable value of the variation.

8 Contractor's Obligations and Warranties

8.1 The Contractor will carry out the Works for the Principal in accordance with this Contract.

8.2 The Contractor warrants that the Works will:

a) match the description of the Works set out in this Contract;

b) be performed in a thorough and professional manner and in accordance with Good Industry Practice; and

c) be undertaken in accordance with all applicable Legislative Requirements.

8.3 The Contractor will ensure that its Personnel have the necessary skills and experience to perform those works allocated to them by the Contractor.

8.4 The Principal may give written notice to the Contractor to remove any of its Personnel from work under this Contract whose performance the Principal reasonably considers is unsatisfactory. The Contractor shall promptly comply with such notice and will gain approval from the Principal for any replacement.

8.5 The Contractor will not represent itself nor allow its Personnel to represent themselves as being employees or agents of the Principal. It is the express intention of the parties that such a relationship does not exist.

8.6 The Contractor will comply with all reasonable directions of the Principal's Representative, having regard to the nature of the Works.

8.7 The Contractor will complete the Works in accordance with all operations, safety, health and environmental guidelines, rules and procedures provided to the Contractor by the Principal, and any applicable Legislative Requirements.

8.8 The Contractor will perform the Works at such place(s) as set out in **Annexure A** and also in such place(s) as may be necessary to comply with the obligations under this Contract.

8.9 The Contractor warrants that it has fully informed itself as to the site including access to and the prevailing conditions at the site, and any documents forming part of this Contract or necessary for performance of this Contract, and that it has made all necessary enquiries regarding any other matter or thing that might reasonably have been expected to affect the carrying out of this Contract by a competent contractor experienced in the type of Works which are the subject of this Contract.

8.10 The Contractor shall remain fully responsible for the Works despite:

a) the Principal's, the Principal's representative's or any of the Principal's other contractors' comment on, review of, approval of, consent to, consent to the use of, acceptance of, or certificate issued in connection with the Works (or failure to do so);

b) any payments being made for the Works; or

c) the Contractor effecting and maintaining any insurance required by the Contract.

9 Provisions related to supply of goods, materials or equipment

9.1 If, as part of the Scope of the Works, the Contractor is required to supply goods, materials or equipment (**Goods**) to the Principal, the Contractor warrants that the Goods will:

a) be free from defects and encumbrances;

b) be of new and merchantable quality;

c) be fit for the purpose or purposes specified in this Contract, and

d) meet the performance criteria (if any) specified in this Contract.

9.2 If the Contractor provides the Goods as part of the Scope of Work, it will provide the Principal with any necessary operation and maintenance instructions prior to their delivery, installation or incorporation in the Works.

9.3 Any Goods forming part of the Scope of Works, shall be examined by the Principal's Representative as soon as practicable after delivery and shall be accepted when the Principal's Representative certifies that he or she has verified that the Goods have been delivered without damage and are in accordance with the requirements of this Contract.

9.4 Risk in the Goods passes to the Principal upon acceptance by the Principal in accordance with clause 9.3.

9.5 Title in the Goods passes to the Principal on the earlier of acceptance of the Goods or payment for the Goods.

9.6 Packaging and labelling of the Goods and in particular (without limitation) any poisons, drugs chemicals, flammables, gases, volatiles, corrosives, explosive or goods of a dangerous nature must comply with the provisions of the relevant Legislative Requirements in force at the time of delivery.

9.7 At least seven (7) days before delivery of any chemical substance or hazardous material, the Contractor must submit a Material Safety Data Sheet (**MSDS**) for that substance to the Principal's Representative.

9.8 Delivery Dockets, properly completed, stating this Contract Number and particulars of the Goods, must be furnished at the time of delivery. Failure to comply with this requirement may result in rejection by the Principal's Representative and any costs resulting from such rejection shall be borne by the Contractor.

10 Insurance

Workers Compensation

10.1 The Contractor will effect and maintain for the duration of this Contract, workers' compensation insurance as required by law. The Contractor shall ensure that any subcontractors are similarly insured.

Public Liability Insurance

10.2 The Contractor will effect and maintain for the duration of this Contract, appropriate public and products liability insurance in the amount stated in **Annexure A**, for any single occurrence for public liability and in the aggregate for products liability, against claims by any other party which may arise from death or injury of any person or loss or damage to any property which arises out of or in connection with the performance of this Contract (including where caused in connection with the use of a motor vehicle).

Professional Indemnity Insurance

10.3 If this Contract requires the Contractor to prepare any designs or provide any professional or specialist advice or service of a professional nature, the Contractor will effect and maintain a Professional Indemnity policy, in the amount stated in the **Annexure A.**

Evidence of insurance

10.4 The Contractor must, before commencing work and also upon request made by the Principal's Representative during the Term, provide to the Principal's Representative, copies of certificates of currency in relation to all required insurances, as well as proof of payment of premiums. Notwithstanding any other provision of this Contract, the Contractor shall not become entitled to any payment under this Contract or at law until it has complied with this requirement.

11 Directors' guarantee

11.1 If requested by the Principal, it is a condition of this Contract that the Contractor procures the directors of the Contractor to execute a guarantee and indemnity in the form at **Annexure B**.

12 Indemnity

12.1 The Contractor releases, discharges and indemnifies the Principal and its Personnel from and against all Claims which may be brought against or made upon or incurred by any of them in connection with any:

a) negligent or unlawful act or omission of the Contractor or its Personnel;

b) breach of this Contract by the Contractor or its Personnel;

c) contravention of any Legislative Requirements by the Contractor or its Personnel; or

d) infringement by the Contractor or its Personnel of the Intellectual Property Rights of any third party,

except to the extent the Claim is due to the negligent or unlawful act or omission of the Principal, or its Personnel.

12.2 Neither party will be liable to the other party or to any other person for any Consequential Loss.

12.3 As far as the law permits and unless otherwise specified in this Contract, the Principal will not be liable to the Contractor for any Claim relating to or arising from this Contract, except to the extent that the Claim arises from the negligent or unlawful act or omission of the Principal or its Personnel.

12.4 The liability of a Party to the other Party for loss or damage sustained shall be reduced proportionately to the extent that the loss or damage was caused or contributed to by the other Party's negligence, unlawful act or omission and/or failure to comply with its obligations and responsibilities under and/or in connection with this Contract or otherwise at law.

12.5 To the maximum extent permitted by law, but subject to clause 12.6, the liability of a Party whether arising out of or in connection with this Contract or out of or in connection with the performance or non-performance of the Works and whether such liability arises in contract, in tort (including negligence), under statute or otherwise is limited to the total aggregate liability specified in **Annexure A**.

12.6 The limitation of liability in clause 12.5 does not apply in relation to liability:

a) for personal injury (including sickness, injury and death);

b) for infringement of any Intellectual Property Rights of any third party;

c) ~~for loss of, or damage to, tangible property of any third party; or~~

~~d)~~ for which the Contractor has insurance or would have had insurance had it complied with its insurance obligations under the Contract.

13 Intellectual Property Rights

13.1 ~~The Contractor assigns a~~All Intellectual Property Rights in New Contract Material vests on creation ~~to~~in the ~~Principal~~Contractor.

13.2 ~~The Contractor shall promptly provide to the Principal all source code relating to the New Contract Material in a format and on a~~

~~medium which is suitable for compilation and use in the Principal's designated operating environment, at the Completion Date~~Not used.

13.3 The Contract does not affect the Intellectual Property Rights in Existing Contract Material.

~~13.4~~ The Contractor grants, and shall ensure that relevant third parties grant to the Principal, a non-exclusive, perpetual licence (including the right to sub-licence), without additional cost to the Principal, to~~:~~

~~13.5 a) use ;~~

~~13.6 b) exploit (but not commercially); and/or~~

~~13.7 b) otherwise exercise,~~

~~13.8~~13.4 all Intellectual Property Rights in relation to the Existing Contract Material and the New Contract Material but only as required for ~~undertaking the business of~~ the Principal's use of the Works.

~~13.9~~13.5 The Contractor warrants that it is the beneficial owner of the Intellectual Property Rights in the Existing Contract Material or has a right to sub-licence the Intellectual Property Rights in the Existing Contract Material in the manner set out in this clause 13.

~~13.10~~13.6 All amounts relating to the Intellectual Property Rights, including royalties and like fees or payments, incurred by the Contractor in relation to the Works, shall be paid by the Contractor and be deemed to have been allowed in the Contract Amount.

~~13.11~~13.7 The Contractor will execute all documents necessary to give effect to the provisions of this clause 13 at no extra cost to the Principal.

14 Confidentiality

14.1 The Contractor undertakes to treat as confidential and not to disclose, duplicate, use or permit the use of, at any time and in any way, the Confidential Information of the Principal coming into its possession or knowledge, other than for the purpose of completing this Contract, obtaining professional advice or complying with any Legislative Requirements.

14.2 The Contractor shall not, without the prior written approval of the Principal (and on such terms as the Principal deems fit), disclose to any person, any Confidential Information of the Principal which becomes known to the Contractor in the course of this Contract and the Contractor shall ensure its Personnel are similarly restrained.

14.3 All Contract Material supplied to or created by the Contractor for use during the course of this Contract and any Confidential Information provided to the Contractor, must be delivered to the Principal (in hard and electronic form) upon termination or completion of this Contract or upon any written request of the Principal's Representative. Subject to complying with the requirements of clauses 13 and 14, the Contractor is entitled to keep one copy of the Contract Material for its internal governance and reporting purposes.

14.4 The parties acknowledge that the Principal may contract with a Government Agency and pursuant to that contract may be subject to legislation including the RTI Act.

14.5 Documents and information generated as a result of obligations under this Contract or that relates to the performance of obligations under this Contract, may be subject to the disclosure requirements of RTI Act.

14.6 The parties also acknowledge that any disclosure by the Principal of such documents and information pursuant to this legislation or to any Government Agency will not constitute a breach of this Contract by the Principal.

15 Non-compliant Works

15.1 If the Principal is not satisfied that the Works comply in all respects with the requirements of this Contract, the Principal may, at its option:

a) require the Contractor to promptly take such steps as are necessary to ensure that the Works comply with this Contract at no additional cost to TI; and

b) subject to clause 15.1(a), rectify, either itself or by others, the Works which do not comply with this Contract at no additional cost to the Principal and/or the Contractor agrees to reimburse the Principal for reasonable costs and expenses the Principal incurs in rectifying any non-compliant Works (which is deemed a debt due by the Contractor to TI).

15.2 The Principal's rights under clause 15.1 do not in any way change or affect the Contractor's obligations under this Contract or affect the Principal's rights against the Contractor under this Contract.

16 Project Management

16.1 The Contractor must keep the Principal fully informed on all aspects of the Works.

16.2 Without limiting the scope of clause 16.1, the Contractor will provide to the Principal, as requested from time to time by the Principal, detailed progress reports as well as copies of all plans, designs, calculations, drawings, specifications, reports, data and other information relating to the Works to a standard which accords with Good Industry Practice.

16.3 The Contractor shall liaise with and report to the Principal's Representative during this Contract and shall attend such meetings and briefings with the Principal and other interested parties as required by the Principal's Representative.

16.4 All communications, deliverables and other documents required for the performance of this Contract shall be delivered to the Principal's Representative in writing and, if stated in **Annexure A** or elsewhere under this Contract, in electronic format.

17 Termination for Convenience

17.1 The Principal may, by 14 days' prior written notice ~~in writing~~ to the Contractor, terminate this Contract for its convenience. ~~and, provided the Contractor has not by a breach of any provision of this Contract or by any wrongful act or omission caused or contributed to the termination, t~~The Contractor shall be entitled to be paid an amount pro rata to the Contract Amount for the Works completed prior to termination, together with such justifiable extra and unavoidable costs incurred to the termination date (but excluding Consequential Loss) on the incomplete portion of the Works.

18 Termination Otherwise

18.1 If the Contractor:

a) commits an act of bankruptcy, has a bankruptcy petition presented against it or is made bankrupt; or

b) advises the Principal or other creditors that it is insolvent; or

c) enters into a Scheme of Arrangement or an arrangement with creditors under Part 10 of the Bankruptcy Act; or

d) an application is made to a Court for the winding up of the Contractor; or

e) has a winding up order made against it; or

f) has a receiver or a receiver manager appointed to carry on the business or any part of the business or for any

assets of the Contractor or is placed into administration; or

g) has an execution levied against it by any person,

then the Principal may, without prejudice to any other rights it has at law, terminate this Contract or take over the balance of the Works or any part of the Works upon providing notice in writing to the Contractor.

18.2 If the Contractor breaches a provision of this Contract, then the Principal may issue a notice in writing to the Contractor requiring it to show cause within the period stated in the notice (but not less than 10 Business Days) why this Contract should not be terminated or why the Principal should not take over the balance or any part of this Contract ~~and recover its costs so incurred from the Contractor~~.

18.3 If the Contractor fails, within the period specified in a notice issued pursuant to clause 18.2, to remedy the breach to the satisfaction of the Principal acting reasonably, then without prejudice to any other rights it has at law, the Principal may terminate this Contract or take over the balance of the Works or any part of the Works upon providing notice in writing to the Contractor.

18.4 If the Principal serves notice of termination on the Contractor pursuant to the above provisions, then this Contract shall be at an end on and from the date specified in the notice of termination.

18.5 Upon termination of this Contract or taking over of the balance or any part thereof by the Principal, the Contractor shall be entitled to be paid an amount pro rata to the Contract Amount for the Works completed prior to termination~~Principal shall be entitled to withhold all moneys which are due or would otherwise become due to the Contractor under this Contract and deduct from such moneys, the Principal's costs of completing the Works and if such moneys are insufficient, the Principal may elect to recover from the Contractor, or the Guarantor, the balance of its costs as a debt due and owing from the Contractor to the Principal~~.

19 Dispute resolution

19.1 Any dispute or difference between the parties (**dispute**), shall in the first instance, be notified in writing by one party to the other, requesting a meeting within seven (7) days to be attended by a representative of each party having the capacity to reach a binding agreement by negotiation, and each party shall negotiate and use their best endeavours to resolve the dispute.

19.2 If the parties are unable to resolve any dispute or difference in accordance with clause 19.1, then the dispute must be submitted to mediation in accordance with, The Resolution Institute Mediation and Conciliation Rules or any replacement or similar rules as amended from time to time.

19.3 A party may not start court proceedings in relation to a dispute until it has exhausted the dispute resolution procedures in clauses 19.1 and 19.2.

19.4 Notwithstanding the existence of a dispute, the Principal and the Contractor shall continue to meet their respective obligations, but the Principal shall be entitled to withhold payment of any amount in dispute and the Contractor shall continue to perform the Works under this Contract. The Principal will act reasonably in relation to this clause.

20 Notices

20.1 Any notice necessary or required to be given by any Party to the other must be in writing addressed to the Party to whom it is to be given according to the contact details in Annexure A and:

a) hand delivered to that Party's address;

b) sent by pre-paid mail to that Party's address;

c) sent by email to the that Party's email address~~; or~~

~~d) transmitted by fax to that Party's address~~.

21 General

21.1 Each party must pay its own costs and expenses of and incidental to the negotiation, preparation and execution of this Contract. Any stamp duty on this Contract is payable by the Principal.

21.2 This Contract may only be amended by the written agreement of the parties.

21.3 The Contractor must not assign or subcontract this Contract or any right under this Contract without the prior written consent of the Principal. The Principal may assign and/or novate its rights and obligations under this Contract or any part of it, ~~without the consent of~~in consultation with the Contractor whose consent will not be unreasonably withheld.

21.4 This Contract supersedes all previous agreements about its subject matter and embodies the entire agreement between the parties.

21.5 The Contractor warrants that, to the best if its knowledge, as at the Commencement Date, the Contractor does not have a Conflict of Interest in the performance of the Contractor's obligations under this Contract. If a Conflict of Interest or risk of a Conflict of Interest arises during the Term, the Contractor must, within 3 Business Days, give the Principal written notice of this.

21.6 The relationship between the Principal and the Contractor under this Contract is one of principal and contractor only and the Contractor is not, by virtue of this Contract, in partnership of joint venture with the Principal.

21.7 Clause 2 (Nature of Contract), clause 12 (Indemnity), clause 13 (Intellectual Property Rights) and clause 14 (Confidentiality) and 21.8 (Governing Law) survive termination of this Contract.

21.8 The laws of the State of Tasmania govern this Contract.

22 Force Majeure

22.1 The relevant party is not liable for any delay or failure to provide the services caused by a Force Majeure Event.

22.2 The relevant party must notify the other party as soon as practical of any anticipated or actual (if not already notified as anticipated) delay or failure caused by a Force Majeure Event.

22.3 The relevant party must remedy the Force Majeure Event to the extent reasonably practicable and resume performance of its obligations as soon as practicable.

22.4 The relevant party is not required under this clause to settle any labour dispute against its will or to test the validity or refrain from testing the validity of Federal, State, Territory or local law, order, rule or regulation.

~~21.8~~22.5 The provision of the services by relevant party is suspended for the period of delay caused by the Force Majeure Event.

ANNEXURE A

Clause 1	Commencement Date:	01/04/2022
Clause 1	Completion Date:	01/08/2022
Clause 1	Principal's Representative:	Jacob Gerke, Project Manager NMIS Email: Jacob.Gerke@tasirrigation.com.au Tel: 0429 978 313
Clause 2	Nature of Contract:	Fixed Lump Sum
Clause 2	Contract Amount:	[redacted]
Clause 3.1	Fees Excluded:	Nil
Clause 4.4	Working hours:	As required
Clause 5.1	Intervals for Progress Claims:	Monthly
Clause 5.3	Any reimbursement of expenses by TI	On prior written approval by the Principal's Representative
Clause 8.8	Designated Work Area(s)	No designated work areas
Clause 10.2	Public and Products Liability:	$20,000,000 for any one occurrence for public liability, in the aggregate for products liability.
Clause 10.3	Professional Indemnity:	$2,000,000 per claim.
Clause 11	Directors Guarantee:	Not Required
Clause 12.5	Mutual Cap on Liability	$200,000
Clause 16.4	Format:	All communications/deliverables are required in electronic format.
Clause 21.1	Notices	Contact details

Principal: **Tasmanian Irrigation Pty Ltd**
ACN 133 148 384 / ABN 95 722 799 075

Name: Jacob Gerke, Project Manager NMIS
Address: PO Box 84, Evandale, Tas, 7212
Fax: 03 6398 8441
Phone: 03 6398 8433 / [redacted]
Email: Jacob.Gerke@tasirrigation.com.au

Contractor: **Hydro-Electric Corporation T/a Entura**
ABN 48 072 377 158

Name: Chris Masters, Electrical Engineer
Address: 4 Elizabeth Street, Hobart, Tas, 7000
Phone: [redacted]
Email: chris.masters@entura.com.au

ANNEXURE B

Director's Guarantee

Form of Guarantee by Director of the Contractor

To: Tasmanian Irrigation Pty Ltd (TI)

In consideration of TI entering into a contract with [insert] ACN [insert] (**Contractor**) on or about the date of this Guarantee, at the request of the undernamed Guarantor, the Guarantor hereby guarantees to TI the due and proper performance and observance by the Contractor of the obligations of the Contractor set out in the Contract between TI and the Contractor.

The Guarantor shall not be discharged or released from this Guarantee by any arrangement made between TI and the Contractor with or without the consent of the Guarantor or by any forbearance whether as to performance or otherwise.

The liability of the Guarantor under this Guarantee will not be affected by any act, omission, matter or thing which, but for this clause, might operate in law or in equity to release the Guarantor from that liability or to reduce the Guarantor's liability under the Contract.

Dated this day of 20##

Executed by [insert] as Guarantor in the presence of:

Signature

Signature of Witness

Name of Witness in full

Lara Henley

From: Sues Gough
Sent: Monday, 21 March 2022 5:14 PM
To: jacob.gerke@tasirrigation.com.au
Cc: Adam Gall; Prajit Parameswar; Eric.Shegog@tasirrigation.com.au
Subject: NMIS: Confidentiality Agreement re forecast modelling
Attachments: Confidentiality Agreement DRAFT (NMIS).docx

Follow Up Flag: Follow up
Flag Status: Completed

Mr Gerke,

I refer to your email to Adam Gall today in relation to the above.

Hydro Tasmania appreciates Tasmania Irrigation's wish to convey modelling data to Government and Ministers associated with funding processes and I have made amendments to the agreement (the definition of Affiliate and clause 3.1) to accommodate that (highlighted in yellow).

I've also amended the redundant references to Discloser's Confidential Information that were identified (marked up).

I'm more than happy to discuss any aspect of the above with your legal team if required.

Kind regards

CONFIDENTIALITY AGREEMENT

Details

Date ___/___/2022

	Hydro Tasmania (Discloser)		Tas Irrigation (Recipient)
Name	Hydro-Electric Corporation (trading as Hydro Tasmania) (ABN 48 072 377 158)	Name	Tasmanian Irrigation Pty Ltd (ACN 133 148 384)
Address	4 Elizabeth Street, Hobart, Tasmania, 7000	Address	2 Terminal Building, Launceston Airport, Western Junction, Tasmania, 7250
Contact	[Insert]	Contact	[Insert]
Phone	[Insert]	Phone	[Insert]
Email	[Insert]	Email	[Insert]

Executed by the parties as an agreement

Executed by the **HYDRO-ELECTRIC CORPORATION trading as Hydro Tasmania (ABN 48 072 377 158)** by

.....

Signature

Executed by **TASMANIAN IRRIGATION PTY LTD (ACN 133 148 384)** pursuant to the Formal Instrument of Delegation approved 4 April 2020 by:

.....

Delegate's Signature

.....

Full name and role of Delegate

.....

Full name

.....

Company Secretary's Signature

.....

Date

.....

Full name of Company Secretary

.....

Signature of Witness

.....

Full name of witness

.....

Date

PART A - Confidentiality and Privacy

1. Acknowledgment and no obligation

1.1 Acknowledgement

Each party acknowledges that the Confidential Information is secret and confidential to the Discloser.

2. Obligation of Confidence

2.1 Maintain confidentiality

Subject to clause 3 (Permitted Disclosures), clause 4 (Exclusions) and clause 5 (Return or destruction of Confidential Information), the Recipient must:

(a) keep the Confidential Information confidential and not disclose, or permit the disclosure of, Confidential Information to any person other than an employee or officer of the Recipient with a genuine need to know the information for the Purpose, without the prior written approval of the Discloser;

(b) take those steps it uses to secure and protect its own confidential information (and at least reasonable steps) to keep the Confidential Information secure and protected from any use, disclosure or access that is inconsistent with this document; and

(c) not memorise, modify, reverse engineer or make copies, notes or records of the Confidential Information for any purpose other than in connection with the Purpose.

2.2 Use of Confidential Information

The Recipient may use the Discloser's Confidential Information only for the Purpose.

3. Permitted Disclosures

3.1 Affiliate Disclosure

(a) The Recipient may disclose the ~~Discloser's~~ Confidential Information to its Affiliate without the Discloser's prior written consent but only if the disclosure is made to the Affiliate on a 'need to know basis' for the purpose of assessing a business case of, or potential funding in, the proposed Northern Midlands Irrigation Scheme and before the disclosure the Recipient:

(i) has informed the Affiliate of the confidential nature of the Confidential Information to be disclosed;

(ii) has informed the Affiliate of any assumptions, qualifications, limitations or disclaimers marked or noted on the Confidential Information; and

(iii) has ensured that the Affiliate will observe all the Recipient's obligations under this document as if those obligations were imposed on that Affiliate.

(b) The Recipient is liable for any act or omission of any of its Affiliates which would constitute a breach of this document if it was the conduct of the Recipient.

3.2 Required Disclosures

(a) The Recipient may disclose Confidential Information ~~of the Discloser~~ without the Discloser's prior written consent if the disclosure is required by any applicable law, legally binding order, Government Agency, requirement of a regulator, rules of any stock exchange or as a result of a court order provided:

(i) where it is legally permitted to do so, the Recipient provides the Discloser with reasonable prior written notice of the required disclosure to allow the Discloser to take such steps as the Discloser considers necessary to prevent or minimise the disclosure or maintain the confidentiality of the Confidential Information;

(ii) the Recipient provides the Discloser with that assistance and co-operation which the Discloser considers necessary to prevent or minimise that disclosure of the Confidential Information; and

(iii) the Recipient limits the disclosure to that Confidential Information that must be disclosed by law, order, Government Agency, requirement or rule.

4. Exclusions

The Recipient's obligations of confidence in this document do not apply to Confidential Information that:

(a) is in the public domain other than as a result of a breach of this document;

(b) is provided to the Recipient (without restriction as to its use or disclosure by the Recipient) by a third party whom the Recipient knows and can demonstrate is legally entitled to possess the Confidential Information and provide it to the Recipient; or

(c) is independently developed by the Recipient or the Recipient's Affiliate.

5. Return or destruction of Confidential Information

5.1 Return or destruction

Where requested by the Discloser, the Recipient agrees to:

(a) immediately cease using the ~~Discloser's~~ Confidential Information;

(b) promptly return to the Discloser, or at the option of the Discloser, destroy or alter so as not to contain any Confidential Information, all material in the possession of the Recipient or its Affiliates which contain any Confidential Information and provide written confirmation to the Discloser that such destruction or alteration has been completed; and

(c) permanently delete Confidential Information from all electronic media on which it is stored, so that it cannot be restored or in any way reconstructed or reconstituted.

5.2 Return or destruction exception

Despite clause 5.1 (Return or destruction), a Recipient is not required to return, destroy or alter documents or other materials to the extent that:

(a) the Recipient is required by law to keep them;

(b) they are legal advice, internal working papers, legal opinions or materials used for the purpose of providing legal opinions;

(c) they are directors' papers of the Recipient or its Related Entities, or the minutes of the board of the Recipient or its Related Entities or any committee of such board; or

(d) they are included in working papers for the purpose of and in submissions to internal board, board committee or senior executive meeting papers for the purpose of evaluating any proposed transaction and for making decisions in relation to any proposed transaction.

5.3 No release

The Recipient is not released from its obligations under this document as a result of returning, destroying or deleting any documents or other information under clause 5.1 (Return or destruction).

6. No representation or warranty

6.1 No representations or warranties given

Each partyRecipient hereby acknowledges that, except as may be subsequently agreed in writing by the parties, neither the Discloser nor any of its Affiliates:

(a) has made or makes any representation or warranty, express or implied, as to the accuracy, content, legality or completeness of any of the Confidential Information;

(b) is under any obligation:

(i) to notify the Recipient or its Affiliates; or

(ii) to provide any further information to the Recipient or its Affiliates,

if the Discloser or its Affiliates become aware of any inaccuracy, incompleteness or change in the Confidential Information; or

(c) has made or makes any representation or warranty, express or implied, that the Confidential Information does not infringe the Intellectual Property Rights or any other right of any person.

6.2 Recipient to make its own assessment

The parties agrees and acknowledge that:

(a) the Recipient must make its own assessment of all Confidential Information and satisfy itself as to the accuracy, content, legality and completeness of that information;

(b) any forecasts or estimates in the Confidential Information may not prove to be correct or be achieved; and

(c) the Recipient will rely solely on its own investigations and analysis in evaluating any transaction, project or similar.

7. Ownership unaffected

This document does not transfer to the Recipient any right, title or interest in the ~~Discloser's~~ Confidential Information or Intellectual Property Rights in the Confidential Information.

PART B - Term

8. Term

This document will remain in force for a period of six (6) years from the date of its execution. Upon expiry of the term of this document the obligations of the parties under this document will cease.

PART C - Breach of Confidentiality

9. Remedies

The Recipient acknowledges that:

(a) damages may not be an adequate remedy for the Discloser for any breach of this document; and

(b) as a remedy for any breach or threatened breach by the Recipient or its Affiliates of this document, the Discloser will be entitled to seek injunctive relief or specific performance, in addition to any other remedies available at law or in equity.

PART D - General

10. Notices

10.1 Form

Any communications (**Notice**) to be given under or in connection with this document must be in writing, signed by the sender and marked for the attention as set out or referred to in the Details or, if the recipient has notified otherwise, then marked for attention in the way last notified.

10.2 Delivery

A Notice must be:

(a) sent by email to the email address set out or referred to in the Details;

(b) left at the address set out or referred to in the Details; or

(c) sent by prepaid post to the address set out or referred to in the Details.

10.3 When effective

A Notice will be taken to be duly given or made:

(a) if sent by email, they are taken to be received at the time the email message is sent, unless:

(i) the sender receives automated email notification that the email transmission has failed or has been delayed within twelve (12) hours of sending the notice; or

(ii) the sender receives automated email notification to the effect that the recipient is not likely to receive the notice until a later date, which will then become the deemed date of receipt; or

(b) if sent by post, they are taken to be received six (6) days after posting (or ten (10) days after posting if sent to or from a place outside Australia),

but if the result is that a Notice would be taken to be given or made on a day that is not a Business Day in the place to which the Notice is sent or is later than 4pm (local time), it will be taken to have been received at 9am on the next Business Day.

11. Miscellaneous

11.1 Amendments

An amendment or variation to this document is not effective unless it is in writing and signed by the parties.

11.2 Assignment

A party cannot assign or otherwise transfer any of its rights under this document without the prior written consent of each other party.

11.3 Counterparts

This document may be entered into in any number of counterparts, and counterparts may be exchanged by electronic transmission, each of which will be deemed an original, but all of which, taken together, constitute one and the same instrument.

11.4 Entire Agreement

This document constitutes the entire agreement between the parties in relation to its subject matter and supersedes all previous deeds, negotiations and understandings between the parties in relation to its subject matter.

11.5 Severance

If anything in this document is unenforceable, illegal or void then it is severed and the rest of this document remains in force, unless the severance would change the underlying principal commercial purpose or effect of this document.

11.6 Waivers

A right under this document may only be waived in writing, signed by the party granting the waiver.

12. Governing law and jurisdiction

The laws of Tasmania govern this document. The parties submit to the non-exclusive jurisdiction of the courts of Tasmania.

PART E - Defined terms and interpretation

13. Definitions

In this document unless the contrary intention appears:

Affiliate of a party means an auditor or adviser of the party or in the case of Tas Irrigation, any State or Commonwealth Minister, department or authority including the Minister of the Crown for the time being

administering the Irrigation Company Act 2011, Department of Natural Resources and Environment Tasmania and Nation Water Grid Authority.

Business Day means any week day on which banks are generally open for business in Hobart, Tasmania.

Confidential Information means:

(a) Hydro Tasmania's forecast modelling data showing the estimated hourly flow rates exiting the Poatina Power Station between March 2022 and July 2027 (inclusive); and

(b) any other data related to the information referred to in paragraph (a) above which may be supplied by Hydro Tasmania to Tas Irrigatione Discloser to the Recipient on a confidential basis.

Details means the section of this document headed 'Details'.

Discloser means the Hydro-Electric Corporation (trading as Hydro Tasmania) (ABN 48 072 377 158), as set out in the Details.

Government Agency means any governmental, semi-governmental, administrative, judicial or quasi-judicial body, department, commission, authority, tribunal, agency or entity.

Intellectual Property Rights includes all present and future intellectual and industrial property rights conferred by statute, at civil, common law or in equity including:

(a) copyright;

(b) design, patent, trademark, semiconductor, circuit layout, database rights or plant breeder rights (whether registered, unregistered or applied for);

(c) trade, business, company or domain name; and

(d) know how or inventions, processes (whether in writing or recorded in any form).

Purpose means enabling Tas Irrigation to undertake preliminary designs and assessment of the sizing of the buffer dam associated with the proposed Northern Midlands Irrigation Scheme.

Recipient means the Tasmanian Irrigation Pty Ltd (ACN 133 148 384), as set out in the Details.

14. Interpretation

(a) "Including" and similar expressions are not words of limitation.

(b) A provision of this document must not be construed to the disadvantage of a party merely because that party was responsible for the preparation of this document or the inclusion of the provision in this document.

(c) If an act must be done on a specified day which is not a Business Day, it must be done instead on the next Business Day.

(d) All references to time are to Eastern Standard time.

Lara Henley

From: Tenders <Tenders@tasirrigation.com.au>
Sent: Tuesday, 6 October 2020 1:40 PM
Subject: DPP-1320 - Design partner prequalification
Attachments: Northern Midlands Preferred Option Engineering Report - Design Assumptions.pdf; Northern Midlands Preferred Option Engineering Report .pdf; Tasmanian Irrigation - Conditions of Tendering (Design Partner Prequalification).docx; Design Partnering - Industry Brief.pdf; Design Partnering - Industry Responses(September 2020).pdf; Don Preferred Option Engineering Report_v.1.pdf; Fingal Preferred Option Engineering Report.pdf; Design Partner Scope of Works(Prequalification Request).pdf

Follow Up Flag: Follow up
Flag Status: Completed

Tasmanian Irrigation is seeking to pre-qualify potential design partners and invites you to submit an application.

The attached documents are:

- Design Partner Scope of Works (Prequalification request for services)
- Reference documents:
    - Design partnering Industry Briefing Note
    - Design Partnering Industry Responses (September 2020)
    - Don Preferred Option Engineering Report
    - Fingal Preferred Option Engineering Report
    - Northern Midlands Preferred Option Engineering Report
    - Northern Midlands Preferred Option Engineering Report – Design Assumptions
- Tasmanian Irrigation – Conditions of Tendering (Design Partner Prequalification)

Please note the following important dates:

- Return of Conditions of Tendering to be returned by 9th October 2020;
- Submissions to be submitted by 23rd October 2020.

Please direct all enquiries to tenders@tasirrigation.com.au including a reference to DPP-1320 in the subject line.

Thanks and regards
Tenders at Tasmanian Irrigation

Tasmanian Irrigation

T: 03 6398 8433
E: tenders@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

HELPING TO GROW THE WEALTH OF TASMANIA

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COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

Item	Design Assumptions	Comments
General		
Delivery Period Length	150	Linked Directly to inputs
Pump Station 1		
Name	Poatina Tailrace Pump Station	
Water Source	Poatina Tailrace	
Pump Station Type	Instream Pump Station	
Foundation Conditions	Assumed ok with no piling required.	No Geotech undertaken at site yet.
Wet Well Description	Excavated Intake channel to set back Pump Station	
Shed Type	Colourbond Shed	
Pump Type(s)	End Suction	Assumed. To be determined during design phase
HV Power Source	TasNetworks Overhead line within 50m	
Length of Power Line Extension Required	0	Power to site, capacity assessment required
Communications at Location	Telstra 4G	
Upper Flow Rate Capability	76.2ML/day	
Lower Flow Rate Capability	5ML/day	Assumed. To be determined during design phase
Efficiency Point Target (ML/day)	50ML/Day	Assumed. To be determined during design phase
Proposed Road for Access	Poatina Road	
New Access Road Length Required	320m	
Pump Station 2		
Name	Barton Pump Station	
Water Source	Boost Pump Station/Scheme Water	
Pump Station Type	Boost - With Header Tank Prior	
Foundation Conditions	Assumed Good Foundations considering location can be modified along alignment to find good conditions	
Wet Well Description	N/A	
Shed Type	Colourbond Shed	
Pump Type(s)		To be determined during design phase
HV Power Source	TasNetworks Overhead line within 50m	

Item	Design Assumptions	Comments
Length of Power Line Extension Required	0	
Communications at Location	Telstra 4G	
Upper Flow Rate Capability	39ML/day	
Lower Flow Rate Capability	2ML/day	Assumed. To be determined during design phase
Efficiency Point Target (ML/day)	30ML/Day	Assumed. To be determined during design phase
Proposed Road for Access	Macquarie Road	
New Access Road Length Required	10m	
Pump Station 3		
Name	Isis Pump Station	
Water Source	Boost Pump Station/Main Line Zone 1	
Pump Station Type	Boost	
Foundation Conditions	Assumed Good Foundations considering location can be modified along alignment to find good conditions	
Wet Well Description	N/A	
Shed Type	Contained within the Barton Pump Station	
Pump Type(s)		To be determined during design phase
HV Power Source	Pump Sets within Barton PS	
Length of Power Line Extension Required	0	
Communications at Location	Telstra 4G	
Upper Flow Rate Capability	5ML/day	
Lower Flow Rate Capability	0.5ML/Day	Assumed. To be determined during design phase
Efficiency Point Target (ML/day)	3.5ML/Day	Assumed. To be determined during design phase
Proposed Road for Access	As per Barton	
New Access Road Length Required	0	NA
Pump Station 4		
Name	Campbell Town Pump Station	
Water Source	Boost Pump Station/Main Line Zone 2	
Pump Station Type	Boost - With Header Tank Prior	

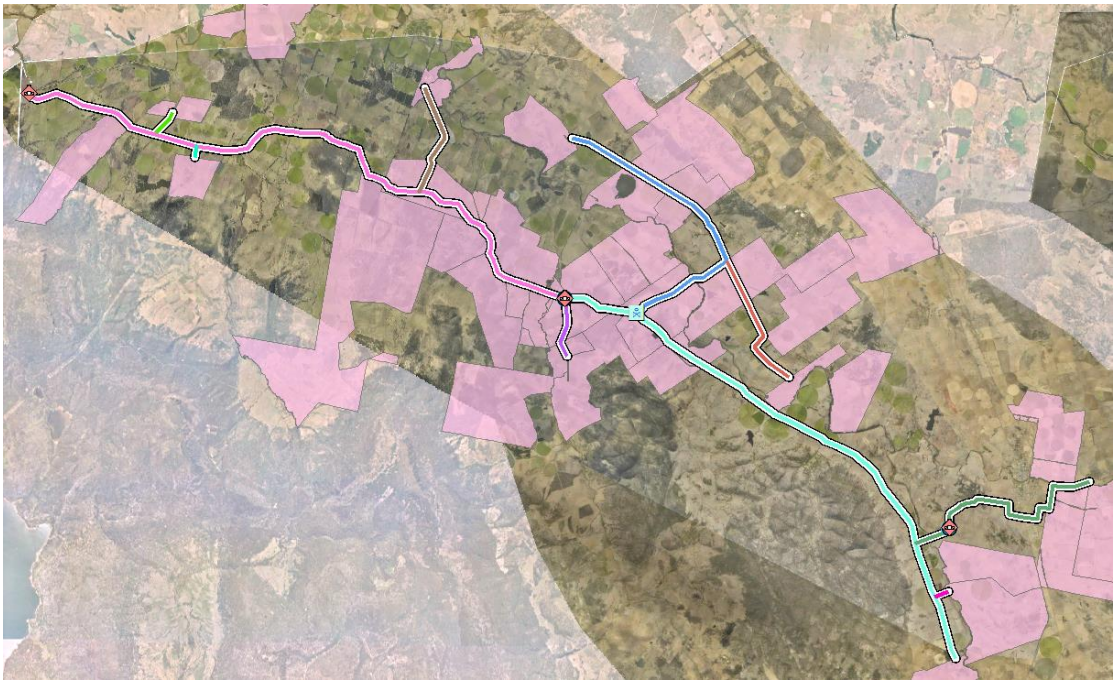
Item	Design Assumptions	Comments
Foundation Conditions	Assumed Good Foundations considering location can be modified along alignment to find good conditions	
Wet Well Description	N/A	
Shed Type	Colourbond Shed	
Pump Type(s)	End Suction	Assumed. To be determined during design phase
HV Power Source	TasNetworks Overhead line	
Length of Power Line Extension Required	1600m	Not included in cost estimate
Communications at Location	Telstra 4G	
Upper Flow Rate Capability	9.3ML/day	
Lower Flow Rate Capability	1ML/day	Assumed. To be determined during design phase
Efficiency Point Target (ML/day)	7ML/Day	Assumed. To be determined during design phase
Proposed Road for Access	Hoggs Ford Road	
New Access Road Length Required	10m	
PRV 1		
Name	Conara Main PRV	
Water Source	Main Line Zone 2	
Valve Type	PRV	
Purpose	Reduce pressure class of Conara Main and Conara A	
Upper Flow Rate	20.4 ML/d	
Lower Flow Rate	1 ML/d	Assumed. To be determined during design phase
Average Flow Rate	15 ML/d	Assumed. To be determined during design phase
Proposed Road for Access	Macquarie Road	
New Access Road Length Required	10 m	
Pipeline		
Materials Used	All HDPE - No other materials allowed for at this stage	
Trading Zones	Minimised number of Trading Zones	
Boost Pumping Arrangements	Used Header Tanks Prior to Boost Pump Stations to account for the fact that	

Item	Design Assumptions	Comments
	Control of Boost Pump Stations Typically Struggle	
Constructability		
Crossings outside normal allowance	No Specific Allowance for any crossings other than utilising Medium Rock for major crossings in some locations	
Major Crossings	Poatina Road Isis River Macquarie River x2 Midlands Highway Lake Leake Road	
Trenching Considerations	Consider that the Installation rate of $200/m for the 1000mm OD HDPE is sufficient to cover if benching is required. Assume benching will not be required often as minimal need to enter trench	
Alignment Clearing Requirements	Minimal Forestry Clearing required	
Alignment Considerations	Stayed on Boundaries Avoided pivot circles	
Property Outlets		
Average Size Used	200mm	
Cage Type	Standard Frost Protection Type	
Telemetry Functionality	Full Flow Control	
Scheme Communication Network	Via Fibre Optic Installed along entire pipeline length	

Tasmanian Irrigation

NORTHERN MIDLANDS IRRIGATION SCHEME

Preferred Option – Engineering Report



Document Control					
Project:	Northern Midlands Irrigation Scheme (NMIS)				
Report Title:	Preffered Option Engineering Design Report				
Revision	Date	Author	Reviewer(s)		Summary of Revision Changes
			Name	Signature	
A	September 2020	C Reid	M Holmes		Initial draft
0	September 2020	C Reid	M Holmes	[redacted]	Initial Issue

Executive Summary

This report outlines the engineering design in delivering the preferred option of 11,425 mega litres (ML) of water to the farming districts under the proposed Northern Midlands Irrigation Scheme (NMIS).

The engineering design for the 11,425 ML preferred option is based on 30 of the 41 Expressions of Interest (EOI) received.

The preferred option for the Northern Midlands Irrigation Scheme draws water from the Poatina Tailrace through a pump station to supply 11,425 ML through 90.5 km of pipeline over a 150-day summer irrigation season. Design is based on a peak flow of 76.2 ML/d. The scheme covers the area between Poatina Tailrace to just south of Campbell Town.

Water is pumped out of the Poatina Tailrace into the Poatina Main 1, there are three gravity branches and one pumped branch off this first zone. The first zone discharges into a tank at Barton where the water is boosted by a pump station into Poatina Main Zone 2. There are two gravity branches off this and one pumped branch to Campbell Town.

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1 Background

1.1 Tasmanian Irrigation Engineering Drivers

The fundamental engineering drivers which culminate in a preferred option are the following:

- Have a design lifespan of 100 years
- Deliver water at an average reliability of greater than 95 per cent
- Built to satisfy irrigation demand in the region at the time of water sales
- Supply water to as many irrigators in a region as possible providing that
    - The solution is technically possible
    - The solution is commercially feasible
- Design a scheme to optimise capital expenditure whilst minimising on-going operational costs

These drivers lay the foundation for the engineering decisions to arrive at a preferred option.

1.2 Report Context

This engineering report is supplementary to the *Northern Midlands Irrigation Scheme Preferred Option Report* and must be read in conjunction for completeness.

1.3 Northern Midlands Irrigation Scheme

The Northern Midlands Irrigation Scheme (NMIS) is part of the Future Irrigation Project which will inform the development of the *Pipeline to Prosperity* suite of schemes proposed by Tasmanian Irrigation (TI). It is situated in the Northern Midlands Council region.

Initial demand for an irrigation scheme in the district was determined through a private landholder-led Expression of Interest (EOI) process, undertaken in 2018. This process was used as the basis for a formal EOI process by Tasmanian Irrigation, which has led to the design of this preferred option. 41 EOI's were returned, including interests from outside the expression area, totalling 18,225 ML with an average of 796 ML/EOI.

1.4 Expression of Interest Process

In February 2018 TI conducted an Expression of Interest (EOI) process to determine demand for an irrigation scheme in the district. An EOI letter with supporting information was sent to all landowners with landholdings of 10 Ha or greater.Figure 1shows the geocoded EOI's.



Figure 1 NMIS EOI

2 Overview of Scheme Alternatives

Based on the geographic spread (see Figure 1) of irrigators across the scheme, the alternatives investigated were based on various supply and distribution combinations. Tasmanian Irrigation have considered several water sources for the scheme. These including direct take from the Lake River, direct pump from the Poatina tailrace during the summer period (with potential reserve storage), utilisation of idle capacity (investment water) in the MWS and additional supply capacity from the MWS Arthurs pipeline.

Two key elements have been assessed in the alternatives that have been investigated:

- Location of water storages; and
- Ability to distribute water the EOIs.

The following sections provide an overview of the key alternative scheme designs that have been considered that do not form part of the current preferred option.

All of the scheme options considered the cost of installation of spur pipelines to service properties remote from the trunk main and considered the alternative of a lift pump station to a central service reservoir or the use of booster pump stations. Details of the scheme alternatives are discussed below. Several dam option and alternative in conjunction with the above were also investigated these are further outline below.

2.1 Storage Dams

A high-level assessment of a number of dam locations has been considered. The dams were considered to provide a buffer storage to any potential Poatina Power Station outage. Outages were reviewed and were not considered a risk and subsequently dams have been discounted in the preferred option at this pre-feasibility stage.

2.2 Hydro

Hydro Tasmania submitted two EOIs for transferring water from Brumbys Creek (from Poatina) into Lake River. A number of options have been assessed which consist of various flow rates and outlet locations.. These options included running a pipe parallel to the NMIS trunk main, upsizing the first section of the NMIS trunk main and a separate pipeline alignment between Brumbys Creek and Lake River. Due to discussion between Tasmanian Irrigation and Hydro Tasmania, the Hydro components have not been included in the preferred option but maybe reconsidered at Business Case.

2.3 Conara

The original EOI area covered properties just south of Conara. An option had been developed which covered EOIs only in the original area. Due to the significant interest outside of this area, the proposed option was extended to services properties with the southern boundary below Campbell Town.

2.4 Tunbridge

This option considers EOIs outside the preferred option as far south as Woodbury which borders with the Midlands Irrigation Scheme. This adds 23 km of main to the design with a ground elevation increase of approximately 75 m for additional 4000 ML. this Option was excluded from the preferred option as it extended the scheme outside the focus area and was deemed uneconomical

2.5 Interconnection with Floods Creek Dam

A number of EOIs received are on the border of the existing Midlands Irrigation Scheme (MIS). An option which included two pipelines connection from Floods Creek Dam (FCD) in the Midlands Irrigation Scheme into NMIS were explored. As Poatina typically only operates over summer, this connection would provide NMIS with winter water. Acts as a redundancy to NMIS should there be an outage at Poatina Power Station and alternative supply.

One of the pipelines feeds from FCD following Tunbridge Tier Road and connected to the NMIS Trunk Main and provides 100 ML/d (depending on configuration). The second feed pipeline runs from FCD down the Isis valley and connected to the NMIS trunk main at Isis Road and provided 32 ML/d into the scheme. The pipelines also enabled existing water entitlements holders in MIS to access their water due issues with riparian delivery.

The interconnection options do not form part of the preferred option due to direction provided by the Tasmanian Irrigation Board.

3 Preferred Option

3.1 Overview

The preferred option is to pump out of the Poatina Tailrace with a boost pump Station(BPS). This BPS will supply pressure to the first half of the trunk main up to Barton BPS.

The distribution pipeline alignments and design are based on providing water to the greatest number of properties as economically as possible.

The region supplied by the proposed scheme is from Poatina to south of Campbell Town and includes outlets in Campbell Town. The alignment of the main distribution pipeline is relatively flat following the west of the Macquarie River. Branches supplying Isis Road and Campbell Town require additional head from Booster Pump Stations. Pipeline sizes are generally kept as large as practical to minimize headloss and to maximize trading zones. The current preferred design consists a distribution main, which is supplied from a booster pump at the start and halfway along, and eight branch lines.

The preferred distribution pipeline alignment will be further refined during final design subject to geographic allocation at water sales. The arrangement is shown in the below schematic Figure 2 and zones in Figure 3.

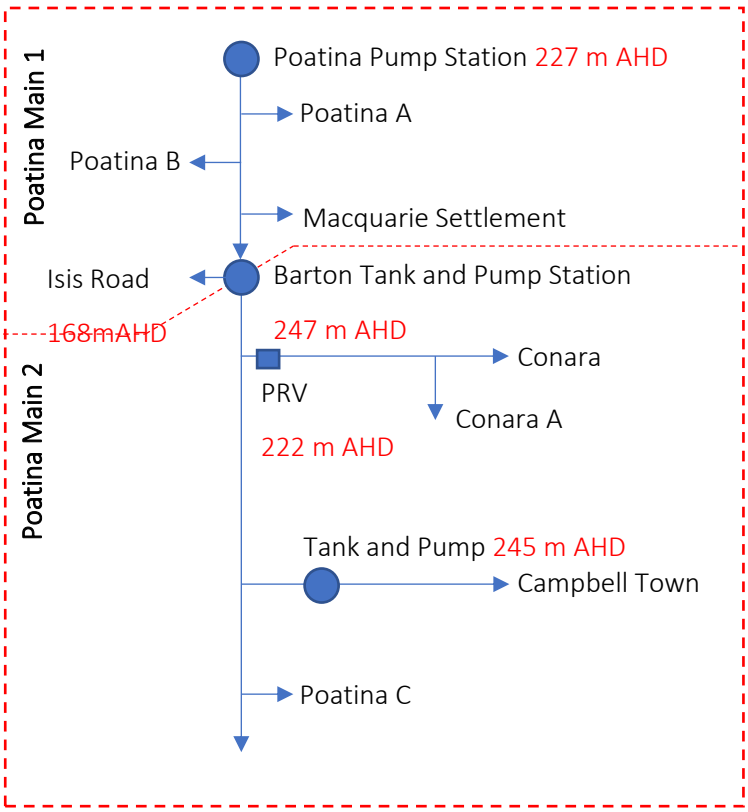


Figure 2 NMIS Preferred Option Schematic

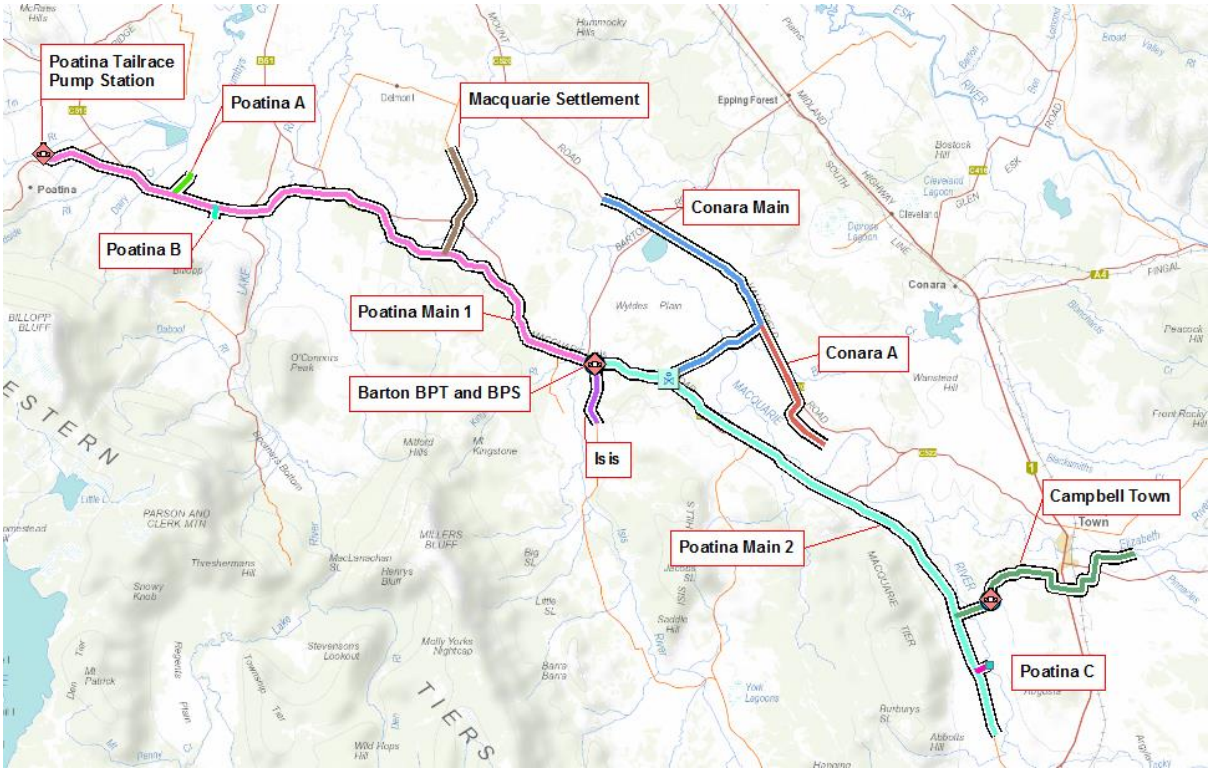


Figure 3 NMIS Zone Map

3.2 Demand

The scheme has been designed to service 30 EOIs operated over a 150-day season with the following demands:

Item	ML/150 days	ML/d
Scheme Total	[redacted]	
Average EOI		
Minimum EOI		
Maximum EOI		

3.3 Design and Assumptions

The TI Steady State Hydraulic Model Tool Version U was used to design the preferred option. Refer to Appendix A for hydraulic grade lines for all pipelines in the proposed scheme. A summary of the design assumptions are provided in Appendix B.

3.4 Poatina Main 1 – Poatina to Barton

The Poatina Pump Station is proposed to be located upstream of drop structure No. 1 (a weir like structure) on the Poatina Tailrace and opposite the offtake to Cressy Longford Irrigation Scheme. Access track and power to the pump station site is required from Poatina Road. Water from the scheme is pumped directly from the tailrace and into the scheme's distribution main.

Access for both construction and scheme operation will need to be negotiated and agreed with Hydro Tasmania

The proposed pump station site is founded on sand, gravel and mud of alluvial origin (Qh) based on an assessment of the geological polygons on TheLIST. This will need to be confirmed during further design work for the pump station site to understand what impact it may have on construction works.

The BPS will need to be capable of pumping up to 882 L/s at 40 m with a power supply of approximately 523 kW. Poatina BPS discharges into 28.8 km of DN1000 HDPE.

There are four branches and six direct outlets on Main Line 1. The first two branches are offtakes to a single outlet. The final two branches each service two outlets with the Isis Road Branch will requiring additional pressure from a BPS. The Isis BPS is to be located within the Barton BPS shed but is separate from the Main Line 2 BPS which reduces the OPEX for the Isis Road branch.

The end of Main line 1 discharges into the Barton Break Pressure Tank(BPT) with a FSL of 170 m AHD. The BPT will take 20 m (maximum flow, dynamic pressure) to 57 m (no flow, static pressure) of pressure out of the system.

3.5 Poatina Main 2 – Barton to Ross

Water is drawn out of the Barton BPT from the Barton BPS to supply Main Line 2. The Barton BPS will pump up to 452 L/s to 76 m with a power supply of approximately 492 kW. The Barton BPS discharges into 24.8 km pipeline. of DN700 HDPE It is located next to the Macquarie Road and there is power connection points located in close proximity.

The pressure is interrupted at Barton BPT as Tasmanian Irrigation has existing schemes with BPS's in series which perform poorly due to unsuitable pump controls. Allowing the BPT in this pre-feasibility design provides a conservative CAPEX and OPEX cost which can be reviewed during the detailed design phase. Effective process controls and surge devices could be used to mitigate the need for the BPT during detailed design.

Main Line 2 supports 5855 ML/150 days which equates to a flow rate of 39 ML/d. There are three branches and three direct outlets on Main Line 2.

The first branch, Conara Main, tees off Main Line 2 at 1960 Macquarie Road. The main heads north east across the property, crossing Macquarie River and continuing to Valleyfield Road. The Conara Main continues along Valley Field Road to the north with a branch, Conara A, heading along the road to the south.

A PRV at the start of the Conara Branch will reduce the pressure class of pipe required while still maintaining pressure to outlets above the service minimum. Conara branch consists of 13.7 km pipeline of DN560 HDPE in mainly PN8. A 1.1 km section has been costed as medium difficulty installation due to potential Jurassic dolerite. Conara A is 6.3 km pipeline of DN280 HDPE mainly PN8. The Conara Branches deliver 3055 ML/150 days which equates to a flow rate of20.4 ML/d to 8 outlets.

The second branch is to Campbell Town. The branch crosses the Macquarie River and follows Hoggs Ford Road totaling 9.3 km of DN400 PN8 HDPE pipe. The pressure is broken into a BPT on a hill before Campbell Town where the water is boosted out of with a BPS. The pump station on the Campbell Town Branch has a pump station has a duty of 45 m at 108 L/s with a power supply of approximately 72 kW. There are no power lines nearby and power will need to be

extended from the existing network or an alternative location investigated during the design phase. Campbell Town Branch services 3 outlets at 1400 ML/150 days or 9.3 ML/d. A 500 m section of pipeline has been costed as medium difficulty installation due to potential tertiary basalt.

The third branch off Main Line 2 services 2 outlets at 1000 ML/150 days which equates to a flow rate of 6.7 ML/d.

4 Limitations and Considerations

The proposed concept has the following key limitations and considerations:

- TI will be able to source water from Hydro Tasmania using a similar supply arrangement to that for Whitemore Irrigation Scheme (WIS). This has been negotiated with Hydro and an in-principle agreement has been provided to provide 12,000 ML between October 1 and 31 March each summer period.

- The alignment of the Distribution Networks aims to minimise impact on properties that are crossed.

- The current alignment seeks to avoid excessively rocky areas where possible. Preliminary assessment of the geology along the pipeline alignment indicates that digging conditions should be reasonably favourable.

- A flora and fauna assessment will be required as part of the preliminary design phase. A high-level assessment of data available on theLIST suggests that threatened species may have habitation or be present along the pipeline route.

- The pipe alignment will be refined during the final design phase through the completion of site walkovers, meetings with impacted landowners and improved understanding of elevation and geotechnical conditions.

5 Preferred Option Costing

5.1 Costing Model

The concept design for Northern Midlands Irrigation Scheme has been costed using Version U of TI's model which provides unit rates and modifiers for pipelines, pump stations and turbines. The cost for the Barton and Campbell Town Balance Tanks has been assigned based on similar tanks installed for the recently constructed Scottsdale Irrigation Scheme.

The accuracy of the costing will need to be further refined during final design as the pipeline alignment, sizing and material type is confirmed. The costing for the pump stations will also need careful consideration and review given the historic variability in cost. The concept cost estimate in FY2019 dollars is shown in Table 1 on the following page.

Table 1 Preferred Option Capital Expenditure

[redacted]

5.2 Operational Expenditure Assessment

The concept capital cost estimate and concept engineering design work were used to calculate operational expenditure for the scheme. It is noted that the asset renewal levy percentages used in the development of this operational expenditure assessment are significantly higher than the asset renewal levy calculated for schemes constructed in Tranches One and Two, this is due to a new method of calculating the ARL which is driven by asset type and a more detailed cost breakdown by asset type.

A first principal operation and maintenance task assessment has been used to derive the Fixed Maintenance cost. The Fixed Management Costs have been derived from the Commercial cost model which has been developed for all operational and T3 schemes, significant effort has been expended to ensure there are no duplications between Fixed Maintenance, Fixed Management and ARL.

The methods used for the Operational Cost calculations are relatively new and still being refined, the methods used have been developed using known TI operational information and industry standard practices. The cost estimates are higher than has traditionally used in the T1 and T2 schemes. There has been input from Water Delivery and Corporate Services teams, it is believed these methods provide a more realistic cost estimate that should be slightly conservative. These methodologies will be refined as the design progresses and the assumptions are clarified.

Table 2 Preferred Option Operation Expenditure



6 Reference Materials

6.1 GIS Data

Dam Sites Identified:

W:\GIS Shared\FutureIrrigation\Northern Midlands\Northern Midlands Engineering Data.gdb\NMIS_Dam_Assessments

Pipelines Alignments Options:

W:\GIS Shared\FutureIrrigation\Northern Midlands\NMIS_PreferredEng.gdb\PipelineRevAA_20191023

Preferred Option:

ArcMap > TI Map Tools > Scheme – NM: Norther Midlands > Layer Category – Build: Infrastructure Planned > Add Layers – Infrastructure Planned

6.2 Models

Preferred Option Hydraulic Model:

https://tasirrigation.sharepoint.com/:x:/s/Schemes/Northern%20Midlands/EXfW9Muq20VCoLHUGIrsaPUBIcSnTi8t3RPtqN3U3G1l8w?e=L0YVOv

Poatina to Conara Option:

https://tasirrigation.sharepoint.com/:x:/s/Schemes/Northern%20Midlands/Ea-JHlGhqZtCgUxaKE_BH94BtWXs0NV-PpQUSQcgE3fd4g?e=5JVy0Y

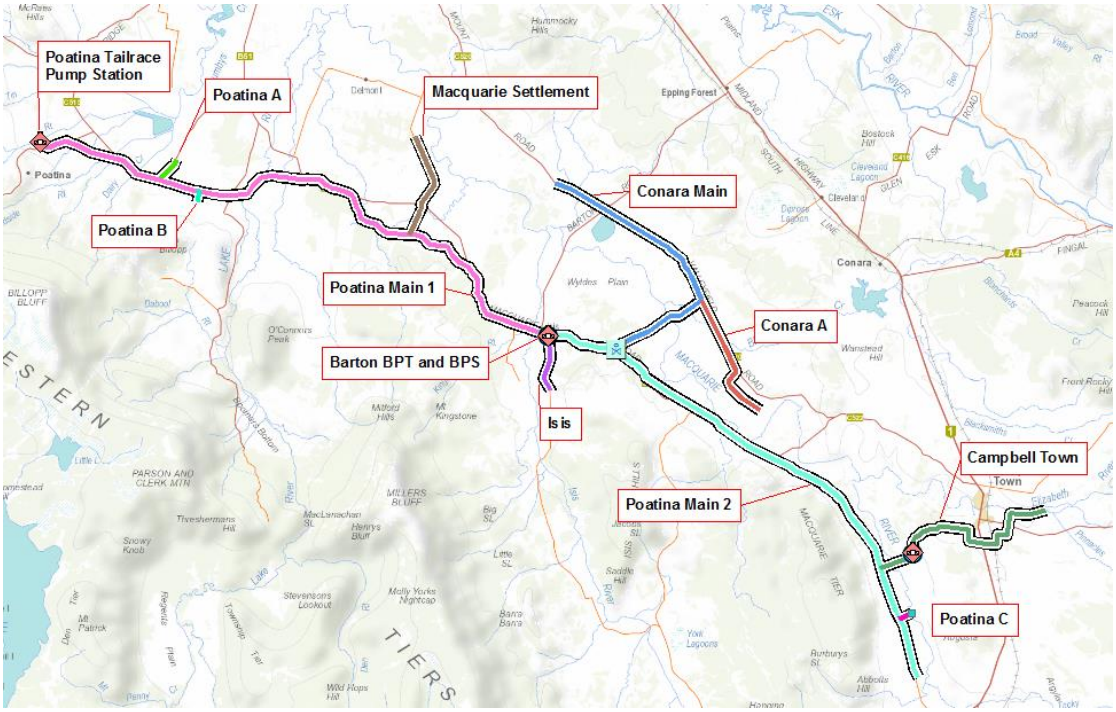
Interconnection with FCD Option:

https://tasirrigation.sharepoint.com/:x:/s/Schemes/Northern%20Midlands/Ed8kRgyVRb9Io8OlEcXThXMBFbwYQKKe81CfiEeHhm42Hw?e=zeqQTL

All Development models are in this SharePoint folder:

https://tasirrigation.sharepoint.com/:f:/s/Schemes/Northern%20Midlands/Elz-lpHFmohIv4MTj2-6ZgkB2_Hb-ZEnU_YOcH1IDGjUvg?e=ndwlII

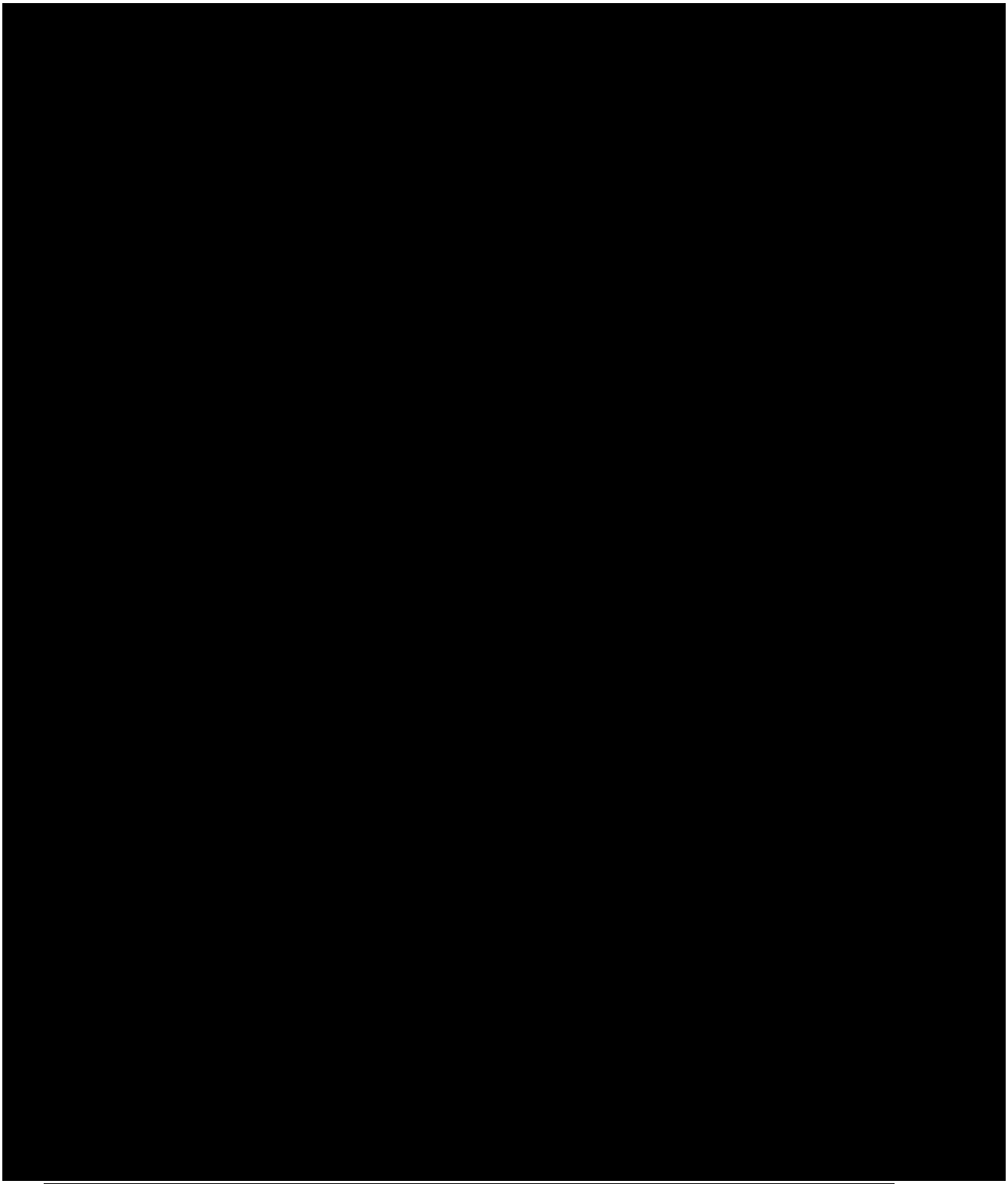
Appendix 1 – Scheme Map



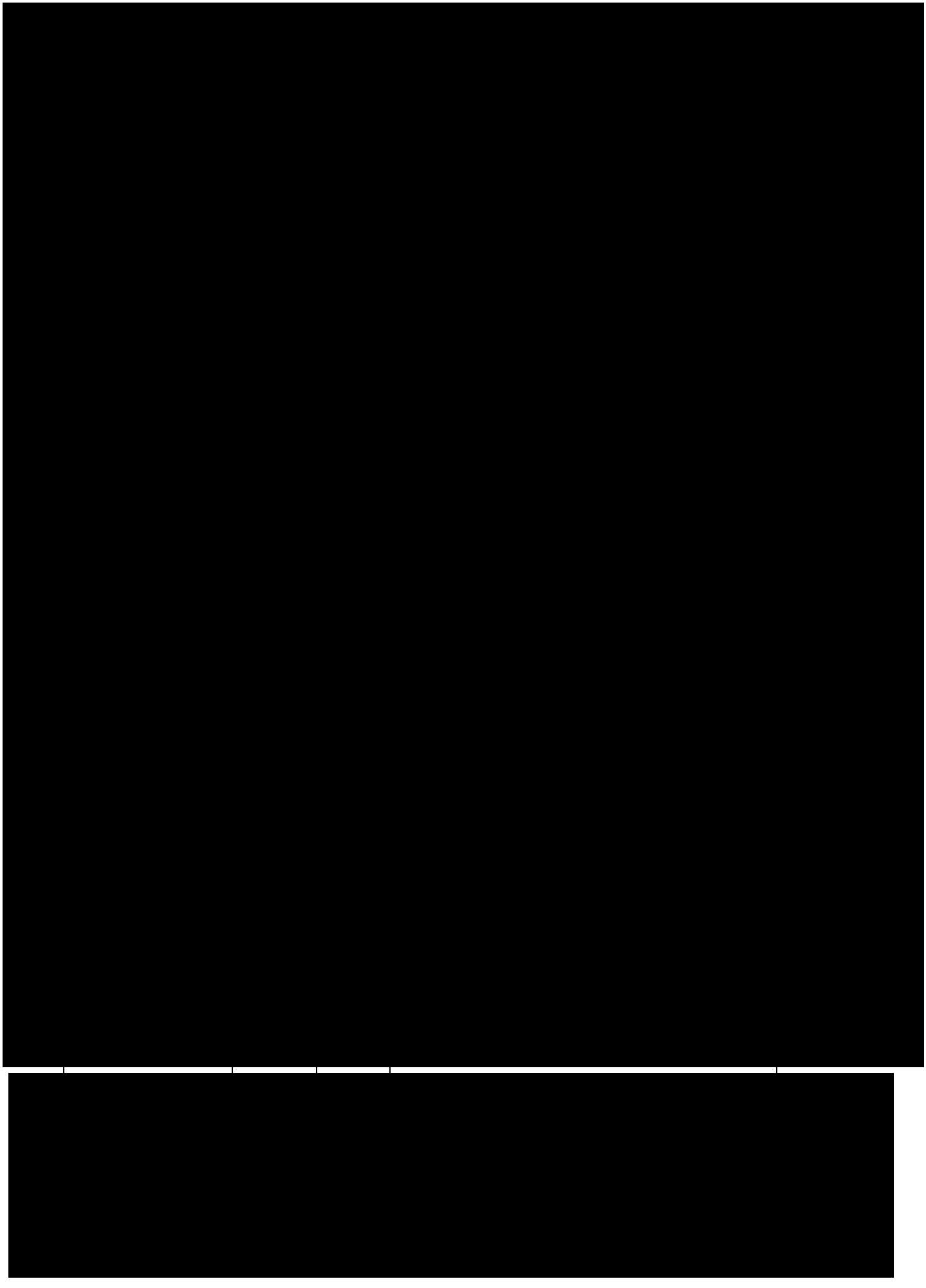
Appendix 2 – Model Inputs

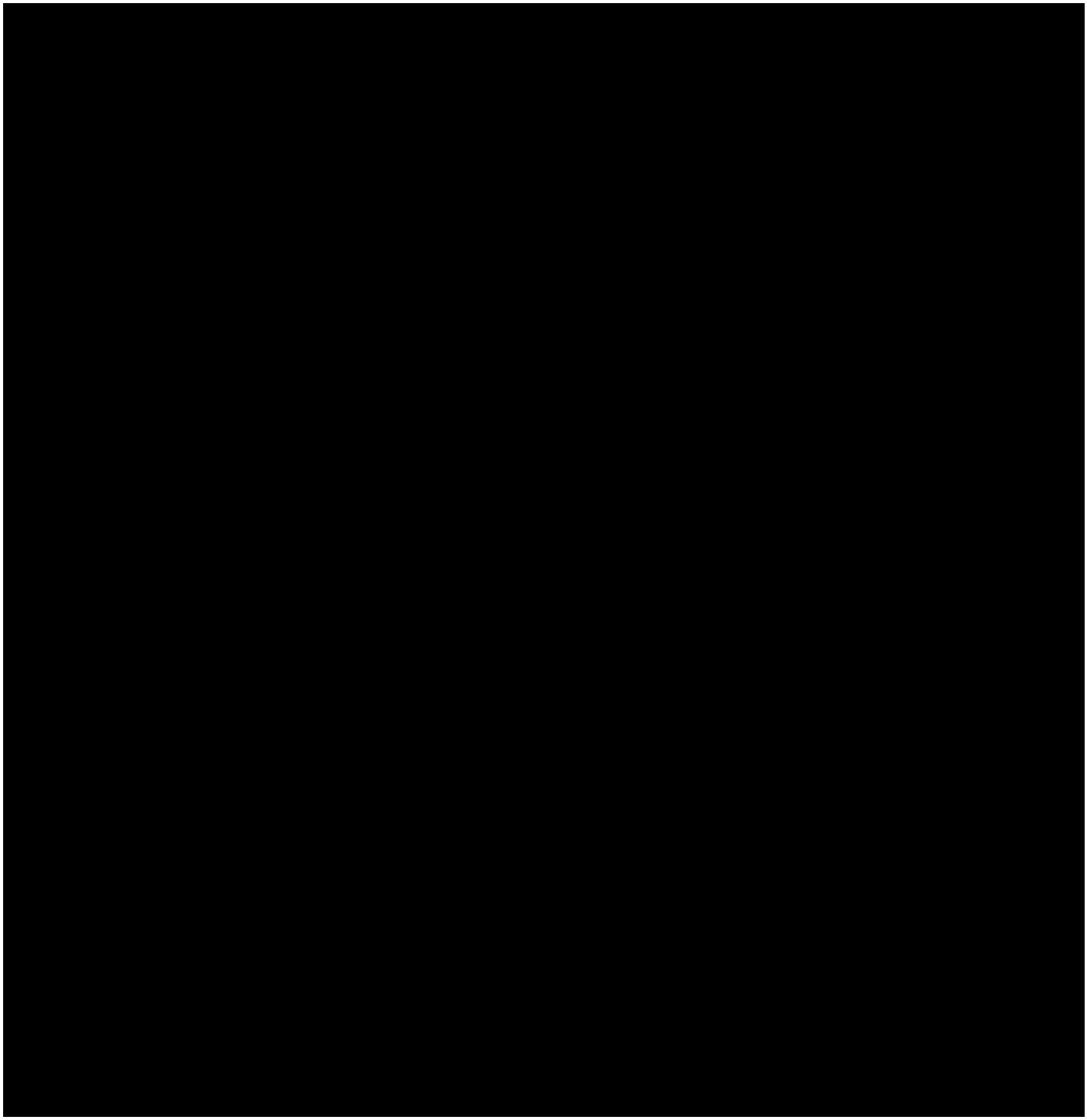
System Inputs For Project NMIS Model v.4			
WATER DELIVERY	Value	Units	Notes
Season length	150	days	Dec-March inclusive.
Hours pumped/day	24	hrs	Check opportunity for off-peak pumping to larger storage…
Future pipe friction loss allowance	+10%		Design against pipe ageing effects (e.g. algal buildup). Equivalent to multiplying C factor by 0.95 (as in prev models).
Min. allowable residual head - offtakes	15.0 m		Delivers 5m at outlet after 10m losses incurred through outlet assembly.
Min. allowable residual head - all other points	5.0 m		Design against vacuum, including during transient effects.
PIPES/PUMPS			
Power per ML per m lift	3.83	kWh/ML/m	Based on P(kWh)=*ρ*gVh/3.6e6 V=ML h=m
Pump hydraulic efficiency	79%		Confirm upon detailed design
Pump motor efficiency	90%		Confirm upon detailed design
Pump inlet/suction losses	3.0 m		Confirm upon detailed design
PRV head loss	5.0 m		Confirm upon detailed design
COSTS			

[redacted]









Appendix 3 – HGL

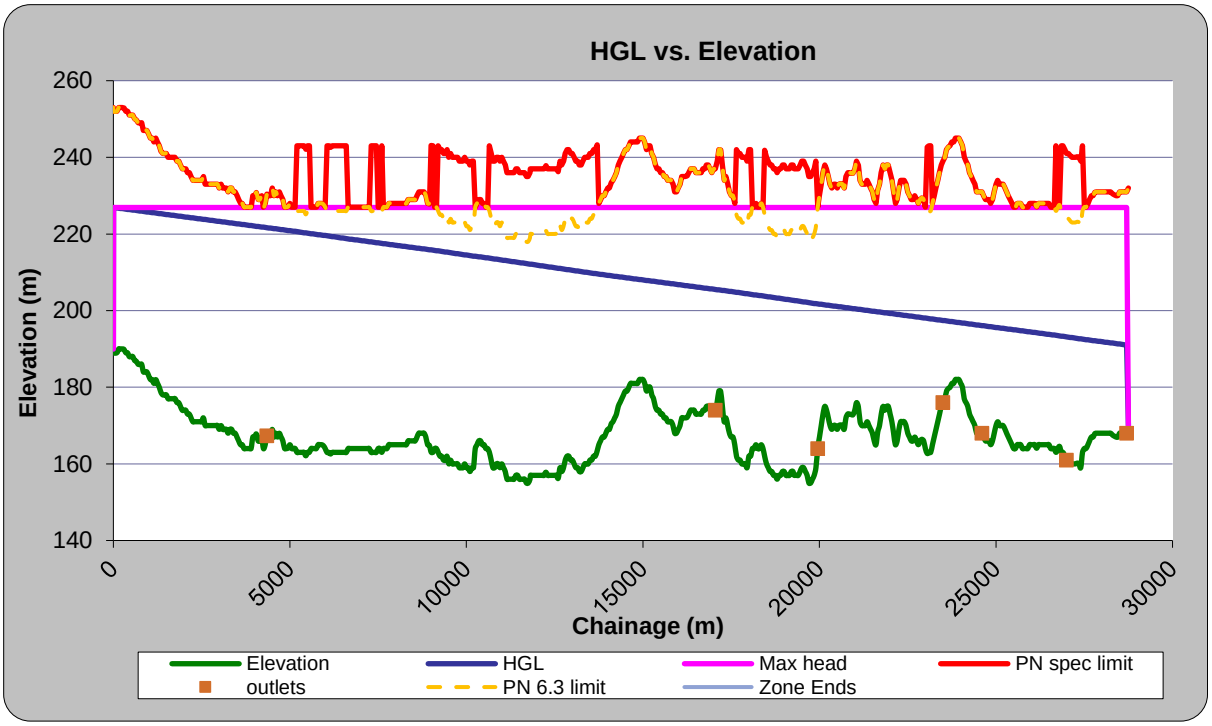


Figure 4 Poatina Main 1 HGF

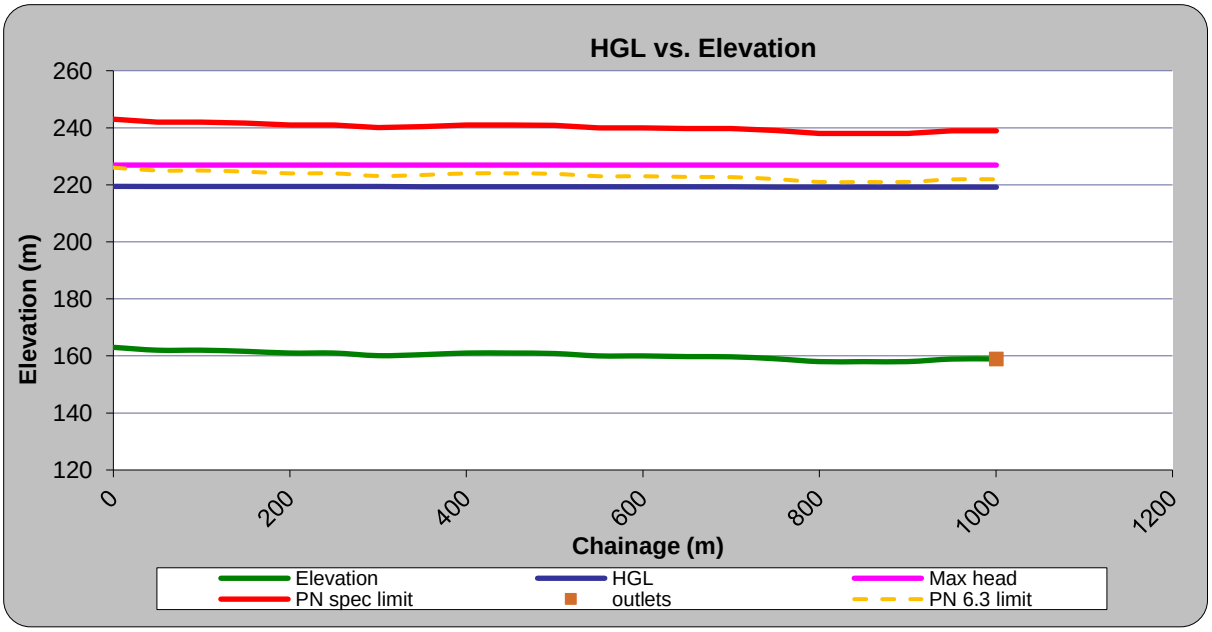


Figure 5 Poatina A HGL

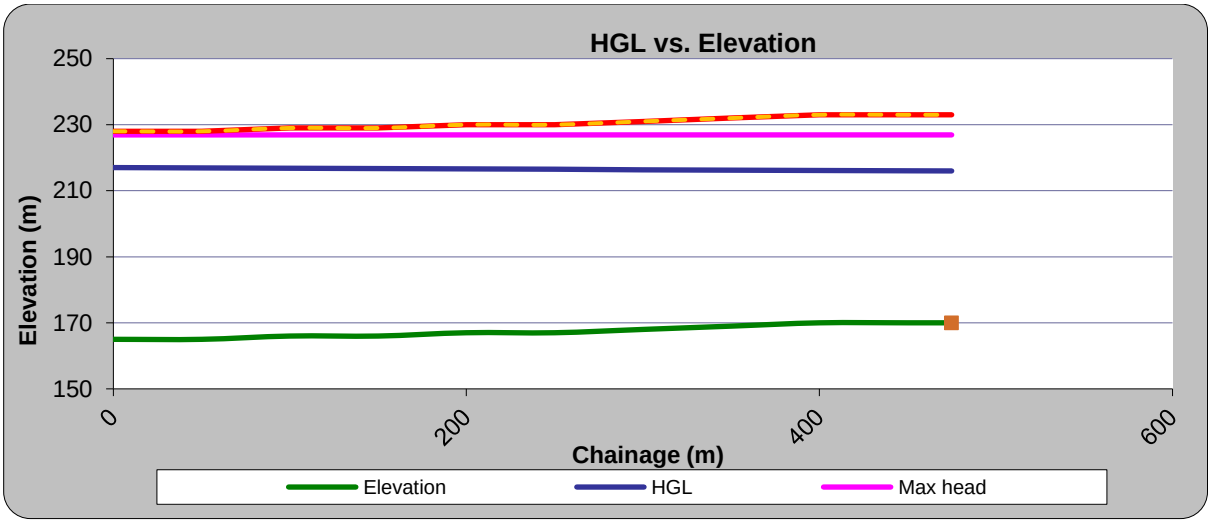


Figure 6 Poatina B HGL

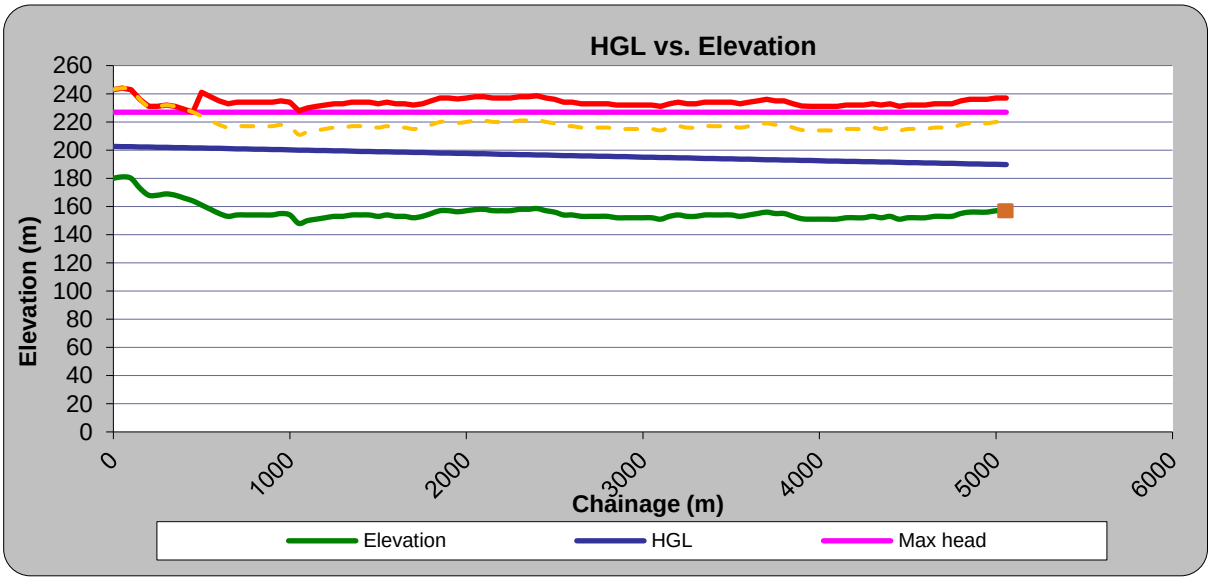


Figure 7 Macquarie Settlement HGL

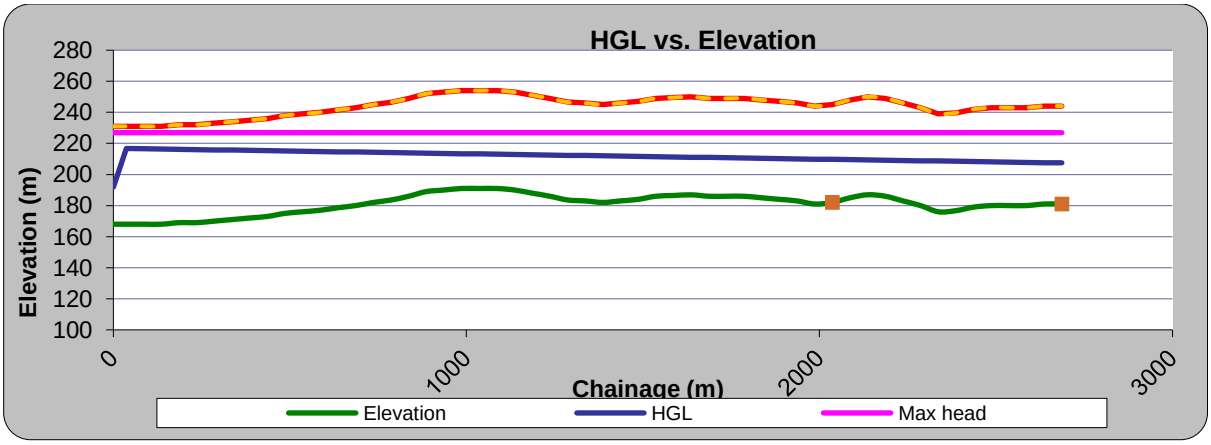


Figure 8 Isis Road HGL

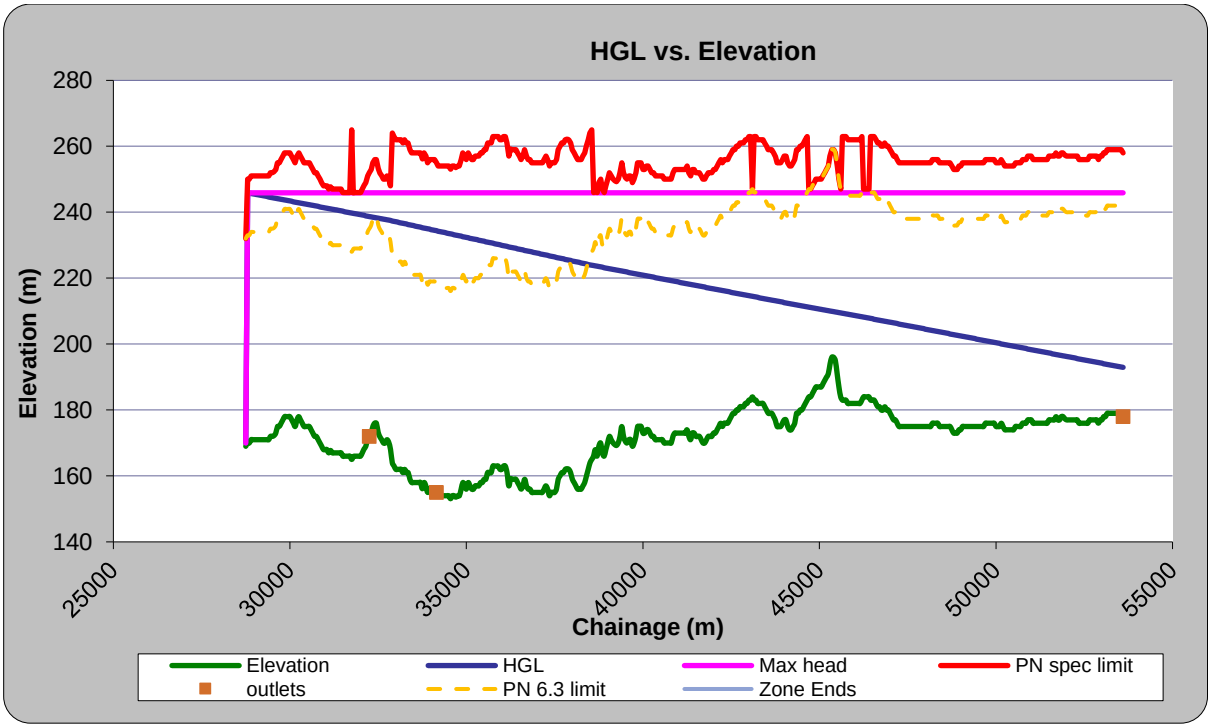


Figure 9 Poatina Main 2 HGL

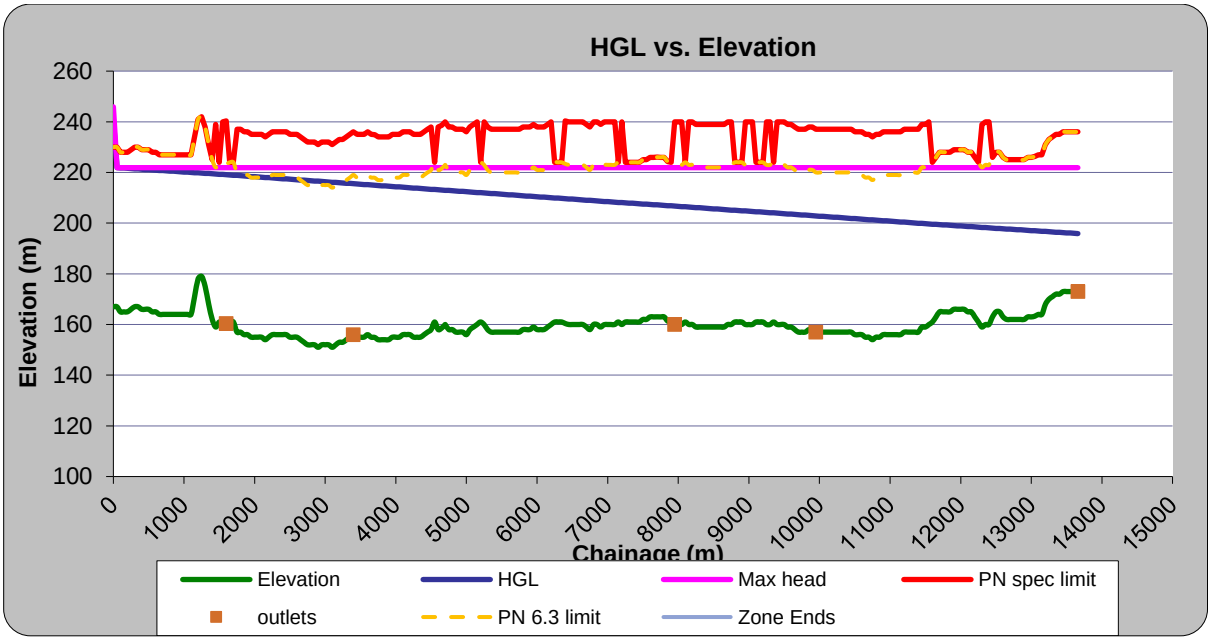


Figure 10 Conara HGL

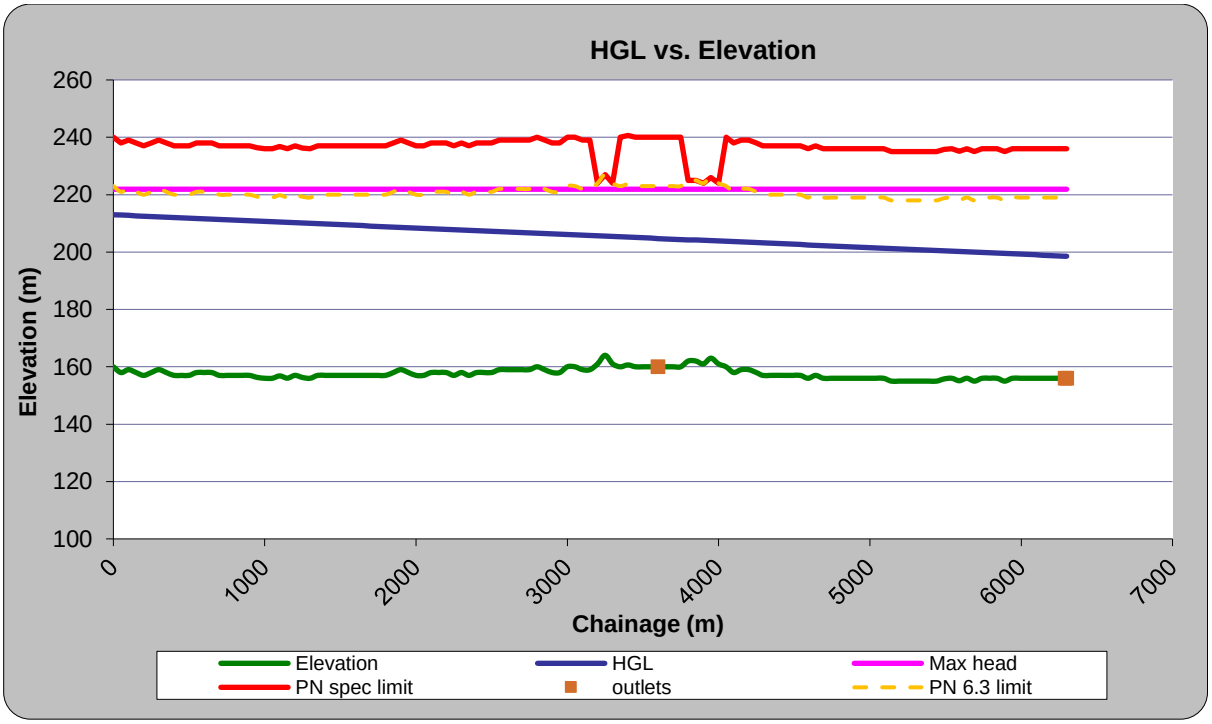


Figure 11 Conara A HGL

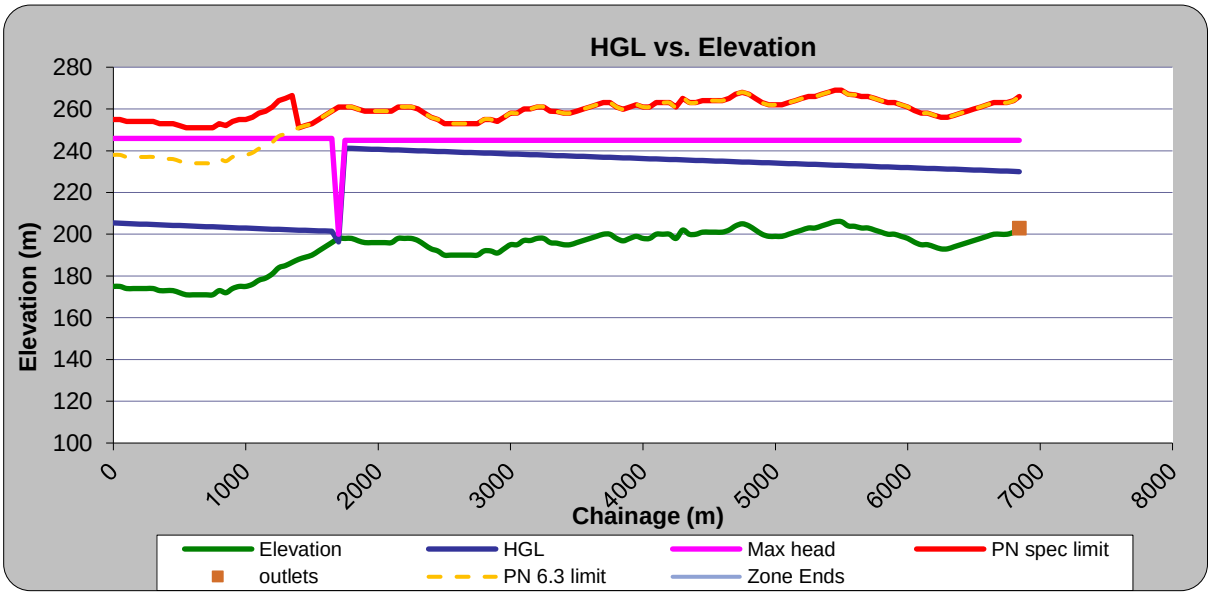


Figure 12 Campbell Town HGL

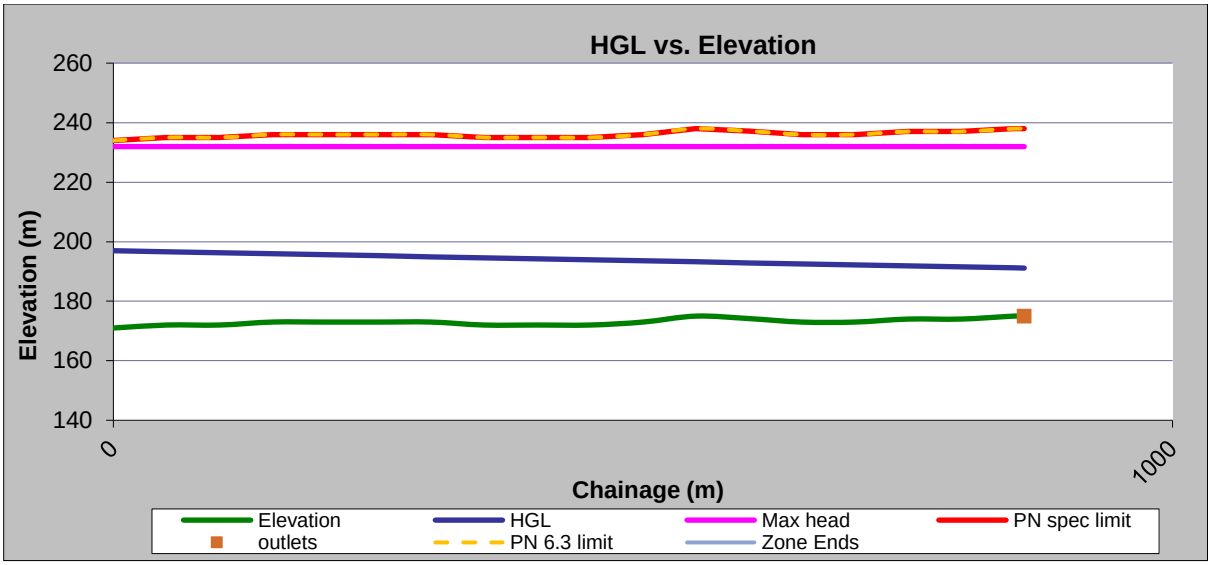


Figure 13 Poatina C HGL

Tasmanian Irrigation

CONDITIONS of TENDERING

CONDITIONS of TENDERING (CoT) FOR

Request for Consultancy Services – Pre-qualification of design partners

1. QUESTIONS AND CLARIFICATIONS

Applicants must direct any questions or requests for clarification or further information to the Tasmanian Irrigation's Project Manager in writing, via the tender portal, not later than the tender clarifications close date.

Tasmanian Irrigation's may issue a written clarification or further information before the Tender Closing Time. Any such communication may also be issued to all other Applicants.

It is the Applicant's responsibility to nominate if it considers a request for clarification to be 'commercial-in-confidence'.

Requests for clarification which are deemed by Tasmanian Irrigation to be 'commercial-in-confidence' will be processed as follows:

- if a Request for Clarification is designated as 'commercial-in-confidence' by an Applicant and is approved as 'commercial-in-confidence' by Tasmanian Irrigation , the response will be provided only to the Applicant raising the Request for Clarification; or
- conversely, if a Request for Clarification designated by the Applicant as 'commercial-in-confidence' is deemed by Tasmanian Irrigation to be relevant to all Applicants, then the Applicant will be notified of this decision.

The Applicant may, by notifying Tasmanian Irrigation in writing within 2 Business Days of receiving notification from Tasmanian Irrigation, withdraw a question submitted in accordance with this clause in circumstances where the Applicant does not wish Tasmanian Irrigation to publish its response to the Request for Clarification.

2. SUBMISSION OF TENDERS

Applications are to be submitted by **23rd October 2020**

Applications received after this time may be subject to rejection by the Principal.

Applications shall be submitted in electronic and hardcopy format. The submission response detail is outlined in Section 10 – PRE-QUALIFICATION SUBMISSION in the Request for Consultancy Services – Pre-qualification of Design Partners document.

The submission must not contain generic marketing materials because tender submissions must be limited in size.

Submissions in excess of the following sizes MAY NOT BE ACCEPTED.

Submissions shall:

- Be logically set out clearly identifying the location of schedules within the Form of Tender and additional documentation provided by the Tender.

- Fit within a single A4 50mm 3 ringed binder folder or 50mm binder comb
- Only include A4 documents using 12 size fonts (or larger), be 1.5 line spaced, single sided and have 3 cm margins on all pages.
- Have **three hard copies** (1 marked original, 2 marked copy) and **an electronic copy** of the submission attached (CD or memory stick). The submission marked "Original" will be used as the formal submission where there is a discrepancy between the hard and soft copies. Hard copies are to include labelled divider tabs for each schedule and the soft copy shall be a single PDF document.

All drawings to be submitted with the submission shall be provided in A3 size with title blocks. These drawings shall be folded to fit within the binder comb/folder as described above.

3. CONFORMING TENDER

The Applicant shall submit a Tender in conformance with the Tender Documents.

A non-conforming tender may be considered by the Principal at its absolute discretion. The principal is under no obligation to consider a non-conforming tender.

4. ACCEPTANCE AND REJECTION OF TENDERS

4.1. The Principal reserves the right, without reference or liability to any Applicant, to:

(a) reject any or all tenders or to waive any irregularities contained therein;

(b) accept any particular proposals submitted by any Applicant even though the contract price or completion date, or other matters, specified therein may not be so favourable as those contained in some other tender; and

(c) negotiate with any one or more Applicants with a view to modifying the Terms, Conditions and other matters applicable to this Request for Tender or to any Contract that may result from such negotiations.

4.2 The successful Applicant shall execute the Formal Instrument of Agreement.

5. AMENDMENT

The Principal may revise or amend any of the drawings and specifications and other Tender Documents. Revisions and amendments, if any, shall be provided to the Applicant in the form of a Supplementary Notice and the Applicant's acknowledgment of receipt of such notices shall be recorded by the Applicant in the appropriate space provided in the Form of Tender.

6. CONFIDENTIAL INFORMATION

6.1 All drawings, specifications and other information whether oral, printed or graphic contained in the Tender Documents or obtained by the Applicant from the Principal ("Information") are confidential to the Principal and shall not be used by the Applicant other than for the purpose of preparing and submitting a Tender.

6.2 The Applicant shall not reveal, copy, reproduce or make known either directly or

indirectly to any third party, firm or corporation any of the Information except when, and then only to the extent, reasonably necessary for the purpose of preparing and submitting the Tender.

6.3 Within two (2) days of receiving notice that the Tender has not been accepted, the Applicant shall immediately return all Tender Documents and other Information and all copies thereof to the Principal together with a statement that no further copies have been made using the declaration located at the end of this document.

6.4 The Applicant agrees to ensure that its Directors, Officers and employees, agents or contractors to it, or any other person to whom it supplies the Information as permitted by this Clause, will be bound by terms no less onerous than those contained in this Clause.

6.5 Failure to comply with these confidentiality requirements may be taken into account by Tasmanian Irrigation when considering the Applicant's submission and may result in the Tender being passed over.

7. APPLICANT TO INFORM ITSELF

The Applicant acknowledges that it has:

7.1 Examined all the documents forming the Tender Documents and all Supplementary Notices;

7.2 Read AS 4120-1994, the Australian Standard for the Code of tendering and in particular the provisions of clauses 7.4 and 7.5 of that standard and is therefore prepared to warrant to the Principal in the terms of Clause 14 of these Conditions of Tender;

7.3 Examined all information relevant to and/or affecting its Tender; including local familiarisation by a physical inspection;

7.4 Formed its own opinions and satisfied itself as to the sufficiency of its Tender and that the tendered price makes appropriate allowance for complying with the requirements of the Tender Documents and all other things coincident with the requirements of the Contract if awarded to the Applicant; and

7.5 Made its bid without relying on any representation outside of the tender document set, whether written or verbal, made by the Principal, its servants and agents.

8. COSTS OF TENDERING TO BE BORNE BY APPLICANT

The Applicant acknowledges that:

8.1 The Applicant is responsible for all costs related to the preparation of is tender;

8.2 There have been no representations made to it in relation to any form of reimbursement of its costs of preparation of the Tender; and

8.3 The Principal is not, under any circumstances, in any way liable to the Applicant and the Applicant has no claim against the Principal for its costs of preparation of the Tender.

9. TENDER ENQUIRIES & LARGE ELECTRONIC FILES ACCESS

All administrative and technical enquiries shall be made direct to Tenders via email at Tenders@tasirrigation.com.au.

Applicants shall note that questions submitted to the Principal, and the answers to these enquiries will be made available to all Applicants where appropriate. Where possible, questions should be open and describe the situation for which information is sought.

If a question is not of a general nature, but relates to proprietary aspects of a proposal, the Respondent must identify the question(s) as such. If, in the opinion of the Principal, the question is not proprietary in nature, the relevant Respondent will be advised and will have the option to withdraw the question(s). If the Respondent continues to request a response, the question(s) and the response may be circulated to all recipients of this RFP.

Recipients of this RFP are encouraged to monitor their e-mail for such communication.

10. LODGEMENT OF TENDERS

Submissions bearing the number of the Tender and the name of the Applicant are to be lodged so that hardcopy is received prior to the closing date and time either by courier or hand in sealed envelope in hardcopy and by common standard electronic storage device (CD, memory stick, etc.) at:

The Tender Box
Tasmanian Irrigation
Level 2, Terminal Building Launceston Airport,
Western Junction, Evandale Main Road, TAS 7212

Not more than one tender is to be enclosed in one envelope. By lodging a Tender, an Applicant may become bound by the Conditions of Tender. Any deviation from the tender document requirements must be declared in the Declaration of Conformance section of the Form of Tender.

10.1 LATE TENDERS

Tasmanian Irrigation may not accept

A tender not received as specified before the closing time will not be admitted for consideration unless there is evidence satisfactory to the Evaluation Committee that the sole reason the tender was received after the specified deadline was due to mishandling by Tasmanian Irrigation.

Return of late Tenders

A late Tender that is not accepted will be marked on the envelope with the time and date of receipt, and be returned unopened to the Applicant, if sufficient address details are available.

11. SUBCONTRACTORS

Each Applicant shall be entirely responsible for the activities of its potential subcontractors with respect to the Tender, including answering any queries they may have. The Applicant shall ensure that under no circumstances will the Subcontractor contact the Principal in order to submit queries. If the Subcontractor has a query, this shall be lodged via the principal Contractor (Applicant).

12. WARRANTY OF NO COLLUSION

The Applicant hereby warrants that:

(a) The price(s) and amount of this bid will be/has been arrived at independently, without consultation, communication or agreement for the purpose or with the effect of restricting competition with any other firm or person who is a bidder or potential prime bidder;
(b) Neither the price(s) nor the amount of this bid will be or have been disclosed to any other firm or person who is a bidder or potential prime bidder on this project, and will not be so disclosed prior to bid opening;
(c) Neither the prices nor the amount of the bid of any other firm or person who is a bidder or potential prime bidder on this project have been disclosed to me or my firm;
(d) No attempt will be made or has been made to solicit, cause or induce any firm or person who is a bidder or potential prime bidder to refrain from bidding on this project, or to submit a bid higher than the bid of this firm, or any intentionally high or non-competitive bid or other form of complementary bid;
(e) No agreement has been promised or solicited for any other firm or person who is a bidder or potential prime bidder on this project to submit an intentionally high, non-competitive or other form of complementary bid on this project;
(f) The bid of my firm will be and is made in good faith and not pursuant to any consultation, communication, agreement or discussion with, or inducement or solicitation by or from any firm or person to submit any intentionally high, non-competitive or other form of complementary bid;
(g) My firm will not offer or enter and has not offered or entered into a subcontract or agreement regarding the purchase or sale of materials or services from any firm or person, or offer, promise or pay cash or anything of value to any firm or person, whether in connection with this or any other project, in consideration for an agreement or promise by any firm or person to refrain from bidding or to submit any intentionally high, non-competitive or other form of complementary bid or agreeing or promising to do so on this project;
(h) My firm will not accept and has not accepted or has not been promised any subcontract or agreement regarding the sale of materials or services to any firm or person, and has not been promised or paid cash or anything of value by any firm or person, whether in connection with this or any other project, in consideration for my firm's submitting any intentionally high, non-competitive or other form of complementary bid, or agreeing or promising to do so, on this project;
(i) I have made a diligent inquiry of all members, officers, employees, and agents of my firm with responsibilities relating to the preparation, approval or submission of my firm's bid on this project and have been

advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, or other conduct inconsistent with any of the statements and representations made in these warranties; and

(j) I understand and my firm understands that any misstatement in these warranties shall be treated as a fraudulent concealment of the true facts relating to submission of bids for this contract.

13. ASSESSMENT CRITERIA

In determining which Tender is most advantageous to the Principal, the assessment will include the following criteria:

- Understanding of the task, proposed methodology for partnering and Key Personnel Experience
- Track record delivering successful, on-time, optimised design outcomes for water infrastructure asset types and schemes that are relevant to irrigation schemes
- Track record delivering support during construction phase (QA audits; Commissioning Plan/Commissioning; O&M manual development)
- Demonstrated commitment to and proposed process for conducting Safety in Design/HAZOP activities during design
- Demonstrated previously approved Tasmanian Industry Participation Plan

14. PRINCIPAL'S RIGHTS

The Applicant acknowledges that the Principal may, in its absolute discretion, do any one or more of the following:

(a) alter or amend any aspect of the RFT process at any time and withdraw from the RFT process at any time;
(b) not proceed with the project or not proceed with the project in the manner specified in the Tender Documents;
(c) change the scope of the project, including any requirements set out in the Tender Documents;
(d) suspend, cancel or reinstate the RFT process or project;
(e) re-advertise for new tenders;
(f) terminate at any time further participation in the process by any or all Applicants;
(g) extend the closing date for tenders or clarifications;
(h) require additional information, clarification or further offers from any Applicants;
(i) negotiate with one or more Applicants;
(j) invite one or more Applicants to make a presentation on any matter;
(k) elect not to select any Applicants as preferred Applicant; and
(l) take such other action in relation to the RFT process or the project as the Principal considers appropriate in its discretion.

Tasmanian Irrigation may, at any time following receipt of tenders, request one or more of the Applicants to supply any further information or clarification concerning a tender which Tasmanian Irrigation considers necessary or desirable.

Tasmanian Irrigation reserves the right to seek clarification, verification and additional information concerning the tender or the Applicant from third parties and the Applicant authorises Tasmanian Irrigation to do so.

15. NO RECOURSE

(a) The Principal's decision in the above matters will be final and (subject to statutory rights that cannot be excluded or modified) no Applicant is entitled to any redress or claim against the Principal as a result of the Principal exercising any or all of its rights as mentioned in the RFT, including these Conditions of Tendering.
(b) The Principal's total aggregate liability to the Applicant arising under, out of, or in connection with the RFT, including these Conditions of Tendering, under statute, in tort (for negligence or otherwise) or any other basis in law or equity, is limited to $1,000.
(c) The Principal is not liable for any indirect or consequential loss or any loss of revenue, profit or business opportunities suffered by the Applicant in connection with the RFT, including these Conditions of Tendering, whether under contract, tort (including negligence) or otherwise.

16 PROBITY OF THE PROCESS

A probity adviser has been engaged for the entire Process. The probity adviser will act as an independent observer of the Process. Any probity concerns Respondents have about the RFP stage or the Process must be submitted (in appropriate detail) to the probity adviser in writing by email with a copy of such writing provided at the same time to the nominated Tasmanian Irrigation email address.

The probity adviser will raise all matters with Tasmanian Irrigation, making recommendations where necessary. Any action taken as a result of such process will be at the absolute discretion of Tasmanian Irrigation.

The probity advisor's contact details are:



18 ANTI-LOBBYING, IMPROPER INTERFERENCE AND SOLICITATION

Applicants and their representatives are prohibited from engaging directly or indirectly in lobbying, improper interference or solicitation of Tasmanian Irrigation employees, representatives or advisers with respect to any aspect relating to the tender process or any activities which are likely to give rise to the perception that they have engaged in lobbying,

improper interference or solicitation of Tasmanian Irrigation or its advisers. Any breaches of these requirements may result in an Applicant being removed from the process.

1 Debriefing

1.1 Request for debriefing

Unsuccessful Applicants are encouraged to request a debriefing from Tasmanian Irrigation to discuss the reasons for their non-selection. An Applicant who would like a debriefing should contact the Contact Officer.

1.2 Timing for debriefing

If requested to do so, Tasmanian Irrigation will provide a debriefing for an unsuccessful Applicant after either:

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

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

CONDITIONS OF TENDERING FOR

Request for Consultancy Services – Pre-qualification of design partners

The Tenderer is to delete and initial relevant line and items below and return to the Principal's nominated contact.

THE TENDERER
ACKNOWLEDGES ACCEPTANCE OF THE CONDITIONS OF TENDERING and intends to submit.

OR

DECLINES TO TENDER

AND

ALL tender files have been **returned / deleted**, and no further copies have been made.

Signed on behalf of

Tenderer:.....

By (print name)) ……
its) (Signature)
(Title of Person Signing))
having authority in that behalf in the presence of:)
)
……
(print name of Witness) (Signature)

Dated:.....

Tenderer's Name of Contact: .....

Contact's Email Address:.....

Note: Tasmanian Irrigation will direct all Tender correspondence through to the Tenderer's nominated contact. Contractors not submitting a tender will not receive future correspondence.





Tasmanian Irrigation

A Smarter Approach to Designing Irrigation Schemes

Collaborating
Sharing
Learning
Excellence

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Intent of briefing note

The intent of this briefing note is to consult and seek industry feedback on Tasmanian Irrigation's (TI) proposed development of a design partnering approach to the creation of new irrigation schemes. Ordinarily, a briefing would be delivered via presentation and questions in person. However, with current COVID-19 restrictions in place, TI has implemented a remote working arrangement across its team.

As such, this briefing note is circulated to industry with an invitation to submit queries and feedback to the TI team. Following this briefing note and incorporation of industry feedback to improve the proposed approach, it is intended that a request for services will be issued to the market.

Tasmanian Irrigation...

Executive Summary

Building 15 large-scale irrigation schemes has enabled Tasmanian Irrigation (TI) to refine many of its procedures in a bid to achieve global best practice in project management and delivery.

However, this learning cycle is an ongoing process and Tasmanian Irrigation is committed to continuing to work collaboratively with its consultants and contractors to determine the most effective pathways to reduce duplication, enhance cross-scheme learnings, simplify procedures and provide more certainty to suppliers.

Tasmanian Irrigation understands the design component of our irrigation schemes has caused a level of frustration for some of our contractors. We are adapting our approach to remedy this.

Tasmanian Irrigation's Technical Support Services team has spent considerable time listening to these concerns and developing a briefing paper on a proposed change to the approach to designing new schemes.

This paper is intended to consult and seek feedback from industry to ensure the final approach is practical, workable and an agreed platform to move forward.

Historically, Tasmanian Irrigation has created new schemes through a Design and Construct (D&C) approach. This allowed projects to be tendered rapidly and TI expenditure – prior to business case approval – to be effectively managed.

To provide TI with more control over design outcomes and reduce the requirement for design on contractors, TI is considering a Design Finalisation and Construct (DF&C) approach. The method will lead to TI producing a significantly developed design prior to tender, which is then finalised by a contractor ahead of construction.

The design development pre-tender is intended to allow more lessons learned from previous schemes to be embedded into design. However, where identified, it is also intended to allow contractor innovation to be introduced during the finalisation phase.

While TI has restructured to create an internal Technical Support Services function, there are insufficient resources to complete detailed design in-house.

A design partnering arrangement is proposed as our preferred approach. Novating the design partner team to a contractor is also considered to provide continuity of design intent through the construction phase.

To inform the design consulting industry of TI's expectations in a design partner, a process flow is proposed in this document that outlines likely interactions and responsibilities throughout the DF&C approach.

Following the creation of 15 operational irrigation schemes and with a further 10 in the pipeline, TI highly values consulting and contractor industry feedback to achieve the best possible outcomes for all parties.

And in the spirit of collaboration and partnership, we welcome any feedback on the proposed change in approach outlined in this briefing paper.

Background

With 10 Tranche One irrigation projects now operational, a further four Tranche Two projects completed, another on track (Scottsdale) to deliver irrigation water for the 2020-21 season, and funding now confirmed for the construction of the first five projects of Tranche Three, as well as planning on the second five, Tasmanian Irrigation is poised to deliver more high-surety irrigation water than ever to Tasmanian farmers.

Demand for irrigation water has reached record highs with Expressions of Interest on new projects surpassing all expectations, including 11,700 megalitres for the Tamar Irrigation Scheme, which extends from Beaconsfield to Pipers River to Lilydale to Selbourne. This reiterates the high-value that Tasmanian farmers place on access to high-surety, fit-for-purpose irrigation water.

This is also the case for the Don Irrigation Scheme, which is the first of the Tranche Three projects to be progressed from Expressions of Interest to the announcement of the preferred option and to water sales. EOIs for almost 5,000 megalitres were forwarded for irrigation water in this region.

"While Tasmanian Irrigation (TI) remains focused on delivering these complex irrigation projects on time and on budget in a safe manner, the organisation is also seeking to reduce costs, standardise systems, introduce innovative new irrigation solutions and enhance our partnership focus across irrigators, suppliers and consultants."

The setting for new irrigation schemes has also evolved from construction of independent schemes to augmentation and interconnection of schemes across Tasmania. Considering significant operational efficiencies to be gained, scheme design has the potential to be of higher complexity in the future.



Limitations of Current Design and Construct Approach

Historically, Tasmanian Irrigation has created new schemes through a Design and Construct (D&C) approach. This allowed projects to be tendered rapidly and TI expenditure – prior to business case approval – to be effectively managed.

The approach has also encouraged contractor design innovations through the tender and detailed design phases.

However, feedback from industry and TI's own observations have indicated some key drawbacks associated with the D&C approach including:

- A high level of design and administrative burden on contractors, who may not have sufficient design management capability;
- A lack of TI direct access to designers and an inability for TI to influence design outcomes to the required extent;
- Difficulty conveying project experience and lessons learned from previous projects, impeding whole-of-life outcomes, simplicity and standardisation in some cases;
- Delayed commencement of construction while 100 per cent design details are being agreed; and
- Insufficient time allowance for design within the D&C for the increasing complexity associated with TI schemes.

The current D&C approach may also pose some perceived tenderer disincentives including:

- Cost risk and duration of tendering, including tender phase due diligence geotechnical investigations;
- Design risks to contractors including cost impacts associated with changes between tender and detailed designs;
- Ground condition risks associated with limitations in geotechnical data available to suit the final detailed design solution;
- Design management requirements for companies that are best equipped for construct only projects; and
- Design delaying commencement of on-ground works and mobilisation (i.e. contracts are let in October, design takes five months, works start in March).



Alternative Approach: Design Finalisation and Construct

To alleviate some of these risks and concerns, TI is considering an amended approach. As the current D&C approach has been effective in addressing primary TI drivers for price and risk certainty, it provides a logical start point.

However, a more balanced approach that allows some of the benefits of the D&C approach to be retained but also provides increased design control may be the Design Finalisation and Construct (DF&C) method.

Key attributes of the method are:

- TI would provide a significantly developed design (say 60 – 90 per cent, depending on asset class) as well as overall functional description as part of the tender documentation;
- In addition to developed design, project scope is defined and documented prior to tender with an expectation the contractor can conduct pricing from the TI design;
- Contractor has option of limiting tender phase design to due diligence design review, but also has the option of offering alternative innovations that achieve TI outcomes;
- Post-award, contractor finalises detailed design and constructs;
- Design partner can be novated;
- Constructability is assessed in the design phase; contractor carries risk for final design and constructability;
- Cost of tendering is reduced; and
- Key principal supply items may be ordered earlier to reduce construction time.

The perceived benefits of the DF&C approach include:

- TI can influence the design and specify requirements in more detail. This allows reasonable control of the design outcome including OPEX costs, whole-of-life considerations, standardisation, scheme integration and incorporation of lessons learned from previous schemes;
- Significant reduction in tendering costs for those contractors wanting to avoid tender phase design development;
- Reduced tender and contract period, reduced likelihood of significant design changes from tender to final design due to design advancement prior to tender; and
- Where identified and considered value-adding, innovation may also be included in the TI design for finalisation by the construction contractor.

A summary of the DF&C approach is provided in Table One below:

Table One: DF&C Approach Summary

Method	Design Finalisation and Construct (DF&C)
Description	• TI provides 100% design schematic and 60% to 90% detailed design • Project scope is defined and documented prior to tender with expectation that Contractor can conduct pricing from design • Contractor completes detailed design and constructs. • Typically fixed price contract • Design partner can be novated • Constructability assessed in design phase, contractor carries risk on final design and constructability
Tender Cost and Time	• Constructability assessed in design phase, contractor carries risk on final design and constructability
Industry/Contractor requirements	• Requires capability in design and stakeholder management but less so than traditional D&C
Benefits	• TI have reasonable control of design outcomes including OPEX costs, whole-of-life considerations, standardisation • Previous lessons learned readily incorporated • Potential for design partner post award to be novated to contractor to maintain continuity of project involvement • Contractor innovation still able to be designed into project during tender and detailed design completion phase • Reduced design requirement for companies less well-equipped for design • Reduced tender and contract period due to design advancement prior to tender
Risks/Risk Allocation	• TI requirement for early expenditure on 60% to 90% design means TI carry a cost risk on upfront design - **TI risk increased compared to D&C** • TI partially carry risk of undesirable design outcomes but has more control - **TI risk reduced compared to D&C** • More TI design control means less opportunity for contractor innovation compared to D&C. TI partially carry risk of missing benefits on contractor innovation - **TI risk increased compared to D&C** • TI planning/approvals risk retained – **TI risk as with D&C** • Contractor partially carries design finalisation/constructability risk, but design has progressed prior to tender and more ground condition information available from design process. Constructability has also been assessed in design phase - **Contractor risk reduced compared to D&C** • Construct contract price risk carried by TI, but reduced requirement for contractor design effort - **TI risk reduced compared to D&C**

The Need for a TI Design Partner

Under this proposed DF&C approach, TI would develop its own design standards that specify the type of infrastructure to be used across new schemes, design standards to standardise engineering, hydraulics, electrical plans, pumps, pipelines and dams.

A key outcome would be the standardisation of infrastructure, leading to much more efficient scheme operation. A consistent approach to system control and data acquisition will also assist Tasmanian Irrigation in its operational and water delivery focus.

In line with our Corporate Plan Safety Strategy, it is also anticipated that the DF&C approach would allow further embedment of safety principles early in the design phase.

This would increase focus on engagement with TI operational staff via Safety-in Design workshops and Hazard and Operability (HAZOP) analyses throughout design. Emphasis would also be placed on site safety audits during construction.

While TI has embedded a Technical Support Services function into the organisation, it is not the intent to undertake detail design development in house.

Currently, there is insufficient internal resource for this to be possible and in the longer term, TI's focus will transition from the building of new schemes towards the sustainable management and operation of existing irrigation schemes.

"As a result, embedded design partnership is a preferred approach to filling resource gaps to undertake detailed design of the new schemes."

The intent is to provide TI project managers with increased access to design resources via the internal TI engineering team and the design partner together.





Design Partner Overview

With a possible DF&C approach in mind, TI has considered the required design partnering process and outlined interactions with design consultants and contractors during the creation of a new irrigation scheme. The proposed stages of the process are documented in Table Two below and shown in the schematic in Figure One.

The process begins with the collation of design documentation from the TI Project Manager and internal TI Engineering team. This would provide a basis of design, a set of technical specifications/standard drawings for asset types in the scheme, a project technical scope and a scheme functional description. The design partner would then review the functional description and facilitate a series of workshops to address constructability, environmental and safety in design issues.

To be effective, a design partner will engage with TI to ensure that the design is thoroughly reviewed for conformance to health and safety best practice. This would require facilitated discussion and collaboration with both the TI Project Manager, TI Engineering Team and TI Water Delivery Scheme Operators to extract lessons learned from previous projects.

A draft design drawing set is produced and iteratively reviewed between the TI Project Manager, TI Engineering and the Design Partner up to the production of a construction tender design. It is envisaged that this level of completion would depend on the asset class with for example, a 90 per cent complete design for pump stations and pipelines.

It is envisaged that TI would detail property outlets and valves up to a 100 per cent design level.This would reflect the extent that TI has matured after successfully constructing 15 irrigation projects, capturing lessons learned from these previous schemes and developing technical documentation. It is also envisaged that together with TI, the Design Partner has progressed landholder engagement, necessary permits and approvals and development applications to the approval status.

The design is subjected to a HAZOP with the TI Project Manager, TI Engineering and Water Delivery operators to continue capturing essential input to the safety, maintainability and operability of design outcomes. It is envisaged that the constructability of the proposed design is also assessed at this stage and a commissioning plan developed for the major components of the designed scheme.

Upon completion of the HAZOP, tender documentation is produced, and contractor engagement progresses based on the partial design. Upon award, the design partner, design and commissioning plan are novated to the contractor. Under contractor leadership, the design is then progressed to 100 per cent complete, including a second HAZOP on the final design with TI operator stakeholders. With the final design and necessary approvals in place, issued for construction drawings and specifications are then confirmed, and the construction phase can begin.

While construction progresses with the contractor and novated Design Partner, the TI Project Manager and TI Engineering Team works to develop plans for safety auditing. Once construction is complete, the novated commissioning plan for the scheme is then followed through by the contractor. By significantly developing a design and technical specification and novating a commissioning plan, the intent is to reduce the likelihood of a scheme not performing as intended. If the technical specifications and novated commissioning plan are adhered to, the commissioning risk is carried by TI.

Upon completion of the commissioning phase, as-built documentation is handed over to TI in accordance with TI standard templates. In addition to O&M manuals, it is envisaged that new assets are uploaded into the TI asset register and a scheme asset management plan is produced that would meet TI's documentation specifications.

Table Two: Stages of Design Partnering Process and Input Requirements

Stage	Description	Input requirements		
		TI	Design Partner	Construction contractor
1	Production of: - Basis of design - Technical specifications - Project technical scope - Standard drawings for scheme assets - Scheme functional description - Permits and approvals	Lead	None	None
2	Completion of: - Safety in design/ environmental design/constructability workshops - Review/revision of functional description - Draft design drawings	Participate	Lead	None
3	Review and acceptance of: - Revised functional description - Draft design drawings	Lead	Participate	None
4	Production of updated design to 60%-90% depending on asset class	Participate	Lead	None
5	Completion of HAZOP on 60%-90% final design	Participate	Lead	None
6	Production of: - 60%-90% construction tender design - Construction tender documents - Value engineering workshop - Contractor engagement	Participate	Lead	None
7	Finalisation of: - Detailed design of outstanding elements - 100% Design HAZOP	Participate (Review only)	Participate	Lead
8	Completion of IFC drawings and specifications	Participate	Lead	Lead

9	Start of construction phase	Participate	Participate	Lead
10	Development of commissioning plan	Participate	Lead	Participate
11	Completion of commissioning activities and report	Participate	Participate	Lead
12	Development of O&M plan	Participate	Participate	Lead
13	Production of: - As-built documentation - O&M plan - Asset Management Plan - Population of Asset Register	Participate	Participate	Lead







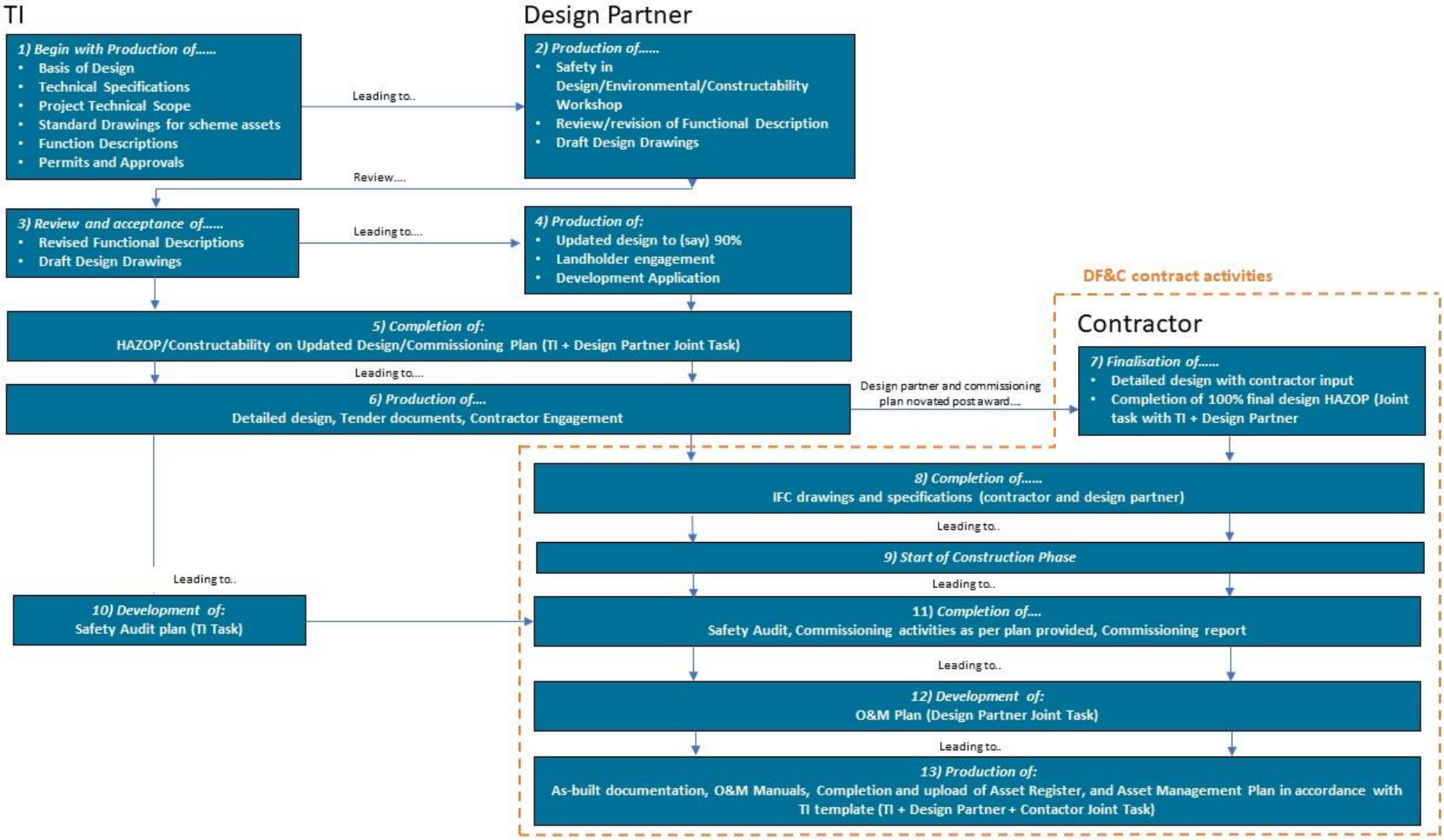


Figure 1. Process and information flow for Design Partnering process in creation of new scheme

Table Three: Design Disciplines Needed by TI

Considering the above design partnering process, Table Three below lists the design disciplines that TI requires potential design partners to provide for different scheme infrastructure assets.

Scheme asset type	Pump Stations	Pipelines	Dams/Storages	Power Generation
Design discipline	Mechanical Electrical/ Instrumentation/Control Civil/Structural	Mechanical Civil/Structural	Dam Safety Geotechnical Hydrology Civil/Structural	As required
TI specific need	Drafting Pump Selection Electrical/Control system design Civil design Mechanical design	Transient analysis Drafting	All design	As required

Summary

As indicated above, the intent of this briefing is to raise awareness within the design consultancy and construction contractor industries of Tasmanian Irrigation's (TI) desire and intent to adopt a design partnering approach to the creation of new irrigation schemes.

We are also seeking to enhance collaboration with industry in this area, and in the spirit of partnership, we would welcome feedback and queries for clarification to:

Paul Davis **General Manager Technical Support Services** **Mobile:** [redacted] **Email:** paul.davis@tasirrigation.com.au	**Paul Ellery** **General Manager Program Development and Delivery** **Mobile:** [redacted] **Email:** paul.ellery@tasirrigation.com.au

"Thank you for being a highly-valued partner of Tasmanian Irrigation and working with us to enable Tasmanian farmers to expand, diversify and value add through the provision of high-surety irrigation water."

Tasmanian Irrigation...

Tasmanian Irrigation



Design Partnering Briefing Note

Summary of Industry Responses



September 2020

Tasmanian Irrigation sincerely thanks all of its highly-valued contractors and other stakeholders who took the time to comment on the new Design Partner Briefing Note.

Your input has been widely appreciated.

The feedback was positive overall, with constructive comments and a number of suggested amendments to the approach that can benefit all stakeholders.

Several common themes emerged from respondents and we have now collated these ideas and proposed amendments into this summary document.

For more information, please contact:

Paul Davis
General Manager Technical Support Services
Mobile: [redacted]
Email: paul.davis@tasirrigation.com.au

Paul Ellery
General Manager Program Development and Delivery
Mobile: [redacted]
Email: paul.ellery@tasirrigation.com.au

Theme One

Contractor Risk with a Partially Novated Design for Finalisation and Construction

A number of respondents suggested Tasmanian Irrigation consider developing a 100 per cent complete design for pipelines and pump stations ahead of the Design Finalisation and Construction (DF&C) tender phase.

The general view expressed was that a 90 per cent complete design may not be sufficient for meaningful contractor input.

There is a perceived risk in receiving a 90 per cent complete design that could require significant further work to finalise.

The view expressed is that with design partner resources on board, Tasmanian Irrigation could progress to 100 per cent complete.

Amendment One:

Tasmanian Irrigation and its design partner will develop designs to the following levels of completion prior to DF&C tendering:

- Pipelines and pump stations to 100 per cent
- Reservoirs/balance tanks to 100 per cent
- Control system to 80 per cent
- Outlets to 100 per cent
- Dams to 60 per cent
- Power Generation to 60 per cent

Theme Two

Contractor Risk with a Novated Design Partner that may not be their Preference

A small number of respondents perceived a risk with the intended novation of a design partner that may not be the contractor's preference (and vice versa) during construction.

Tasmanian Irrigation views the novation of the design and design partner to the construction phase of the project as an essential means of preserving continuity of the design intent throughout the project.

However, it is also clear that, in some cases, a novated design partner is not preferred.

As a mitigation it is proposed that, while the novation of the detailed design is mandatory, the novation of Tasmanian Irrigation's design partner is considered optional for the successful contractor to consider.

To facilitate this, as part of the detailed design development, the design partner will be required to develop a schedule of rates for the activities that are to be undertaken during the design finalisation and construction phase. For example, these activities include (but are not limited to):

- Site-based design and engineering support during construction;
- Quality Assurance audits and design certification;
- Development of a commissioning plan / undertaking commissioning;
- Development of the asset register and populating Tasmanian Irrigation's asset management system; and
- Development of an O&M manual for scheme infrastructure in line with Tasmanian Irrigation requirements.

The successful contractor may decide to accept this schedule of rates and Tasmanian Irrigation's design partner is novated across to the contractor for the DF&C process.

In this instance, risks associated with design finalisation are carried by Tasmanian Irrigation.

In the event that the contractor does not accept the schedule of rates for Tasmanian Irrigation's design partner, they then select their own designer.

However, in this instance, risks associated with design finalisation are carried by the contractor.

Amendment Two:

The design partnering approach is refined to accommodate the option of not novating the design partner, together with the corresponding risk apportionment.

Theme Three

Constructability Assessments and the Tendering Process

In follow up discussions with respondents, feedback indicates it is essential for Tasmanian Irrigation to include constructability assessments in the early design development process.

Validating this observation, Tasmanian Irrigation continues to experience challenges from unforeseen constructability problems and under-estimated costs associated with civil works.

It is suggested that Tasmanian Irrigation identifies constructability and cost estimation skills and experience as essential requirements in potential design partners.

Further feedback on constructability assessments, suggests that it would be beneficial for Tasmanian Irrigation's tendering process to allow for alternative tenders to be submitted.

While these alternative submissions might not comply with detailed design requirements, they may offer constructability benefits that have not been discovered in the design process.

Amendment Three:

Tasmanian Irrigation's selection process for a design partner is already being developed with an emphasis on constructability and cost-estimation skills / experience.

Tasmanian Irrigation will also ensure that the tendering process continues to allow for alternative tenders that can provide constructability benefits.

Theme Four

Procurement of a Design Partner

A large number of respondents queried the time period that a design partner would be engaged for.

The feedback provided suggested that it would be beneficial to engage a design partner for a pilot trial scheme to demonstrate Proof of Concept for the design partner process.

Amendment Four:

Tasmanian Irrigation will set a three-year time period for the selected Design Partner with a hold point at the commissioning of the first scheme in construction, likely to be the Don Irrigation Scheme.

There will then be an option to continue for the remaining two Tranche Three schemes.

Theme Five

Quality Assurance Site Presence and the Responsibility of the Design Partner during the Construction and Commissioning Phase when Novated to the Principal Contractor

Follow up discussions with respondents indicated that roles and responsibilities during construction phase require clarification ahead of securing a design partner.

Amendment Five:

The activities Tasmanian Irrigation requires from the design partner include (but may not be limited to):

- Site-based design and engineering support during construction;
- Quality Assurance audits and design certification;
- Development of a commissioning plan / undertaking commissioning;
- Development of the asset register and populating Tasmanian Irrigation's asset management system; and
- Development of an O&M manual for scheme infrastructure in line with Tasmanian Irrigation requirements.

Theme Six

Capacity Building in Tasmania from the Design Partnering Process

Follow up discussions with respondents have suggested that Tasmanian Irrigation takes the opportunity to build Tasmanian capacity in design through the partnering process.

Feedback emphasised the benefit of engaging with a design partner that understands Tasmanian Irrigation infrastructure and the Tasmanian Irrigation context.

As a State-Owned company, Tasmanian Irrigation complies with the State Government's buy-local policy and as such, this will be considered in tender evaluation

Amendment Six:

Tasmanian Irrigation is specifically structuring a pre-qualification request for design partnering services against the likely asset types that will comprise its schemes.

As indicated above, constructability and cost estimation are emphasised skillsets / experience that is desirable.

Tasmanian Irrigation will also specifically include track record on previous design assignments on water infrastructure that is likely to comprise future Tranche Three irrigation schemes.

Appendix

Summary of Industry Responses to Design Partner Briefing Note

Feedback comments received (anonymous)
• Contractors better placed to foresee construction risks than design consultants • Contractors provide input into design at front end – delaying this to 90% design loses benefit • Final 10% of a design can take long time (50% of design time) • Need to consider how we engage the designer – if lump sum for entire package including one novated, there is a risk borne by designer (i.e. if contractor makes significant changes from 90% to complete, then designer may need to wear re-design costs) • Given that 90% design is too late for a contractor to have input into pipelines, thought should be given to a 100% complete design for pipelines • Similarly, for pump stations, civil contractors are unlikely to provide much benefit in design. Consideration to complete 100% design before going out to construction • As constructed docs difficult to price up front as difficult to estimate the extent of design documentation revisions up front – design consultant will need to factor in risks • Designs should be developed inhouse to a similar level that went out as part of previous D&Cs (clear pipeline corridor, indicative asset locations and size) • Clear guidelines provided / standard documentation of SiD, FDs Commissioning Plans, tender docs, tech specs etc) • Engage design partner in two stages: i) up to DF&C contract tender documentation; ii) as part of the DF&C contract • Consideration recommended to developing design to 100% for elements with low risk of change once awarded to contractor • Provide clear standard documents such as Safety Audit; Commissioning Report O&M manuals and As Cons so these don't need to be developed by contractor. Alternatively, write some of these out of the contract and include in Design Partners novated portion brief
• Previous advice provided to TI was to transition to construct only contracts with a schedule of rates for high risk quantities such as rock and underground volumes for dams • Risk profile between TI and the contractor does not look to be addressed • The contractor is asked to take on all the risk of the project yet with minimal input into the design • Contractor has no input in to the selection of the design partner • Contractor will have little to no influence over the design partner, however, will be expected to carry constructability, scope creep and commissioning risks • New process effectively eliminates innovation from the process as innovation cannot be implemented at 80%-90% stage of design with significant redesign (time/cost impost). Value engineering is completed without contractor involvement • Adequate timeframes for tender and construction have not been addressed and have been highlighted to be reduced • Issues related to liquidated damages have not been addressed • If TI wishes to control the design and all learnings from previous projects, then they should manage the designers to 100% stage and not 80%-90% stage. TI do not necessarily need resources to complete the inhouse detailed design as they can use their design partner

Appendix

Summary of Industry Responses to Design Partner Briefing Note

Feedback comments received (anonymous)
• Support the approach in principle with detailed D&C for the final project delivery • Believe the model helps ensure that rigorous testing of options and risks can take place before commitment to one particular solution • Believe the approach with D&C tendering to finalise design and construct is conducive of comparing like tenders on a fair basis whist allowing for some innovation in delivery • Strongly suggest that TI does not enter into a monopoly situation with design partners. This locks out a large number of potential suppliers who have built up skills over many years servicing the Tasmanian water industry and reduces fair competition that could benefit Tas industry • Commend TI for seeking to improve their procurement process and also for seeking feedback from local industry
• Welcome the proactive approach in assessment of current design delivery and proposed change • Recognise that TI has gained significant IP in development of their design standards and standardisation across schemes • This increased IP lends itself to TI increasing control over design process and managing associated risks • Generally supportive of the approach outlined with general feedback • For larger contracts, and EOI and ECI phase could be undertaken in parallel with design phase – This enables contractor more input into constructability, innovation and cost savings • For smaller contract, model could simply be construct only if novating the design adds unnecessary complexity and time. Contractor could still provide some constructability and detailed design input (post tender) as the successful contractor during the finalisation of the design to IFC • Typically, limited opportunity to influence significant change in design once the design has progressed to 90%. For larger projects and EOI and ECI phase may be beneficial. Recognise there is some constructability and refining of detailed design possible from 90% design to IFC for typical projects • As part of novating the design to the principal contractor, will TI have a back-to-back consultancy agreement (on TIs commercial terms) with the design consultant? The extent of departures from TI's commercial terms will guide the risk passed to the contractor • Will all tenderers be required to provide a compliant tender price (e.g. compliant with the 60% to 90% design)? This would enable an 'apples for apples' comparison of submitted tender prices. Contractors would then propose 'alternative tender' process based on alternative design options which are considered separately by TI. This gives contractors the opportunity to demonstrate innovation and value for money options while still submitting a compliant tender

Appendix

Summary of Industry Responses to Design Partner Briefing Note

Feedback comments received (anonymous)

- During the tender phase, there could be a need for the contractor to engage a third party to check viability of alternative design options for 'alternative tenders. By introducing a third party there is a need to manage risk of non-compliance with TI documentation. By submitting alternative designs as 'alternative tenders' this assists both TI and contractor in managing the risk and associated costs
- TI could allocate some budget in the consultancy agreement for assessment of alternative design options as 'viable / not viable'. This would encourage innovation during the tender phase amongst contractors and also focus TI's design partner on value for money solution knowing the design may be challenged with alternatives at tender time
- The consultancy agreement established between TI and the design partner should consider design services scope and fees for 1) Assessment of alternative design viability; 2) Development of detailed design to 100% IFC; 3) Construction phase services. Concern is that if these scope and cost is not defined for later stages, there is some risk that the design scope (0-90%) will slip into post novation phase
- Under the DF&C model, TI will be responsible for management of the design up to 90% including the scope of design provided by the design consultant. TI must manage the consultant to ensure they have adequately completed a 90% design prior to novation – a mechanism for review against set criteria including review by 3rd party consultant could be considered prior to novation
- Who would carry the design growth risk from the point in time that the design is novated to issue of IFC?
- Completion of design should be progressive and allocated into considered design deliverable packages. In addition, the contract should allow progressive commencement of construction activities including procurement activities as the associated design packages are developed. For example, commencement of earthworks activities should be able to commence on completion of the design for earthworks package. Long lead time items (e.g. valves or pumps) should be part of an early design deliverable package to enable procurement activities to proceed
- Under the DF&C model, what would assessment criteria be for tenders and what percentage weighting would be on price?

- **Standardisation:** Keen to further understand TI's needs over and above the previous specifications and barriers that TI has encountered to achieving the standardisation they desire
- **Project Timing:** TI is aware of the design timelines which TI have required as part of project specifications and hence the difficult task to achieve not only the design but the entire design process which is laid out in project specifications. Keen to understand how TI has determined the timing for past design phases with a view to having input to future design timelines

Appendix

Summary of Industry Responses to Design Partner Briefing Note

Feedback comments received (anonymous)

- **Access to Designers:** With the current TI project specifications, access to the designer is free and unencumbered. Our experience has varied from the early days of TI, where we had significant design by TI staff through to latest projects where that interaction has reduced for some reason. Design input from the end user is always critical and encourage TI to obtain the right contractual environment where this can occur. Our view is that innovation needs to be captured as early as possible in a project lifecycle and in a manner where capex is not already fixed
- **Novation:** We encourage the concept of having a design partner, and for that design partner to be fully involved with the project right through to and including commissioning. We are keen however, to discuss the risks associated with being novated as a consultant and the issues around who owns the design risk, contract terms with a new partner (i.e. the contractor) how TI envisage managing a forced partnership at times
- **Due Diligence** – Through any D&C tender bid, a sufficient amount of time and resources is allocated to the bid and this is directly impacted by the quality of information provided but also importantly who owns the risks with each aspect. For the design approach being considered, we are keen to discuss how TI envisages design risk transfer and impact and costs associated with undertaking due diligence for a project and the time envisaged to tender considering the depth some of the due diligence may need to go to
- **Construction Phase Services**: In the current model being suggested by TI, the design partner would be novated to the successful contractor. Keen to discuss and understand the role of the design partner, with regard to construction QA, certification and consideration of access to the design partner from the contractors perspective, both office-based support role but critically for onsite support
- **In summary** – Fully encourage the Design Partner approach to be developed

- **Early design completion:** Early progression of land tenure will reduce the risk of construction delay. Design partner scope could include specialists in land tenure (planning stakeholder engagement)? Recommended to retain control over construction tender until issues are resolved to avoid contractor imposing time penalties
- **Early design completion:** Early identification of environmental and planning matters beneficial. Design partner could potentially include specialist in environmental issues? Recommended to retain control over construction tender until issues are resolved to avoid contractor imposing time penalties
- **Innovation:** DF&C may reduce contractor opportunity for innovation. Some form of Early Contractor Involvement (ECI) or inclusion of highly experienced construction personnel in design team may also assist
- **Safety in early design:** Embedding SiD/HAZOP throughout design – important that design partner has strong safety culture aligned with TI; experienced facilitators of SiD/HAZOP; experienced construction personnel also considered beneficial

Appendix

Summary of Industry Responses to Design Partner Briefing Note

Feedback comments received (anonymous)

- **Partnership to increase design capability and capacity:** Design partner approach positive – expectations need to be clearly outlined in approach to procure the partner. Indications of the number of personnel sought across relevant disciplines will also assist consultants to provide well-detailed proposals
- **Fostering design partnership:** Aspects to consider are; cultural alignment; trust, discipline coverage; local presence. Consider running first project with a single select partner as proof of concept; contract should include mechanisms for continuous performance reviews and feed-back
- **Number of design partners:** Design single design partner for whole of Tranche Three? Or appoint small number of partners they would interchange or a scheme-by scheme proposition? Single design partner recommended for consistency
- **Arrangement for Design Partner:** Contractual arrangements can have a bearing on how closely the ideal of a collaborative partnership can be achieved. For example, traditional consultancy, whereby the consultant takes on full design risk (consultant would need to overlay their QA processes over design elements undertaken by TI, with possible duplication)
- **Arrangement for Design Partner:** Consultant and TI each take responsibility for defined design components and liaise regularly to ensure compatibility

- **Arrangement for Design Partner:** Other considerations are reporting lines between TI and the design partner; location (e.g. co-locating); integration of systems defining how information will be shared, established workflows and QA processes
- **Procurement of Design Partner:** If TI wishes to assess the fit of the design partner, a pilot scheme appointment may buy time and give the opportunity to provide PoC ahead of going to tender for longer term partner
- **Preparedness of specs and standardised drawings**: Early preparation of standard drawings / technical specifications essential – TI should seek external assistance where required
- **Novation of design partner**: Potential for conflict of interest where designer is working for TI to provide a 'quality' outcome whereas the contractor is working towards a "lowest cost" outcome. Despite novation TI will likely still need to pay any variations associated with mandatory requirements of reference design. Suggested approach is for TI and design partner to develop design to agreed level for tender. Contractor is invited to identify potential cost savings – any proposed design or constructability changes requiring TI approval. Design partner is not novated but is made available (under the TI contract) to the contractor to "test" potential design changes. The idea could be extended as far as making the design partner available to the contractor to finalise the design incorporating the contractor's thoughts/innovations. The approach would allow for TI to retain full design control, share in potential design finalisation/ construction savings. There would be no complication or conflict of interest for the design partner; the contractor would have some influence/ownership of the final design (less variations)

Appendix

Summary of Industry Responses to Design Partner Briefing Note

Feedback comments received (anonymous)
• **Perceived benefits of approach:** Acknowledge benefits of the DF&C approach to broaden the field of likely participants in both design and construction phase; helps ensure rigorous testing of options and risks before commitment to a solution; pricing of contracts will be more accurate with less risk to both parties due to more fully developed design at tender stage; conducive of comparing like tenders on a fair basis whilst allowing for some innovation on delivery • **Constructability:** Incorporate a mechanism to ensure the 60-90% design is financially realistic, feasible and that the burden of realising a technically complex design does not fall to the contractor • **Formalise interactions between design partner and contractor during tendering:** To ensure that all contractors have fair access to confirm/request details tin understand the intent of the design • **Formalise the interactions between the design partner and the contractor if not novated:** Procurement method should ensure that the continuity of design is maintained if the design partner is not carried through to project delivery. This ensures other potential design consultants are given reasonable chance of involvement in the project delivery phase • **Acknowledge local Tasmanian design partners:** Encourage a focus on local participation to continue capacity building in the State

"Thank you again for being a highly-valued partner of Tasmanian Irrigation and working with us to enable Tasmanian farmers to expand, diversify and value add through the provision of high-surety irrigation water."

Request for Consultancy Services – Pre-qualification of design partners

Tasmanian Irrigation Design Partner

October 2020

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1 GENERAL

This document forms the basis of pre-qualification of Tasmanian Irrigation's (TI) potential design partners. Responses to this pre-qualification request will be considered ahead of issuing a request for consultancy services and TI's proposed contractual arrangements for design partnership.

2 OVERVIEW

2.1 Tasmanian Irrigation

Tasmanian Irrigation Pty Ltd (TI) is the single state-owned company responsible for implementing and developing irrigation schemes of regional and state significance as well as the operation of existing irrigation schemes.

TI's aim is to provide infrastructure to grow the wealth of Tasmania by developing and enhancing the productive capacity of the State's agricultural industries.

These significant irrigation schemes are realised through public-private partnerships. This is achieved through State and Federal Governments grants together with private capital contributions made through the purchase of tradeable water entitlements. All operating costs, including provision for asset renewal, are met by annual charges levied on water entitlement holders.

TI provides the technical, financial and project management skills needed to deliver major irrigation infrastructure projects. With the assistance of its *contractor*s, it progresses schemes from concept development through feasibility and construction to operations, with the design life of the new pipeline infrastructure to exceed 100 years of economic use and 200 years for dams, with an overarching philosophy of minimising operating and maintenance life-cycle costs.

The overall irrigation scheme must have an average water delivery reliability of at least 95% during its operating life. Each scheme is built to satisfy demand in that region, with a threshold level of commitment from irrigators required before construction can commence.

3 INTRODUCTION/BACKGROUND

The construction of 15 large-scale irrigation schemes has enabled TI to refine many of its procedures for the planning, design and construction of new schemes.

Historically, TI has created new schemes through a Design and Construct (D&C) approach. This allowed projects to be tendered rapidly and expenditure – prior to business case approval – to be effectively

managed. However, feedback from industry and TI's own observations have indicated some drawbacks that have led to a modified approach to new scheme creation.

The approach is outlined in the attached documents:

- *'Design Partnering Industry Brief',*
- *'Design Partnering – Industry responses'.*

A key feature of the approach is that, to allow TI increased influence over design and the incorporation of lessons learned from previous schemes, designs are proposed to be significantly developed prior to tendering for construction. While TI has restructured to create an internal Technical Support Services function, there are insufficient resources to fully complete detailed design in-house. As such, a design partner approach is preferred. Further detail on the process stages and interactions between TI and a design partner are contained in the aforementioned documents.

Funding is confirmed for the first five of TI's new Tranche Three (T3) irrigation schemes and planning underway on the second five irrigation schemes in T3. The schemes that are likely to be progressed during this design partnering arrangement are:

- Don (preferred option identified and water sales complete)
- Fingal (preferred option identified water sales yet to be progressed)
- Northern Midlands (NMIS) (preferred option identified water sales yet to be progressed)
- Tamar (options under development)
- Sassafras Wesley Vale Augmentation (SWISA) (options under development)

Currently unfunded:

- Southern Midlands (options under development)
- South East Augmentation (options under development)

Of these first five, the proposed Don irrigation scheme is the most advanced and is described in the accompanying report '*Don Preferred Option Engineering Report'.* This scheme has secured the capital contribution from the private sector through the sale of water entitlements.

Fingal and NMIS are to follow with preferred options approved and progressing towards water sales. Engineering reports for these schemes, scheme maps and proposed infrastructure for the preferred options are contained in the accompanying documents *'Fingal Preferred Option Engineering Report'* and *'Northern Midlands Preferred Option Engineering Report'*

Currently, Tamar, SWISA, Southern Midlands and South East Augmentation remain in the options development stage.

4 DESIGN DEVELOPMENT, REVIEW AND APPROVAL WORKFLOW

The schematic diagram in Figure 1 below shows the intended design development, review and approval process that will be followed throughout this engagement.

4.1 Preferred Option design

As shown, the preferred option workflow covers the first draft design that is undertaken by the TI Project Engineer in conjunction with the Project Manager. While the internal TI engineering team will be responsible for the development of preferred options for new schemes, it is anticipated that the design partner will provide engineering resources to support this development, as and when required.

A key requirement is that, once the first draft design is complete, a review process is undertaken to assess the constructability of the design and provide a third-party review of the estimated capex costs that have been developed.

TI continue to face challenges in this area and the ability to assess constructability, estimate costs and identify early beneficial changes is an essential skillset and experience base that the Design Partner can bring to the partnership.

Once the design partner review is completed, the preferred option is considered by the TI Project Control Group (PCG). The role of the PCG is to challenge and confirm the preferred option ahead of its presentation to the Board for approval.

4.2 Business Case

Following Board approval of the preferred option, a water sales process is undertaken. The preferred option design is then refined based on the actual water sales contracts that are secured. The Design Partner will provide input to this post water sales design refinement leading to an internal review by TI Water Delivery and Technical Support Services. Again, the focus is on constructability and cost estimation of the refined design. The refined design then forms part of a business case that is submitted to the PCG for review and then on to the TI Board for approval.

4.3 Detailed Design and Tender Preparation

Post business case approval, TI and the Design Partner will progress the detailed design for the scheme and its elements to a defined level of completion:

- Pipelines and Pump Stations to 100%
- Reservoirs/Balance tanks to 100%
- Control System to 80%
- Dams to 60%
- Power Generation to 60%

The required design activities for these asset classes are anticipated to be conducted in collaboration between the TI Engineering team, the Design Partner and the TI Project Manager. Further details are provided in section 5 below.

The Design Partner will also assist in the preparation of tender documentation and specification of the Design Finalisation and Construct (DF&C) contract. An important part of this process is to ensure that all contractors have sufficient design information upon which to base their tender submission.

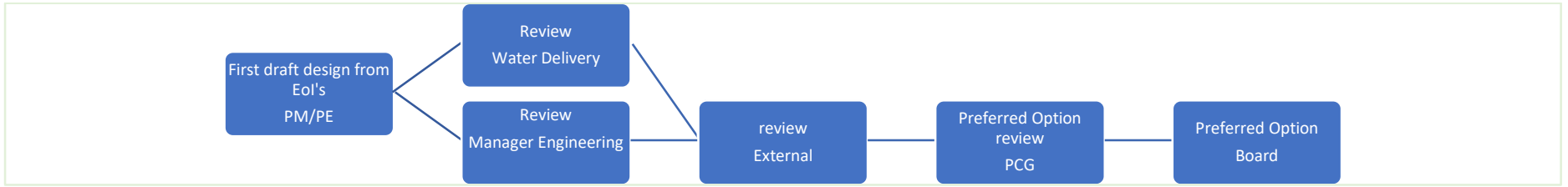
As outlined in the attached documents *'Design Partnering Industry Brief, 'Design Partnering – Industry Responses',* the detailed design process requires that TI Water Delivery stakeholders are also engaged via Safety in Design and HAZOP procedures throughout the stages of design.

The Design Partner will also be required to prepare a schedule of rates for anticipated activities during the DF&C phase of the project. These activities include (but are not limited to):

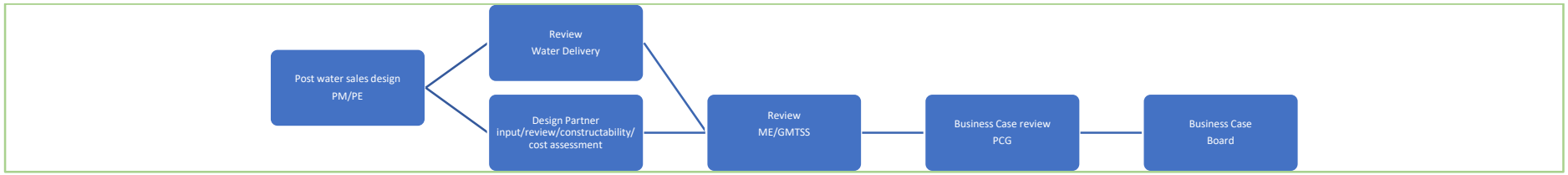
- Site-based design and engineering support where required
- Quality Assurance audits and design certification
- Development of a commissioning plan/undertaking commissioning
- Development of an asset register in the required format for importing into TI's asset management systems
- Development of an O&M manual for scheme infrastructure in line with TI requirements
- Development of a scheme asset management plan in line with TI requirements

As part of the tender process, the detailed design is novated to the DF&C contractor and the option of novating the Design Partner is provided together with schedule of rates information for the activities above.

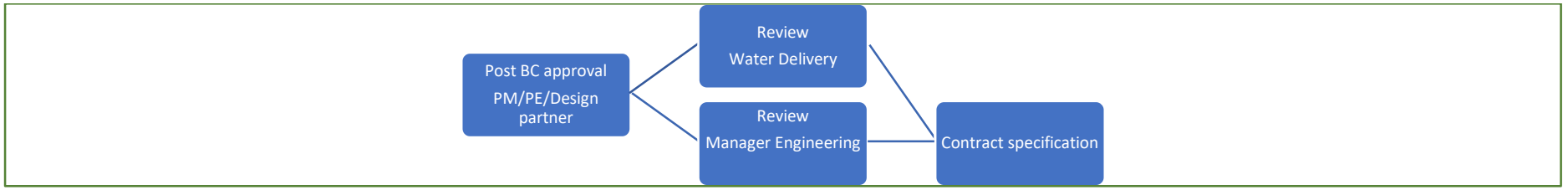
PREFERRED OPTION



BUSINESS CASE



DETAILED DESIGN & TENDER PREPARATION



CONSTRUCTION

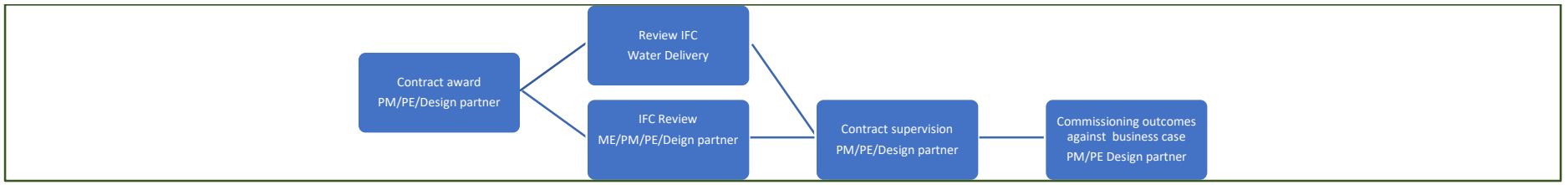


Figure 1. Design development, review and approval workflow

4.4 Construction

Following contract award, the successful DF&C contractor (and the novated design partner, where selected) progress the novated design to Issue for Construction status. Again, TI Water Delivery stakeholders are engaged throughout this process via Safety in Design and HAZOP procedures. Where the Design Partner is novated to the contractor, the Design Partner undertakes the activities listed in section 4.3 above and defined in their schedule of rates provided at tender.

5 SCOPE OF WORKS FOR DESIGN DEVELOPMENT

5.1 Design for Preferred Option identification

As outlined above and shown in Figure 1, the internal TI Engineering team will be responsible for the development of preferred options for new schemes for internal board approval. However, TI continue to face challenges associated with constructability assessment, design optimisation and cost estimation for the preferred option concept designs.

The design partner is required to undertake a review of the TI Engineering team preferred option design with a focus on constructability assessment, design optimisation and a review of cost estimation. The output from this review shall be a 'Cost and Constructability Assessment' report for the preferred option. The report shall include (but is not limited to):

- Project description summary
- Executive Summary
- Construction overview of scheme elements
- Design optimisation
- Cost assessment
- Key Risks and Opportunities
- Site photos

Cost estimation shall be completed at the P50 confidence level including pricing of inherent and contingent risk.

Based on this requirement, the Design Partner and TI Engineering team will convene an inception meeting to confirm the scope of constructability assessment and the cost review. The Design Partner will be required to submit a fixed price and timeline for the preparation of the 'Cost and Constructability Assessment' report.

5.2 Design for Business Case development

As outlined in the design workflow above, post preferred option approval and water sales completion, the preferred option design is refined based on the confirmed water sales contracts.

While the TI engineering team will lead this process, the design partner may be required to provide resource input to meet timelines for business case development.

Based on this case-by-case requirement, the Design Partner will be required to propose a team member and an hourly rate for provision of support into business case design based on actual water sales contract volumes

Following the refinement of the preferred option design post water sales, the design workflow also requires the constructability and cost estimate to be reviewed against any major infrastructure and/or location changes that are proposed.

Based on this requirement, the Design Partner and TI will convene an early meeting to confirm the scope of the follow up constructability assessment and cost review. The Design Partner will be required to submit a fixed price and timeline for this work.

5.3 Design for Tender preparation

Following the approved business case design, the detailed design development then progresses through collaboration between the Design Partner and the TI team. The design process will be managed via the TI Project Manager and Project Engineer. The required design outcomes will be delivered by the Design Partner.

As outlined in the *'Design Partnering Industry Brief'* document, the process begins with the collation of documentation from the TI team. This will provide a:

- Conformation of concept design for preferred option
- Basis of design
- Set of technical specifications/standard drawings for the asset types that are in the scheme
- Project technical scope
- Scheme functional description

Based on this information, the Design Partner will be required convene an early design meeting with TI to submit and discuss a fixed price and timeline for progression of the design to the required completion stage. As outlined above, the following defined levels of completion apply for different asset classes:

- Pipelines and Pump Stations to 100%
- Reservoirs/Balance tanks to 100%
- Control System to 80%
- Dams to 60%
- Power Generation to 60%

With the fixed price and timeline for the design established, the tender design activities are provided are provided in section 6 below.

5.4 Design support during construction

Design support activities during construction include (but are not limited to):

- Site-based design and engineering support
- Quality Assurance audits and design certification
- Development of a commissioning plan/undertaking commissioning
- Development of an asset register in the required format for importing into TI's asset management systems
- Development of an O&M manual for scheme infrastructure in line with TI requirements
- Development of a scheme asset management plan in line with TI requirements

At the completion of tender design, the Design Partner will convene a meeting to present and discuss a schedule of rates for these activities. As part of the tender process, the detailed design is novated to the DF&C contractor and the option of novating the Design Partner is provided together with schedule of rates information for the activities above.

6 DETAILED DESIGN ACTIVITIES REQUIRED – DESIGN FOR TENDER PREPARATION

The scope of required activities for design partners is defined against the infrastructure asset classes that are likely to comprise new schemes below. These infrastructure asset classes are:

- Balance tanks: 100% detailed design
- Pump Stations: 100% detailed design
- Pipelines (Rising Mains, Distribution, Branch Pipelines): 100% detailed design
- Property Outlets: 100% detailed design
- Control system: 80% detailed design

- Dams: 60% detailed design
- Power Generation: 60% detailed design

Summaries are provided below. Detailed descriptions of design activities for pump stations, pipelines and dams are contained in the relevant Appendices.

6.1 Preliminary Design Activities

Preliminary design activities for each scheme include, but are not limited to:

- Preliminary design drawings and reports to include estimation of excavation works, materials options, cost estimates and Net Present Value (NPV estimates)
- Preliminary design drawings and reports including site layouts for pump stations
- Investigation and recommendation of alignment of pipelines
- Alignment and interconnections for all pipework
- Electrical capacity at each Pump Station and Balance Tank site
- Detailed topographic survey of pipeline routes once selected
- Preparation of all required information for cultural heritage and threatened species (flora and fauna) investigations
- Preparation of all documentation to support Development Application processes
- Identification of interactions with existing infrastructure from other utilities
- Facilitation of workshops with TI stakeholders to confirm preliminary design and provide assessment reports for:
    - Constructability
    - Environmental impacts
    - Safety in Design

6.2 Summary of Detailed Design Activities – Balance tanks

Detailed design drawings and documentation for civil, structural and mechanical elements will include (but not limited to):

- Civil design including any necessary geotechnical investigation
- Mechanical and hydraulic design
- Pipework (internal and external)
- Safety in Design Workshop/HAZOP process
- Develop design of balance tanks in accordance with TI standards and specifications
- Provision of preliminary design for TI review and approval
- Provision of constructability assessment report

- Subsequent development of design to level of detail required for approval (100% complete)
- Technical specification
- Schedule of prices and pre-tender cost estimate (completed at the P90 confidence level)
- Design input to DF&C tender documentation and contract specification

Design partner activities required for this asset class are described in detail in Appendix A.

6.3 Summary of Detailed Design Activities – Pump Stations

Detailed design drawings and documentation of civil, structural and mechanical elements including (but not limited to):

- Provide recommendations of pump selections
- Finalise pump selections with TI approval
- Civil design including any necessary geotechnical investigation
- Mechanical and hydraulic design
- Pipework (internal and external)
- Safety in Design Workshop/HAZOP procedures
- Provision of preliminary design for TI review and approval
- Provision of constructability assessment report
- Subsequent development of design to level of detail required for approval (100% complete)
- Technical specification
- Schedule of prices and pre-tender cost estimate (completed at the P90 confidence level)
- Design input to DF&C tender documentation and contract specification

Design partner activities required for this asset class are described in detail in Appendix A.

6.4 Summary of Detailed Design Activities – Pipelines

Detailed design drawings and documentation including (but not limited to):

- Pressure transient modelling, analysis and report (where required)
- Plan and longitudinal sections
- Road/rail/waterway crossing design drawings
- Air and scour valve details
- Connection details to pump stations and balance tanks as per preliminary design
- Develop design of rising mains in accordance with TI standards and specifications
- Provision of preliminary design for TI review and approval

- Provision of constructability assessment report
- Subsequent development of design to level of detail required for approval (100% complete)
- Technical specification
- Schedule of prices and pre-tender cost estimate (completed at the P90 confidence level)
- Design input to DF&C tender documentation and contract specification

Design partner activities required for this asset class are described in detail in Appendix B.

6.5 Summary of Detailed Design Activities – Electrical, Instrumentation and Control

Activities cover the design of infrastructure to allow power supply to and control of constructed assets as per TI specifications:

- Check for electrical capacity at pump station sites
- Design for level control at balance tank sites
- Facilitate and manage pump station electrical, instrumentation and control design with provision for TI review and approval
- Design for control of property outlets in accordance with TI standards and specifications
- Technical specification
- Schedule of prices and pre-tender cost estimate (completed at the P90 confidence level)
- Design input to DF&C tender documentation and contract specification

Design partner activities required for this asset class are described in detail in Appendix A.

6.6 Summary of Detailed Design Activities - Dams

Design partner activities required for the Dam asset class are described in detail in Appendix C.

6.7 Preparation of permits and land applications

As a proportion of works are expected to be completed on privately owned land, TI will require permission work on these lands. Activities include (but may not be limited to):

- Detailed surveys and supporting information to assist the preparation of Development Applications
- Where works occur on crown land, applications for works
- Any other applications required for works
- Stakeholder liaison (i.e. residents, council, crown land services)

7 PROJECT DURATION

The duration of the design partnership is expected to be for a period of 3 years from commencement, with an option for renewal at the end of that period. A hold point for review will be the commissioning of the Don irrigation scheme.

8 SCHEDULE/MILESTONES

As outlined above, the Don irrigation scheme has an approved concept design and is currently begin refined following TI's water sales process. The following are the proposed planned key dates for the Don irrigation scheme design activities:

Design Partner contract awarded	November 2020
Preliminary design approved by TI	January 2021
Detailed design approved by TI	May 2021
Tender documentation, detailed design drawings, schedule of prices technical specifications	June 2021

9 TASMANIAN IRRIGATION SUPPLIED INFORMATION

The following information is available to submissions in response to this pre-qualification request for services:

1. *'Design Partnering Industry Brief'.*
2. *Design Partnering – Industry Responses'*
3. *'Don Irrigation Scheme Preferred Option – Engineering Report'*
4. *'Fingal Irrigation Scheme Preferred Option – Engineering Report'* and
5. *'Northern Midlands Irrigation Scheme Preferred Option – Engineering Report'*

All other information required to complete the detailed design activities as referenced to in Section 4 will be provided as needed by the Design Partner.

10 PRE-QUALIFICATION SUBMISSION

TI's proposed contractual terms for the design partnership consultancy are under development.

In the interim, and as part of the design partner pre-qualification process, TI would like to understand the make-up of likely Design Partners and other parties who are interested in collaborating as a design partner.

As a response to this pre-qualification request for services, potential design partners are requested to submit a response outlining:

- The proposed design partner team and their alignment of skillsets/expertise against the following asset types:
    - Pipelines (rising mains, distribution mains)
    - Pump Stations
    - Electrical/Instrumentation/Control Systems
    - Dams
    - Power generation infrastructure
- A proposed organisational chart for the design partner team
- The proposed methodology for partnering with TI and assisting with the progress through the design development/review/approval workflow as outlined in this document.
- The design partner teams credentials in the specific areas:
    - Constructability assessments to identify risks/opportunities associated with different elements of irrigation schemes, at different stages of design
    - Optimisation of designs to balance capital and operating cost as well as overall system performance
    - Cost estimation (P50 and P90 confidence levels) and validation
    - Facilitated Safety in Design/HAZOP procedures
- An estimated timeline for the progression of detailed design for Don, Fingal and Tamar schemes, including an estimated duration for progressing each scheme design to required level of completion as outlined in section 5.3
- Innovative approaches that the design partner can introduce to ensure the design partnership process proceeds effectively and efficiently.
- Project profiles and references from previous design assignments on water infrastructure relevant to irrigation schemes.

11 ASSESSMENT OF PRE-QUALIFICATION SUBMISSIONS

The assessment of pre-qualification submissions will be undertaken using the following criteria:

Criteria	Comparative Evaluation Criteria	Weight
1	Understanding of task, proposed methodology for partnering and Key Personnel Experience	25%
2	Track record delivering successful, on-time, optimised design outcomes for water infrastructure asset types that are relevant to irrigation schemes	20%
3	Track record in delivering support during construction phase (QA audits; Commissioning plan/commissioning; O&M manual development)	20%
4	Demonstrated commitment to and proposed process for conducting Safety in Design and HAZOP activities during design	20%
5	Demonstrated previously approved Tasmanian Industry Participation Plan	15%
	TOTAL	100%

APPENDIX A – PUMP STATION DESIGN: REQUIRED ACTIVITIES

This Appendix describes the design considerations required by TI for pump stations. This is not a complete list of considerations and the Design Partner shall include all relevant and necessary design considerations to deliver a functioning system.

TI places the following priorities in order, for the design of the system:

- Controllability – stable and reliable control of the scheme and its elements; and
- Minimisation of kWh/ML required for scheme operation.

Following water sales for a preferred option for a scheme, there is a process of re-engineering the concept design to confirm scheme infrastructure that is required to meet the confirmed water sales entitlements. The internal TI engineering team will lead this confirmation of the post water sales design.

Based on this approved post-water sales design, the Design Partner will be required convene an inception design meeting with TI to submit and discuss a fixed price and timeline for progression of the design to the required completion stage for tendering Once agreed, the detailed design of pump stations is progressed as below.

Detailed Design Activities – Pump Stations

It is the responsibility of the Design Partner to provide and finalise a design that meets the TI requirements.

The principle of the design must be to ensure the ongoing safe and reliable performance of the infrastructure and to optimise the performance of all components and associated works to deliver the most cost-effective and efficient system possible whilst ensuring ease of operation. The design must ensure the most economic scheme for TI to own and operate.

The detailed design shall consist of, but not be limited to, the following components:

- Design report;
- Safety in design report;
- Functional description;
- Environmental compliance requirements;
- HAZOP/ Safety in design workshop;
- Relevant work methodologies;

- Risk and Opportunity Workshop;
- Constructability assessment report
- Commissioning, pressure testing and performance testing considerations;
- Draft Operations and Maintenance manuals, including maintenance schedules; and
- Critical and recommended spares.

The detailed design documents must include all documentation necessary to demonstrate, explain and detail the design for construction and operation. Documentation will include, but not be limited to, drawings, summary calculations, assumptions, schedules, reports, specifications, work methodologies and as otherwise required. The detailed design must include all certifications required including a notice that states the detailed design meets TI requirements.

The Design Partner shall design in accordance with relevant legislation, industry standards, guidelines and engineering practice.

The Design Partner must provide to TI copies of relevant design details and documentation on request. This provision of the design documents shall be used by TI to review the status and progress of the design details.

The Design Partner must consider and include in the Detailed Design provision in order of precedence to:

- Decrease maintenance and operating costs;
- Improve the design life or constructability of the project; and
- Reduce capital costs for the construction of the project.

Prior to issuing to TI, the Design Partner will review all documents and ensure they are to an adequate standard for the provision. TI will review the documents and may provide comments.

The Design Partner shall develop the Detailed Design in accordance with the design approval process. This is to be a staged process as below:

- Stage 1: 15% Design Submission
- Stage 2: 85% Design Submission
- Stage 3: 100% Design Submission

Throughout the design development the Design Partner shall convene regular design meetings with the TI team (not less than fortnightly). The meetings shall be held in Tasmania unless otherwise agreed by TI with the cost of attendance at meetings by up to two representatives of TI if held outside Tasmania are to be met by the Design Partner.

Where changes are made to the detail design documentation, the Design Partner must clearly highlight these changes by use of clouding and revision changing in drawings as well as the use of track changes in other typed documents. The date of any change must be clearly defined.

Stage 1: 15% Design Submission – Pump Stations

Following the inception design meeting, the Design Partner is to progress a 15% design. This shall include (but not be limited to):

- Pump Duty points and preliminary pump selection including mechanical and electrical efficiencies
- Pump Station general arrangements
- Preliminary electrical network connection analysis and pump control
- Design Management Plan

A Design Partner meeting with TI will be convened to review the 15% design after it is completed

Stage 2: 85% Design Submission – Pump Stations

Following the 15% design submission and subsequent meeting, the Design Partner is to fully progress the design to the detailed design level.

In progressing the detailed design, the Design Partner shall convene (as a minimum) the following workshops with TI:

- Prior to the submission of the 85% Design, a Safety in Design workshop shall be held. This workshop shall cover all topics relevant to the safe construction, commissioning, operation, and maintenance of the Pump Station; and
- Prior to the submission of the 85% Design, a constructability assessment workshop shall be held. This workshop shall cover all topics relevant to the construction of the pump station including an estimate of construction cost.
- Two (2) weeks prior to the submission of the 85% Design the Design Partner shall convene a risk and opportunity workshop in accordance with the principles and guidelines in AS/NZS ISO 31000:2009 (replacing AS/NZS 4360). The workshop shall focus on risks and opportunities to the design. The degree of control, faults and/or failures that can be remotely or automatically reset shall be determined in this workshop. Findings of this workshop shall be included in the detail design.

Stage 3: 100% Design Submission – Pump Stations

Following the 85% Design Submission and subsequent acknowledgement from TI the Design Partner is to progress the design to a level suitable for final submission and approval.

Design Report – Pump Stations

The Design Partner's Design Report, Design Plans and Construction Specification must address, but not be limited to, the following design and construction considerations:

- Control system design
    - Overview, as a minimum, but not limited to;
        - Pump Station hydraulics, electrical design, mechanical design, civil requirements, Pump Station and power station requirements
    - Scheme P&ID drawing(s);
    - Control system functional specification
- Hydraulic Design
    - Hydraulic analysis and calculations, design criteria including header tank sizing evaluation and elevation optimisation;
    - Plots of system curves overlaid with pump curves for all duty points and dam levels;
    - Control considerations to achieve the various operating modes required;
    - Pump selection and design;
    - Methodology utilised to maximise pumping efficiency while minimising electrical transient generation and mitigation;
    - Pressure testing of the system, which must be defined as an integral part of the design process with attention to test criteria, pipeline lengths, section isolation, and pipeline charging, make up water, etc.; and
    - Performance testing required to demonstrate the system meets TI's project requirements must be developed and documented in the design report. This must cover all components of the system, including transient analysis verification.
- Civil design
    - Structures design including foundations and buildings;
    - Trench compaction and pipe support design;
    - Thrust and anchor block design;
    - Civil infrastructure to support telemetry (footings, cable ducts etc.)
- Mechanical design

- Electrical design
    - Electrical Connections and Transmission analysis and calculations
- Fittings and Instrumentation
    - Details of all equipment required, including but not limited to valves, pipe components, data measurement
    - Details of all instrumentation requirements
    - Specification of weather station location
    - Terminal box connection details
    - Electricity/solar requirements
- Investigations
    - Geotechnical investigation and testing prior to and during construction
- Constructability considerations including but not limited to
    - Access and crane lifts;
    - Coffering, excavating and shoring of pump stations;
    - Environmental risks and how these can be minimised/mitigated in the design;
    - Suitable disposal of unsuitable materials; and
    - Mechanical Design
- Construction
    - Details of recommended construction methodology for all aspects all works defined including machinery required
    - Expected construction timeframes
- Inspection and testing program
    - Details of inspection and testing program including hold point releases
- Maintenance schedules and timings; and
- Draft Operations and Maintenance Manuals.

Prior to issuing to TI, the Design Partner shall review all documents and ensure they are to an adequate standard for the provision.

Design Drawings – Pump Stations

Standard CAD drawing practices and protocols must be used to ensure that the CAD files are suitable for use by others – Refer to Drawing GEN-0001 providing a title block and summary of the required drawing standard (reduced from AS1100). Existing standard drawings from the Design Partner's suppliers can be accepted as "Foreign Prints". The Design Partner's supplied drawings must consistently use the approved template in terms of format, revision control and status.

Drawing numbers and names using standard terminology will be issued by TI as required to the Design Partner. TI issued numbers for drawings will take precedence over the Design Partner's document numbering system.

Where custom fabricated items are included, the Design Partner shall provide shop drawing details.

Scheme Control – Pump Stations

Scheme control includes data acquisition for its economic management, normal operation and for operational "trouble shooting" and problem solving.

The Functional Description will be subject to a workshop to be convened by the Design Partner and attended by TI relevant stakeholders. This is to confirm all elements are correctly integrated, controllable and serviceable, including data capture and integration into the TI SCADA system. This workshop and the finalisation of the Function Description shall form a hold point prior to the Design Partner finalising the 85% Design Submission.

The Design Partner must provide a single scheme control system. This control system will incorporate a single scheme control interface as well as local over-riding controls for local and manual operation as required. The control system must meet all relevant Australian Standards and must be designed such that it can be supported by local technicians. The scheme must be fully integrated with the TI central SCADA control system which uses Schneider ClearSCADA.

Process Control Philosophy – Pump Stations

There are a number of control philosophy parameters that the Design Partner needs to include in the design, including (but not limited to):

- The scheme is required to be easily and reliably controlled, and to easily achieve a steady operating state notwithstanding user impacts on the system such as outlets being opened and closed;
- Operational constraints, especially those relating to day to day water delivery and water trading (in its various forms) and the ability of the scheme to respond practically to user variability;
- Commissioning; identifying and measuring all required parameters for the evaluation of the systems performance;
- Maintenance;
- Faults and power failures; where a fault is non-critical to system operation or safety it must be remotely or automatically resettable via the SCADA system. Automatic resets must take place

once a problem state has ended, such as a power failure or low water level, and the system is safe to resume operation. The alarm notification must remain until acknowledged by the operator; and

- Alarms shall be configured to the TI alarm system definitions

To aid TI in assessing the system and to complement the Process and Instrumentation Diagram (P&ID), the Design Partner must submit a schedule which describes all the scenarios for which the scheme has been designed. This schedule must nominate which scenarios are considered the "critical case scenario" for each zone of the system and demonstrate that this scenario can be safely accommodated. This schedule must include "system time constants" for valve closures and other hydraulic signal generation activities. This schedule must be submitted at the same time as the detailed design P&ID.

The commissioning of the scheme may generate the critical case for the control philosophy. The Design Partner must include commissioning when generating the design for the pipe and the process control philosophy and associated infrastructure.

Safety in Design – Pump Stations

To ensure safety and serviceability in the construction of the scheme the Design Partner must allow for the safe and serviceable operation and maintenance post construction. The scheme must be designed to be operated and maintained in accordance with all legislative requirements including (but not limited to) the Water Management (Safety of Dams) Regulations 2015, *Work Health and Safety Act 2012*, *Work Health and Safety Regulations 2012* and associated Codes of Practice applicable (CoP). These CoP may be located at: http://worksafe.tas.gov.au/laws/codes_of_practice.

The Design Partner shall ensure that the hierarchy of control is applied to risk reduction in delivering the scheme.

In assessing the potential risks during the design, the Design Partner shall consider (but not limit themselves to) the following:

- Application of the "Hierarchy of Control" whereby administrative and PPE controls are a last resort;
- Consideration of communication facilities in case of emergency (e.g. phone);
- The scheme elements that can be remotely controlled must be decided by TI as part of the outcomes of the detailed design reviews and risk assessments (such as a "HAZOP") to be held between the Design Partner and TI during the design phase;

- Automatic and remote alarm and fault reset capabilities will be determined as part of the detailed design reviews and risk assessments as above;
- Minimising the requirement to work in or near noisy pieces of plant and/or equipment;
- Eliminating the risk of flooding, especially in pits;
- Appropriate safety guards must be placed around all moving items of plant. Preference must be given to designs for operations and maintenance procedures which do not require the removal of guards otherwise lockable isolators must be used to de-energise;
- Where protection is required for operators, the Design Partner must advise what protection is required and allow for the supply and install of all necessary signage;
- Appropriate lighting for night access and operation of Pump station(s);
- Appropriate methods to safely and efficiently clear blockages (such as to the inlet trash screens or filters) of Pump Stations whilst minimising pump downtime;
- Providing sufficient tolerances to allow easy replacement of elements, or utilise dismantling joints;
- Not generating pinch points and trip hazards, especially in valve installations;
- Not making access to points of operation difficult to reach in horizontal and vertical axes;
- Provide good footing and sufficient working clearance to maintain or replace equipment in a safe and ergonomic manner;
- Eliminating the need to work at heights or in confined spaces or access into areas where elements operate at the risk of flooding, high velocities, temperatures or pressures or modified atmospheres. Where this is unavoidable, the Design Partner must provide all access points, guards, anchor hold points and other facilities required by law to allow for these types of operation;
- Provide a means for safe access and egress in accordance with AS1657 Building Code of Australia;
- Where possible valve pits shall be free draining to prevent the build-up of water and reduce the risk of drowning;
- Eliminating the use of or need to use dangerous and hazardous materials. Where this is unavoidable, the Design Partner must include relevant documentation and safety provisions for their use and storage;
- Many of the elements of the system will be visible and potentially accessible to the public. The design, construction and operation of the system must provide sufficient safety protection. This also extends to excluding the public from elements of the scheme for the security of the assets;

- The design must allow for safe all-weather access via 4WD to the locations identified by the Design Partner as required for the operator's future operations and maintenance;
- Provision must be made in the design such that all required operation and maintenance activities on the infrastructure can be undertaken in a safe manner; and
- Where exceptions to any of the above are essential, the Design Partner must seek explicit approval from TI for the exceptions at the design review stage.

Design for Serviceability – Pump Stations

During the detailed design, the Design Partner must ensure that the design takes into consideration the serviceability of the system. This system serviceability shall be outlined in the Design Partner's detailed design report and will cover conditions such as, but not limited to:

- Prevention of pipeline drainage at system power off, whether due to normal shut down or power outage;
- Prevention of the occurrence of cavitation conditions at start up, single pump operation, low water levels pipe breakage or other potential cavitation inducing conditions;
- Operating at very low atmospheric pressure conditions;
- Must ensure all mechanical elements are above the 1 in 50-year flood level. Items that will be damaged by inundation (e.g. electrical items) must be located above the 1 in 100-year flood level. Power poles must be located outside of flood zones where practicable. The Design Partner must consider and include in the design the possibility of inundation of the WUC and necessary precautions as protection from inundation;
- Temperature extremes will impact on the serviceability as well as the reliability of the system to deliver water to irrigators. On this basis, the Design Partner must provide as part of the detailed design a schedule nominating area where the serviceability and operation of the system will be affected by temperature extremes; and
- Any other operating condition that could be expected to be encountered during the operating life of the system and which has the potential to introduce conditions contrary to the normal or design operating envelope.

APPENDIX B – PIPELINE DESIGN

This Appendix describes the design considerations required by TI for pipelines (including rising mains). This is not a complete list of considerations and the Design Partner shall include all relevant and necessary design considerations to deliver a functioning system.

TI places the following priorities in order, for the design of the system:

- Controllability, Stable and reliable control of the scheme and its elements; and
- Minimisation of kWh/ML required for scheme operation.

Following water sales for a preferred option for a scheme, there is a process of re-engineering the concept design to confirm scheme infrastructure that is required to meet the confirmed water sales entitlements. The internal TI engineering team will lead this confirmation of the preferred option concept design.

Based on this preferred option concept design, the Design Partner will be required convene an early design meeting with TI to submit and discuss a fixed price and timeline for progression of the design to the required completion stage. Once agreed, the detailed design of pipelines is progressed as below.

It is the responsibility of the Design Partner to provide and finalise a design that meets the TI requirements.

The principle of the design must be to ensure the ongoing safe and reliable performance of the infrastructure and to optimise the performance of all components and associated works to deliver the most cost effective and efficient system possible whilst ensuring ease of operation. The design must ensure the most economic scheme for TI to own and operate.

The detailed design shall consist of, but not be limited to, the following components:

- Design report;
- Safety in design report;
- Functional description;
- Environmental compliance requirements;
- HAZOP/ Safety in design workshop;
- Relevant work methodologies;
- Risk and Opportunity Workshop;
- Constructability assessment report

- Commissioning, pressure testing and performance testing considerations;
- Draft Operations and Maintenance manuals, including maintenance schedules; and
- Critical and recommended spares.

The detailed design documents must include all documentation necessary to demonstrate, explain and detail the design for construction and operation. Documentation will include, but not be limited to, drawings, summary calculations, assumptions, schedules, reports, specifications, work methodologies and as otherwise required. The detailed design must include all certifications required including a notice that states the detailed design meets TI requirements.

The Design Partner shall design in accordance with relevant industry standards, guidelines and engineering practice.

The Design Partner must provide to TI copies of relevant design details and documentation on request. This provision of the design documents shall be used by TI to review the status and progress of the design details.

The Design Partner must consider and include in the Detailed Design provision to:

- Decrease maintenance and operating costs;
- Improve the design life or constructability of the project; and
- Reduce capital costs for the construction of the project.

Prior to issuing to TI, the Design Partner will review all documents and ensure they are to an adequate standard for the provision. TI will review the documents and may provide comments.

The Design Partner shall develop the Detailed Design in accordance with the design approval process. This is to be a staged process as below:

- Stage 1: 15% Design Submission
- Stage 2: 85% Design Submission
- Stage 3: 100% Design Submission

Throughout the design development the Design Partner shall convene regular design meetings with TI (not less than fortnightly). The meetings shall be held in Tasmania unless otherwise agreed by TI with the cost of attendance at meetings by up to two representatives of TI if held outside Tasmania are to be met by the Design Partner.

Where changes are made to the detail design documentation, the Design Partner must clearly highlight these changes by use of clouding and revision changing in drawings as well as the use of track changes in other typed documents. The date of any change must be clearly defined.

Stage 1: 15% Design Submission – Pipelines

Following the early design meeting, the Design Partner is to progress a 15% design. This shall include (but not be limited to):

- Preliminary pipeline alignments
- Hydraulic Grade Lines
- Preliminary pressure transient modelling
- Design Management Plan

A design partner meeting with TI will be convened to review the 15% design after it is completed.

Stage 2: 85% Design Submission – Pipelines

Following the 15% design submission and subsequent meeting, the Design Partner is to fully progress the design to the detailed design level.

In progressing the detailed design, the Design Partner shall convene (as a minimum) the following workshops with TI:

- Prior to the submission of the 85% Design, a Safety in Design workshop shall be held. This workshop shall cover all topics relevant to the safe construction, commissioning, operation, and maintenance of the scheme; and
- Prior to the submission of the 85% Design, a constructability assessment workshop shall be held. This workshop shall cover all topics relevant to the construction of pipelines including an estimate of construction cost.
- Two (2) weeks prior to the submission of the 85% Design the Design Partner shall convene a risk and opportunity workshop in accordance with the principles and guidelines in AS/NZS ISO 31000:2009 (replacing AS/NZS 4360). The workshop shall focus on risks and opportunities to the design. The degree of control, faults and/or failures that can be remotely or automatically reset shall be determined in this workshop. Findings of this workshop shall be included in the detail design.

Stage 3: 100% Design Submission – Pipelines

Following the 85% Design Submission and subsequent acknowledgement from TI the Design Partner is to progress the design to a level suitable for final submission and approval.

Design Report – Pipelines

The Design Partner's Design Report, Design Plans and Construction Specification must address, but not be limited to, the following design and construction considerations:

- Control system design
    - Overview, as a minimum, but not limited to;
        - Scheme hydraulics, electrical design, mechanical design, civil requirements, zone capacities, trading capabilities
    - Scheme P&ID drawing(s);
    - Control system functional specification
- Hydraulic Design
    - Hydraulic analysis and calculations, design criteria including balance tank sizing evaluation and elevation optimisation and PRV requirements;
    - Plots of system curves overlaid with pump curves for all duty points and dam levels;
    - Transient analysis, including negative pressure wave determination, air valve requirements design and surge anticipation relief valve requirements. A model showing transient wave generation under worst case scenarios must be demonstrated to TI during the design review.
    - Air valve performance under normal operation, pipe filling, burst, transient and drainage considerations
    - Cyclical loading to ensure no de-rating required on pipe
    - Control considerations to achieve the various operating modes required;
    - Pressure testing of the system, which must be defined as an integral part of the design process with attention to test criteria, pipeline lengths, section isolation and pipeline charging, make up water etc.
    - Performance testing required to demonstrate the system meets TI's project requirements must be developed and documented in the design report. This must cover all components of the system, including transient analysis verification
- Civil design
    - Structures design including foundations and buildings;
    - Trench compaction and pipe support design;
    - Thrust block design;
    - Trenchless pipe installation design
    - Civil infrastructure to support telemetry (footings, cable ducts etc.)
- Mechanical design

- Electrical design
- Investigations
    - Geotechnical investigation and testing prior to and during construction
- Constructability considerations including but not limited to
    - Access and crane lifts;
    - Coffering, excavating and shoring of pump stations;
    - Environmental risks and how these can be minimised/mitigated in the design;
    - Suitable disposal of unsuitable materials; and
    - Mechanical Design
- Construction
    - Details of recommended construction methodology for all aspects all works defined including machinery required
- Fittings and Instrumentation
    - Details of all equipment required, including but not limited to valves, pipe components, data measurement
    - Details of all instrumentation requirements
    - Specification of weather station location
    - Terminal box connection details
    - Electricity/solar requirements
- Inspection and testing program
    - Details of inspection and testing program including hold point releases
- Maintenance schedules and timings; and
- Draft Operations and Maintenance Manuals.

Prior to issuing to TI, the Design Partner shall review all documents and ensure they are to an adequate standard for the provision.

Design Drawings – Pipelines

Standard CAD drawing practices and protocols must be used to ensure that the CAD files are suitable for use by others – Refer to Drawing GEN-0001 providing a title block and summary of the required drawing standard (reduced from AS1100). Existing standard drawings from the Design Partner's suppliers can be accepted as "Foreign Prints". The Design Partner's supplied drawings must consistently use the approved template in terms of format, revision control and status.

Drawing numbers and names using standard terminology will be issued by TI as required to the Design Partner. TI issued numbers for drawings will take precedence over the Design Partner's document numbering system.

Where custom fabricated items are included, the Design Partner shall provide shop drawing details.

Scheme Control – Pipelines

Scheme control includes data acquisition for its economic management, normal operation and for operational "trouble shooting" and problem solving.

The Functional Description will be subject to a workshop to be convened by the Design Partner and attended by TI relevant stakeholders. This is to confirm all elements are correctly integrated, controllable and serviceable, including data capture and integration into the TI SCADA system. This workshop and the finalisation of the Function Description shall form a hold point prior to the Design Partner finalising the 85% Design Submission.

The Design Partner must provide a single scheme control system. This control system will incorporate a single scheme control interface as well as local over-riding controls for local and manual operation as required. The control system must meet all relevant Australian Standards and must be designed such that it can be supported by local technicians. The scheme must be fully integrated with the TI central SCADA control system which uses Schneider ClearSCADA.

Process Control Philosophy – Pipelines

There are a number of control philosophy parameters that the Design Partner needs to include in the design, including (but not limited to):

- The scheme is required to be easily and reliably controlled, and to easily achieve a steady operating state notwithstanding user impacts on the system such as outlets being opened and closed;
- Operational constraints, especially those relating to day to day water delivery and water trading (in its various forms) and the ability of the scheme to respond practically to user variability;
- Commissioning; identifying and measuring all required parameters for the evaluation of the systems performance;
- Maintenance;
- Faults and power failures; where a fault is non-critical to system operation or safety it must be remotely or automatically resettable via the SCADA system. Automatic resets must take place once a problem state has ended, such as a power failure or low water level, and the system is

safe to resume operation. The alarm notification must remain until acknowledged by the operator; and

- Alarms shall be configured to the TI alarm system definitions

To aid TI in assessing the system and to complement the Process and Instrumentation Diagram (P&ID), the Design Partner must submit a schedule which describes all the scenarios for which the scheme has been designed. This schedule must nominate which scenarios are considered the "critical case scenario" for each zone of the system and demonstrate that this scenario can be safely accommodated. This schedule must include "system time constants" for valve closures and other hydraulic signal generation activities. This schedule must be submitted at the same time as the detailed design P&ID.

The commissioning of the scheme may generate the critical case for the control philosophy. The Design Partner must include commissioning when generating the design for the pipe and the process control philosophy and associated infrastructure.

Safety in Design – Pipelines

To ensure safety and serviceability in the construction of the scheme the Design Partner must allow for the safe and serviceable operation and maintenance post construction. The scheme must be designed to be operated and maintained in accordance with all legislative requirements including (but not limited to) the Water Management (Safety of Dams) Regulations 2015, *Work Health and Safety Act 2012*, *Work Health and Safety Regulations 2012* and associated Codes of Practice applicable (CoP). These CoP may be located at: http://worksafe.tas.gov.au/laws/codes_of_practice.

The Design Partner shall ensure that the hierarchy of control is applied to risk reduction in delivering the scheme.

In assessing the potential risks during the design, the Design Partner shall consider (but not limit themselves to) the following:

- Application of the "Hierarchy of Control" whereby administrative and PPE controls are a last resort;
- Consideration of communication facilities in case of emergency (e.g. phone);
- The scheme elements that can be remotely controlled must be decided by TI as part of the outcomes of the detailed design reviews and risk assessments (such as a "HAZOP") to be held between the Design Partner and TI during the design phase;

- Automatic and remote alarm and fault reset capabilities will be determined as part of the detailed design reviews and risk assessments as above;
- Minimising the requirement to work in or near noisy pieces of plant and/or equipment;
- Eliminating the risk of flooding, especially in pits;
- Appropriate safety guards must be placed around all moving items of plant. Preference must be given to designs for operations and maintenance procedures which do not require the removal of guards otherwise lockable isolators must be used to de-energise;
- Where protection is required for operators, the Design Partner must advise what protection is required and allow for the supply and install of all necessary signage;
- Providing sufficient tolerances to allow easy replacement of elements, or utilise dismantling joints;
- Not generating pinch points and trip hazards, especially in valve installations;
- Not making access to points of operation difficult to reach in horizontal and vertical axes;
- Provide good footing and sufficient working clearance to maintain or replace equipment in a safe and ergonomic manner;
- Eliminating the need to work at heights or in confined spaces or access into areas where elements operate at the risk of flooding, high velocities, temperatures or pressures or modified atmospheres. Where this is unavoidable, the Design Partner must provide all access points, guards, anchor hold points and other facilities required by law to allow for these types of operation;
- Provide a means for safe access and egress in accordance with AS1657 Building Code of Australia;
- Where possible valve pits shall be free draining to prevent the build-up of water and reduce the risk of drowning;
- Eliminating the use of or need to use dangerous and hazardous materials. Where this is unavoidable, the Design Partner must include relevant documentation and safety provisions for their use and storage;
- Many of the elements of the system will be visible and potentially accessible to the public. The design, construction and operation of the system must provide sufficient safety protection. This also extends to excluding the public from elements of the scheme for the security of the assets;
- The design must allow for safe all-weather access via 4WD to the locations identified by the Design Partner as required for the operator's future operations and maintenance;
- Provision must be made in the design such that all required operation and maintenance activities on the infrastructure can be undertaken in a safe manner; and

- Where exceptions to any of the above are essential, the Design Partner must seek explicit approval from TI for the exceptions at the design review stage.

Design for Serviceability – Pipelines

During the detailed design, the Design Partner must ensure that the design takes into consideration the serviceability of the system. This system serviceability shall be outlined in the Design Partner's detailed design report and will cover conditions such as, but not limited to:

- Transient mitigation
- Prevention of pipeline drainage at system power off, whether due to normal shut down or power outage;
- Operating at very low atmospheric conditions
- The capacity of system air valves to protect the system against negative pressures under line break conditions;
- Must ensure all mechanical elements are above the 1 in 50-year flood level. Items that will be damaged by inundation (e.g. electrical items) must be located above the 1 in 100-year flood level. Power poles must be located outside of flood zones where practicable. The Design Partner must consider and include in the design the possibility of inundation and necessary precautions as protection from inundation;
- Temperature extremes will impact on the serviceability as well as the reliability of the system to deliver water to irrigators. On this basis, the Design Partner must provide as part of the detailed design a schedule nominating area where the serviceability and operation of the system will be affected by temperature extremes; and
- Any other operating condition that could be expected to be encountered during the operating life of the system and which has the potential to introduce conditions contrary to the normal or design operating envelope.

APPENDIX C – DAM DESIGN ACTIVITIES

Preliminary Design Activities – Dams

Under preliminary design, the Design Partner will develop a design sufficient to demonstrate to TI that the constraints of the design and necessary interfaces and requirements are understood. The preliminary design shall be of sufficient content and clarity for a lump sum price for detailed design and construction.

In particular, a clear understanding of the dam requirements is to be demonstrated, especially regarding operational reliability and timing of dam release and dam fill.

Detailed Design Activities – Dams

It is the responsibility of the Design Partner to provide and finalise a design that meets TI's Project Requirements. The principle of the design must be to ensure the ongoing safe and reliable performance of the infrastructure and to optimise the performance of all components and associated works to deliver the most cost effective and efficient system possible. The design must ensure the most economic scheme for TI to own and operate.

The detailed design shall consist of, but not be limited to, the following components:

- All documentation required under the Dam Permit;
- Detailed design report;
- Safety in design report;
- Functional description;
- HAZOP/ Safety in design workshop;
- Relevant work methodologies;
- Risk and Opportunity Workshop;
- Constructability assessment report and;
- Commissioning, pressure testing and performance testing considerations.

The detailed design documents must include all documentation necessary to demonstrate, explain and detail the design for construction and operation. Documentation will include, but not be limited to, drawings, summary calculations, assumptions, schedules, reports, specifications, work methodologies and as otherwise required. The detailed design must include all certifications required including a notice that states the detailed design meets the TI's project requirements.

The design shall be in accordance with the recommendations in the various guidelines published by the Australian National Committee on Large Dams (ANCOLD), other relevant industry standards,

guidelines and good dam engineering practice such as that outlined in the book "Geotechnical Engineering of Dams", 2nd Edition, By Fell, MacGregor, Stapeldon, Bell and Foster, 2015.

The Design Partner shall have all aspects of investigation, design and construction of the dam reviewed and approved by a suitably qualified and industry experienced independent Technical Review Panel (TRP). The TRP must be capable of providing oversight of all technical aspects of the project and must provide written sign off on critical hold points of the project.

The Design Partner must provide to the TI and its representative copies of relevant design details and documentation on request at any time during the design period. This provision of the design documents shall be used by TI to review the status and progress of the design details.

The Design Partner must consider and include in the Detailed Design provision to:

- Decrease maintenance and operating costs;
- Improve the design life or constructability of the project; and
- Reduce capital costs for the construction of the project.
- Prior to issuing to TI, the design partner will review all documents and ensure they are to an adequate standard for the provision to TI. TI will review the documents and may provide comments.

The Design Partner shall develop the Detailed Design in accordance with the design approval process. This is to be a four staged process as below:

- Stage 1: 15% Design Submission
- Stage 2: 60% Design Submission

Throughout the design development the Design Partner shall convene regular design meetings and provide a standing invitation to TI. These meetings shall be held in Tasmania.

Where changes are made to the detail design documentation, the Design Partner must clearly highlight these changes by use of clouding and revision changing in drawings as well as the use of track changes in other typed documents. The date of any change must be clearly defined.

Stage 1: 15% Design Submission - Dams - This should be a development of the Preliminary Design and as a minimum shall contain the following detail:

- Wall alignment optimisation and embankment preliminary design
- Preliminary spillway configuration including:
    - Alignment optimisation,

    - Operating frequencies,
    - Supporting hydrology,
    - Construction material etc.
- Details of site investigations (if required), including but not limited to: Geotechnical investigations, geological assessments etc.
- Details of dam instrumentation
- Outline of any required (if any) changes to the approved dam permit
- Design management plan

The Design Partner shall organise a design meeting with TI after the design submission. This meeting will be where the TI provides and discusses any high-level comments to the design as submitted. The Design Partner will document and minute this meeting and incorporate the comments into the design as it progresses to the next stage.

Stage 2: 60% Design Submission - Dams – Following the 15% Design Submission and subsequent meeting, the Design Partner is to progress the design to a 60% complete design level. As part of this process, the Design Partner will provide a consolidated set of detailed design documents – drawings, specifications and reports for commentary by TI. The documents must be provided in hard copy and soft copy in parent format (i.e. Word, Excel, etc.). This submission shall include evidence of review and sign off by the TRP.

Detailed Design Report - Dams

The Design Partner's Design Report, Design Plans and Construction Specification must address, but not be limited to, the following design and construction considerations:

- An assessment of the Consequence Category for the dam, as defined by ANCOLD guidelines;
    - Confirm dam consequence category
- Investigations
    - Details of hydrology and acceptable spillway capacity including consideration of alternative spillway alignments
    - Details of seismic loading considerations in design;
    - Geotechnical investigation and testing prior to and during construction;
    - Details of dam foundation geotechnical/geological model;
    - Detailed seepage modelling and control plan of dam, foundations and inundation area;

- Embankment
    - Details of filter, drainage and transition design;
    - Choice of embankment type and detailed specifications (including material type and classification, strength and permeability) for all materials;
    - Details of embankment stability analysis under all loading conditions and adopted embankment zoning and geometry;
    - Details of foundation treatment including cut off trench, grouting and inundation/borrow area treatment;
    - Protection of upstream batter face from wave action;
    - Allowances for embankment/foundation settlement; material placement, moisture and compaction requirements;
    - Dry and wet freeboard requirements; Design of the spillway control section and return slope to minimise erosion;
    - Civil infrastructure to support telemetry (footings, cable ducts etc.);
    - Suitable Disposal of unsuitable materials;
- Inlet/Outlet
    - Inlet/Outlet pipe class, invert levels, anchor blocks, installation, welding, pressure testing, separation distance between pipes and backfilling requirements;
    - Specific details of outlet pipe work installation and backfilling arrangements;
    - Specific details of design and construction of outlet to prevent “hogging” of pipe, if a floating inlet arrangement is proposed;
    - Details of inlet screen and any provision for emergency dewatering of the storage;
- Site Considerations
    - Treatment of the storage basin and upstream batter faces to prevent cracking, seepage and adverse water quality issues;
    - Required buffer distance between upstream toe and closet point of any excavation within inundation area;
    - Sources and details of specifications and quantities of any materials to be imported to site;
    - Location of borrow pits and quarries on site and availability and suitability of construction materials;
    - Depth of borrow pit excavations and remediation;
    - Demonstrate in the design how the serviceability requirements of the dam are met
    - Access:

        - Define site access
        - State access assumptions and confirm the access meets the requirement to allow suitably sized vehicles or machinery access.

- Construction
    - Details of adopted construction methodology for all aspects of the dam embankment (including foundations), spillway, and all other works defined under this contract including machinery required;
    - Construction and maintenance of all necessary access roads, including maintenance of access for adjoining landowners;
    - Quality control: specify how conformance to the specification of all dam works will be measured;
- Instrumentation
    - Details of all instrumentation requirements: storage level, rainfall, pore pressure, seepage, settlement and any other requirements;
    - Specification of weather station location;
    - Terminal box connection details;
    - Electricity/solar requirements;
- Inspection and testing program
    - Details of inspection and testing program including suitably qualified person(s), Technical Review Panel (TRP) sign off and hold point releases;
- Supply Pipeline
    - Inlet and outlet fittings including blank flanges on downstream (downstream refers to downstream toe of dam) ends of pipes (drilling pattern of fittings);
    - Hydraulic Design
        - Hydraulic analysis and calculation;
    - Civil Design
        - Thrust block design;
        - Trench compaction and pipe support design;
        - Erosion protection
    - Mechanical Design
    - E-Flow Valve specification including telemetry and control requirements
    - Pressure testing of the system, which must be defined as an integral part of the design process with attention to test criteria, pipeline lengths, section isolation, and pipeline charging, make up water, etc;

    - Performance testing required to demonstrate the system meets TI requirements must be developed and documented in the design report. This must cover all components of the system, including transient analysis verification;
- Design verification:
    - Mechanical/Structural
    - Electrical
    - Scheme Control
- Issued for construction drawings.
    - Supply pipeline alignment sheets to be minimum scale 1:2,000 (H), 1:500 (V) at A3
    - Dam drawings

The Design Partner must consider and include in the Detailed Design provision to:

- Decrease maintenance and operating costs;
- Improve the design life or constructability of the dam; and
- Reduce capital costs for the construction of the dam

Prior to issuing to TI, the Design Partner shall review all documents (including documented evidence of review and acceptance of all documents by the TRP) and ensure they are to an adequate standard for the provision to TI.

Design Drawings - Dams

Standard CAD drawing practices and protocols must be used to ensure that the CAD files are suitable for use by others – Refer to Drawing GEN-0001 providing a title block of the *Principal* and summary of the required drawing standard (reduced from AS1100). Existing standard drawings from the Design Partner's suppliers can be accepted as "Foreign Prints". The Design Partner's supplied drawings must consistently use the approved template in terms of format, revision control and status.

Drawing numbers and names using standard terminology will be issued by TI as required to the *Contractor*. The TI issued numbers for drawings will take precedence over the Design Partner's document numbering system.

Safety in Design - Dams

To ensure safety and serviceability in the construction of the dam, the Design Partner must allow for the safe and serviceable operation and maintenance post construction by TI. The dam must be designed to be operated and maintained in accordance with all legislative requirements including (but not limited

to) the Water Management (Safety of Dams) Regulations 2015, *Work Health and Safety Act 2012*, *Work Health and Safety Regulations 2012* and associated Codes of Practice applicable (CoP). These CoP may be located at: http://worksafe.tas.gov.au/laws/codes_of_practice.

In progressing the detailed design, the Design Partner shall convene (as a minimum) the following workshops with the Principal:

Prior to the submission of the 60% Design, a Safety in Design workshop shall be held. This workshop shall cover all topics relevant to the safe construction, commissioning, operation, and maintenance of the scheme.

Two (2) weeks from the submission of the 60% Design, the Design Partner shall convene a risk and opportunity workshop in accordance with the principles and guidelines in AS/NZS ISO 31000:2009 (replacing AS/NZS 4360). The workshop shall focus on risks and opportunities to the design. Findings of this workshop shall be included by the Design Partner in the detail design.

The Design Partner shall ensure that the hierarchy of control is applied to risk reduction. In assessing the potential risks during the design, the Design Partner shall consider (but not limit themselves to) the following:

- The scheme elements that can be remotely controlled must be decided by TI as part of the outcomes of the detailed design reviews and risk assessments (such as a "HAZOP") to be held between the Design Partner and TI during the design phase.
- Eliminating the risk of flooding, especially in pits;
- Minimising the requirement to work in or near noisy pieces of plant and/or equipment;
- Appropriate safety guards must be placed around all moving items of plant. Preference must be given to designs for operations and maintenance procedures which do not require the removal of guards otherwise lockable isolators must be used to de-energise;
- Where protection is required for operators, the Design Partner must advise what protection is required and allow for the supply and install of all necessary signage;
- Appropriate methods to safely and efficiently clear blockages (such as to inlet screens and excavator access to clear spillway debris)
- Providing sufficient tolerances to allow easy replacement of elements, or utilise dismantling joints;
- Not generating pinch points and trip hazards, especially in valve installations;
- Not making access to points of operation difficult to reach in horizontal and vertical axes;

- Provide good footing and sufficient working clearance to maintain or replace equipment in a safe and ergonomic manner;
- Eliminating the need to work at heights or in confined spaces or access into areas where elements operate at the risk of flooding, high velocities, temperatures or pressures or modified atmospheres, where this is unavoidable, the Design Partner must detail all access points, guards, anchor hold points and other facilities required by law to allow for these types of operation;
- Provide a means for safe access and egress in accordance with AS1657/ Building Code of Australia. Valve pits must be free draining;
- Eliminating the use of or need to use dangerous and hazardous materials. Where this is unavoidable, the Design Partner must include relevant documentation and safety provisions for their use and storage;
- Many of the elements of the system will be visible and potentially accessible to the public. The design, construction and operation of the system must provide sufficient safety protection. This also extends to excluding the public from elements of the system as required;
- The design must allow for safe all-weather access via 4WD for the operator
- Provision must be made in the design such that all required operation and maintenance activities on the infrastructure can be undertaken in a safe manner.
- Where exceptions to any of the above are essential, the Design Partner must seek explicit approval for the exceptions by the *Superintendent* at the design review stage; Many of the elements of the system will be visible and potentially accessible to the public. The design, construction and operation of the dam must provide sufficient safety protection. This also extends to excluding the public from elements of the dam for the security of the assets.
- Appropriate lighting for night access and operation;

Serviceability in Design - Dams

During the detailed design the Design Partner must ensure that the design takes into consideration the serviceability of the system. This system serviceability shall be outlined in the Design Partner's detailed design report and will cover conditions such as, but not limited to:

- Transient Mitigation;
- Operating at very low atmospheric pressure conditions;
- The capacity of the system air valves to protect the system against negative pressures under line break conditions;

- Must ensure all mechanical elements are above the 1 in 50-year flood level. Items that will be damaged by inundation (e.g. electrical items) must be located above the 1 in 100-year flood level. Power poles must be located outside of flood zones where practicable. The Design Partner must consider and include in the design the possibility of inundation of infrastructure and necessary precautions as protection from inundation;
- Temperature extremes will impact on the serviceability as well as the reliability of the system to deliver water to irrigators. On this basis, the Design Partner must provide as part of the detailed design a schedule, nominating areas where the serviceability and operation of the system will be affected by temperature extremes; and
- Any other operating condition that could be expected to be encountered during the operating life of the system and which has the potential to introduce conditions contrary to the normal or design operating envelope.

Design Standards and Design Life - Dams

Where a local AS/NZS standard does not exist then the most commonly referenced international standard will be applied.

For pipeline design, the Water Services Association of the Australia (WSAA) Water Supply Code of Australia must be consulted.

The design life of the infrastructure is to exceed 100 years with an overlaying philosophy to minimise operations and maintenance life-cycle costs. The minimum design lives for elements within a dam project are listed in the table below. Design life is considered to be the timeframe from which it is anticipated that the element would be at the end of its economic life cycle and will need to be fully replaced due to fault (multiple or repeated), or unacceptable loss of efficiency. Design life must be demonstrated in the design of the element of the dam.

Table A1 - Serviceability Timeframes for Dam design

Element	Design Life
Pipelines and their fittings/fixtures	100 years
Pipelines and their fittings/fixtures (through dam embankment)	200 years
Intake and Discharge Structures	100 years
Intake and Discharge Structures (through dam embankment)	200 years

Levees, Dam embankments, spillway channel and all associated structures	200 years
Building Structures – Occupiable structures and elements causing structural support	50 years
Building elements – building elements required for the serviceable use of the building (e.g. Elevated gantries, security facilities)	50 years
Electrical and telecommunications facilities, services and their requisite connections	30 years
Mechanical elements – valves, control features, turbines, etc with routine maintenance or replacement of wearing components	40 years
Site Control and Data Acquisition equipment (SCADA) and electronic control elements	20 Years
Mechanical elements – Pumps	20 years
Permanent access roads, tracks, trails	20 years
Security fences and other mechanical security elements	20 years

Where an element's design life has not been nominated by or is unclear, the Design Partner must request clarification (by provision of a recommendation) from TI prior to finalising the detailed design.

The Design Partner must provide flexibility in the design to allow for easy operation and maintenance of all system elements (including their fittings). All system elements must have a methodology to simply (including by minimising destructive procedures) replace the elements with similar. Valve and mechanical fittings assemblies are to be designed to allow for maximum flexibility for future operation, maintenance and/or replacement, noting different suppliers may provide these elements or assemblies in future.

Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Friday, 6 August 2021 11:32 AM
To: Ian Dunbabin
Subject: Northern Midlands Irrigation Scheme - Information

Follow Up Flag: Follow up
Flag Status: Completed

Good morning Ian

To progress the potential dam option to supply all irrigators we would like the following information:

- The total flow rates of the irrigators that are dependent on the channel.
    - Also if you could confirm that you would be looking for approx 3 days or more of storage this will then see where we push dam size.
- What is the maximum water level in the Tailrace as to not impact on the power station operations.
    - If this could be referenced to height above drop structure No. 1 that would be great
    - The higher we can push this the more likely this option will work.

GHD are currently preparing TI a proposal for a desktop study for concept development.

Also, if you could please give me a call so I can discuss our conversation with the proposed dam site landowner.

Thanks

Regards

Jacob Gerke

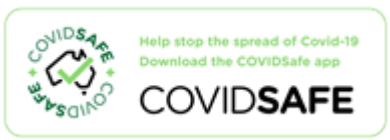
Tasmanian Irrigation

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W: www.tasirrigation.com.au

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Lara Henley

From: Phillip Ellerton
Sent: Tuesday, 23 May 2023 3:08 PM
To: Lara Henley
Subject: FW: Invitation to Tender - DPP-1320 Tranche 3 Design Services (Design Partner)

Importance: High

Hi Lara,
Is this what you are after?

Phillip Ellerton | National Business Development Manager – Water
Dip.PM

entura

m +61 [redacted] **p** +61 3 6245 4500
e phillip.ellerton@entura.com.au | **w** entura.com.au
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Connect with us on Facebook, Twitter and LinkedIn

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From: Tenders <Tenders@tasirrigation.com.au>
Sent: Wednesday, 31 March 2021 5:13 PM
Subject: FW: Invitation to Tender - DPP-1320 Tranche 3 Design Services (Design Partner)
Importance: High

Good afternoon Phil

Alan Barrett asked if I could forward you the below Invitation to Tender.

Kind regards

Mel Durham
Contracts Specialist

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: melanie.durham@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Tenders
Sent: Wednesday, 31 March 2021 12:04 PM
Subject: Invitation to Tender - DPP-1320 Tranche 3 Design Services (Design Partner)
Importance: High

Dear Tenderer

Please find an Invitation to Tender for **Design Services for Tranche 3 Irrigation Scheme Projects** via the following link. The Tender documents will be accessible to you until COB Friday 9/4/2021.

DPP-1320 Tranche 3 Design Services Tender Documents

Please be aware that this Invitation to Tender has only been provided to you as the primary contact for your company and not provided to any subcontractors that may have been nominated during the Prequalification stage. Each Tenderer is responsible for dealing with any subcontractors they wish to engage (if any).

Please forward all enquiries and correspondence relating to this tender to tenders@tasirrigation.com.au.

Kind regards

Mel Durham
Contracts Specialist

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: melanie.durham@tasirrigation.com.au
W: www.tasirrigation.com.au

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Thursday, 12 September 2019 10:05 AM
To: Greg Carson
Subject: Northern Midlands Irrigation Scheme
Attachments: NMIS Schematic_Working Group.jpg; Instream Technologies25kW.pdf; 2017-P154-Flyer.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Greg,

Sorry for the time in returning to you, there have been some internal updates.

Where I am currently at;

Lake River – there is no appetite to continue to pursue this option. The water volume was not there for supplying the TI needs and Hydro Arthurs Lake substitution so did not achieve what I think we needed to.

Current proposal;

- Water supply from two sources
    - There appears to be additional capacity in the Arthurs Lake penstock that would enable a gravity supply to a large proportion of the interest via an Isis Valley pipeline. This would require review of the MWS water agreement with a potential increase of 5-10GL.
    - The second source is to install the Poatina tail race pipeline to supply water to the Lake River area. Integral in this option would be the transfer of Hydro water under agreement. T0 understand this element, we need to have a clearer picture of Hydro interest / how this might occur.
        - Our current modelling is that a pumped option to Lake River would have a variable cost of circa $[redacted] Trevallyn foregone power
        - By including this inside the MWS scheme fixed charges are circa $[redacted]
        - Volumes impact the above in context of the infrastructure requirements, potential transfer model etc.
- We propose that the interconnectivity with the MWS provides the following opportunities
    - Pipeline connection from Floods Creek to Poatina means that there is the potential to supply water back through to CLIS and WHS when Poatina is down (inc. winter)
    - Hydro involvement means that the pipeline diameter from where the gravity line joins to the Lake River-Poatina line will be larger keeping the trading and backup options wider.
    - Open to how a Hydro water transfer agreement might come together.
- The other matters I would like to discuss are;
    - Location of proposed pump station and footprint on Hydro lands
    - Potential for generation of power ex the tail race flow through in-stream generators to run the pump station – per attached flier examples (no work done on this yet)
    - The preliminary model indicates the Poatina pumps would require 80kW.

I have attached a schematic of current thoughts.

Regards

Ian

Tasmanian Irrigation
p 0488 153 346
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PO Box 84 Evandale TAS 7212

Tasmanian Irrigation is a multi-award winning organisation. Achievements include winning multiple 2014 Engineering Australia, Tasmanian Engineering Excellence Awards and CCI Earth Awards. The company was also a 2014 Infrastructure Partnerships Australia Smart Project Award finalist.






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Poatina discharge / bypass pump station
For supply to CLIS or WHS

P-7

Poatina Main
DN800

P-4

Hydro

Hydro Supply
359?ML

Poatina PS
Hydro 359?ML

TI Supply

TI EOI Supply
820ML

Poatina PS
TI 820ML
$33.46 inc $22.25/ML

Manifold y shed allowance, no pump instal

Manifold allows for expansion

TI Archer et Al 820ML

Poatina PS
TI 8975ML Spare

Poatina Tail race. Intake for Hydro and Lake River. Pipe sized to enable future boost at Lake River also facilitates back flow.
Hydro manage own pumps

NM A
800ML

Pipework for future boost
Allows water both directions

Lake River PS. Only initial install of pipes, bypass for CLIS/WHS

NM MAIN
Flow both directions V-1
3500ML nominally

Floods Creek
7525ML
MWS Augmen
$[redacted]/ML

NM MAIN
"ISIS" Feed using Floods Creek. Nominally 7525 ML

Hydro 3597 discharge @ Lake River

NM MAIN

Lake River

Isis River

Flow meter & PRV

Floods Creek Dam
4850ML

MWS: 7,525 ML of extra capacity.
4,525ML stored for summer.
Any additional capacity is achieved through trading.
Pipeline capable of nominally 9,000ML @ current design to Macquarie / Conara junction

Conara Main

Conara Main

Optional extension for CT. This will negate potential supply to CLIS/WHS

Conara B / Ross Main

CT Boost 1
115kW
$[redacted]/ML

CB / Ross Main
1450ML

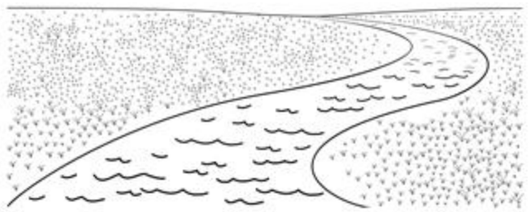
CT Boost 2
97kW
$[redacted]/ML

Macquarie River

150ML

E-6

Ross – CT Capital purchase equivalent with losses $[redacted]
Opex pumped = $[redacted]
Opex riparian = $[redacted] equivalent



Macquarie alternative

Northern Midlands Concept Scheme Design
10 July 2019

Instream
Energy Systems

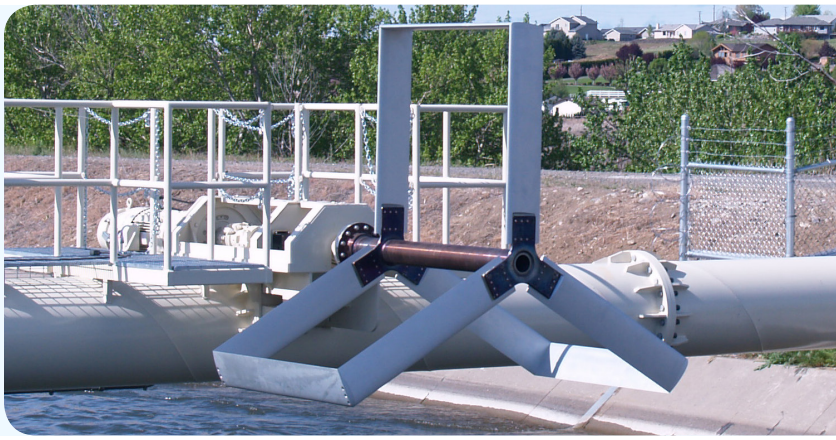
Create Clean, Secure, 'Domestic' Reliable Power

25 kW Hydrokinetic Turbine

System Specification Sheet



Instream's Vertical Axis Hydrokinetic Turbines efficiently convert kinetic energy in moving water into cost-competitive renewable electricity. The operation of Instream's Turbines produces no emissions, no excessive noise, nor any waste by-products.



APPLICATIONS

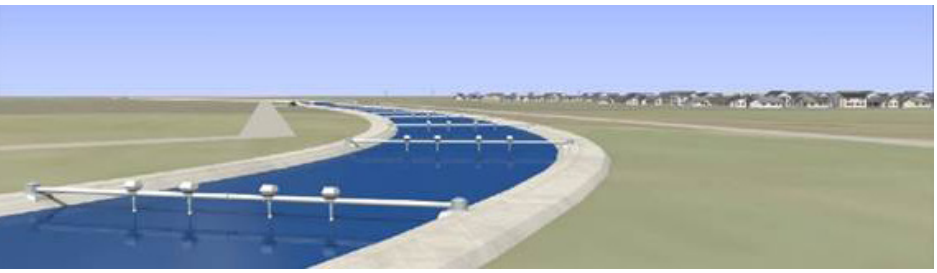
- Commercial
- Agricultural
- Remote Communities
- Institutional
- Residential
- Industrial

KEY BENEFITS

- Applicable to various conditions
- Essentially no environmental impact
- Cost-effective
- Scalable for site specific optimization
- Minimal and simplified maintenance
- Rapid deployment



Instream tested river configuration



Possible canal configuration

TURBINE

Rated Power	25kW
Type	3 blades
Height of Blades	1.5 m
Diameter of Rotor	3 m
Swept Area	4.5 m^2
Blade Material	Stainless Steel & Aluminum
Life Expectancy	>20 years

OPERATIONAL DATA

Rated Water Speed	3 m/s
Start-up Water Speed	1 m/s
Cut-out Water Speed	3 m/s
Survival Water Speed	3.5 m/s
RPM at Rated Power	30 RPM
Survival Operational RPM	45 RPM

WATERWAY CHARACTERISTICS*

- Minimum Average Velocity: 1.5 m/s
- Maximum Velocity: 3.5 m/s
- Minimum Depth: 2 m
- Minimum Width: 4 m

* *Subject to canal or riverbed formation*

SITE CHARACTERISTICS

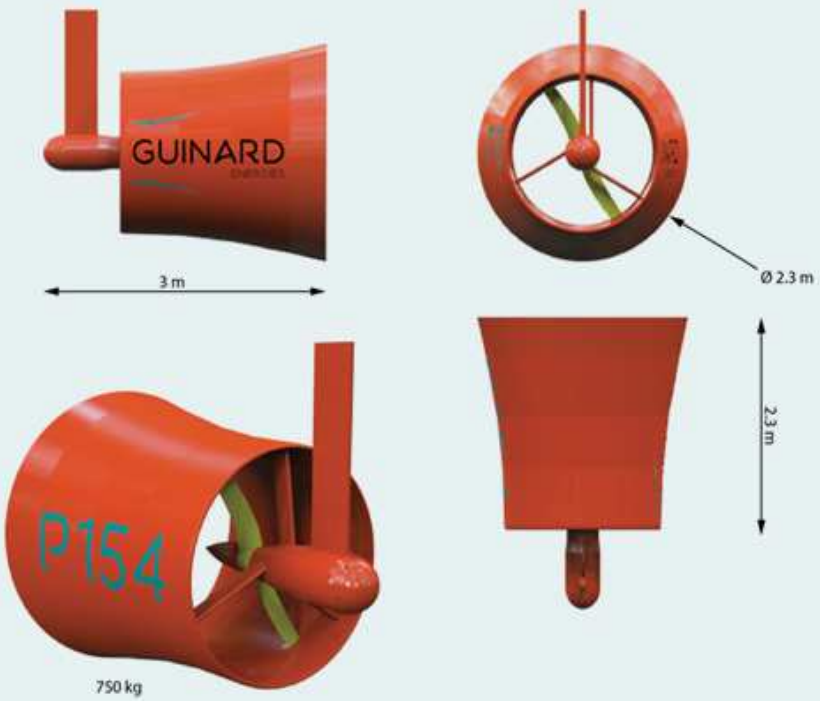
- Available anchor points
- Grid connection nearby
- Proximity to access roads

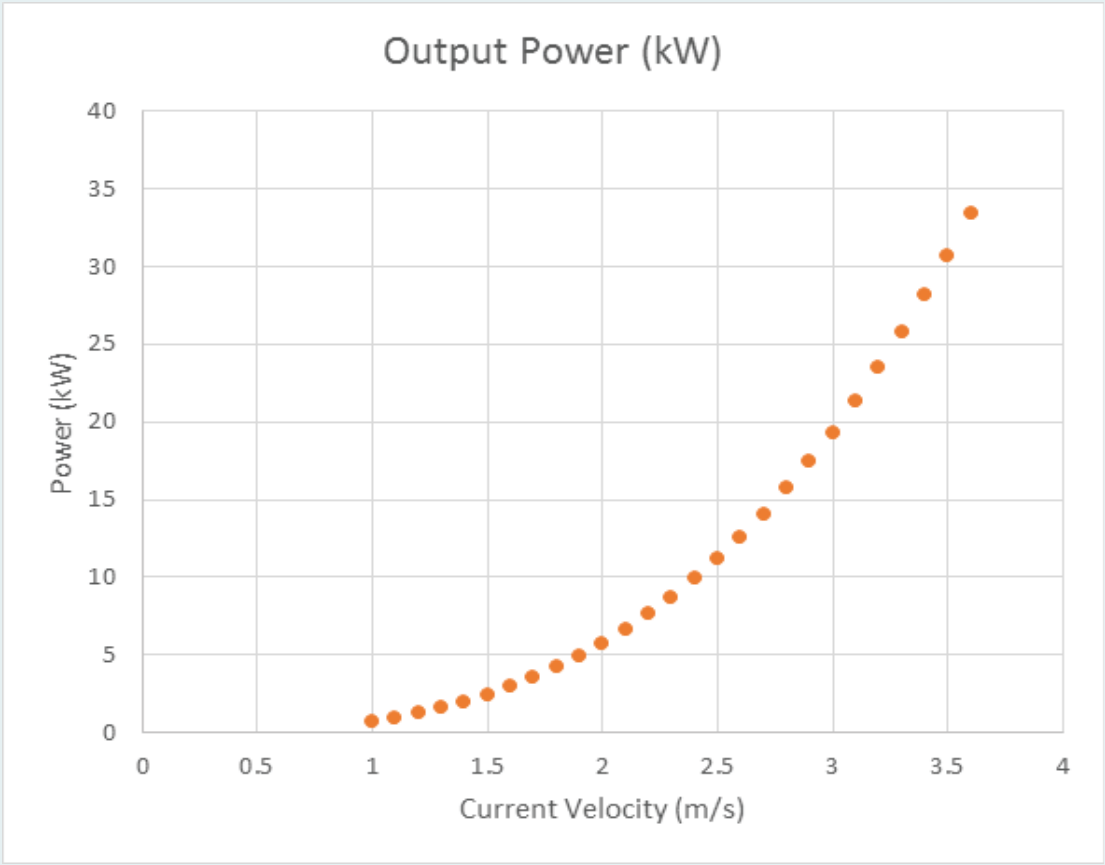
Contact us today to discuss possible hydrokinetic power generation for your water resources.

www.instreamenergy.com
Email: info@instreamenergy.com
Phone: +1 (604) 569-2769

POSEIDE 154 - RIVER AND MARINE CURRENT TURBINE

GUINARD ENERGIES





WWW.GUINARD-ENERGIES.BZH

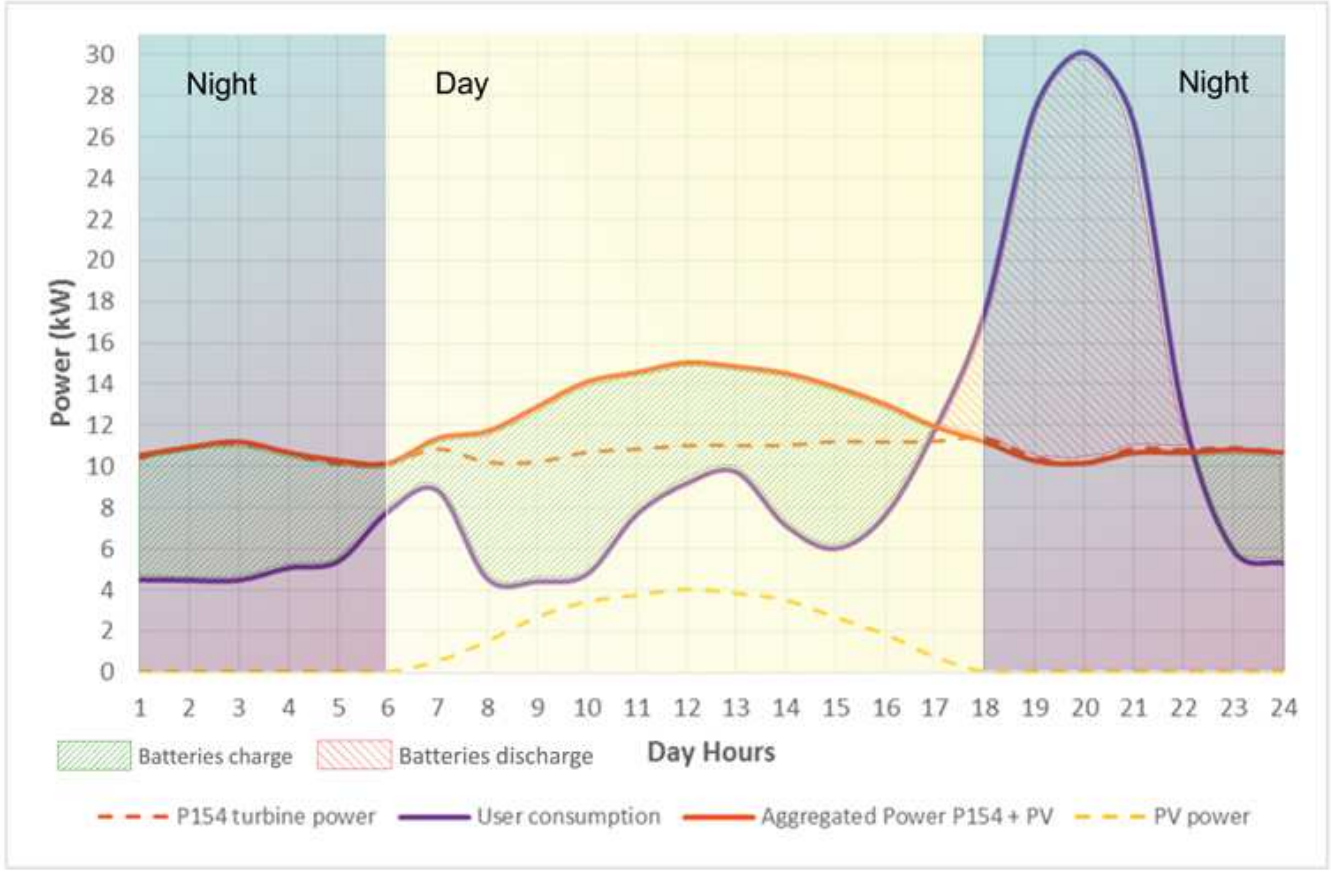
HYBRID POWER SOLUTION

GUINARD ENERGIES

P154 TURBINE @ 2.5 M/S : 12 KW CONTINUOUS OUTPUT ;
+ 5 KW PEAK OF PV PANELS ;
+ 100 KWH OF BATTERIES ;
+ 30 KW INVERTER

= 30 KW PEAK AC/DC DELIVERY
&
300 KWH DAILY

Common user consumption Vs Hybrid power solution



AN EASY-TO-INSTALL HYBRID POWER GENERATION SOLUTION ABLE TO PROVIDE 30 KW FOR NON-INTERCONNECTED AREA.

WWW.GUINARD-ENERGIES.BZH

Lara Henley

From: Phillip Ellerton
Sent: Tuesday, 20 April 2021 10:17 AM
To: Michael Beven; Celeste Hammond
Subject: FW: DPP-1320 Tender Addendum 1
Attachments: DPP-1320 Addendum 1.pdf; DPP-1320 Addendum 1 - Pre-tender briefing presentation.pdf; DPP-1320 Addendum 1 - TI Pipeline BoD.pdf; DPP-1320 Addendum 1 - TI Pump Station BoD.pdf

Importance: High

Follow Up Flag: Follow up
Flag Status: Completed

FYI

Phillip Ellerton | National Business Development Manager - Water
Dip.PM

entura

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e phillip.ellerton@entura.com.au | **w** entura.com.au
a 89 Cambridge Park Drive, Cambridge TAS 7170, Australia
Connect with us on Facebook, Twitter and LinkedIn

WE OWN. WE OPERATE. WE CONSULT.

From: Tenders <Tenders@tasirrigation.com.au>
Sent: Monday, 19 April 2021 1:23 PM
Subject: DPP-1320 Tender Addendum 1
Importance: High

Dear Tenderers

TI would like to thank you for attending the pre-tender briefing held last week. ***Attached*** is Tender Addendum 1 covering the pre-tender briefing presentation and any subsequent questions raised for your information.

Please note that this tender addendum has not been provided directly to any subconsultants who were in attendance at this meeting and this will remain the responsibility of the Tenderer to provide any such information to its subconsultants as it deems necessary in the preparation of its Tender submission.

Kind regards

Mel Durham
Contracts Specialist (in the role of Authorised Contact Officer)

T: 03 6398 8433

E: tenders@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

LinkedIn | Twitter | Facebook

HELPING TO GROW THE WEALTH OF TASMANIA

COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

Tasmanian Irrigation

ABN: 9572 2799 075/ ACN: 133 148 384

TENDER CLARIFICATION NOTICE

Addendum Number:	**One (1)**
Date Issued:	19/4/2021
Tender Number:	DPP-1320
Tender description:	Tranche 3 Design Services
Project:	Not applicable
Issued to:	All Tenderers

Description:

A. Please find ***attached*** a copy of the presentation slides delivered at the Pre-tender briefing meeting held on Thursday 15th April 2021 for information only. These slides do not form part of the Tender Documents.

B. The following items were raised by Tenderers during the meeting:

1) **Construction support without Novation** – Its TIs preference that the Consultant is novated to the Construction Contractor in order to provide construction support services. Agreement from all parties (TI, Design Consultant and Construction Contractor) is required.

2) **Early involvement by Consultant** – The Consultant will be provided a whole-of-project view of each project, with TI leading the early stages of design and transitioning towards the Consultant performing more design activities from detailed design stage.

3) **Level of Resourcing Post water sales** – The level of resourcing required may vary depending on the number of material changes to design that may occur based on the water sale contracts established.

4) **Copy of design standards** – The full suite of technical specifications will be made available to the successful Tenderer upon Contract Award. The ***attached*** basis of design for pump stations and pipelines provide Tenderers with an overview of these requirements.

5) **No guarantee provision** – The no guarantee to carry out a Project provision in the Umbrella Agreement is required for instances where TI does not proceed with a particular Project or where TI elects for a portion of the Services to be completed by another party.

Please acknowledge receipt of this Addendum 1.

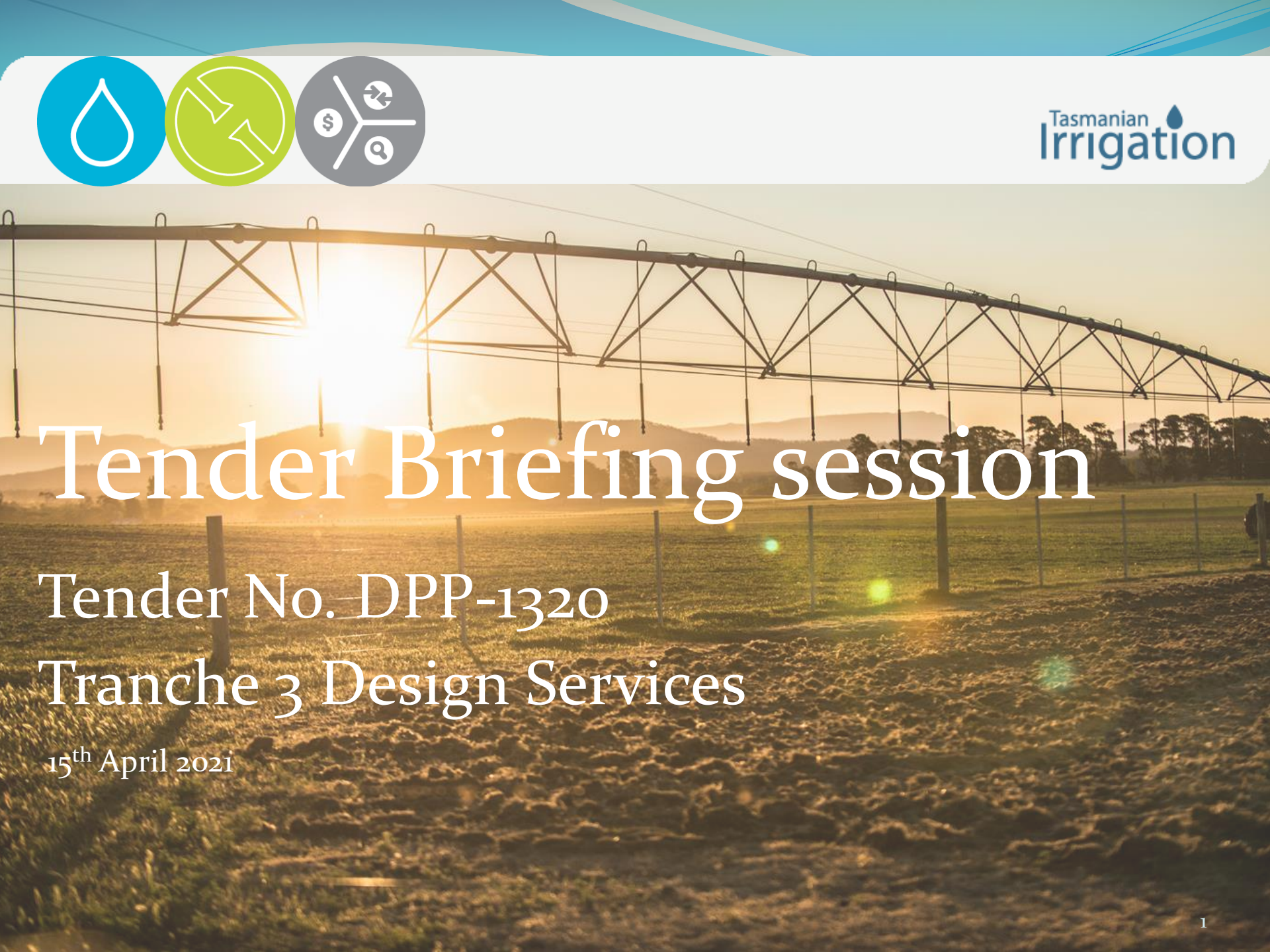
NAME OF TENDERER: _____

SIGNED FOR AND ON BEHALF OF THE TENDERER: _____ DATE: / /

Signature

_____

Name of signatory



Tender Briefing session

Tender No. DPP-1320
Tranche 3 Design Services

15th April 2021

Outline

- Background – The need for Design Partnering
- Tasmanian Irrigation Design Development Process
- Contracting Model overview, Key tender requirements and Tender Dates

The need for Design Partnering

- Historical Design and Construct (D&C) approach has led to 18 operational schemes
  - Cost management pre-business case approval
  - Encouraged innovation

- Previous industry feedback (pre 2020) - Limits of historical D&C approach:
  - High levels of design/admin on construction contractors
  - Delayed commencement to finalise design details
  - Tasmanian Irrigation (TI) access to designers, difficulty conveying lessons learned and influencing outcomes
  - Limited standardisation

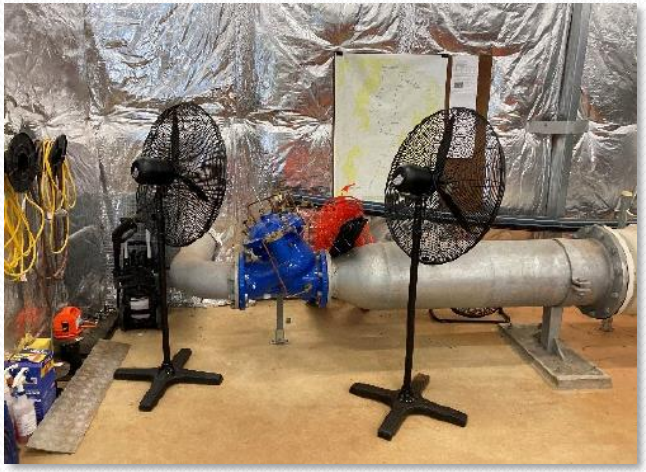
The need for Design Partnering











The need for Design Partnering

- Engaged with design and construction industry throughout 2020 and sought feedback via briefing papers for comment

- Alternative Design Finalisation and Construct (DF&C) approach:
  - Together with a design consultant, TI provides functional description and significantly developed design for construction tender
  - Full scope is defined and documented prior to tender and contractor prices on the design
  - Post award – Contractor finalises design and constructs
  - Design consultant can be novated to preserve continuity and implementation of design outcomes

The need for Design Partnering

- DF&C benefits:
  - Enhanced control of design outcomes (WLC, standardisation)
  - Incorporation of lessons learned
  - Design consultant potentially novated to preserve continuity and implementation of design outcomes
  - Reduced design management requirement on contractors

The need for Design Partnering

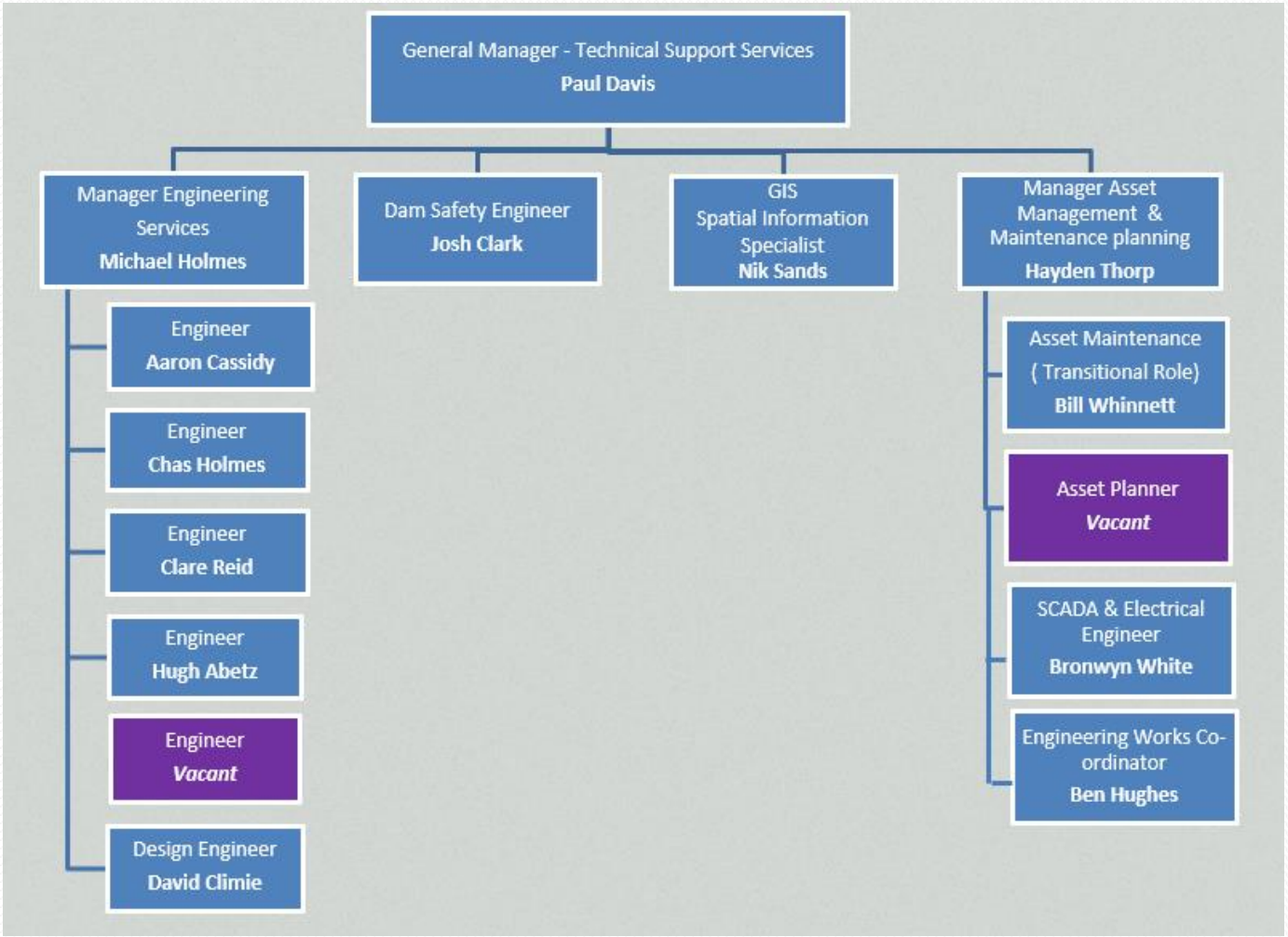
- TI developing technical standards to be applied to new scheme infrastructure
- A key outcome: Consistent approach to SCADA

However……

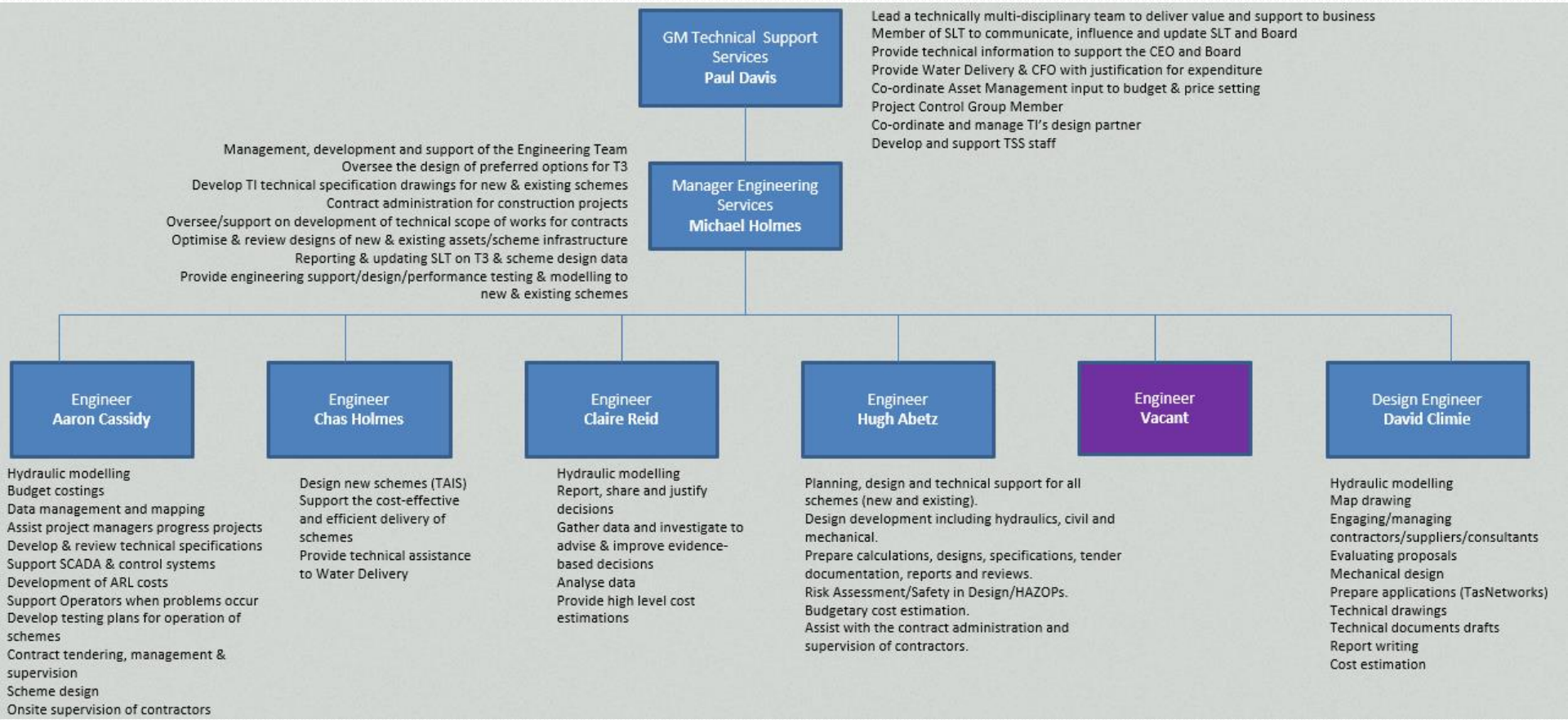
- There is insufficient internal resources to undertake detailed design solely in house

- **Embedded design partnership is the preferred approach to filling our resource gaps**

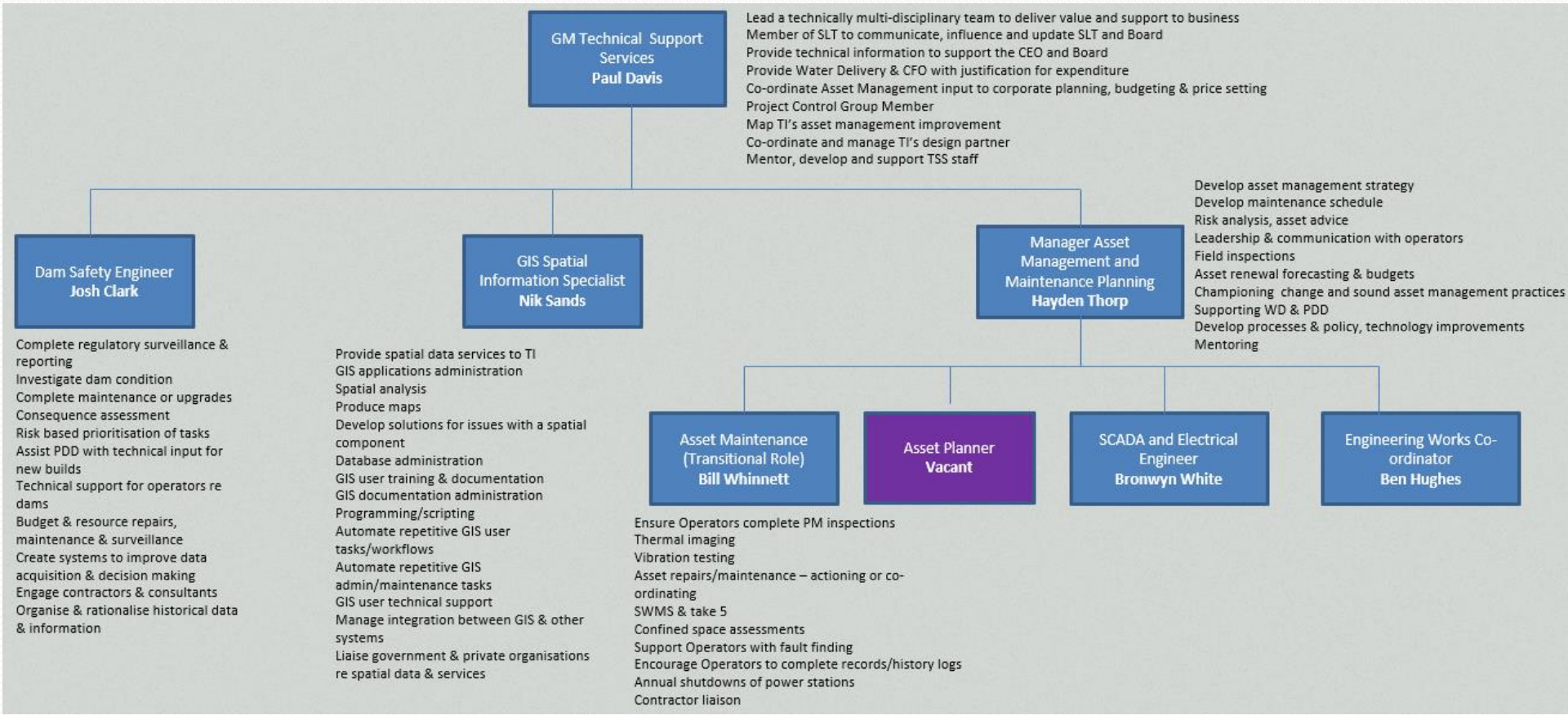
Org Chart –Tech Support Services



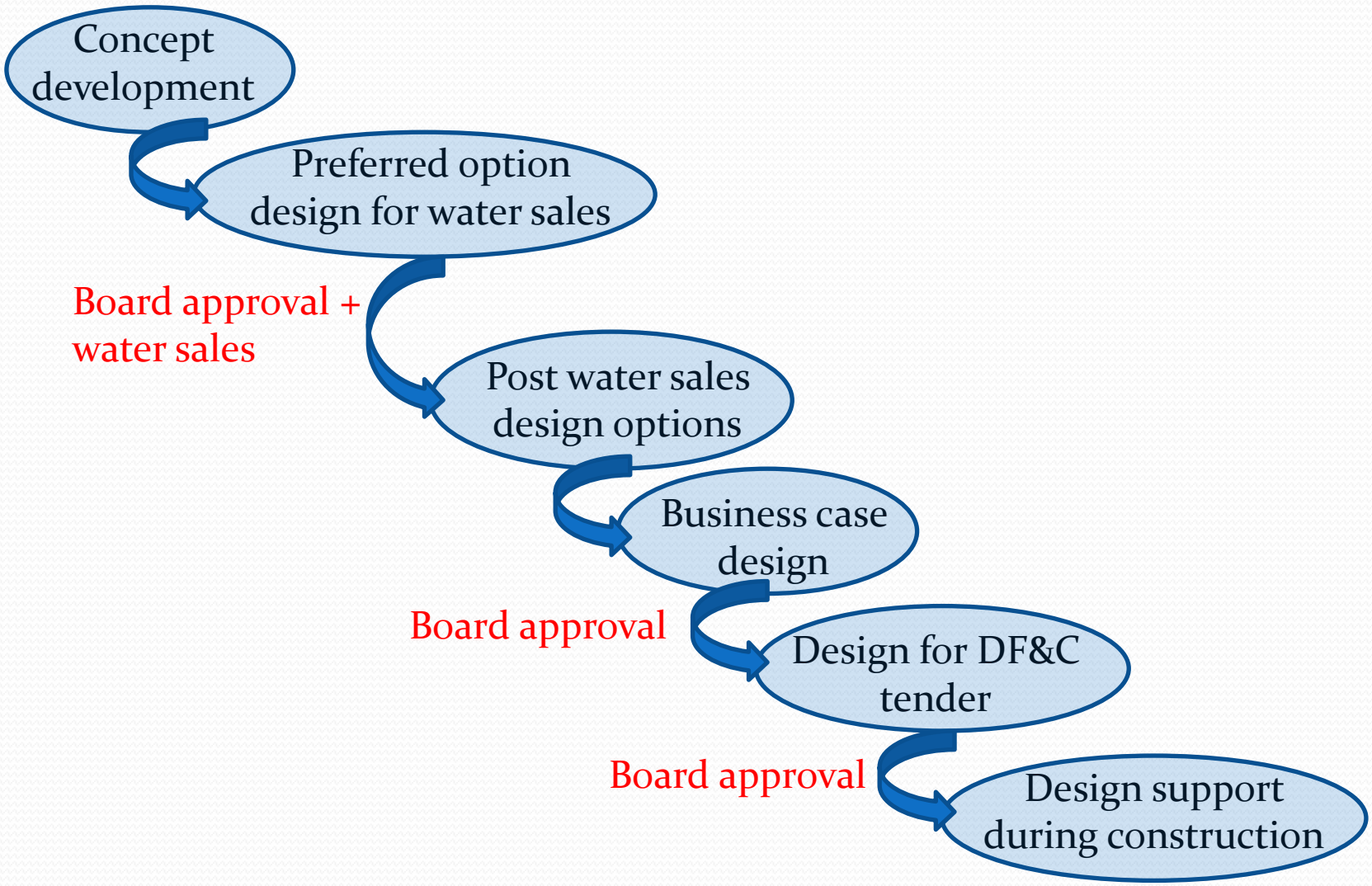
Org Chart – Engineering Services



Org Chart – Dam Safety, Asset Management and GIS services



TI Design Stages

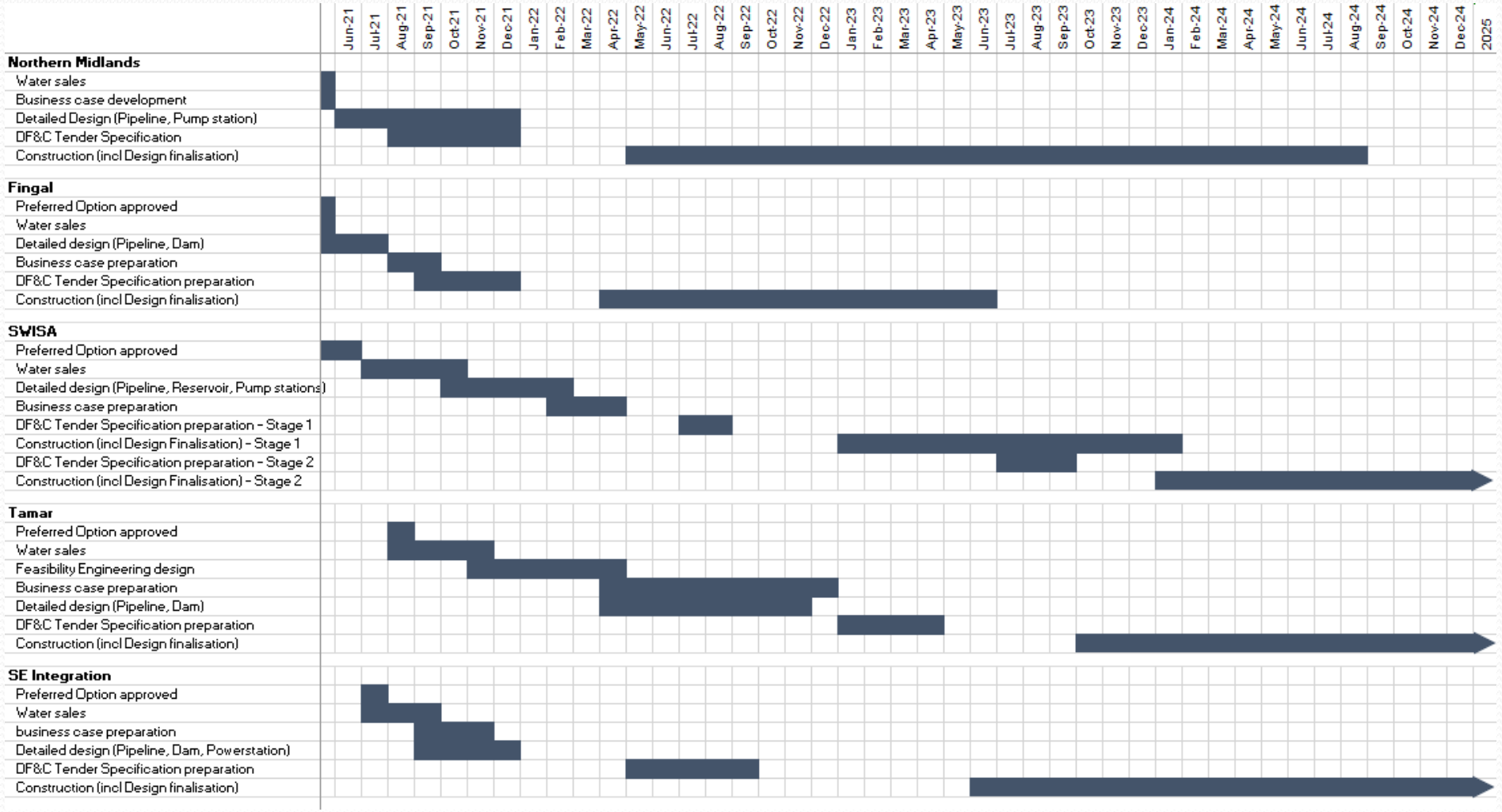


Scheme design development status

- Funding confirmed for first 5 Tranche 3 Irrigation Schemes
- Don Irrigation Scheme design services awarded under separate contract

Scheme	Design Development status
Northern Midlands (NMIS)	Post water sales design options under development
Fingal	Preferred option design approved, pre-water sales
Tamar	Preferred option design under development not yet approved
Sassafras Wesley Vale Augmentation (SWISA)	Preferred option design under development, not yet approved
South East integration Project (SEIP)	Preferred option design under development, not yet approved

T3 PROJECTS PROPOSED PROGRAM



Key TI requirements

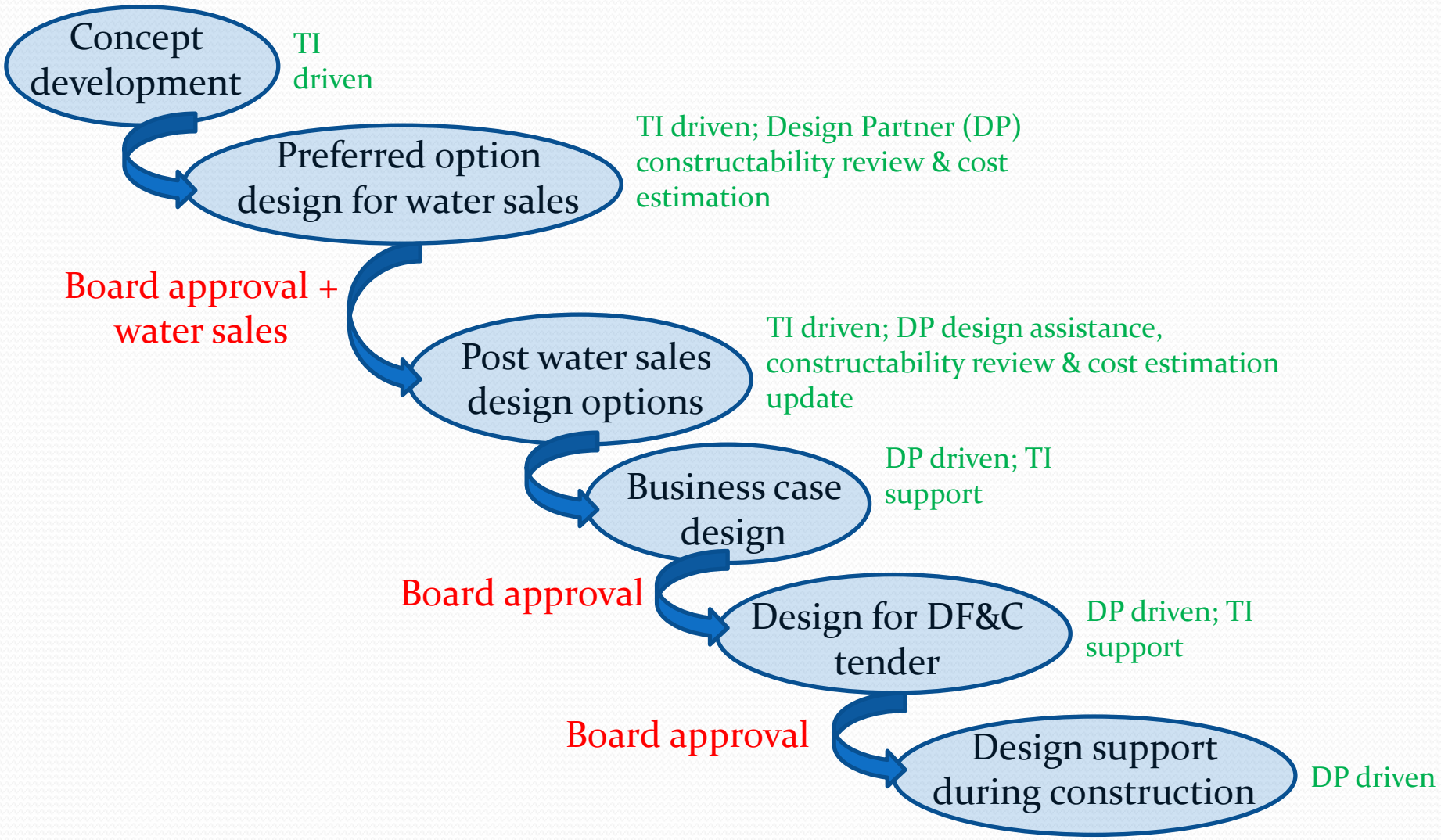
- Supply water to as many irrigators in a region as possible providing that:
  - The solution is technically possible
  - The solution is commercially feasible
- Design to optimise capital expenditure whilst minimising on-going operational costs
- Enhance our capacity to identify constructability risks and develop robust capital cost estimates as design develops

Individual Schemes

- Each new irrigation project will maintain a high-level Basis of Design (BoD) document defining the project objectives, functionality preferences

- This in conjunction with TI standard document will detail the design requirements for Scheme design

TI Design Stages



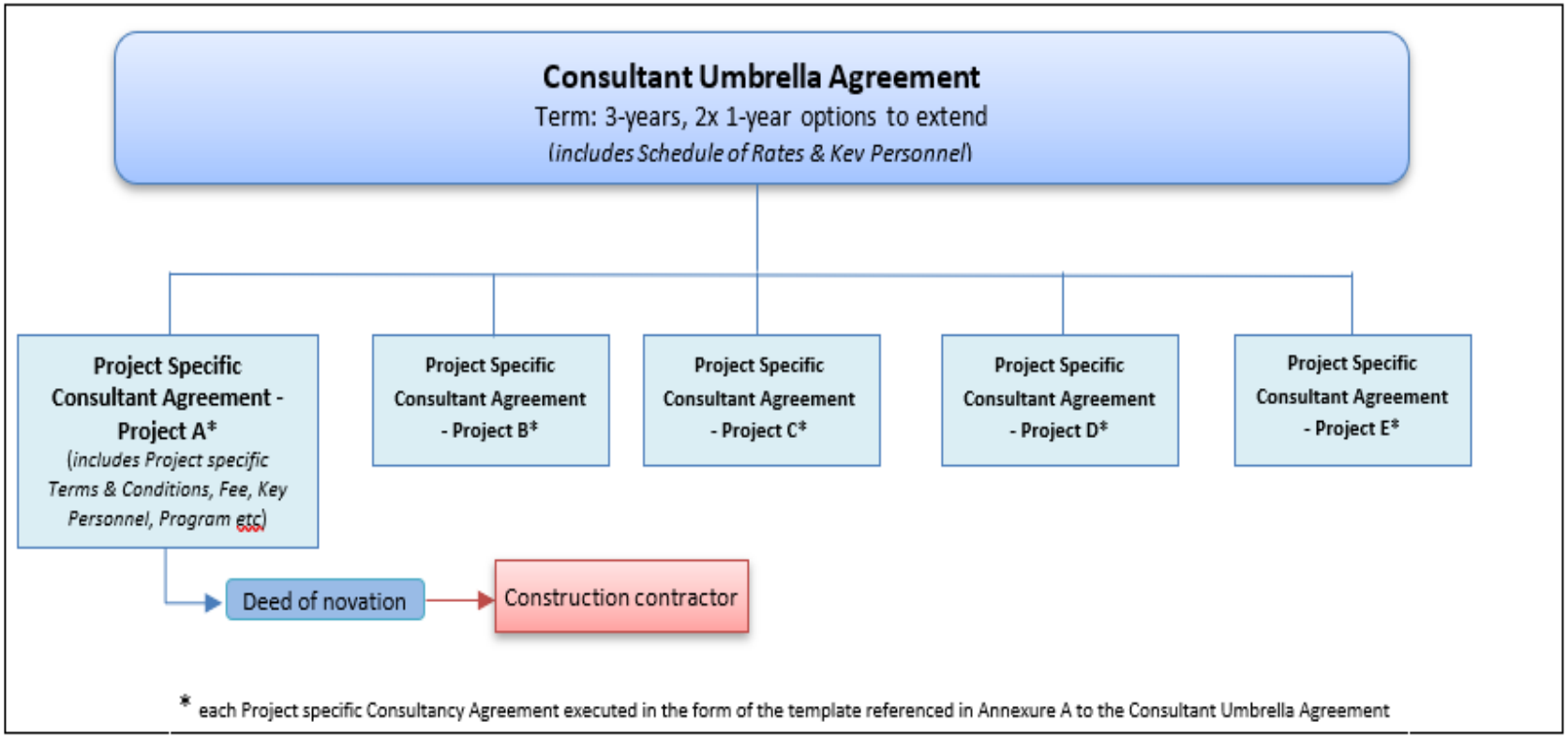
Detailed Design Stages

- The Design Partner shall develop the detailed design in accordance with the following design approval stages:
  - Stage 1 - 15% Detailed Design (all asset types)
  - Stage 2 - 85% Detailed Design (60% in the case of dams & power generation)
  - Stage 3 - 100% Detailed Design (where required)

Detailed Design for Tender

- The detailed design will be managed by TI in collaboration with the Design Partner. The required design outcomes will be delivered by the Design Partner.
- To assist in the development of the Tender package for Design Finalisation and Construction

Contracting Model



Tender Requirements

- All tender schedules to be provided for Tranche 3 Design Services.
- Northern Midlands Irrigation Scheme (NMIS) specific information required for evaluation purposes:
  - Detailed price breakdown;
  - NMIS specific Program; and
  - NMIS resource loading.

Tender Requirements

- Tender responses must be submitted in the format requested (i.e. fully completed tender schedules)
- Pricing schedule must be provided in separately sealed envelope (& as separate electronic document)
- All communication is to be directed to:

  Mel Durham via tenders@tasirrigation.com.au

- Tenderers must not contact any other TI personnel directly

Key Tender Dates

Key Date	Description
5 May 21	Last day to submit tender clarifications and requests
10am, 11 May 21	Tender Closing Date
Early June	Contract award (umbrella agreement)
Mid June	Contract commencement
On request	Unsuccessful Tender de-brief

Questions?

Thank you

Basis of Design

Pipelines

March 2021

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Document Control					
Project:	Generic Engineering - Basis of Design				
Report Title:	TI Irrigation Pipelines – Basis of Design				
Revision	**Date**	**Author**	**Reviewer(s)**		**Summary of Revision Changes**
			Name	**Signature**	
1	Unknown	Unknown			
2	2013	Maynard	N.Byrne		
3	August 2020	TI Engineers 2020	M.Holmes P.Davis		Full revision and update to current practises
4	March 2021	M Holmes	P Davis		Finilisation

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1 Summary

This document shall be used to define a consistent engineering process and design parameters for Tasmanian Irrigation (TI) irrigation pipeline systems. The following areas are addressed:

- General design philosophy
- Pipeline materials
- Pipeline route selection guidelines
- Steady state hydraulic design (gravity and pumped)
- Design for operation and maintenance
- Pipeline supply and installation costs
- Ground classification for pipe installation

Pump Stations are the subject of a separate Basis of Design document.

Users of this document should also consult the references listed in Section 10.

2 General Design Philosophy

TI pipeline systems shall meet the following engineering design objectives and be in accordance with TI's design policy:

- Have a design lifespan of 100 years with major rotating equipment or critical component replacements expected at approximately 20 to 40-year intervals.
- Built to satisfy irrigation demand in the region at the time of water sales.
- Supply water to as many irrigators in a region as possible providing that.
    - The solution is technically possible.
    - The solution is commercially feasible.

Design to optimise capital expenditure whilst minimising on-going operational costs.

Each new irrigation scheme or large project will maintain a high-level Basis of Design (BoD) document defining the project objectives, functionality preferences. The TI technical document hierarchy is show below in Figure 1 with outline the flow of technical data.

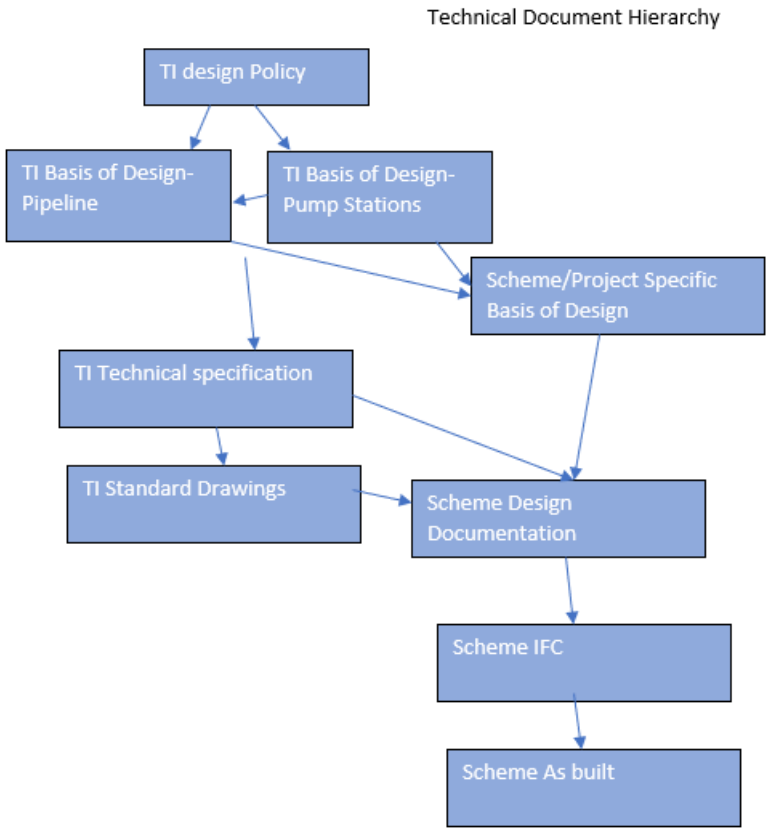


Figure 1 TI technical document hierarchy

2.1 Pipeline Route and Alignment Design

Potential pipeline corridors are determined by desktop study and limited fieldwork during the pre-feasibility phase of each project before a GPS alignment survey takes place in the field.

Several options are available for assisting desktop alignment design. These include:

- State-wide datasets – special values etc.
- Expressions of Interest (EOI)
- Land capability information
- GIS contours and aerial imagery

Where high accuracy information is required, and is not available from other sources, LiDAR and orthorectified aerial photography can be conducted to aid in design.

2.1.1 Factors to consider when confirming pipeline routes.

When designing the pipeline alignment, the following factors are to be considered:

- Source(s) of water, likely spread of delivery locations (later revised in the Project scope by expression of interest (EOI) and then finally contracted sales of water), terrain and elevation changes.
- TI's obligation is to deliver water to property boundaries within the irrigation district. Where the pipeline passes through a property, the property outlet point location can be nominated by the owner at any point along the alignment within that property.
- Requirements of irrigators versus economics of design.
- Routing the pipeline along ridgelines can allow gravity feeds in multiple directions but may increase pumping head requirements and cause more rock to be encountered.
- Effect of the route on hydraulic grade line and pumping requirements.
- Effect of the route on the number of roads, access, and water crossings.
- Effect of the route on the difficulty of water crossings.
- Minimisation of impacts on potentially sensitive flora & fauna or their habitat areas.
- Minimisation of impacts on aboriginal or heritage features.
- Any adverse effects on properties that will not benefit from the irrigation water supply.
- For ease of construction, operations, and maintenance; consider proximity to existing accesses, fence lines road alignments.
- Likely position of above ground features such as air relief valves, scour valves and property outlets.
- The potential for the irrigator to benefit from accumulated hydraulic head.
- Location and capacity of existing power supplies; and

- Location of above ground infrastructure and impacts of any easements (pump stations, tie-ins etc.).

3 Pipe

3.1 Pipe Material

High Density Polyethylene (HDPE), specifically PE100, is the TI preferred material for underground pipes at commercially available PN ratings below 16, due to the following reasons:

- Long operating life (target >100 years)
- Welding avoids bell and spigot joints and associated 'O' rings.
- Inherent flexibility reduces hydraulic transient and differential ground settlement effects.
- Easily curved to follow gradient or alignment variations.
- Less sensitive to misalignment issues than the alternatives
- Suitable for use with directional drilling techniques (with and without conduits)
- No corrosion issues.
- No electrical conductivity issues (i.e., handling near transmission lines, earthing currents)
- Joints and fittings can generally handle axial loading often without the need for anchor or thrust blocks.
- Longer lengths are available in HDPE (12-25m or in coils for smaller diameters, see note below re PN10 limit), therefore less joints are required.

Some pipelines or sections may require the use of other pipe materials, (e.g., short, small diameter (DN<160) sections, above ground or high-pressure installations, crossings, etc.). In these situations, pipe material shall be determined by the design engineers. In these situations, pipe material shall be determined by design engineers, noting that the selection of material may result in a design life that is lower than the 100-year goal. Where material design life is lower than 100 year this impact shall be considered and documented in the maintenance and asset renewal levy cost.

3.2 Minimum pipe bend radius

Generally, a minimum bending radius of 33 x DN (outside diameter) shall be adopted for PE100 pipes. See also drawing GEN-0007 Generic Pipe Alignment and Technical specification TI_TS-08 pipelines

Pipe DN (mm)	PE100 HDPE Pipe Min. Bend Radius (m)	Pipe DN (mm)	PE100 HDPE Pipe Min. Bend Radius (m)
125	4.1	400	13.2
140	4.6	450	14.9
160	5.3	500	16.5
180	5.9	560	18.5

200	6.6	630	20.8
225	7.4	710	23.4
250	8.3	800	26.4
280	9.2	900	29.7
315	10.4	1000	33.0
355	11.7	1200	39.6

Table 1 – Minimum allowable bend radius

3.3 Pipe PN rating

The maximum allowable operating pressure (MAOP) of the HDPE pipework is to be determined according to AS4130, which includes a series of design factors to reduce the nominal pressure class (PN) according to design conditions. The following design factors are assumed for the steady state hydraulic analysis:

- f_0 = 1.25, water will be transferred fluid
- f_1 = 1.0, Temperature of 20 C assumed as the pipe will be buried, and Tasmania has typically cool temperatures.
- f_2 = 1.0, Pipe will be installed mostly in open field. Where installation is under the road it will use a specialist design.
- f_3 = 1.0, pipeline will be installed using standard trenching

AS4130 equation for MAOP is $MAOP(MPa) = \frac{0.125 \times PN}{f_0 \times f_1 \times f_2 \times f_3}$

Fatigue de-rating and surge mitigation is to be considered for the HDPE pipe in accordance with the Plastics Industry Pipe Association of Australia (PIPA) Industry Guidelines POP010A – Polyethylene Pressure Pipes Design for Dynamic Stresses (Issue 5.1). Based on a 100-year design life, a maximum of 8 pressure cycles per day could occur before fatigue de-rating would be required. (i.e., before the fatigue load factor would be less than 1.0). It is assumed that the events which could create pressure cycles in the pipelines is the operational design of starting or stopping the pumps).

PN specification shall be determined by the steady state and transient hydraulic analysis, so that expected pipe maximum allowable operating pressures (MAOP) do not exceed the following:

Pipe PN Class	Max. Allowable Operating Pressure (MAOP) (m)
6.3	63
8.0	80
10.0	100
12.5	125
16	160

Table 2 – Design limits for pressure pipe

During detailed design, the designer is to provide a transient analysis for final design with their report detailing the mitigation actions taken to avoid exceedance of pressures 1.25 x MAOP. In many cases the no-flow static loading remains the PN rating driver.

Notes:

1. Coiled pipe – PN10 is the minimum pressure rating to be used for pipe delivered in coils (DN ≤125), to protect against uncoiling and installation damage.
2. PN 6.3 HDPE shall not be subjected to full vacuum loads.
3. External authorities may require an increase in PN rating for the crossing of services in lieu of conduit.

3.4 Minimum pipe diameter

Minimum pipe diameter for delivery lines shall be DN 160. Low volume, low use spur lines shall be a minimum of DN125. Offtakes and extensions to single Property Outlets and other fittings (via reducing tees, and moulded HDPE fittings) can be as small as DN110.

3.5 Pipe lengths

Pipe lengths of 20m are assumed for design and costing. However, lengths up to 25m and longer coils for smaller diameters may be used to minimise the number of welds and installation costs in practice. The constraints are in delivery logistics with 20.9m being the maximum suitable for urban road and Bass Strait crossings. Special delivery vehicles and arrangements are required for 21 to 25m lengths and other handling costs and risks are introduced.

The cost of increasing weld numbers should be balanced with the added handling difficulty of longer pipe lengths both in delivery and once on site.

3.6 Hydraulic design

Hydraulic design of pipelines shall be carried out using the TI hydraulic model or InfoWorks, which can be modified to suit each individual project. A consistent approach allows for efficient comparison and review of design options. Transient analysis can be undertaken with TI's InfoWorks software. This should be utilised internally as a first pass to ascertain transient risk areas in pipelines and to help with the design and development of mitigation strategies.

Steady state and transient hydraulic models should be confirmed by as part of the Detailed Design review process.

3.7 Water properties

Clean raw water is the base assumption in early design, and provisions in TI technical specification are made for the following variables, the impacts of which shall be evaluated and designed against on a scheme-by-scheme basis:

- Water temperature effects
- Water pH range
- Sediment loads
- Debris size

- Fauna growth within system (e.g., frogs, fish etc.)
- Flora growth within the system (apart from modification of the design friction factor as outlined in 4.2 and 4.3)
- Other contaminant effects (e.g., potential use of biocide)

3.8 Pipe friction losses

The preferred pipe friction losses method shall be calculated using the Colebrook-White equation. Base values shall be given by the Australian Pipe Friction Handbook (Pump Industry Australia Inc., 2008). Design assessment Pipe friction losses can be calculated using the Hazen-Williams formula. Base values for the Hazen-Williams roughness factor, C, shall be given by the Australian Pipe Friction Handbook (Pump Industry Australia Inc., 2008).
An extra allowance for pipe friction losses (e.g., 0.95 x C) may be incorporated into the design to allow for pipe fouling or installation irregularities on a project specific basis and should be noted as such in the project Basis of Design.

An extra allowance for pipe friction losses shall be incorporated into the design to allow for pipe fouling or installation irregularities on a project specific basis and should be noted as such in the project Basis of Design. This consideration must address the sensitivity of each case and the consequences of the fouling on the performance of the system.

Note: that these values assume clean, concentrically jointed pipes and make no allowances for biofouling or installation irregularities (bends or offsets). These need to be considered on a scheme-by-scheme design.

3.8.1 Allowable pipe friction losses

Design pipe friction losses shall be limited to the range 1.5 – 5.0 m/km of pipe, at the nominal flow rates under normal pumped circumstances. Short sections of pipe or fittings may exceed this range; with regard to velocity constraints (see section 3.8.2).
These values are low within the range of recommended values (Water Supply Code of Australia, 2002) Design consideration may require the friction losses to be higher to apportion the headloss over the pipeline to reduce the need for pressure reducing valves.

Current Roughness

Material	HW	CW
HDPE, PVC	150*	0.05 + 10% headloss = 0.1
DICL, MSCL	133*	0.15 to 0.165

range values based on ID used.

Sensitive Roughness validations

Material	HW	CW
HDPE, PVC	135	0.15
DICL, MSCL	127 Or 117	0.3 Or 0.6

3.8.2 Allowable flow velocities

Flow speeds greater than 2.4 m/s in pipe are to be avoided. Increased local pressure losses and nuisance noise issues may occur at velocities above this. In valves and fittings higher velocities may be considered. Minimum velocities also need to consider the operational need for scouring in section 3.9.
Velocities above 4 m/s in cement mortar lined pipes (MSCL, DICL) can cause damage to the internal lining.
Control valves and meters shall be sized to allow operation in the peak performance range inclusive of three times nominal flow requirement for property outlets. Mitigation methods for noise reduction may also need to be considered for valve locations.

3.9 Scouring and pipeline draining

Pipelines shall be designed as to allow adequate velocities in the section of pipes to allow scouring and/or draining to occur. This is required for the ongoing operation and maintenance of the pipeline of their design life. If adequate scouring velocities cannot be achieved, alternative methods of scouring/cleaning to be considered in the design phase. Pigging facilities or connection points may need to be allowed for.

4 Pipeline Components

For all fitting specifications please refer to the appropriate TI standard drawings and the relevant TI technical specification

4.1 Fittings and Property Outlets

For all fitting and Property Outlet specifications please refer to the appropriate TI design drawings and/or the relevant specification. TI standard drawings for Property Outlets include:

- GEN-0002: Standard Property Outlet GA & Detail
- GEN-0012: Standard Offtake and Offtake Extensions
- GEN-0014: Standard property Outlet P&ID
- GEN-0022: Standard Property Outlet Protective Cage

4.1.1 Fitting and Property Outlet head losses

Hydraulic losses due to fittings shall be calculated for each fitting based on manufacturer's data and included in the hydraulic design. TI guarantees a Property Outlet supply pressure of at least 5m at the contracted seasonal flow rate (see 4.10 Residual Head).
Head losses across a property outlet assembly shall be less than 10m unless engineering approval has been given for a modified design (may be required where pipeline residual heads are very high).

4.2 Pump suction and discharge losses allowance

Pump suction and discharge losses should be accounted for and noted when calculating pump power requirements. Pump stations typically have around 3-5m of head loss associated with suction lift, fittings, valves, manifolds etc. For preliminary design, allow 5m. Refer to the separate Pump Station Basis of Design document for further details.

4.3 Water course or above ground crossings

The preference is for all crossing to be below ground and where not possible, by approval from TI engineering. Water course or above ground crossings shall generally be designed where necking down is limited to one nominal size only. The design shall allow for pipes to be sufficiently supported across their entire above ground length. Above ground pipe work shall be designed to be UV-stable. and suitable for environmental conditions the location I.e., flood risk. The design of the crossing shall consider future capacity upgrades whether the most economical solution install during construction. The risk assessment of the above ground asset shall also consider impacts by flood and fire.

4.4 Season length and pumping regimes

Water delivery variables such as season length and hours pumped per day shall be determined on a scheme-by-scheme basis and stated in the project deliverables and assumptions. The designer is required to consider the capital and operational costs and relative value of off-peak pumping to larger holding storages compared to 24-hour pumping.

4.5 Residual head requirements

The following requirements will ensure positive pipe pressures and allow effective flow control at property outlets:

Pipeline Point	Min. Residual Head (m)
Property Outlet	15
All other points	5

Table 3 – Minimum Pipeline Head Requirements

The minimum Property Outlet residual head of 15m allows for up to a 10m head loss across the Property Outlet valve train assembly. This requirement can be varied where a reduction directly translates to a reduction in pumping head, but only where an engineering design shows that nominal delivery flow can still be met. The minimum required residual head in such cases may be reduced to 9m.
On some schemes with high or variable heads it may be necessary to define Normal and Maximum Available head for the different seasonal operating scenarios. It may be

necessary to inform irrigators of the scheme's operational constraints and effects on their irrigation systems.

4.6 Pump efficiency allowances

Refer to Pumps and Pump Stations Basis of Design document for more detail.
The design philosophy drives choosing the most efficient combination of these components at the dominant operating point. Optimisation of CAPEX for low operating and maintenance costs is a key design criterion as per the TI design policy.

4.7 Transmission losses

Transmission losses of at least 10% (DPIPWE default value) should be allowed for when delivering water to irrigators via natural creeks or rivers, although this will vary depending on the locality, transmission length and seasonal conditions. In some cases, higher loss values may be applied by DPIPWE unless testing is undertaken by TI or others to prove transmission loss values. Delivery by river or streams systems is not TI's preferred method but may be considered if other delivery methods are cost prohibitive.

4.8 Pressure reduction valves

The use of pressure reduction valves to limit the pressure downstream shall be analysed against the cost of high PN rated pipe and components in the first instance to ensure that the use of PRV's will facilitate significant CAPEX reduction to offset the ongoing OPEX of these additional components. For valve specification refer to TI-TS-011

4.9 Air valves

Minimum air valve spacing shall be in accordance with Water Services Association of Australia (WSAA) WSA 03-2011 Water Supply Code of Australia. and TI-TS-008 pipeline and TI-TS-011 valve specification.

4.10 Scour Valves

Minimum scour valve sizing and spacing shall be design in accordance with TI specifications TI-TS-011 valve and the requirement for scouring and draining in line with the planned operational and maintenance philosophy.

4.11 Isolation valves

Isolation valve should be installed at all main connection point to allow branch to be isolated if need while allowing main lines still to operate as required. All isolation valves shall be in accordance with TI-TS-011 valve specification.

4.12 Pipeline Markers

Pipeline markers shall be installed along the entire length of the pipeline to allow identification of the pipeline route for asset protection. These markers shall be installed in locations where they will not inhibit the use of land or access while still identifying asset location.

4.12.1 Marker tape

Marker tape complying with AS/NZS 2648.1 and denoting "Buried Water Pipeline" shall be installed along the entire length of the pipeline in accordance with the GEN Drawings - 004.

5 Design for operation

Pipelines shall be designed with adequate capacity to allow practical scheme operations, such as water trading. The determination of trading and additional capacity is to be confirmed in the feasibility stage and project deliverables documentation. Such functional flexibility or capacity is subject to engineering and local hydraulic limitations as well as capital cost. Where significant technical or economic hurdles are encountered which prevent such operations, restrictions and/or controls will need to be advised with the water sales process and implemented by scheme management.

As stated in section 3.8.2, adequate flow velocities in pipeline design shall be allowed for to allow appropriate and regular scouring /pipe cleaning activities to be undertaken and ensure on-going operation of the pipelines.

5.1 Tradability within trading zones

Full tradability within a trading zone requires the sum of all Property Outlet flows within a zone to be made available at the downstream end of that zone. The appropriate designation of zone boundaries is critical to maximising economic impact of providing this level of tradability.

Trading zone design should seek to provide a balanced outcome with regard to the following:

- maximising tradability
- minimising increases in capital costs
- maintaining design point hydraulic efficiency

Naturally, pump stations and major pipe size changes should be located at trading zone boundaries, however this does not mean all pipe size changes must be a zone boundary. Trading zones should be selected so that irrigators with outlets located nearby are grouped. This results in less impact from trading on the hydraulic operation of the scheme.

Often it is desirable to place the end of a zone shortly after a property outlet, or group of outlets, with a large, combined allocation.

Figure 2 provides some guidance on the placement of zone boundaries. Zones should only be restricted where it has a direct effect on capital cost for the scheme. For example, if the outlets shown in Zone 1 had small allocations, there may be no benefit in restricting the zone here. It could be merged with the current Zone 2 into one larger zone without any material increase to capital costs.

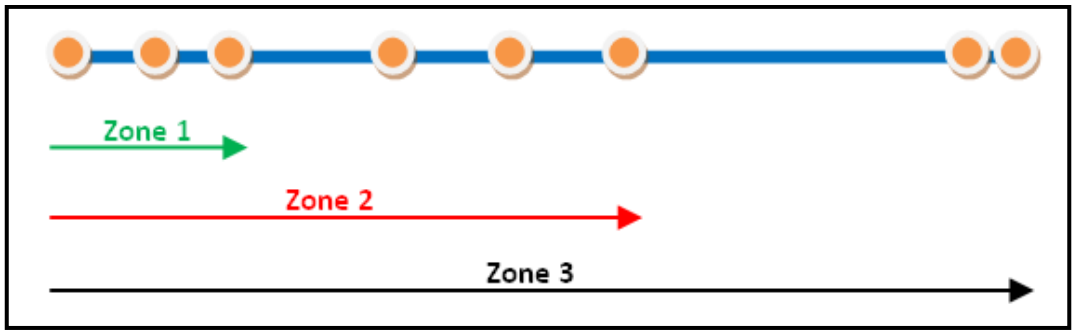


Figure 2 – Efficient Zone Placement

Zone boundaries are to be confirmed post water sales, it is essential that the actual design and selection of pumps and pipes can, at their limits, meet the zone flow requirements, while also ensuring efficient operation at the scheme design point.

5.2 Rostering

TI has guaranteed that Property Outlets will be capable of delivering irrigators three times their nominal outlet flow to permit trading without increasing the outlet size. This will facilitate higher flow delivery to a limited number of irrigators at certain times (for example, localised usage rostering or flood flow harvesting), without increasing the total delivery flow rate of the scheme.

The individual offtake sizing and property outlet sizing is generally detailed under the water sales letter of offer and detailed in the scope of works with the specification requesting nominal to three times nominal flow by either manual intervention or remote control. In some cases, the Property Outlet orifice plates may have to be exchanged to achieve the correct hydraulic balance over the system inclusive of the flow meter.

5.3 Noise Levels

The noise levels for the new piping will comply with the environmental noise level criteria identified in the Planning Permit Potential noise sources, will be identified and suitable treatment applied as required.

5.4 Safety in Design

To ensure safety and serviceability of the pipeline and components must be designed to allow for the safe and serviceable operation and maintenance. The pipelines must be designed to be operated and maintained in accordance with all legislative requirements including (but not limited to) the Water Management (Safety of Dams) Regulations 2015, *Work Health and Safety Act 2012*, *Work Health and Safety Regulations 2012* and associated Codes of Practice applicable (CoP).
These CoP may be located at: http://worksafe.tas.gov.au/laws/codes_of_practice.

The designers shall ensure that the hierarchy of control is applied to risk reduction in design of pipeline and associated components. Designs shall be in accordance with Australian and TI standards.

6 Cost estimation

As part of the Design process, it is required a review of the constructability and capital cost estimate for the concept design through to detailed design is undertaken.

The Designers along with TI representatives are required to undertake an 'alignment walk through' of the irrigation scheme proposed location to assess constructability risks and provide information to input into the capital cost estimate review.

A report that provides a concept level capital cost estimate review and constructability commentary is required to be produced at the major design phases. the TI constructability field form is required to be completed as a minimum.

6.1.1 Pipe supply and installation costs

The supply and installation costs for pipes and typical pump stations are detailed in the TI Cost estimation tool and are used for the TI pre-feasibility and preliminary design construction cost budgeting purposes. As updated pricing becomes available this is built into the Cost estimation tool and must be noted on the revision history.

6.1.2 Pipe costs (budget baseline)

HDPE pipe cost variations correlate closely with the international price of crude oil. Some predictive indexes can be used to estimate price changes. Pipe costs cannot be locked in with certainty until a Manufacturing Request Order (MRO) is placed with the pipe manufacturer or the HDPE resin is purchased outright.

6.2 Pipe installation costs (budget baseline)

Pipe installation costs are updated in the TI cost estimation tool periodically on review of data.
Excavation, pipe welding and installation costs used for designing are dependent on diameter and excavating conditions. For preliminary design, average underground conditions shall be assumed unless known poor construction conditions exist.
The *poor* or *above ground* installation cost indexes should be used where difficult ground conditions (e.g., rock) or the requirement for above ground installation is expected.
NOTE:

1. The model does not allow for trench widths over 1m or trench depths over 1.5m where special excavation and shoring needs must be considered.
2. For ground classification see Section 7. Estimates of installation cost must consider the relocation and/or disposal of unsuitable embedment material. In extreme cases the importation of "bedding sand" or alternative trench fill may be necessary.

6.3 Associated equipment preliminary costs (budget baseline)

During pre- and feasibility phase and up to Preliminary Design and costing, the following approximations can be used as a guide to estimate other supply and installation costs.

- Pipe fittings and crossings: Add 15% of pipe and its install cost.
- Pump stations are based on the separate pump station costing tool that feeds into the inputs page of the TI cost estimation tool. This is also regularly updated based on review of available data.
- Power supply to pump stations: Provided upon application to TasNetworks.

6.4 Option assessment

All designs are to be assessed utilising TI's cost estimation tool to determine the best option from and CAPEX and OPEX perspective. This cost estimation tool is used to determine construction costs such as direct contingencies, supervision, project, and quality management. Other project risk and opportunity costs are assessed in conjunction with TI management. The use of the costing tool will provide a consistent cost assessment approach to all project and design assessment.

7 Ground classification for pipeline installation

7.1 Purpose

This system shall be used to classify ground conditions along the pipeline route before and during construction in the following ways:

- To provide the basis for pipe installation schedule of rates; and
- To allow verification of ground conditions (and thus actual contractor payment rates) in the field as construction occurs.

The system will categorise ground conditions based on the ability to excavate only. The generic Pipeline Trenching and Excavation drawing is GEN-0004.

7.2 Ground classification

This system shall be used to classify ground conditions along the pipeline route for cost and constructability assessment purposes before and during construction in the following ways:

- To provide the basis for pipe installation schedule of rates; and
- To allow verification of ground conditions (and thus actual contractor payment rates) in the field as construction occurs.

The system will categorise ground conditions based on the ability to excavate only. The generic Pipeline Trenching and Excavation drawing is GEN-0004.

7.3 Ground classification

Ground shall be classified as either:

- Average
- Medium
- Hard

Note: this can also be used based on installation difficulties. I.e., For steep grade.

7.4 Definition of rock

Ground is defined as rock if it meets one of the following conditions:

- Medium generally consists of -Boulders and detached single pieces of rock, each measuring at least $2m^3$ Machinery able to remove i.e., rock breaker at rate not exceeding Table 4
- Hard -Material which cannot be ripped at a production rate exceeding that rate in the table below:

Operating Mass (kg)	AS 2868 Class of Equipment	Excavation Rate Solid (m3/hr)
Crawler Tractor		
20,000 – 29,000	150 C	15
29,000 – 44,000	200 C	20
44,000 – 58,000	300 C	30
Excavator		
27,000 – 38,000	115	10
38,000 – 44,000	155	15
44,000 – 50,000	175	20
50,000 – 60,000	200	25
60,000 – 68,000	235	35

Table 4 – Production rates to define rock.

8 Pipeline installation

The trench depth shall be sufficient to ensure the proper installation of the pipeline in accordance with TI Specification and the Drawings.

Cover shall be determined by measurement of the shortest distance from the top of pipe to the average of the level of the graded ground or the natural surface on the two sides of the trench at that location, whichever is the lesser.

Trench backfill shall be placed in accordance with the TI standard Drawings.
Backfill shall generally be compacted to a relative density sufficient to prevent further settlement under natural moisture and load conditions.

The compaction procedure, including: the lift sequence; thickness and cover over the pipe; and the test methods in the laboratory and in the field; shall be as per the approved Technical specification. Compaction shall comply with the requirements of AS2566.2:2002, Section 5.4.

9 Guidelines on material re-use (HDPE, MSCL and DICL pipes)

Excavated ground is the preferred source of embedment and trench fill materials for HDPE pipeline installation. In combination with geotechnical survey results, the following guidelines may be used to indicate the suitability of such excavated material along the pipeline alignment.
Nominal trench dimensions and zone thicknesses are given by generic TI Pipeline Trenching and Excavation drawing GEN-0004.
Excavated materials may be suitable for re-use in the following trench zones:

- Trench fill
- Haunching, side support and overlay.
- Bedding

Existing topsoil shall be removed before trenching and replaced after pipe installation. Topsoil must not be mixed with other material.
Material deemed suitable for bedding may also be suitable for haunching, side support and overlay. These materials are collectively referred to as embedment materials.
Embedment materials must transfer pipe loads to the surrounding earth and prevent point loading on the pipeline.
Trench fill material shall be subject to less stringent requirements because while compaction requirements are similar, particle sizes may be larger without the risk of pipe point loading.
Suitable embedment and trench fill materials shall satisfy the requirements below.

9.1 Material composition

Suitable material types shall be approved for use by the Superintendent. These materials can comprise:

- Gravels
- Soils
- Stabilised material such as native soil or aggregate with cement or fly-ash addition.

Excavated material is the preferred source of all embedment and trench fill materials.

10 Supporting Documentation

10.1 TI Drawings:

DRAWING	TITLE
GEN-0001	TI Project Structure and Terminology
GEN–0002	Std Property Outlet GA & Detail
GEN–0003	Pipeline Fittings Attachment Detail Options
GEN–0004	Std Trenching & Backfilling Detail
GEN–0007	Generic Pipeline Alignment GA
GEN–0008	Above Ground Piping & Transition
GEN–0009	Pipeline & Infrastructure Marking
GEN–0014	Standard Property Outlet P&ID
GEN–0022	Standard Property Outlet Protective Cage

10.2 TI Standards:

TI Pump Stations Basis of Design

The following Tasmanian Irrigation standards shall apply:

TI-TS-001	Dams
TI-TS-002	Weirs
TI-TS-003	Storage Tanks
TI-TS-004	Intake Screens
TI-TS-005	Dry Well Pumps and Motors
TI-TS-006	Submersible Pumps and Motors
TI-TS-007	Filters
TI-TS-008	Pipelines
TI-TS-010	Surge Mitigation Devices
TI-TS-011	Valves
TI-TS-011	Property Outlets
TI-TS-013	Instrumentation and Telemetry
TI-TS-014	Electrical
TI-TS-017	Structures and Building Work
TI-TS-018	Heating, Ventilation and Cooling
TI-TS-019	Pipework
TI-TS-020	Civil Works
TI-TS-021	Hydraulic Modelling
TI-TS-099	Operation and Maintenance Manuals
TI-TS-100	Commissioning and Handover

These standards shall have precedence over Australian or International Standards as permitted under Commonwealth and State laws, acts and regulations. Any *item* not covered by the either the applicable Principal or Australian standards shall be fit for purpose and based on current industry best practice.

10.3External Standards:

AS/NZS 2566 Buried Flexible Pipelines
WSA 03-2011 Water Supply Code of Australia Version 3.1
AS 2868 Class of Equipment

10.4References:

Australian Pipe Friction Handbook, Pump Industry Australia Incorporated
Plastics Industry Pipe Association of Australia (PIPA) Industry Guidelines POP010A – Polyethylene Pressure Pipes Design for Dynamic Stresses (Issue 5.1)

PUMP STATIONS

BASIS OF DESIGN

March 2021

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4	March 2021	M Holmes	P Davis		Finalisation

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1 Summary

This document shall be used to define a consistent engineering process and design parameters for Tasmanian Irrigation (TI) pump stations and associated works including intakes, manifolds and valve pits. The following areas are addressed:

- General design philosophy
- General arrangements
- Hydraulic design
- Design for operation and maintenance
- Control methodology
- Control system components
- Structure and surrounds
- WH&S, labelling and signage.

Pipelines are the subject of a separate Basis of Design document.

Users of this document should also consult the references listed in Section 11

2 General Design Philosophy

TI pump stations shall meet the following engineering design objectives:

- Have a design lifespan of 100 years with major rotating equipment or critical component replacements expected at approximately 20 to 40-year intervals.
- Built to satisfy irrigation demand in the region at the time of water sales.
- Supply water to as many irrigators in a region as possible providing that.
    - The solution is technically possible.
    - The solution is commercially feasible.
- Design to optimise capital expenditure whilst minimising on-going operational costs.

Each new irrigation scheme or large project will maintain a high-level Basis of Design (BoD) document defining the project objectives, functionality preferences.). The TI technical document hierarchy is show below in Figure 1 with outline the flow of technical data.

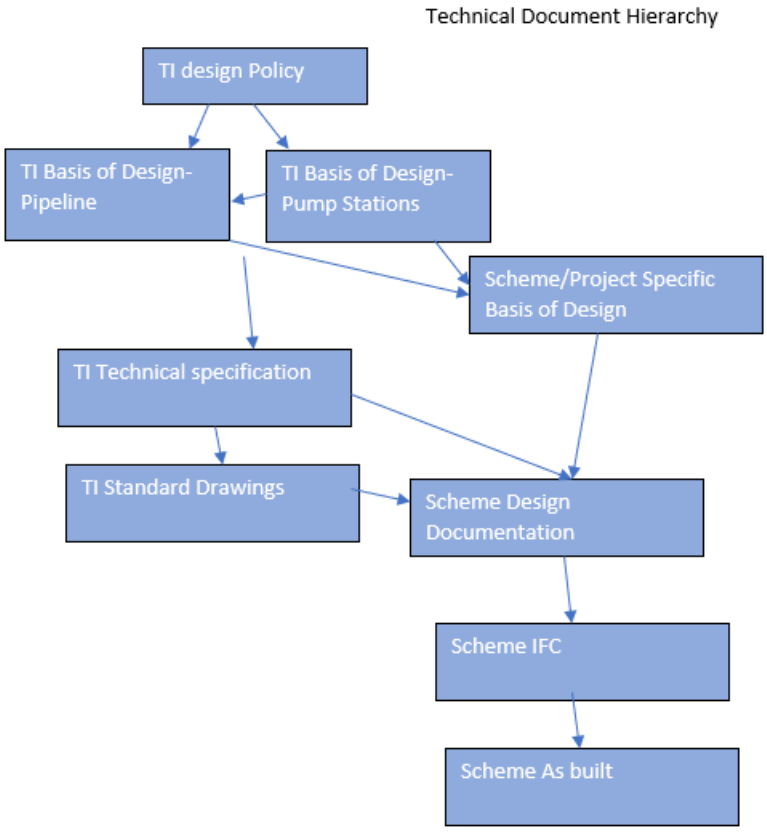


Figure 1 TI technical document hierarchy

2.1 General Requirements

The hydraulic requirements of the pump station will be based on the hydraulic model developed for the corresponding pipeline. The model will provide nominal hydraulic head and flow requirements for the pump station—based on the Project Basis of Design and modelling assumptions.

TI designate "small" pump stations as those with a combined rated power of less than 65 kW. Less demanding specification options are available for such smaller pump stations.

Factors to consider when choosing general arrangements and pump station locations:

- Water supply and relative levels e.g., dam, natural water course, man-made water course, pipeline (boost pump);
- Susceptibility to flooding (in general, pump station mechanical components should be above the 1:50 year flood level with all electrical equipment above the 1:100-year flood level).
- Ability to adequately exceed the required Net Positive Suction Head required ($NPSH_R$)
- Location of above-ground infrastructure and impacts of any easements;
- Ease of construction, operations and maintenance - consider proximity to existing access and road alignments;
- Location and capacity of existing power supplies (involve Tas Networks prior to Preferred Option phase);
- Proximity to residential areas and the impact of potential increases in ambient noise levels;
- Minimisation of impacts on potentially sensitive flora & fauna or their habitat areas;
- Minimisation of impacts on aboriginal or heritage features; and
- Any adverse effects (e.g. noise) on properties that will not benefit from the irrigation water supply.

3 Hydraulic Design

Hydraulic design of pipelines shall be carried out using the TI hydraulic model or InfoWorks, which can be modified to suit each individual project. TI's preference is that all final models are completed in InfoWorks to allow ongoing monitor during scheme operation. A consistent approach allows for efficient comparison and review of design options. (Refer to the TI pipeline basis of design for pipelines).

Once the hydraulic design has been completed, this should then form the basis for pump selection. It should be ensured that the selected pumps have the ability to meet the required worst-case hydraulic design scenario whilst also operating efficiently at the expected design duty ranges with sufficient excess capacity to cater for normal wear and tear between normal pump refurbishments. The hydraulic information required from the hydraulic model for pump station design is:

- Season pumping length (days) and expected pumping duration (hrs)

- Flow rate (l/s) and pumping head required (m) for various operating points (typically low, shoulder and peak seasons)
- Expected water temperatures (average and range)
- Any out of season operation required (low or winter season)
- Assumed suction and discharge losses for each pump or pump set.

3.1.1 Water Properties

Clean raw water is the base assumption in early design, and provisions in TI technical specification are made for the following variables, the impacts of which shall be evaluated and designed against on a scheme-by-scheme basis:

Water temperature effects

Water pH range

Sediment loads

Debris size

Fauna growth within system (e.g., frogs, fish etc.)

Flora growth within the system (apart from modification of the design friction factor as outlined in 4.2 and 4.3)

Other contaminant effects (e.g., potential use of biocide)

3.1.2 Pump Station Hydraulic Losses

At concept design, the hydraulic losses for internal pump station pipework and valving should be considered and minimised to promote efficient operation. As the basic pump specifications are likely to be chosen prior to completion of detailed design, an estimate for the pump station intake and discharge losses should be used when specifying the duty points for pump selection.

A 5m loss allowance should be included during TI preliminary design; however, a maximum loss of 3m is specified for detailed design and included in the pump specifications. Calculation of the expected losses must be completed during detailed design.

3.1.3 Net Positive Suction Head (NPSH)

To ensure optimal pump performance and prevent cavitation, and consequently impeller damage, it must be ensured that sufficient NPSH is available for all desired operating points. The *Pumping System Performance – Industry Sourcebook* recommends in general (rule of thumb) that $NPSH_A \geq 1.25 \times NPSH_R$, for all expected flow rates.

$$NPSH_A = H_A + H_S - H_{vap} - H_f$$

$$H_A = absolute\ pressure\ head$$

$$H_s = static\ liquid\ level\ above\ pump\ centreline$$

$$H_{vap} = absolute\ liquid\ vapour\ pressure\ head$$

$$H_f = inlet\ pipe\ friction\ losses$$

It should be noted that both $NPSH_A$ and $NPSH_R$ are dependent on flow rate. As always H_f should be minimised through thoughtful design.

To avoid cavitation erosion, it should be ensured that continuous operation is within 50% to 120% of Best Efficiency Point (BEP) flow (Q_{BEP}). Cavitation surging can occur if flow is below 30% of Q_{BEP}. (Grist Dr E, 2011).

The system must be evaluated under new conditions to ensure cavitation does not occur.

4 Pump Selection

4.1 TI Pump Type Preference Hierarchy

TI has determined the following hierarchy for pump selection. The hierarchy is developed around current opinions on lifecycle cost and should be used as a guide for the order of selection and elimination of pump types. When a pump type is eliminated, a brief justification shall be provided as to why no suitable pumps of that type have been included in the selection.

Order of Preference	Pump Type
1	End Suction
2	Split Case
3	Vertical/Horizontal Multi Stage
4	Submersible - End Suction Style
5	Line Shaft
6	Submersible Multi Stage

Table 1 Pump Selection Hierarchy – 1 being most preferable, 6 being least preferable.

4.2 Pump Selections

The preliminary pump selection is intended to inform the preliminary design and assist in determining site power requirements along with identifying potential issues that may arise.

It is anticipated that the preliminary pump selection will identify 3 to 5 different pump sets/pump set configurations dependent on the application.

The preliminary pump selection should consider a number of different pump types that have suitable hydraulic performance and be independent of the civil/structural constraints of the pump station. The pump selection should identify key performance specifications from each pump selection such as $NPSH_R$ and minimum submergence requirements in addition to duty envelope and dimensional data.

4.3 Pump Station Configurations

When selecting pumps, consideration should be given to the number of pumps and the inherent redundancy that can be achieved along with maximising efficiencies across the operating envelope. Pump selection should consider the need to balance efficiency and lower power consumption with capital costs.

Typically, multiple pumps of the same configuration are preferred. Additional low flow pumps may be used as required to maintain high efficiency at the bottom end of the envelope.

TI has a preference for single pump stations with multiple pumps in parallel for most applications, however there may be situations such as high head river harvesting where multiple pumps/stations in series may be appropriate due availability of suitable pumps or to improve operation and maintenance costs.

Pump Stations shall be designed with adequate capacity to allow practical scheme variation to "nominal" operations such as water trading and rostering. Such flexibility and overall capacity is subject to engineering and local hydraulic limitations as well as capital cost considerations.

A criticality analysis should be undertaken to determine pump numbers to provide suitable redundancy and duty options. Dividing the "nominal" duty and/or selecting the number of pumps to be used aids in determining the level of redundancy., The performance range and defined system reliability needs to be considered as a whole as part of the schemes design and laid out in the scheme specific basis of design.

4.3.1 Redundancy

To ensure efficient operation of pump stations at a variety of flows, multiple pumps in parallel should be utilised. Often 3-4 pumps will provide the most suitable balance between capital costs and ongoing operational performance for a range of flow rates.

Utilisation of multiple pumps provides the benefit of ensuring that if a single pump goes out of service, the remaining pumps can still provide a large proportion of the desired flow (approaching the full design point). For lower power pump stations, a full-size installed "spare" is often the most cost-effective solution, however, for larger multi-pump installations other decision-making tools will be necessary.

A required level of redundancy shall be considered on a scheme-by-scheme basis dependent on the water source and system configuration. Sizing of balance tanks and or storages shall also be considered in the design of Pump station.

4.3.2 Flexibility

Ideally pumps should be chosen to ensure they operate at their Best Efficiency Point (BEP) whilst meeting the system requirements, with $NPSH_A$ exceeding $NPSH_R$ by an adequate margin (see Section 3.1.3). Some additional capacity above 100% design flow should be achievable (pumps usually expected to operate throughout 50–110% of BEP) – also refer Section 5.3.2. This will increase the ability of the scheme to maintain delivery during any unscheduled maintenance or single pump outages.

Where impeller size options exist within one body size, the maximum size impeller should not be installed to meet the duty point for a pump system. This provides for the most cost-effective performance upgrade should such an increase be required in future. However, this must be considered against the certainty of the maximum duty point and the longer-term payback of any higher system best efficiency point (BEP).

4.3.3 Season length and pumping regimes

Water delivery variables such as season length and hours pumped per day shall be determined on a scheme-by-scheme basis and stated in the Project Basis of Design. The designer may be required to consider the capital and operational costs and relative value of off-peak pumping to holding storages compared to a 24-hour pumping regime. A whole-life-cost comparison will be conducted to eliminate the need for 24-hour pumping if considered to be cost effective.

4.4 Pump Efficiency

Pump motors consume 30% of electrical energy in Australia (PIPA, 2011). The following values shall be used for efficiency allowances in the Preliminary Design for estimation of power requirements:

Pump station type	Efficiency
Pump hydraulic efficiency Boost Pump 65kW+	70%
Pump hydraulic efficiency Boost Pump <65kW	50%
Pump hydraulic efficiency In-Stream Pump	75%
Pump motor and electrical efficiency	86%

Table 2 efficiencies

Electric motor and drive efficiency: 986% (minimum at 50hz VFD/VSD setting) Motors to be IE4 rated where such motors are available in Australia.

These values should be seen as conservative in the design phase and actual efficiencies of the selected pumps and motors at the design point should be higher where such equipment is available. Efficiency is critical as energy costs are typically 85% of the lifetime operating costs of any pump system and are generally the major component of scheme operational costs.

The design philosophy drives choosing the most efficient combination of these components at the dominant operating point, and across the widest normal operating range as possible. At tender, this issue of optimisation for low operating and maintenance costs must be a key part of the selection criteria.

4.5 Speed

In general, four pole motors are TI's preference for pumping. Four pole motors provide a good balance between performance and wear. Two pole motors are usually required for efficient higher head deliveries. The use of variable frequency drives/variable speed drives (VFD/VSD) mitigates the tendency to over-design pump capacity. They also facilitate optimised BEP operation at other than the nominated duty points with the same pump.

Note: At 80% of rated speed the drive is consuming only 50% of its rated power.

№ of Poles	VFD/VSD Input Frequency (Hz)	Operating Speed (RPM)
2	50	3,000
4	50	1,500
6	50	1,000
8	50	750

Note: The VFD/VSD should have sufficient extra capacity to operate the pump at a minimum of 52.5 Hz.

4.6 Standardisation

Where possible, pumps should be selected so that motors and components are easily interchangeable across the pump set. This is beneficial in a multi-pump station and also between schemes where applicable. One suitable replacement unit can be kept by TI or the supplier to service a number of pump applications, potentially from more than one scheme.

5 Design for Operation And Maintenance

Pump stations shall be designed with a strong emphasis on ensuring the design is safe, easily maintained and operated while being cost-effective over the whole asset design life cycle.

5.1 Noise Levels

The noise levels for the new pump stations will comply with the environmental noise level criteria identified in the Planning Permit. Potential noise sources will be identified and suitable treatment applied as required.

5.2 Safety in Design

To ensure safety and serviceability of the pipeline and components must be designed to allow for the safe and serviceable operation and maintenance. The pipelines must be designed to be operated and maintained in accordance with all legislative requirements including (but not limited to) the Water Management (Safety of Dams) Regulations 2015, WORK HEALTH AND SAFETY ACT 2012, WORK HEALTH AND SAFETY REGULATIONS 2012 and associated Codes of Practice applicable (CoP).

These CoP may be located at: http://worksafe.tas.gov.au/laws/codes_of_practice.

The designers shall ensure that the Hierarchy of Control is applied to risk reduction in design of pipeline and associated components. Designs shall be in accordance with Australian and TI standards.

In assessing the potential risks during the design, shall consider (but not be limited to) the following:

- Application of the “Hierarchy of Control” whereby administrative and PPE (Personal Protective Equipment) controls are a last resort;
- Consideration of communication facilities in case of emergency
- The scheme elements that can be remotely controlled must be confirmed as part of the outcomes of the detailed design reviews and risk assessments (such as a “HAZOP”) must be held during the design phase;
- Automatic and remote alarm and fault reset capabilities will be determined as part of the detailed design reviews and risk assessments as above;
- Minimising the requirement to work in or near noisy pieces of plant and/or equipment;
- Safe access for operators and the public;
- Eliminating the risk of flooding, especially in pits;
- Appropriate safety guards must be placed around all moving items of plant. Preference must be given to designs for operations and maintenance procedures which do not require the removal of guards otherwise lockable isolators must be used to de-energise;
- The requirement for a Safety Integrity Level (SIL)-Rated emergency stop system
- The requirement for ‘No-flow’ protection of pumps and motors
- Providing sufficient tolerances to allow easy replacement of elements, or utilise dismantling joints;
- Not generating pinch points and trip hazards especially in valve installations;
- Not making access to points of operation difficult to reach in horizontal and vertical axes;

- Provide good footing and sufficient working clearance to maintain or replace equipment in a safe and ergonomic manner;
- Eliminating the need to work at heights or in confined spaces or access into areas where elements operate at the risk of flooding, high velocities, temperatures or pressures or modified atmospheres, where this is unavoidable, the design must provide all access points, guards, anchor hold points and other facilities required by law to allow for these types of operation;
- Provide a means for safe access and egress in accordance with AS1657 Building Code of Australia;
- Where possible valve pits shall be free draining to prevent the build-up of water and reduce the risk of drowning;
- Many of the elements of the system will be visible and potentially accessible to the public. The design, construction and operation of the system must provide sufficient safety protection. This also extends to excluding the public from elements of the scheme for the security of the assets;
- The design must allow for safe all-weather access as required for future operations and maintenance;
  Provision must be made in the design such that all required operation and maintenance activities on the infrastructure can be undertaken in a safe manner.

5.2.1 Intake Flow Properties

A number of intake phenomena exist that can be detrimental to pump and pipeline performance. These include non-uniform flow, vortexing, pre-swirl, air entrainment and sedimentation or blockage. Refer to intake screen specification TI-TS-004 for further guidance on how these phenomena are to be minimised.

Non-uniform flow: If variable flow conditions exist at the intake, this can incite excessive noise and vibration in the pumps. The implications of undue noise can range from creating an unpleasant work environment through to operational restrictions. Excessive vibration is detrimental to pump performance and the longevity of many components. In general flow velocity approaching the impeller should be less than 0.5 m/s.

Vortices (surface and submerged): These can form between the pump impeller and both surface (free surface) and submerged (walls) interfaces. The presence of submerged vortices can be difficult to detect. Often vortices are the result of insufficient inlet submergence in a wet-well. They can be detrimental in terms of both pre-swirl and air entrainment in the flow. To minimise these phenomena, the intake bell in wet-well installations should be located 0.5 x D from the well floor.

Pre-swirl: Rotation is initiated in the liquid before it reaches the impeller. This reduces the amount of work that the impeller can perform on the fluid. Pre-swirl can result in both performance and efficiency losses. Inlet design should seek to minimise this through consideration of vortices and the incoming flow.

Air entrainment: Vortices and incoming flows that fall from above the free surface are key causes of air entrainment in pumped flows. Air entrainment can lower the hydraulic efficiency of pipelines and can produce unbalanced forces in the impeller resulting in excess noise and vibration in pumps. Design should seek to minimise inflows that fall from above the free surface and air valves should be installed at a suitable position downstream of the pumps to release any entrained air.

Sedimentation: If a sediment trap is utilised, flow velocities in it should be below 0.3 m/s to allow entrained particles to precipitate from the flow. If entrainment of sediment is desired velocities should be kept above 0.5 m/s throughout the intake.

Blockage: Any inlet filtering is a risk to operational reliability – coarse screens with apertures near the impeller passing size are the usual standard protection fitting. Pressure screens are much more expensive and less common. Starvation (low suction head) and no-flow protections must be built into the design. Screen through-flow velocities should be kept below 0.1 m/s and inlet geometry designed to promote natural flushing.

5.3 Access

All valving and controls should be readily accessible, without the need to navigate or climb over pipework or other obstacles or enter confined spaces. Maintenance works space and full replacement handling must be considered to cover the full life cycle of the installed equipment. The system shall be designed with operations and planned maintenance activities in mind so that valves are all accessible at an appropriate height.

1.1 Isolation

Isolation switches should be clearly identified and labelled to correspond with their respective VFD/VSD and pump terminology. The Scheme Process and Instrumentation Diagram (P&ID) must be used as the “master” control document.

5.3.1 Jacking Pump

In many cases TI schemes may be required to deliver very low flows (relative to scheme design flow) to a small number of irrigators, particularly at the start and end of seasons. Installation of a jacking pump is often beneficial in these cases and should be considered where gravity delivery is not possible.

1.2 Test Tapping Points & PUMP ACCEPTANCE Testing

Test tapping points should be included in the design at suitable locations to allow for installation of pressure transducers, pressure gauges for commissioning and operational needs at upstream and downstream points across all significant equipment. Tees and tapping points are also for potential attachment of additional jockey pumps or hose take off points.

Commissioning and subsequent testing should be undertaken to ISO9906 or AS2417 for rotodynamic pumps.

5.3.2 Electrical Supply & Services

The electrical supply should not be the constraint to marginal upgrades. The individual drive supplies should be capable of coping with the installation of the next size drive with only a fuse size change. Sufficient three-phase power outlets should be included to ensure that a single 10m three-phase extension cord can service the entire pump station (for heavy duty portable equipment).

1.3 Emergency Stop

All pumps should have a Safety Integrity Level (SIL) rated emergency stop button accessible near rotating components that are potentially hazardous. It should be ensured that the location of the emergency stop button itself does endanger the operator. Emergency stop buttons are a last resort safety method and should not be used as an alternative for proper safeguarding or automatic safety devices.

Emergency stop buttons are not to be used as an isolation for performing maintenance on equipment.

6 Control Methodology

Control of most pump and pipeline systems is via either pressure or flow, with more complex arrangements involving both parameters. Most TI schemes have features of reticulation schemes and utilise Modulating Valves on property outlets. As these valves control the flow at the outlet (in the majority of cases) pressure control is the most suitable for pumped systems. Flow control is suitable for less complex schemes with minimal delivery points.

6.1 Pressure Control

When flow is controlled by outlet resistance, pump control can be based solely on pressure. Often it is beneficial to use a "pivot" pressure system. This is where the pressure transducer used as the control feedback is located at a critical point sufficiently downstream of the pump station to allow friction losses to play their part. This provides what can be a very efficient and robust method of pressure control.

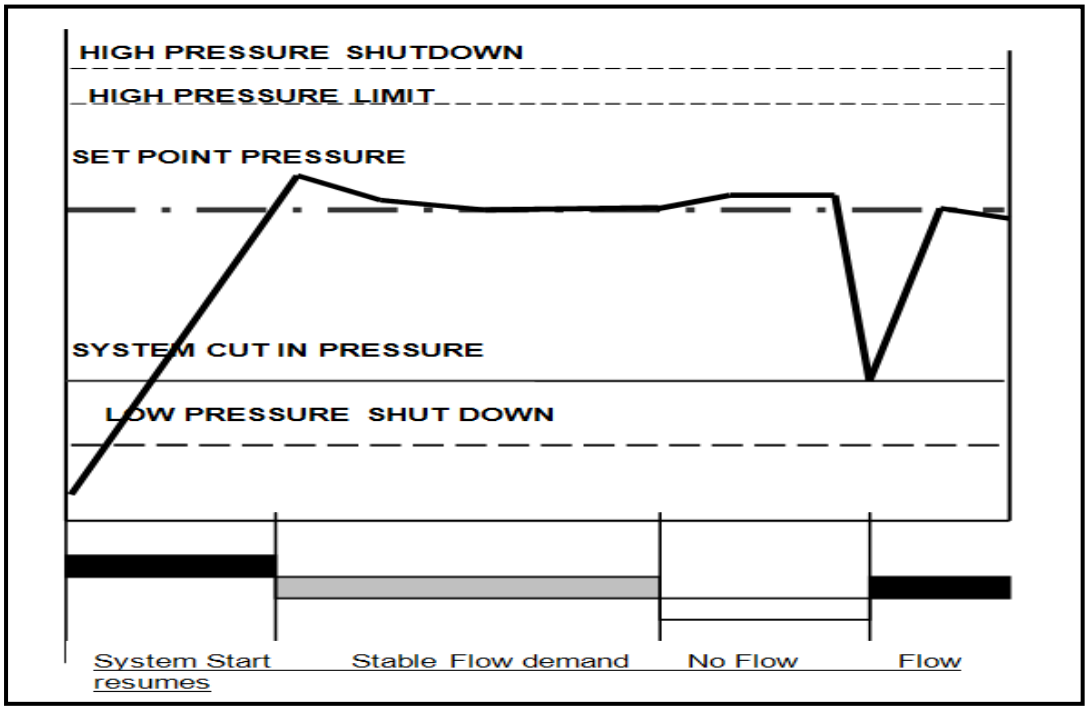


Figure 2 – Basic Pressure Control (ORCA Control Manual)

Figure 2 shows how a pressure system operates. Pressure drop occurs in the line when outlets are opened causing the pumps to ramp up in order to maintain their set-point pressure. Similarly, ramp down occurs if the system pressure begins to build as this indicates a reduction in flow out of the pipeline.

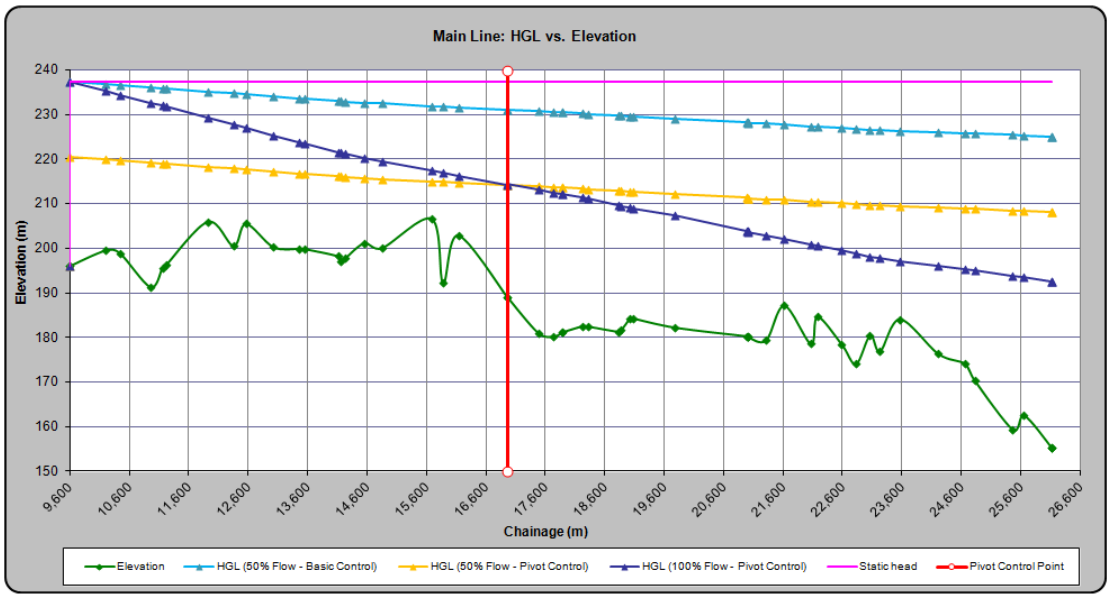


Figure 3 – Comparison of Basic and Pivot Pressure Control

Figure 3 shows the difference between a basic form of pressure control and utilization of a pivot point. Both methods require similar programming. The pivot system utilizes the inherent hydraulic responses as part of the control process to provide more efficient operation.

One disadvantage of the pivot pressure system is the need for communication between the pivot point and the pump station control system. In some cases, this can result in increased installation and ongoing telemetry costs. The expected costs should be balanced with the potential savings of more efficient and robust pump control.

Balance tanks have been found to be effective in controlling the flow and pressure by maintaining a predetermined control level at the tank, providing a constant pressure supply to the system with fully variable flow which is important in open ended systems. As above, expected costs should be balanced with potential on-going savings from pump control.

6.2 Flow Control

In this scenario, system delivery is controlled by flow readings rather than pressure. Flow control is a simple method of control for systems with only a single delivery points less preferred than pressure control. Flow control uses flow meter output to ramp the pumps up and down in order to meet the desired set-point in the case of open system control. In this case, the control system shall ensure that switching between pumps does not preclude the system from running within the peak efficiency zones of the pumps by switching too early.

7 Control System Components

Refer to the standard In-line Boost Pump Stations P&ID drawing GEN -0037.

7.1 Hydraulic Control Valves

A number of control valves can be utilised in pump stations to ensure optimum operation and control of the combined pipeline and pump station system.

Key valves that may be required are:

- check valves: ensure that backflow does not occur through the pumps.
- air valves: release entrained air from pumped flows and prevent vacuum formation in the case of a sudden pump stoppage. These should be installed adjacent to where the pipeline transitions from above to below ground.
- surge anticipation valves: open to prevent pressure surges from transients in the case of a sudden pump stoppage. These usually also feature a pressure relief function to mitigate the possibility of pump dead head over pressurisation.
- flow control valves: often used for delivery of flows to natural water courses.
- isolation valves: used to isolate pumps when required for maintenance and other purposes.

Control valves and meters shall be sized to allow operation at nominal and peak (including transient loading) performance range whilst also minimising capital costs. TI valves requirements are defined in TI_TS-011.

7.2 Sensors

Key sensors often utilised are:

- pressure transducers: measure pressures and provide a 4–20 mA output for use in monitoring and control of pumps and other devices. Often converted to digital outputs at one or more points in the control system.
- pressure gauges (dial or digital): provide a manual confirmation of pressure transducer outputs.
- proximity switches: proximity switches can indicate system faults, such as valves being in the wrong position, when connected to the pump station control system.
- float switches: when connected to the pump station control system, float switches prevent pumps running dry by alarming when input water levels drop too low for operation.

  flow meters: measure flow rates for use in control and reporting (4–20 mA output).

7.3 Variable Frequency Drive/VARIABLE SPEED DRIVE (VFD/VSD)

Except for cases where variable control operation of pumps is deemed superfluous, VFD/VSDs should be allowed for as standard. Their current rating must exceed that of the motor nameplate current draw.by 20% or as agreed based on the capital cost differences are unreasonable.

7.3.1 Programmable Logic Controller (PLC)

In most cases due to the complexity of the system control required, a programmable logic controller (PLC) will be required. Where possible this should be consistent with existing TI schemes of a similar nature. The TI preference is for Siemens or Schneider Electric PLCs to maintain consistency between schemes and utilise the extensive industry support available.

1.4 Supervisory Control And Data Acquisition (SCADA)

All new irrigation schemes shall be designed with a control system that enables the scheme to operate with a high level of autonomy. All standard scheme functions should be able to occur without input from the operator whilst parameters are within defined bounds. The scheme control system shall be self-sufficient and all encompassing, including all pump stations, property outlets, flow meters and any other components. The control system shall allow for both local and remote control, where there are multiple pump stations each shall have local control facilities for the relevant components.

The system shall record all practical scheme operation data that is required for scheme operations, maintenance and reporting. This data shall be recorded and stored as outlined in TI-TS 013 and TI-TS 014

The control system shall have the capability to link to the TI master SCADA system. The information passed from the scheme system to the master system will be decided between the scheme designer and the operations team. As a minimum, the information passed will be that required for reporting.

The control system shall be capable of sending data to other servers and systems (such as BOM) as part of data backup and reporting requirements.

The SCADA system should be the Schneider Electric GeoSCADA system. This has been selected as the TI Standard.

HMI screens shall be configured similar to those used on existing schemes to enable greater interoperability between schemes.

8 Structure and Surrounds

8.1.1 Structure

In general, standard TI pump stations should be constructed of a lightweight steel frame with Colorbond 'Ultra' grade zincalume sheeting. The zincalume colour should be Colorbond 'Deep Ocean' (TI blue). Additional thermal and noise insulation can be added, in the form of internal cladding, as required.



Figure 4 – Liffey Pump Station WHS (steel frame with zincalume sheeting)

For larger pump stations (typically >110kw drives), or where additional noise attenuation is required, concrete tilt panel construction should be considered. As with Colorbond pump stations the concrete colour shall be considered and be coloured to Deep Ocean through addition of pigments to the concrete mix or have a suitably hardwearing external paint coating.



Figure 5 – Stoneycroft Pump Station WHS (concrete tilt panel walls)

Provision of adequate safe means of accessing and removing heavy items from within the building should be included in the design. For example (in order of preference).

- internal access for mobile lifting gear through the vehicle door
- swinging jib
- removable roof section (especially for turbine pumps)
- internal monorail and trolley.

For submersible and vertical-axis turbine pump stations, it is often unnecessary to provide a surrounding structure due to their lower noise levels and the inherent weather resistance of the pumping components. Where this applies, sensitive control and electrical equipment can be housed within a smaller, secure weather-proof enclosure.

Bollards must be installed outside personnel egress doors to ensure that they are not blocked by vehicles etc.

8.2 Ventilation

Pump stations should feature adequate ventilation to ensure VFD/VSD and pump motor heat is dissipated whilst also preventing the build-up of moisture. This can be achieved through the use of an appropriately designed cooling system via natural or mechanical means.

8.3 Access Road and Hardstand Area

The access road and hardstand should be suitable for the continued operation and maintenance of the site. Often a key requirement is that the hardstand be of suitable size and strength for the largest crane required for maintenance and removal of the pumps.

8.4 Drainage

Adequate drainage should be ensured to prevent inundation of the pump station under circumstances other than that considered major flooding. The flood frequency level to be exceeded that informs drainage design should be decided on a project specific basis.

It must also be ensured that existing drainage is not negatively affected by the works being completed.

8.4.1 Landscaping

Where required screening plants should be located around pump stations to improve aesthetics. This can be especially important when located near areas of natural significance.

Areas that have been affected by works, but are not explicitly part of the pump station, should be remediated to their pre-existing condition.

8.4.2 Security

Pump stations should feature a visual and audible alarm system to deter unauthorised access and fire. These alarms must be part of the telemetry system.

1.5 External Valves and Fittings

Often it may be required for certain components to be installed on the pipeline in the vicinity of, but outside, a pump station main structure. Often this will be a flow meter due to the flow development lengths required for accurate metering Flow meters shall be installed in line with manufactures requirements and industry best practises.

In most cases the fitting should be located within a protective concrete pit with a suitable cover and drainage or above suitable compacted hardstand material. Refer to the standard TI pump station drawings.

9 Cost estimation

As part of the Design process, it is required a review of the constructability and capital cost estimate for the concept design through to detailed design is undertaken.

The Designers along with TI representatives are required to undertake an 'site walk through' of the irrigation scheme proposed location to assess constructability risks and provide information to input into the capital cost estimate review.

A report that provides a concept level capital cost estimate review and constructability commentary is required to be produced at the major design phases. the TI constructability field form is required to be completed as a minimum.

9.1 Associated equipment preliminary costs (budget baseline)

During pre- and feasibility phase and up to Preliminary Design and costing, the following approximations can be used as a guide to estimate other supply and installation costs.

- Pump stations are based on the separate pump station costing tool that feeds into the inputs page of the TI cost estimation tool. This is also regularly updated based on review of available data.
- Power supply to pump stations: Provided upon application to TasNetworks.

  Pump Station costing is currently incorporated into the TI cost estimation tool.

9.2 Option assessment

All designs are to be assessed utilising TI's cost estimation tool to determine the best option from and CAPEX and OPEX perspective. This cost estimation tool is used to determine construction costs such as direct contingencies, supervision, project, and quality management. Other project risk and opportunity costs are assessed in conjunction with TI management. The use of the costing tool will provide a consistent cost assessment approach to all project and design assessment.

10 Labelling and Signage

10.1 Asset Tagging

Asset tags should be legible and attached in a robust manner to the relevant equipment they detail. These should be in accordance with the TI Engineering Documentation, Storage, Terminology and Asset Coding document and the operational asset register to be submitted by the contractor at project completion. Etched stainless steel tags are required for external and underground (pit) installations. Alternatives will be considered for weatherproof housed equipment.

10.2 Pump Numbering

All pumps and valving should be clearly named and numbered to enable easy identification and association with their respective VFD/VSDs and isolation switches. This is especially important when isolating individual pumps for maintenance purposes. The Operation and Maintenance Manual, asset list and Control System Description and supporting drawings shall be consistent in all regards.

10.2.1 Signage

The following signage should be considered for pump stations:

- required PPE situated at the access to the area requiring its use i.e., pump station entrances, cabinet panels;
- restricted access and warning signage for high voltage areas;
- emergency exit signage;
- Confined space access (as required)
- rotating equipment warnings;
- authorised personnel only area signage;
- equipment may start at any time signage; and
- isolate before performing maintenance signage.



Figure 6 – Example OH&S Signage at Liffey Pump Station on WHS

11 Supporting Documentation

11.1 TI Drawings:

DRAWING	TITLE
GEN-0001	TI Project Structure and Terminology
GEN–0002	Std Property Outlet GA & Detail
GEN–0003	Pipeline Fittings Attachment Detail Options
GEN–0004	Std Trenching & Backfilling Detail
GEN–0007	Generic Pipeline Alignment GA
GEN–0008	Above Ground Piping & Transition
GEN–0009	Pipeline & Infrastructure Marking
GEN–0014	Standard Property Outlet P&ID
GEN–0022	Standard Property Outlet Protective Cage

11.2 TI Standards:

TI Pump Stations Basis of Design

The following Tasmanian Irrigation standards shall apply:

TI-TS-001	Dams
TI-TS-002	Weirs
TI-TS-003	Storage Tanks
TI-TS-004	Intake Screens
TI-TS-005	Dry Well Pumps and Motors
TI-TS-006	Submersible Pumps and Motors
TI-TS-007	Filters
TI-TS-008	Pipelines
TI-TS-010	Surge Mitigation Devices
TI-TS-011	Valves
TI-TS-011	Property Outlets
TI-TS-013	Instrumentation and Telemetry
TI-TS-014	Electrical
TI-TS-017	Structures and Building Work
TI-TS-018	Heating, Ventilation and Cooling
TI-TS-019	Pipework
TI-TS-020	Civil Works
TI-TS-021	Hydraulic Modelling
TI-TS-099	Operation and Maintenance Manuals
TI-TS-100	Commissioning and Handover

These standards shall have precedence over Australian or International Standards as permitted under Commonwealth and State laws, acts and regulations. Any *item* not covered by the either the applicable Principal or Australian standards shall be fit for purpose and based on current industry best practice.

11.3 External Standards:

ISO 9906-2012 Rotodynamic pumps – hydraulic performance acceptance tests – Grades 1, 2 and 3.

AS2417-2001 Rotodynamic pumps – hydraulic performance acceptance tests – Grades 1 and 2. Cautionary Note: This later version has wider tolerances for allowable hydraulic performance than its 1980 predecessor.

11.4 References:

Australian Pump Technical Handbook, Pump Industry Australia Incorporated, Fourth Edition, 2007.

Plastics Industry Pipe Association of Australia (PIPA) Industry Guidelines

Lara Henley

From: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Sent: Wednesday, 3 June 2020 8:13 AM
To: Ian Dunbabin
Subject: Northern Midlands Irrigation Scheme

Hi Ian

Just following up on our conversation last week regarding Hydro's ability to supply the proposed Northern Midlands Irrigation Scheme at the Poatina tailrace. Is there any additional information you require to be able to provide TI with information next week?

Regards

Paul Ellery
General Manager Program Development and Delivery

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: paul.ellery@tasirrigation.com.au
W: www.tasirrigation.com.au

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COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy.

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Lara Henley

From: Chris Masters
Sent: Friday, 23 September 2022 3:39 PM
To: 'Hugh Abetz'
Subject: RE: [External]Meeting with TasNetworks - CN22-75942 / CN22-76045 Pituncarty & Valleyfield Projects

Good afternoon Hugh,
Unfortunately neither myself or Andrew will be available next week.
I will be out of the office but still answering emails next week.

Following that my leave has extended and I will be on leave from the 3rd Oct through to the 28th Oct.
Andrew will also be on leave from the 26th of Sep though to the 14th of Oct and can any queries you may have.

Thanks,
Chris Masters | Electrical Engineer

entura

m +61[redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
Connect with us on Facebook, Twitter and LinkedIn

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Please consider the environment before printing my email
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From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Wednesday, 21 September 2022 10:17 AM
To: Chris Masters <Chris.Masters@entura.com.au>
Subject: RE: [External]Meeting with TasNetworks - CN22-75942 / CN22-76045 Pituncarty & Valleyfield Projects

Hi Chris,

TasNetworks have arranged a meeting on site to discuss the Valleyfield PS (Pituncarty) site next week Wed and I wondering whether you wanted to join this one?

If so I will forward the invite.

Kind Regards,
Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy. For more information please refer to our website https://www.tasmanianirrigation.com.au/.

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[redacted]



From: Aaron Cassidy
To: Gregory Carson
Cc: Jacob Gerke
Subject: Poatina Buffer Dam - Amalgamated Dam Options Report RevA
Date: Friday, 28 January 2022 2:23:19 PM
Attachments: 12556374-REP-Poatina Buffer Dam - Amalgamated Dam Options Report RevA.pdf
image006.png
image007.png
image009.png
image011.png
image013.png
image001.png
image002.png
image003.png

Greg,

Please find attached the final draft of the Poatina Buffer Dam options report.

Jacob will be in touch next week to discuss.

Regards

Aaron Cassidy

T: 03 6398 8433
M: [redacted]
E: aaron.cassidy@tasirrigation.com.au
W: www.tasirrigation.com.au

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CovidSafe_Email_Footer (2) (003)

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Lara Henley

From: Chris Masters
Sent: Thursday, 8 September 2022 10:21 AM
To: 'Hugh Abetz'
Cc: 'Jacob Gerke'
Subject: NMIS - Valleyfield HV Connection preliminary design
Attachments: Valleyfield HV Connection - Preliminary Design.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Hugh,
As briefly discussed yesterday please find attached the preliminary design for the HV connection at Valleyfield. Most aspects of this design will need to be reviewed upon receipt of the TasNetworks connection design.

We will start preparing a similar package for the Poatina pump station in preparation for its connection design. As discussed, I believe that we can proceed with the design without soil resistivity testing.

Regards,
Chris Masters | Electrical Engineer

entura

m +61[redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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Lara Henley

From: Matthew McMullen
Sent: Wednesday, 31 August 2022 1:37 PM
To: Aaron Cassidy
Subject: Re: [External]FW: TI Survey of Poatina Tail

Follow Up Flag: Follow up
Flag Status: Completed

Hi Aaron,

No worries. Thanks for that.

Regards,
Matthew

Sent from my iPhone

> On 31 Aug 2022, at 12:44, Aaron Cassidy <aaron.cassidy@tasirrigation.com.au> wrote:
>
> Thanks Matthew,
>
> In the interest of time, we will either use one of the existing benchmarks or just ensure we have a good reference point that can be tied to a benchmark installed in the future.
>
> I have just spoken to Brock about the risk assessment, hopefully he will get it to you later today.
>
> Regards
>
> Aaron
>
> ---
>
> **From:** Matthew McMullen <Matthew.McMullen@hydro.com.au>
> **Sent:** Monday, 29 August 2022 2:51 PM
> **To:** Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
> **Subject:** [External]FW: TI Survey of Poatina Tail
>
> You don't often get email from matthew.mcmullen@hydro.com.au. Learn why this is important
>
> Hi Aaron,
>
> I've checked with the Entura surveyors and I don't believe there are any benchmarks in the vicinity of drop structure No.1. They did supply the attached picture that has the state marker in the bottom left corner. If you still require your survey marker it would be best to start the dial before you dig process.
>
> Regards,
> **Matthew McMullen**
> Acting Production Supervisor Poatina & Trevallyn

m +61 [redacted]
e matthew.mcmullen@hydro.com.au
w http://hydro.com.au
a Poatina Power Station, Poatina TAS 7302

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From: Matthew McMullen
Sent: Friday, 26 August 2022 5:29 PM
To: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; NMIS <NMIS@TasIrrigation.com.au>
Subject: RE: TI Survey of Poatina Tail

Hi Aaron,

Thanks for your email. Given the timeframe, I believe the easiest way would be for Hydro Tasmania to provide a resource to assist Brock and his team with site access. This way we will not need our Permit to work (PTW) and level 2 induction training to be completed before the outage. I will need to get back to you on Monday with further details about the installation of a survey marker.

Moving forward, if there will be a need for Tas Irrigation to access the site, I will be able to make arrangements for the appropriate inductions to be given and keys issued for site access.

Regards,
Matthew McMullen
Acting Production Supervisor Poatina & Trevallyn

m +61 [redacted]
e matthew.mcmullen@hydro.com.au
w http://hydro.com.au
a Poatina Power Station, Poatina TAS 7302

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From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Friday, 26 August 2022 12:31 PM
To: Matthew McMullen <Matthew.McMullen@hydro.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; NMIS <NMIS@TasIrrigation.com.au>
Subject: TI Survey of Poatina Tail

G'Day Matthew,

As discussed on the phone, TI would like to do a survey of the Poatina tailrace from approx. 100m upstream of drop structure 1 through to the upstream side of drop structure 5. The survey is to inform elements of the design around the proposed buffer dam for the Northern Midlands Irrigation scheme. We are hoping we can do this in the upcoming Poatina shutdown.

Can you please advise what processes we need to follow and training/inductions we would need to do the surveying?
We will be using Pinion Advisory (formerly Macquarie Franklin) for the work with Brock Nadler leading. Brock oversaw the installation of an irrigation offtake from the tail race in the same area a couple years ago so may have done some of the required training.

If possible, when doing the surveying we would like to install a survey benchmark close to the boundary fence about 100m upstream of drop structure 1. The benchmark would be like the attached drawing.

If you need any further information please give me a call.

Regards

Aaron Cassidy

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: aaron.cassidy@tasirrigation.com.au
W: http://www.tasirrigation.com.au

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Lara Henley

From: Chris Masters
Sent: Monday, 29 August 2022 10:12 AM
To: 'Hugh Abetz'
Cc: 'Jacob Gerke'
Subject: Valleyfield and Poatina Pump Station earthing

Categories: Red Category

Good morning Hugh and Jacob,
Sorry for the delay getting this back to you. I have summarised the earthing arrangement of the pump stations below. Can you please share this with GHD.

Pump station earthing
It is intended that the Pump station foundation will be interconnected to the HV earth system to provide an equipotential platform within the pump station during HV earth faults.
Grading earth conductors are to be installed around the perimeter of the pump station to control touch voltages to the building exterior and will be detailed in Entura's HV connection design package.
As there are no HV assets within the pump station all earthing within the pump station is to in accordance with AS3000 applicable to an LV installation. No additional HV rated equipotential earthing is required within the pump station.

Pump station foundation earthing
To earth the foundation reinforcing can GHD please provide 4 earth points, one at each corner of the pump station slab.
Earth points are to be welded to reinforcing steel. An example earth point can be found here:
https://www.nvent.com/en-au/erico/products/earthbridge-db-one-stud-cable-solid-round-steel-0

Pump Station Hard Stand
Regarding the pump station platform, from the perspective of the HV earth system it is highly preferable that the hard stand is constructed utilising a clay rich road base such as brown gravel (potentially sourced from mudstone or shale). FCR sourced from Dolerite or Basalt is to be avoided if possible as it has a high electrical resistivity.

Thanks and regards,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Wednesday, 23 March 2022 9:57 AM
To: Sues Gough
Cc: Adam Gall; Prajit Parameswar; Eric Shegog
Subject: RE: [External]NMIS: Confidentiality Agreement re forecast modelling
Attachments: Confidentiality Agreement DRAFT (NMIS).docx

Follow Up Flag: Follow up
Flag Status: Completed

Hi Sues

We have reviewed the document and comfortable with it in its revised form

I am happy to be listed as the contact on the front page.

Can we please arrange execution of this as soon as practical.

Thanks
Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Sues Gough <Susan.Gough@hydro.com.au>
Sent: Monday, 21 March 2022 5:14 PM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Adam Gall <Adam.Gall@hydro.com.au>; Prajit Parameswar <Prajit.Parameswar@hydro.com.au>; Eric Shegog <Eric.Shegog@tasirrigation.com.au>
Subject: [External]NMIS: Confidentiality Agreement re forecast modelling

You don't often get email from susan.gough@hydro.com.au. Learn why this is important

I refer to your email to Adam Gall today in relation to the above.

Hydro Tasmania appreciates Tasmania Irrigation's wish to convey modelling data to Government and Ministers associated with funding processes and I have made amendments to the agreement (the definition of Affiliate and clause 3.1) to accommodate that (highlighted in yellow).

I've also amended the redundant references to Discloser's Confidential Information that were identified (marked up).

I'm more than happy to discuss any aspect of the above with your legal team if required.

Kind regards

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CONFIDENTIALITY AGREEMENT

Details

Date ___/___/2022

	Hydro Tasmania (Discloser)		Tas Irrigation (Recipient)
Name	Hydro-Electric Corporation (trading as Hydro Tasmania) (ABN 48 072 377 158)	Name	Tasmanian Irrigation Pty Ltd (ACN 133 148 384)
Address	4 Elizabeth Street, Hobart, Tasmania, 7000	Address	2 Terminal Building, Launceston Airport, Western Junction, Tasmania, 7250
Contact	[Insert]	Contact	[Insert]
Phone	[Insert]	Phone	[Insert]
Email	[Insert]	Email	[Insert]

Executed by the parties as an agreement

Executed by the **HYDRO-ELECTRIC CORPORATION trading as Hydro Tasmania (ABN 48 072 377 158)** by

.....

Signature

Executed by **TASMANIAN IRRIGATION PTY LTD (ACN 133 148 384)** pursuant to the Formal Instrument of Delegation approved 4 April 2020 by:

.....

Delegate's Signature

.....

Full name and role of Delegate

.....

Full name

.....

Company Secretary's Signature

.....

Date

.....

Full name of Company Secretary

.....

Signature of Witness

.....

Full name of witness

.....

Date

PART A - Confidentiality and Privacy

1. Acknowledgment and no obligation

1.1 Acknowledgement

Each party acknowledges that the Confidential Information is secret and confidential to the Discloser.

2. Obligation of Confidence

2.1 Maintain confidentiality

Subject to clause 3 (Permitted Disclosures), clause 4 (Exclusions) and clause 5 (Return or destruction of Confidential Information), the Recipient must:

(a) keep the Confidential Information confidential and not disclose, or permit the disclosure of, Confidential Information to any person other than an employee or officer of the Recipient with a genuine need to know the information for the Purpose, without the prior written approval of the Discloser;

(b) take those steps it uses to secure and protect its own confidential information (and at least reasonable steps) to keep the Confidential Information secure and protected from any use, disclosure or access that is inconsistent with this document; and

(c) not memorise, modify, reverse engineer or make copies, notes or records of the Confidential Information for any purpose other than in connection with the Purpose.

2.2 Use of Confidential Information

The Recipient may use the Discloser's Confidential Information only for the Purpose.

3. Permitted Disclosures

3.1 Affiliate Disclosure

(a) The Recipient may disclose the ~~Discloser's~~ Confidential Information to its Affiliate without the Discloser's prior written consent but only if the disclosure is made to the Affiliate on a 'need to know basis' for the purpose of assessing a business case of, or potential funding in, the proposed Northern Midlands Irrigation Scheme and before the disclosure the Recipient:

(i) has informed the Affiliate of the confidential nature of the Confidential Information to be disclosed;

(ii) has informed the Affiliate of any assumptions, qualifications, limitations or disclaimers marked or noted on the Confidential Information; and

(iii) has ensured that the Affiliate will observe all the Recipient's obligations under this document as if those obligations were imposed on that Affiliate.

(b) The Recipient is liable for any act or omission of any of its Affiliates which would constitute a breach of this document if it was the conduct of the Recipient.

3.2 Required Disclosures

(a) The Recipient may disclose Confidential Information ~~of the Discloser~~ without the Discloser's prior written consent if the disclosure is required by any applicable law, legally binding order, Government Agency, requirement of a regulator, rules of any stock exchange or as a result of a court order provided:

(i) where it is legally permitted to do so, the Recipient provides the Discloser with reasonable prior written notice of the required disclosure to allow the Discloser to take such steps as the Discloser considers necessary to prevent or minimise the disclosure or maintain the confidentiality of the Confidential Information;

(ii) the Recipient provides the Discloser with that assistance and co-operation which the Discloser considers necessary to prevent or minimise that disclosure of the Confidential Information; and

(iii) the Recipient limits the disclosure to that Confidential Information that must be disclosed by law, order, Government Agency, requirement or rule.

4. Exclusions

The Recipient's obligations of confidence in this document do not apply to Confidential Information that:

(a) is in the public domain other than as a result of a breach of this document;

(b) is provided to the Recipient (without restriction as to its use or disclosure by the Recipient) by a third party whom the Recipient knows and can demonstrate is legally entitled to possess the Confidential Information and provide it to the Recipient; or

(c) is independently developed by the Recipient or the Recipient's Affiliate.

5. Return or destruction of Confidential Information

5.1 Return or destruction

Where requested by the Discloser, the Recipient agrees to:

(a) immediately cease using the ~~Discloser's~~ Confidential Information;

(b) promptly return to the Discloser, or at the option of the Discloser, destroy or alter so as not to contain any Confidential Information, all material in the possession of the Recipient or its Affiliates which contain any Confidential Information and provide written confirmation to the Discloser that such destruction or alteration has been completed; and

(c) permanently delete Confidential Information from all electronic media on which it is stored, so that it cannot be restored or in any way reconstructed or reconstituted.

5.2 Return or destruction exception

Despite clause 5.1 (Return or destruction), a Recipient is not required to return, destroy or alter documents or other materials to the extent that:

(a) the Recipient is required by law to keep them;

(b) they are legal advice, internal working papers, legal opinions or materials used for the purpose of providing legal opinions;

(c) they are directors' papers of the Recipient or its Related Entities, or the minutes of the board of the Recipient or its Related Entities or any committee of such board; or

(d) they are included in working papers for the purpose of and in submissions to internal board, board committee or senior executive meeting papers for the purpose of evaluating any proposed transaction and for making decisions in relation to any proposed transaction.

5.3 No release

The Recipient is not released from its obligations under this document as a result of returning, destroying or deleting any documents or other information under clause 5.1 (Return or destruction).

6. No representation or warranty

6.1 No representations or warranties given

Each partyRecipient hereby acknowledges that, except as may be subsequently agreed in writing by the parties, neither the Discloser nor any of its Affiliates:

(a) has made or makes any representation or warranty, express or implied, as to the accuracy, content, legality or completeness of any of the Confidential Information;

(b) is under any obligation:

(i) to notify the Recipient or its Affiliates; or

(ii) to provide any further information to the Recipient or its Affiliates,

if the Discloser or its Affiliates become aware of any inaccuracy, incompleteness or change in the Confidential Information; or

(c) has made or makes any representation or warranty, express or implied, that the Confidential Information does not infringe the Intellectual Property Rights or any other right of any person.

6.2 Recipient to make its own assessment

The parties agrees and acknowledge that:

(a) the Recipient must make its own assessment of all Confidential Information and satisfy itself as to the accuracy, content, legality and completeness of that information;

(b) any forecasts or estimates in the Confidential Information may not prove to be correct or be achieved; and

(c) the Recipient will rely solely on its own investigations and analysis in evaluating any transaction, project or similar.

7. Ownership unaffected

This document does not transfer to the Recipient any right, title or interest in the ~~Discloser's~~ Confidential Information or Intellectual Property Rights in the Confidential Information.

PART B - Term

8. Term

This document will remain in force for a period of six (6) years from the date of its execution. Upon expiry of the term of this document the obligations of the parties under this document will cease.

PART C - Breach of Confidentiality

9. Remedies

The Recipient acknowledges that:

(a) damages may not be an adequate remedy for the Discloser for any breach of this document; and

(b) as a remedy for any breach or threatened breach by the Recipient or its Affiliates of this document, the Discloser will be entitled to seek injunctive relief or specific performance, in addition to any other remedies available at law or in equity.

PART D - General

10. Notices

10.1 Form

Any communications (**Notice**) to be given under or in connection with this document must be in writing, signed by the sender and marked for the attention as set out or referred to in the Details or, if the recipient has notified otherwise, then marked for attention in the way last notified.

10.2 Delivery

A Notice must be:

(a) sent by email to the email address set out or referred to in the Details;

(b) left at the address set out or referred to in the Details; or

(c) sent by prepaid post to the address set out or referred to in the Details.

10.3 When effective

A Notice will be taken to be duly given or made:

(a) if sent by email, they are taken to be received at the time the email message is sent, unless:

(i) the sender receives automated email notification that the email transmission has failed or has been delayed within twelve (12) hours of sending the notice; or

(ii) the sender receives automated email notification to the effect that the recipient is not likely to receive the notice until a later date, which will then become the deemed date of receipt; or

(b) if sent by post, they are taken to be received six (6) days after posting (or ten (10) days after posting if sent to or from a place outside Australia),

but if the result is that a Notice would be taken to be given or made on a day that is not a Business Day in the place to which the Notice is sent or is later than 4pm (local time), it will be taken to have been received at 9am on the next Business Day.

11. Miscellaneous

11.1 Amendments

An amendment or variation to this document is not effective unless it is in writing and signed by the parties.

11.2 Assignment

A party cannot assign or otherwise transfer any of its rights under this document without the prior written consent of each other party.

11.3 Counterparts

This document may be entered into in any number of counterparts, and counterparts may be exchanged by electronic transmission, each of which will be deemed an original, but all of which, taken together, constitute one and the same instrument.

11.4 Entire Agreement

This document constitutes the entire agreement between the parties in relation to its subject matter and supersedes all previous deeds, negotiations and understandings between the parties in relation to its subject matter.

11.5 Severance

If anything in this document is unenforceable, illegal or void then it is severed and the rest of this document remains in force, unless the severance would change the underlying principal commercial purpose or effect of this document.

11.6 Waivers

A right under this document may only be waived in writing, signed by the party granting the waiver.

12. Governing law and jurisdiction

The laws of Tasmania govern this document. The parties submit to the non-exclusive jurisdiction of the courts of Tasmania.

PART E - Defined terms and interpretation

13. Definitions

In this document unless the contrary intention appears:

Affiliate of a party means an auditor or adviser of the party or in the case of Tas Irrigation, any State or Commonwealth Minister, department or authority including the Minister of the Crown for the time being

administering the Irrigation Company Act 2011, Department of Natural Resources and Environment Tasmania and Nation Water Grid Authority.

Business Day means any week day on which banks are generally open for business in Hobart, Tasmania.

Confidential Information means:

(a) Hydro Tasmania's forecast modelling data showing the estimated hourly flow rates exiting the Poatina Power Station between March 2022 and July 2027 (inclusive); and

(b) any other data related to the information referred to in paragraph (a) above which may be supplied by Hydro Tasmania to Tas Irrigatione Discloser to the Recipient on a confidential basis.

Details means the section of this document headed 'Details'.

Discloser means the Hydro-Electric Corporation (trading as Hydro Tasmania) (ABN 48 072 377 158), as set out in the Details.

Government Agency means any governmental, semi-governmental, administrative, judicial or quasi-judicial body, department, commission, authority, tribunal, agency or entity.

Intellectual Property Rights includes all present and future intellectual and industrial property rights conferred by statute, at civil, common law or in equity including:

(a) copyright;

(b) design, patent, trademark, semiconductor, circuit layout, database rights or plant breeder rights (whether registered, unregistered or applied for);

(c) trade, business, company or domain name; and

(d) know how or inventions, processes (whether in writing or recorded in any form).

Purpose means enabling Tas Irrigation to undertake preliminary designs and assessment of the sizing of the buffer dam associated with the proposed Northern Midlands Irrigation Scheme.

Recipient means the Tasmanian Irrigation Pty Ltd (ACN 133 148 384), as set out in the Details.

14. Interpretation

(a) "Including" and similar expressions are not words of limitation.

(b) A provision of this document must not be construed to the disadvantage of a party merely because that party was responsible for the preparation of this document or the inclusion of the provision in this document.

(c) If an act must be done on a specified day which is not a Business Day, it must be done instead on the next Business Day.

(d) All references to time are to Eastern Standard time.

Lara Henley

From: Chris Masters
Sent: Friday, 5 August 2022 4:53 PM
To: 'Jacob Gerke'; 'Hugh Abetz'
Subject: RE: NMIS HV and Earthing Design
Attachments: Poatina Pump Station - Concept Connection Arrangement_Rev 2.pdf; RE: [External] Tas Irrigation - Northern Midlands - HV and Earthing Design - Two sites

Good afternoon Jacob, Hugh,
Please find attached the revised Poatina concept connection arrangement.
Please let me know if you need anything adjusted.

The soil resistivity testing at the Valleyfield Pump Station site on Wednesday was successful. Access was good and there was lots of clear ground to take the traverses.

Jacob, Phil Ellerton has been following up on the T&Cs for me and mentioned that he hasn't heard back from Melanie. If possible are you able to countersign the attached and flick it back. Let me know if there are any issues.

Thanks and regards,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Monday, 1 August 2022 1:17 PM
To: Hugh Abetz <hugh.abetz@tasirrigation.com.au>; Chris Masters <Chris.Masters@entura.com.au>
Subject: RE: NMIS HV and Earthing Design

Pump Station GA

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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-----Original Appointment-----
From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Tuesday, 19 July 2022 9:22 PM
To: Hugh Abetz; Chris Masters; Andrew Baird; Jacob Gerke
Subject: NMIS HV and Earthing Design
When: Monday, 1 August 2022 1:00 PM-1:30 PM (UTC+10:00) Hobart.
Where: Microsoft Teams Meeting

Microsoft Teams meeting

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Or join by entering a meeting ID
Meeting ID: 483 340 929 228
Passcode: iiWUwQ

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Lara Henley

From: Adam Gall
Sent: Monday, 21 March 2022 12:43 PM
To: Jacob Gerke
Cc: Prajit Parameswar; Eric Shegog
Subject: RE: [External]NMIS: Confidentiality Deed & forecast modelling

Follow Up Flag: Follow up
Flag Status: Completed

Thanks Jacob,

Happy to chat at 1pm.

Chat soon.

Adam Gall
Operational Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Monday, 21 March 2022 12:41 PM
To: Adam Gall <Adam.Gall@hydro.com.au>
Cc: Prajit Parameswar <Prajit.Parameswar@hydro.com.au>; Eric Shegog <Eric.Shegog@tasirrigation.com.au>
Subject: RE: [External]NMIS: Confidentiality Deed & forecast modelling

Hi Adam

We have a comment on the agreement around allowing us to report through government and ministers through our approval process for funding etc.

Our legal's have proposed the following suggestion to allow this:

New definition

> "**Authorised Recipient**" means any State or Commonwealth Minister, department or authority including the Minister of the Crown for the time being administering the Irrigation Company Act 2011, Department of Natural Resources and Environment Tasmania and Nation Water Grid Authority.

Amended clause 3.1

3.2 Disclosure to an Authorised Recipient

The Recipient may disclose any Confidential Information to any Authorised Recipient without the Discloser's prior written consent but only if the disclosure is made to the Authorised Recipient in connection with the proposed Northern Midlands Irrigation Scheme and before the disclosure the Recipient has informed the Minister of the confidential nature of the Confidential Information to be disclosed.

Additional comment was that although Confidential Information is defined as the Discloser's Information, the terms Discloser's Confidential Information and Confidential Information of the Discloser are also used. The second references to the Discloser are unnecessary. It would avoid potential confusion if the agreement just used the defined term Confidential Information.

I proposed we talk through the intention at 1pm to ensure we are clear on the intent.

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

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From: Adam Gall <Adam.Gall@hydro.com.au>
Sent: Wednesday, 16 March 2022 3:33 PM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Prajit Parameswar <Prajit.Parameswar@hydro.com.au>
Subject: [External]NMIS: Confidentiality Deed & forecast modelling

Hi Jacob,

As discussed yesterday, commonly when we hand out our internal modelling data, our lawyers ask us to arrange a confidentiality deed.

It will need to be handed over confidentially upon execution of the attached deed.

I've attached a draft copy, for you to review.

Let us know TI's thoughts on it, and we can arrange execution and exchange of data.

Cheers,

Adam Gall
Operational Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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Lara Henley

From: Chris Masters
Sent: Wednesday, 27 July 2022 5:10 PM
To: 'Hugh Abetz'
Subject: RE: NMIS HV and Earthing Design
Attachments: Poatina Pump Station - Concept Connection Arrangement_Rev 1.pdf

Good afternoon Hugh,
Thanks for setting up the meeting.

I was planning on undertaking the site testing this week, but covid struck me down last week and so I'm now playing catch up.
Is Wednesday next week (3rd Aug) feasible for you?

I have also attached an updated concept connection arrangement for the Poatina pump station for when you need to progress the connection arrangement with TasNetworks.

Additionally, we have been working on a preliminary layout design for the Valleyfield Pump Station and we have been using the provided site plan PDF for the background.
If possible it would be great if you could provide a CAD version of the site plan as it will improve the quality of our drawing.

Thanks,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Thursday, 21 July 2022 12:20 PM
To: Chris Masters <Chris.Masters@entura.com.au>
Subject: RE: NMIS HV and Earthing Design

Hi Chris,

I have created a new invite for progress meetings for NMIS HV and Earthing Design works by Entura. Starting 1st August when Jake is back in the office.

However, I am keen to hear from you when you think the Soil Resistivity testing can be carried out for Valleyfield? And that everything else is on track and if you need anything from TI?

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: 0447 101 286
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



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[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Thursday, 18 November 2021 10:41 AM
To: Gregory Carson <Greg.Carson@hydro.com.au>
Cc: Adam Gall <Adam.Gall@hydro.com.au>; Prajit Parameswar <Prajit.Parameswar@hydro.com.au>
Subject: RE: [External]RE: Tas Irrigation - Heights in Poatina Tailrace

Hi Greg

Thanks for these all clear.

I have one question though, what are the max take flow rates associated with these volumes?

Or are they associated to specific periods, ie. 180day summer or a winter period.

Ie Northern Midlands is 25,500ML with a 150day flow rate = 170ML/day.

If we can associate all these volumes to ta flow rate it will allow us to consider how many days buffer the dam might provide.

Regards

Jacob Gerke

[redacted]

Tasmanian Irrigation

T: 03 6398 8433
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E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Gregory Carson <Greg.Carson@hydro.com.au>
Sent: Thursday, 18 November 2021 8:56 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Adam Gall <Adam.Gall@hydro.com.au>; Prajit Parameswar <Prajit.Parameswar@hydro.com.au>
Subject: [External]RE: Tas Irrigation - Heights in Poatina Tailrace

Jacob

As requested, the following table lists the water users along the Poatina tailrace/pond:

Water user	Annual volume (ML)
Cressy-Longford	25,000
Keach Pastoral	1,600
Tas Irrigation (Whitemore)	10,000
Bill Scott-Young	1,000
Macquarie Settlement (Poatina pond)	22,500
Greenvale Pastoral (Tole)	460
Dave Archer (Poatina pond)	???

Hydro Tasmania has committed to maintain a flow of 2.8 cumecs (100 cusecs – 245ML/day) at the former town water supply pumps at Cressy township.

[redacted]

I hope the above makes sense.

Thank you

Greg

Greg Carson
Hydro Tasmania
mob: [redacted]

From: Gregory Carson
Sent: Friday, 12 November 2021 3:01 PM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Adam Gall <Adam.Gall@hydro.com.au>; Prajit Parameswar <Prajit.Parameswar@hydro.com.au>
Subject: RE: Tas Irrigation - Heights in Poatina Tailrace

Jacob

Sorry about the delayed formal response. As we discussed about a week after you originally sent the email, the crown of the Poatina tailrace tunnel is designed to be a 'dry crown' and must stay that way. The water level in and at the exit of the tailrace tunnel (and a distance downstream) must **not** be raised as a result of activities associated with the construction and operation of the Northern Midlands Irrigation Scheme or any other irrigation scheme TI operates.

[redacted]

Happy to discuss.

Thank you

Greg

Greg Carson
Environment Manager (Acting)

Hydro Tasmania
m +61 [redacted]
e greg.carson@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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No trees were killed in the sending of this message, but a large number of electrons were terribly inconvenienced.

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Monday, 20 September 2021 1:23 PM

To: Gregory Carson <Greg.Carson@hydro.com.au>
Subject: Tas Irrigation - Heights in Poatina Tailrace

Hi Greg

As discussed last week can you please provide the following information as soon as practical:

- What is the maximum water level in the Tailrace as to not impact on the power station operations?
  - If this could be referenced to height above drop structure No. 1 that would be great
  - The higher we can push this the more likely this option will work.
- What is the maximum water height that would be allowable in the current channel (without modifications or upgrades)

This information will be significant in TI determining its buffer dam arrangements.

Thanks

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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Lara Henley

From: Chris Masters
Sent: Friday, 24 June 2022 4:58 PM
To: 'Jacob Gerke'; 'Hugh Abetz'
Cc: 'Aaron Cassidy'
Subject: RE: [External]NMIS HV procurement quotations

Good afternoon Jacob, Hugh,
Sorry, I called back too late and missed you on the phone.

Andrew Hadley from Zinfra has indicated that the cost of two poles, overhead conductor and installation is approximately $[redacted].
I am waiting to see what the cost for cast-in-situ foundations for the kiosks would likely be, but I estimate probably $[redacted]

The arrangement would be very similar to Scottsdale's. We would likely use those drawings as a starting point.
I see no reasons at this point why we couldn't have the cable termination on the back of the metering pole.

Regards,
Chris Masters | Electrical Engineer

entura

m +61[redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Friday, 24 June 2022 11:46 AM
To: Chris Masters <Chris.Masters@entura.com.au>; Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Cc: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Subject: RE: [External]NMIS HV procurement quotations

Hi Chris

A couple of queries:

1. I assume that installation of the overhead option would be more expensive due to at least poles being require and the overhead labour? – Can you please confirm how much more you would expect.
    a. Would this attached (and photos below) Scottsdale arrangement be what we would assume?
    b. Will we be able to run the HV down the pole to the kiosk on the same pole as the metering?

If you could call me to discuss that would be great





Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Chris Masters <Chris.Masters@entura.com.au>
Sent: Thursday, 23 June 2022 5:03 PM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Cc: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Subject: [External]NMIS HV procurement quotations

Good afternoon Jacob, Hugh,
Finally! Schneider have come through with the goods, please find attached pricing for the fully integrated (kiosk + metering) and the standalone kiosk options.
I have summarised the pricing below

Fully integrated ground mounted option:

1500 KVA	**$** [redacted]
2000 KVA	**$** [redacted]

Overhead/Ground mounted mix:

	Kiosk	Metering	Recloser	Total
1500 KVA	$ [redacted]	$ [redacted]	$ [redacted]	**$** [redacted]
2000 KVA	$ [redacted]	$ [redacted]	$ [redacted]	**$** [redacted]

The pricing for the Schneider Nulec recloser and Circle-C metering unit and panel have been obtained from the Scottsdale Irrigation Scheme.

Please note that these prices do not include kiosk foundations, poles or installation and commissioning costs.

Regarding system spares and future replacement should a piece of equipment fail within the fully integrated ground mounted option TasNetworks and Schneider have provided the following advice.

Schneider do not recommend the need to carry system spares of the kiosk components (transformer, HV switchgear or metering unit), additionally TasNetworks do not carry spares of metering units or HV switchgear, they procure it as required.
TasNetworks do not currently hold any stock of the 1500 kVA and 2000 KVA kiosks. It is worth noting that their standard arrangement for kiosks of this size are in a smaller enclosures but the transformers are compatible and can be swapped out if necessary.
TasNetworks has provided the following prices and indicated that lead times are currently 26-30 weeks.

1500 KVA	$ [redacted]
2000 KVA	$ [redacted]

Schneider have indicated that lead times at the moment are currently around 40 weeks. However once things return to 'normal' they are typically 22 weeks for the metering and switchgear and 12 week for the transformers.

Hopefully this pricing helps aid in the selection of which arrangement we will go for.
If you have some availability tomorrow we can catch up to discuss Schneider's offers further. I will be undertaking some testing early next week so will need to push back our scheduled catch-up to later in the week.

Regards,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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Lara Henley

From: Adam Gall
Sent: Thursday, 31 March 2022 10:01 AM
To: Jacob Gerke
Cc: Prajit Parameswar
Subject: RE: [External]RE: Tasmanian Irrigation and Hydro - Northern Midlands Irrigation Scheme Discussions
Attachments: Confidentiality_Agreement_DRAFT_NMIS.pdf; CONFIDENTIAL Poatina_cumecs_minflow.xlsx

Follow Up Flag: Follow up
Flag Status: Completed

Hi Jacob,

Thanks for organising the signatures. I now have a copy of the executed confidentiality agreement. I've attached a copy now.

I've also attached the modelling data which is the "Confidential Information" as defined in the agreement.

As discussed this represents modelling for our base flow (with no irrigation requests). There is 50 traces of modelling to give you some variability of data to work with.

I'm away from the office today, but happy to discuss tomorrow. Otherwise I may be contactable by email intermittently today for any pressing questions.

Many thanks,

Adam Gall
Operational Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Wednesday, 30 March 2022 6:29 PM
To: Adam Gall <Adam.Gall@hydro.com.au>
Subject: Re: [External]RE: Tasmanian Irrigation and Hydro - Northern Midlands Irrigation Scheme Discussions

Thanks Adam
Both Andrew and James have just received and signed and returned

Sent from my iPhone

On 30 Mar 2022, at 5:45 pm, Adam Gall <Adam.Gall@hydro.com.au> wrote:

Hi Jacob.

I'm told that the docs have been sent. They should be on the way, if not in inboxes already.

Apologies for the delay.

Many thanks
Adam

Sent from my iPhone

> On 30 Mar 2022, at 4:44 pm, Jacob Gerke <jacob.gerke@tasirrigation.com.au> wrote:
>
> Hi Adam
>
> Are you able to confirm this has been sent.
>
> We are really wanting to get our hands on this data
>
> Regards
>
> **Jacob Gerke**
>
> <image002.png>
>
> **T:** 03 6398 8433
> **M:** [redacted]
> **E:** jacob.gerke@tasirrigation.com.au
> **W:** http://www.tasirrigation.com.au
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From: James Hipwood <james.hipwood@tasirrigation.com.au>
Sent: Wednesday, 30 March 2022 4:43 PM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: RE: [External]RE: Tasmanian Irrigation and Hydro - Northern Midlands Irrigation Scheme Discussions

Sorry Jacob, I haven't seen any documents or docu sign.

I have checked spam and junk.

Thanks,
James

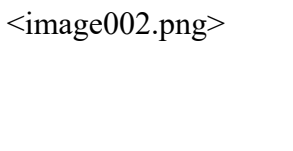
From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Wednesday, 30 March 2022 4:27 PM
To: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>; James Hipwood <james.hipwood@tasirrigation.com.au>
Subject: FW: [External]RE: Tasmanian Irrigation and Hydro - Northern Midlands Irrigation Scheme Discussions

Hi Andrew/James

Are you able to advise if you have received the document from Hydro?

Regards

Jacob Gerke

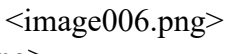


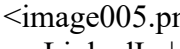
T: 03 6398 8433
M: [redacted]
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W: http://www.tasirrigation.com.au

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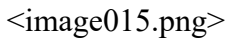
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From: Adam Gall <Adam.Gall@hydro.com.au>
Sent: Wednesday, 30 March 2022 10:48 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: [External]RE: Tasmanian Irrigation and Hydro - Northern Midlands Irrigation Scheme Discussions

Hi Jacob,

I won't be in next week for this meeting next Monday. Happy for you to shift it to the following day if that suits.

I understand that the CA should have been signed and sent by us, but I otherwise haven't heard about the DocuSign status, but once its done, I can get the modelling data across quite promptly.

I'll keep you posted.

Adam Gall
Operational Contracts Advisor

<image016.png>
t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au
w http://hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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-----Original Appointment-----
From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Wednesday, 23 February 2022 10:02 PM
To: Jacob Gerke; Greg Carson; Adam Gall; Prajit Parameswar; David Skipper; Eric Shegog
Cc: Aaron Cassidy
Subject: Tasmanian Irrigation and Hydro - Northern Midlands Irrigation Scheme Discussions
When: Monday, 4 April 2022 1:00 PM-2:00 PM (UTC+10:00) Hobart.
Where: Microsoft Teams Meeting

Reoccurring Meeting to ensure Northern Midlands Irrigation Scheme Water supply agreement is progressed

---

Microsoft Teams meeting

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_____
_____

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CONFIDENTIALITY AGREEMENT

Details

Date 30 March 2022 | 5:45 PM AEDT ___/___/2022

	Hydro Tasmania (Discloser)		Tas Irrigation (Recipient)
Name	Hydro-Electric Corporation (trading as Hydro Tasmania) (ABN 48 072 377 158)	Name	Tasmanian Irrigation Pty Ltd (ACN 133 148 384)
Address	4 Elizabeth Street, Hobart, Tasmania, 7000	Address	2 Terminal Building, Launceston Airport, Western Junction, Tasmania, 7250
Contact	Company Secretary	Contact	Jacob Gerke
Phone	1300 360 441	Phone	03 6398 8433
Email	Corporation.Secretary@hydro.com.au	Email	jacob.gerke@tasirrigation.com.au

Executed by the parties as an agreement

Executed by the **HYDRO-ELECTRIC CORPORATION trading as Hydro Tasmania (ABN 48 072 377 158)** by

.....

Signature

Caroline Wykamp

.....

Full name (print)

Executed by **TASMANIAN IRRIGATION PTY LTD (ACN 133 148 384)** pursuant to the Formal Instrument of Delegation approved 4 April 2020 by:

DocuSigned by:
E482AE1D04534B4...

.....

Delegate's Signature

Andrew Kneebone Chief Executive Offic

.....

Full name and role of Delegate

.....

DocuSigned by:
Full name and role of Delegate
James Hipwood
080CA931AFF54B1...

.....

Company Secretary's Signature

James Hipwood

.....

Company Secretary's Name

DocuSign Envelope ID: E3475CBD-3CC0-4E07-B604-C3893B7A3BF7

PART A - Confidentiality and Privacy

1. Acknowledgment and no obligation

1.1 Acknowledgement

Each party acknowledges that the Confidential Information is secret and confidential to the Discloser.

2. Obligation of Confidence

2.1 Maintain confidentiality

Subject to clause 3 (Permitted Disclosures), clause 4 (Exclusions) and clause 5 (Return or destruction of Confidential Information), the Recipient must:

(a) keep the Confidential Information confidential and not disclose, or permit the disclosure of, Confidential Information to any person other than an employee or officer of the Recipient with a genuine need to know the information for the Purpose, without the prior written approval of the Discloser;

(b) take those steps it uses to secure and protect its own confidential information (and at least reasonable steps) to keep the Confidential Information secure and protected from any use, disclosure or access that is inconsistent with this document; and

(c) not memorise, modify, reverse engineer or make copies, notes or records of the Confidential Information for any purpose other than in connection with the Purpose.

2.2 Use of Confidential Information

The Recipient may use the Discloser's Confidential Information only for the Purpose.

3. Permitted Disclosures

3.1 Affiliate Disclosure

(a) The Recipient may disclose the Confidential Information to its Affiliate without the Discloser's prior written consent but only if the disclosure is made to the Affiliate on a 'need to know basis' for the purpose of assessing a business case of, or potential funding in, the proposed Northern Midlands Irrigation Scheme and before the disclosure the Recipient:

(i) has informed the Affiliate of the confidential nature of the Confidential Information to be disclosed;

(ii) has informed the Affiliate of any assumptions, qualifications, limitations or disclaimers marked or noted on the Confidential Information; and

(iii) has ensured that the Affiliate will observe all the Recipient's obligations under this document as if those obligations were imposed on that Affiliate.

(b) The Recipient is liable for any act or omission of any of its Affiliates which would constitute a breach of this document if it was the conduct of the Recipient.

3.2 Required Disclosures

(a) The Recipient may disclose Confidential Information without the Discloser's prior written consent if the disclosure is required by any applicable law, legally binding order, Government Agency, requirement of a regulator, rules of any stock exchange or as a result of a court order provided:

(i) where it is legally permitted to do so, the Recipient provides the Discloser with reasonable prior written notice of the required disclosure to allow the Discloser to take such steps as the Discloser considers necessary to prevent or minimise the disclosure or maintain the confidentiality of the Confidential Information;

(ii) the Recipient provides the Discloser with that assistance and co-operation which the Discloser considers necessary to prevent or minimise that disclosure of the Confidential Information; and

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(iii) the Recipient limits the disclosure to that Confidential Information that must be disclosed by law, order, Government Agency, requirement or rule.

4. Exclusions

The Recipient's obligations of confidence in this document do not apply to Confidential Information that:

(a) is in the public domain other than as a result of a breach of this document;

(b) is provided to the Recipient (without restriction as to its use or disclosure by the Recipient) by a third party whom the Recipient knows and can demonstrate is legally entitled to possess the Confidential Information and provide it to the Recipient; or

(c) is independently developed by the Recipient or the Recipient's Affiliate.

5. Return or destruction of Confidential Information

5.1 Return or destruction

Where requested by the Discloser, the Recipient agrees to:

(a) immediately cease using the Confidential Information;

(b) promptly return to the Discloser, or at the option of the Discloser, destroy or alter so as not to contain any Confidential Information, all material in the possession of the Recipient or its Affiliates which contain any Confidential Information and provide written confirmation to the Discloser that such destruction or alteration has been completed; and

(c) permanently delete Confidential Information from all electronic media on which it is stored, so that it cannot be restored or in any way reconstructed or reconstituted.

5.2 Return or destruction exception

Despite clause 5.1 (Return or destruction), a Recipient is not required to return, destroy or alter documents or other materials to the extent that:

(a) the Recipient is required by law to keep them;

(b) they are legal advice, internal working papers, legal opinions or materials used for the purpose of providing legal opinions;

(c) they are directors' papers of the Recipient or its Related Entities, or the minutes of the board of the Recipient or its Related Entities or any committee of such board; or

(d) they are included in working papers for the purpose of and in submissions to internal board, board committee or senior executive meeting papers for the purpose of evaluating any proposed transaction and for making decisions in relation to any proposed transaction.

5.3 No release

The Recipient is not released from its obligations under this document as a result of returning, destroying or deleting any documents or other information under clause 5.1 (Return or destruction).

6. No representation or warranty

6.1 No representations or warranties given

Each partyRecipient hereby acknowledges that, except as may be subsequently agreed in writing by the parties, neither the Discloser nor any of its Affiliates:

(a) has made or makes any representation or warranty, express or implied, as to the accuracy, content, legality or completeness of any of the Confidential Information;

(b) is under any obligation:

(i) to notify the Recipient or its Affiliates; or

(ii) to provide any further information to the Recipient or its Affiliates,

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if the Discloser or its Affiliates become aware of any inaccuracy, incompleteness or change in the Confidential Information; or

(c) has made or makes any representation or warranty, express or implied, that the Confidential Information does not infringe the Intellectual Property Rights or any other right of any person.

6.2 Recipient to make its own assessment

The parties agrees and acknowledge that:

(a) the Recipient must make its own assessment of all Confidential Information and satisfy itself as to the accuracy, content, legality and completeness of that information;

(b) any forecasts or estimates in the Confidential Information may not prove to be correct or be achieved; and

(c) the Recipient will rely solely on its own investigations and analysis in evaluating any transaction, project or similar.

7. Ownership unaffected

This document does not transfer to the Recipient any right, title or interest in the Confidential Information or Intellectual Property Rights in the Confidential Information.

PART B - Term

8. Term

This document will remain in force for a period of six (6) years from the date of its execution. Upon expiry of the term of this document the obligations of the parties under this document will cease.

PART C - Breach of Confidentiality

9. Remedies

The Recipient acknowledges that:

(a) damages may not be an adequate remedy for the Discloser for any breach of this document; and

(b) as a remedy for any breach or threatened breach by the Recipient or its Affiliates of this document, the Discloser will be entitled to seek injunctive relief or specific performance, in addition to any other remedies available at law or in equity.

PART D - General

10. Notices

10.1 Form

Any communications (**Notice**) to be given under or in connection with this document must be in writing, signed by the sender and marked for the attention as set out or referred to in the Details or, if the recipient has notified otherwise, then marked for attention in the way last notified.

10.2 Delivery

A Notice must be:

(a) sent by email to the email address set out or referred to in the Details;

(b) left at the address set out or referred to in the Details; or

(c) sent by prepaid post to the address set out or referred to in the Details.

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10.3 When effective

A Notice will be taken to be duly given or made:

(a) if sent by email, they are taken to be received at the time the email message is sent, unless:

(i) the sender receives automated email notification that the email transmission has failed or has been delayed within twelve (12) hours of sending the notice; or

(ii) the sender receives automated email notification to the effect that the recipient is not likely to receive the notice until a later date, which will then become the deemed date of receipt; or

(b) if sent by post, they are taken to be received six (6) days after posting (or ten (10) days after posting if sent to or from a place outside Australia),

but if the result is that a Notice would be taken to be given or made on a day that is not a Business Day in the place to which the Notice is sent or is later than 4pm (local time), it will be taken to have been received at 9am on the next Business Day.

11. Miscellaneous

11.1 Amendments

An amendment or variation to this document is not effective unless it is in writing and signed by the parties.

11.2 Assignment

A party cannot assign or otherwise transfer any of its rights under this document without the prior written consent of each other party.

11.3 Counterparts

This document may be entered into in any number of counterparts, and counterparts may be exchanged by electronic transmission, each of which will be deemed an original, but all of which, taken together, constitute one and the same instrument.

11.4 Entire Agreement

This document constitutes the entire agreement between the parties in relation to its subject matter and supersedes all previous deeds, negotiations and understandings between the parties in relation to its subject matter.

11.5 Severance

If anything in this document is unenforceable, illegal or void then it is severed and the rest of this document remains in force, unless the severance would change the underlying principal commercial purpose or effect of this document.

11.6 Waivers

A right under this document may only be waived in writing, signed by the party granting the waiver.

12. Governing law and jurisdiction

The laws of Tasmania govern this document. The parties submit to the non-exclusive jurisdiction of the courts of Tasmania.

PART E - Defined terms and interpretation

13. Definitions

In this document unless the contrary intention appears:

Affiliate of a party means an auditor or adviser of the party or in the case of Tas Irrigation, any State or Commonwealth Minister, department or authority including the Minister of the Crown for the time being

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administering the Irrigation Company Act 2011, Department of Natural Resources and Environment Tasmania and Nation Water Grid Authority.

Business Day means any week day on which banks are generally open for business in Hobart, Tasmania.

Confidential Information means:

(a) Hydro Tasmania's forecast modelling data showing the estimated hourly flow rates exiting the Poatina Power Station between March 2022 and July 2027 (inclusive); and

(b) any other data related to the information referred to in paragraph (a) above which may be supplied by Hydro Tasmania to Tas Irrigatione Discloser to the Recipient on a confidential basis.

Details means the section of this document headed 'Details'.

Discloser means the Hydro-Electric Corporation (trading as Hydro Tasmania) (ABN 48 072 377 158), as set out in the Details.

Government Agency means any governmental, semi-governmental, administrative, judicial or quasi-judicial body, department, commission, authority, tribunal, agency or entity.

Intellectual Property Rights includes all present and future intellectual and industrial property rights conferred by statute, at civil, common law or in equity including:

(a) copyright;

(b) design, patent, trademark, semiconductor, circuit layout, database rights or plant breeder rights (whether registered, unregistered or applied for);

(c) trade, business, company or domain name; and

(d) know how or inventions, processes (whether in writing or recorded in any form).

Purpose means enabling Tas Irrigation to undertake preliminary designs and assessment of the sizing of the buffer dam associated with the proposed Northern Midlands Irrigation Scheme.

Recipient means the Tasmanian Irrigation Pty Ltd (ACN 133 148 384), as set out in the Details.

14. Interpretation

(a) "Including" and similar expressions are not words of limitation.

(b) A provision of this document must not be construed to the disadvantage of a party merely because that party was responsible for the preparation of this document or the inclusion of the provision in this document.

(c) If an act must be done on a specified day which is not a Business Day, it must be done instead on the next Business Day.

(d) All references to time are to Eastern Standard time.

Lara Henley

From: Chris Masters
Sent: Friday, 6 May 2022 3:11 PM
To: Hugh Abetz
Cc: Andrew Baird; Jacob Gerke
Subject: RE: NMIS HV and Earthing Design Meeting Minutes.
Attachments: Valleyfield Pump Station - Concept Connection Arrangement.pdf; Poatina Pump Station - Concept Connection Arrangement.pdf

Good afternoon Hugh,
Please find attached the proposed TasNetworks connection arrangement for both pump stations to form part of your application request.
Please let us know if you need further assistance with the application requests.

Thanks,
Chris Masters | Electrical Engineer

entura

m +61 400 085 575
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Monday, 2 May 2022 2:54 PM
To: Chris Masters <Chris.Masters@entura.com.au>; Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Andrew Baird <Andrew.Baird@entura.com.au>
Subject: RE: NMIS HV and Earthing Design Meeting Minutes.

Hi Gents,

Notes and actions from our fortnightly meeting. Let me know if you need anything added/changed.

Discussion:

- Awaiting completion of the pricing comparisons for the HV metering and switchgear, received 1.5MVa drawings and offer.
- Earthing, soil resistivity testing for pump station sites

Decision:

- Conduct soil resistivity testing in-situ at Valleyfield, HV earthing to be taken to appropriate depth within native soil below the Pump Station pad fill layer. Pump Station slab reinforcement with grading ring to be used as earth mat and connect with HV earthing. Develop a specification for the soil of the pad fill layer.

Actions:

Entura:

- Materials preference specification for earthing design to be provided to TI
- Check what critical spares may be required for HV Switchgear and Metering and the estimated lead times.

TI:

- Once material specification received will check with local quarries if suitable material available.
- Geotech for soil profiles from Poatina dam investigation to be provided to Entura.
- Drawing Layout of Poatina PS

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: 0447 101 286
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



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From: Hugh Abetz
Sent: Monday, 11 April 2022 2:53 PM
To: Chris Masters <Chris.Masters@entura.com.au>; Andrew Baird <Andrew.Baird@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: NMIS HV and Earthing Design Kick Off Meeting Minutes.

Hi Gents,

Thanks for the meeting earlier today. I have put together some notes and actions from our meeting.

Discussion:

- HV Sites – Poatina and Valleyfield.
- Work completed to date – TN interaction, pump station layouts, review of capital costs of kiosks – ground vs overhead
- Summary of TasNetworks infrastructure and brainstorming options for connection.
- Resistivity Testing planning

Decisions:

- Design based on ground mounted transformers – concept level sketch to be prepared for the TN connection applications to be completed by Entura.

- Valleyfield transformer to be located between road and pump station building – 6m offset from building.
- Specify the metering infrastructure and ensure the enclosure is suitably sized to house it.
- Poatina resistivity testing is on hold until landowner negotiations are resolved. If necessary, information from previous testing at Palmerston switchyard could be used.
- To meet fortnightly for group progress meetings.

Actions:

- TI:
  - To provide the most recent PDF drawings of the Pump Station Layouts.
  - To make TN connection applications for each site (pending receipt of concept sketches from Entura). Emtura to be listed as the designer and to receive TN correspondence.
- Entura:
  - Prepare concept sketches for each site to include in the TN connection application.
  - Develop a solution for soil resistivity measurement for fill and subsequent design basis for earthing at Valleyfield.

Please let me know if I missed anything.

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: 0447 101 286
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



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Lara Henley

From: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Sent: Wednesday, 20 May 2020 9:36 AM
To: Ian Dunbabin
Subject: RE: Meeting follow-up

Follow Up Flag: Follow up
Flag Status: Completed

Hi Ian

Yes, I would still prefer this week, mainly as the current Project Manager for the Northern Midlands scheme departs at the end of this week and would like to have him involved for some continuity. If you can find an hour either tomorrow or Friday it would be appreciated.

Regards

Paul

From: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Sent: Wednesday, 20 May 2020 9:08 AM
To: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Subject: RE: Meeting follow-up

Hello again Paul,

Trust your week is going well.

Did you still want to lock in a meeting this week. Friday has filled up unfortunately so may have to run with next week.

Regards, Ian

From: Ian Dunbabin
Sent: Thursday, 14 May 2020 13:58
To: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Subject: RE: Meeting follow-up

Hi Paul,

Your follow up was timely as I found my response to your earlier note in Drafts! Clearly getting distracted under Skype overload.

Meeting next week ideal. We may struggle to get Gerard but Greg and I are free 1-3.30 pm on Friday if a slot in that period works for your team.

My suggestion (unsent) was to limit the first meeting to your items 1 and 3 and include the consideration of conditional agreements in the development process (ie ahead of your eoi process and conditional on a successful prospectus stage).

Regards, Ian

From: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Sent: Thursday, 14 May 2020 12:43
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Subject: RE: Meeting follow-up

Hi Ian

Is it possible to arrange a meeting on the topics below for late next week?

Regards

Paul

From: Paul Ellery
Sent: Monday, 11 May 2020 1:41 PM
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Subject: Meeting follow-up

Hi Ian

A good start to some meaty topics this morning.

My reading was that the next meeting is to be held within the next two weeks and the agenda is;

1. Northern Midlands Irrigation Scheme
    a. Co-investment
    b. Capital cost estimations
    c. Supply agreement

[redacted]

3. Development of an over-arching water supply agreement with each scheme a schedule to the contract

Does this align with your thoughts?

Regards

Paul Ellery
General Manager Program Development and Delivery

Tasmanian Irrigation

Mob
[redacted]
Email
paul.ellery@tasirrigation.com.au

Web
www.tasirrigation.com.au
PO Box 84 Evandale TAS 7212



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Tasmanian Irrigation is a multi-award winning organisation. Achievements include winning multiple 2014 Engineering Australia, Tasmanian Engineering Excellence and CCF Earth Awards. The company was also a 2014 Infrastructure Partnerships Australia Smart Project Award finalist.

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Lara Henley

From: Chris Masters
Sent: Tuesday, 3 May 2022 10:26 AM
To: 'jacob.gerke@tasirrigation.com.au'
Subject: NMIS HV Design

Good morning Jacob,
I have just remembered something that I forgot to ask yesterday during our catch-up

If possible can you please send your PO through to me, I have not received it through our usual internal channels so there is a chance it may have been misdirected.

Thanks,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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Lara Henley

From: Chris Masters
Sent: Monday, 2 May 2022 2:39 PM
To: 'Hugh Abetz'; 'Jacob Gerke'
Subject: RE: NMIS HV and Earthing Design Kick Off Meeting Minutes.
Attachments: 9223528202-rev0.pdf; 1500 KVA Metering Kiosk- Commercial Offer R0.pdf

Hi Hugh, Jacob,
Please find attached the 1500kVA ground mounted option attached.

Thanks and regards,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Monday, 2 May 2022 1:47 PM
To: Chris Masters <Chris.Masters@entura.com.au>; Andrew Baird <Andrew.Baird@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: RE: NMIS HV and Earthing Design Kick Off Meeting Minutes.

Hi Gents,

I see that I may not have previously provided the latest PDF layouts of the pump stations. Please find them attached.

Kind Regards,
Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy. For more information please refer to our website https://www.tasmanianirrigation.com.au/.

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From: Hugh Abetz
Sent: Monday, 11 April 2022 2:53 PM
To: Chris Masters <Chris.Masters@entura.com.au>; Andrew Baird <Andrew.Baird@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: NMIS HV and Earthing Design Kick Off Meeting Minutes.

Hi Gents,

Thanks for the meeting earlier today. I have put together some notes and actions from our meeting.

Discussion:

- HV Sites – Poatina and Valleyfield.
- Work completed to date – TN interaction, pump station layouts, review of capital costs of kiosks – ground vs overhead
- Summary of TasNetworks infrastructure and brainstorming options for connection.
- Resistivity Testing planning

Decisions:

- Design based on ground mounted transformers – concept level sketch to be prepared for the TN connection applications to be completed by Entura.
- Valleyfield transformer to be located between road and pump station building – 6m offset from building.
- Specify the metering infrastructure and ensure the enclosure is suitably sized to house it.
- Poatina resistivity testing is on hold until landowner negotiations are resolved. If necessary, information from previous testing at Palmerston switchyard could be used.
- To meet fortnightly for group progress meetings.

Actions:

- TI:
    - To provide the most recent PDF drawings of the Pump Station Layouts.
    - To make TN connection applications for each site (pending receipt of concept sketches from Entura). Emtura to be listed as the designer and to receive TN correspondence.
- Entura:
    - Prepare concept sketches for each site to include in the TN connection application.
    - Develop a solution for soil resistivity measurement for fill and subsequent design basis for earthing at Valleyfield.

Please let me know if I missed anything.

Kind Regards,
Hugh Abetz
Project Engineer

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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Single Use Consultancy Contract

entura

Client:	Entura as Consultant	Consultant:
Name: Tasmanian Irrigation Pty Ltd ABN: 95 722 799 075 Address: PO Box 84 Evandale TAS 7212	**Contract Particulars** (to be read in conjunction with the General Conditions of Contract here attached)	Hydro-Electric Corporation T/A Entura ABN 48 072 377 158 4 Elizabeth Street Hobart TAS 7000

Project Number	Contract Description
TBA	Tasmanian Irrigation Northern Midlands Irrigation Scheme HV and Earthing Design

1. The Parties:

Client's representative: Jacob Gerke	Consultant's representative: Phillip Ellerton
Position: [title]	Position: National Business Development Manager - Water
Phone Number (03) 6398 8433 / [redacted]	Phone Number: [redacted]
E-mail address: Jacob.gerke@tasirrigation.com.au	E-mail address: phillip.ellerton@entura.com.au

2. The Services:

The "**Services**" means the whole of the work to be carried out and completed in accordance with the Contract, including variations provided for by the Contract, which is to be completed by the Consultant and includes:

Undertake HV electrical design from the TasNetworks interface boundary at the TI recloser/MCB through to the kiosk substations. Deliverables include layout and details drawings utilising TasNetworks standards and previous TI project drawings. For the interconnection between the metering and kiosk substation Prepare HV cable ratings calculations and basic cable specifications for procurement, based on assumed typical soil thermal resistivity values.
For further details please refer to the attached Tasmanian Irrigation Northern Midlands Irrigation Scheme HV and Earthing Design Proposal dated *28th March 2022*

3. The Contract Sum:

The "**Contract Sum**" is: (click the applicable box/boxes and insert either a lump sum and/or state the applicable schedule of rates and delete as appropriate) *All prices stated exclude GST	X The Lump Sum amount of: [redacted] ☐ The following schedule of rates: [Insert role] hours @ $[insert amount] per hour; [Insert role] hours @ $[insert amount] per hour; Expenses shall be reimbursed by the Client at cost plus 10 percent (%). ☐ The attached schedule of rates
The time for claiming payment is:	[Insert time period, e.g. fortnightly for work performed, or insert milestones] [If nothing stated, on the 20th day of each month or the next business day thereafter.]

4. Time:

The "**Commencement Date**" is:	07/07/2022
The "**End Date**" is:	30/06/2023

5. Governing Law:

The Laws of the State of Tasmania.

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

2. RESPONSIBILITIES AND OBLIGATIONS OF THE CONSULTANT

2.1 The Consultant shall:

(a) comply with all reasonable directions of the Client given pursuant to a provision of the Contract;

(b) employ staff with appropriate qualifications and experience to carry out the Services;

(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

(c) provide the Consultant with such access to premises or sites of the Client as is necessary for the Consultant to carry out the Services; and

(d) bear the cost of all fees and charges required to comply with legislative requirements incurred in connection with carrying out the Services.

4. INSURANCE

4.1 From the Commencement Date, the Consultant must effect and have in place the following insurances:

(a) a professional indemnity insurance policy for the Services with a total aggregate cover of not less than $2,000,000.00 which shall:

(i) include provision for loss of documents; and

(ii) be maintained until the End Date and thereafter for a period of 6 years;

(b) a public liability policy until the End Date for an amount in respect of any one claim or series of claims arising from the one original cause of not less than $5,000,000.00; and

(c) a workers' compensation policy until the End Date for the maximum amount permitted by law, covering the Consultant's liability under common law and statute for death or injury to any person employed by the Consultant.

5. PAYMENT

5.1 The Client shall pay the Consultant the Contract Sum in accordance with this Contract.

5.2 The Consultant shall submit to the Client claims for payment progressively in accordance with the Contract Particulars.

5.3 All monies due and payable by the Client to the Consultant must be paid within 14 days of the receipt by the Client of a properly prepared tax invoice from the Consultant in accordance with clause 6.4.

5.4 If the Client does not pay the amount of the claim the Client shall, either with the payment or not later than the time for payment, provide the Consultant with a written statement of the reason for any difference between the amount claimed and the amount paid or to be paid.

5.5 If any moneys due and payable to either party remain unpaid after the date upon which or the expiration of the period within which they should have been paid, then interest shall be payable thereon at the then current benchmark interest rate applicable to Division 7A of Part III of the *Income Tax Assessment Act 1936* (Cth) from (but excluding) the date upon which or the expiration of the period within which they should have been paid to and including the date upon which the moneys are paid.

6. GST

6.1 Words or expressions used in this clause 6 which are defined in *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) have the same meaning in this clause.

6.2 All amounts stated in and payable under or in connection with this Contract exclude GST unless otherwise indicated.

6.3 If a payment to a party under this Contract is a reimbursement or indemnification, calculated by reference to a loss, cost or expense incurred by that party, then the payment will be reduced by the amount of any input tax credit to which that party is entitled for that loss, cost or expense.

6.4 The recipient will not be liable to pay the Consultantfor a taxable supply made under or in connection with this Contract until the Consultant has given the recipient a tax invoice for the supply to which the payment relates.

6.5 Where an adjustment event occurs in relation to a supply made by the Consultant under or in connection with this Contract, the Consultant will issue an adjustment note to the party providing consideration in respect of that supply within 28 days after becoming aware of the relevant adjustment.

7. VARIATIONS

7.1 The Client may, by written notice to the Consultant, reasonably direct the Consultant to vary the Services and, provided that the variation does not change the general scope of the Services, the Consultant shall be bound to comply with that direction ("**Variation**").

7.2 The parties must use their best endeavours to agree in writing on the value of a Variation, but in the event that the parties are unable to agree within 7 days of the issue of the direction, then the value of the Variation shall be determined using reasonable rates and prices.

7.3 If a new legislative requirement or a change in a legislative requirement after the date of the Contract could not reasonably have been anticipated at the date of the Contract, then the extent to which the Services are changed by that legislative requirement shall be deemed to be a Variation pursuant to clause 7.1.

7.4 Where, due to circumstances beyond the reasonable control or anticipation of the Consultant, the Consultant is required to alter, add to or delete documents or other things previously submitted and which otherwise would have complied with the Contract, the Consultant shall inform the Client and seek directions and any subsequent alteration, addition or deletion shall be deemed to be a Variation pursuant to clause 7.1.

(b) it does and will continue to comply with all laws relating to Modern Slavery;
(c) it does and will continue to take reasonable steps to ensure that there is no Modern Slavery in its supply chains or in its sub-contractor's supply chains;
(d) neither they or any any of their Personnel:
(i) has been convicted of any offence involving Modern Slavery; and
(ii) having made reasonable enquiries, to the best of its knowledge, has been or is the subject of any investigation, inquiry or enforcement proceedings by any Government Agency regarding any offence or alleged offence of or in connection with Modern Slavery.

17.2 Compliance

Both Parties must:
(a) implement and maintain throughout the Term appropriate due diligence procedures for its own suppliers and sub-contractors to ensure that there is no Modern Slavery in its supply chains; and
(b) do all things necessary to immediately rectify or avoid any Modern Slavery risk in its supply chains.

17.3 Notification

The Consultant and Client must promptly notify the other party as soon as it becomes aware of any actual or suspected Modern Slavery in a supply chain which has a connection with this agreement.

17.4 Records

Both Parties must:
(a) maintain a complete set of records to trace the supply chain of all goods and services provided to it and in connection with this agreement; and
(b) provide all information reasonably required by the other party to comply with any law or legal requirement to provide a compliance statement in relation to Modern Slavery.

18. FORCE MAJEURE

18.1 Consequences of Force Majeure

The relevant party is not liable for any delay or failure to provide the services caused by a Force Majeure Event.

18.2 Notification of Force Majeure

The relevant party must notify the other party in writing as soon as practical of any anticipated or actual (if not already notified as anticipated) delay or failure caused by a Force Majeure Event.

18.3 Remedy Force Majeure

(a) The relevant party must remedy the Force Majeure Event to the extent reasonably practicable and resume performance of its obligations as soon as practicable.
(b) The relevant party is not required under this clause to settle any labour dispute against its will or to test the validity or refrain from testing the validity of Federal, State, Territory or local law, order, rule or regulation.

18.4 Suspension of obligations

The provision of the services by the relevant party is suspended for the period of delay caused by the Force Majeure Event.

18.5 Termination right

If:
(a) performance of the services is prevented by a Force Majeure Event for more than one month; or
(b) a delay caused by the Force Majeure Event exceeds three months,
the relevant party may terminate this Contract at the expiration of not less than 30 days written notice to the other party.

19. GOVERNING LAW

19.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

20. DEFINITIONS

20.1 In this Contract, the following capitalised terms have the meanings given in this clause 20.1:

"Force Majeure Event" means an event or cause listed below to the extent that the event or cause is beyond the reasonable control of the relevant party:
(a) act of God, lightning, storm, flood, fire, earthquake or explosion, cyclone, tidal wave, landslide or adverse weather conditions;
(b) strike, lockout, or other labour difficulty but not a strike or lockout at the premises of the party claiming force majeure; or
(c) act of public enemy, war (declared or undeclared), terrorism, sabotage, blockage, revolution, riot, insurrection civil commotion, epidemic or pandemic;
(d) the enactment or amendment of any laws, rules, regulations, orders or decrees of the Australian Federal Government, State or Territory Government, any local government or of any statutory authority, not resulting from the wrongful act or omission of the relevant party; or
(e) travel or other restrictions imposed by the Australian Federal Government, State or Territory Government, any local government or of any statutory authority as a result of outbreak of disease or declaration of an epidemic or pandemic.

"Government Agency" means any government or any public, statutory, governmental (including a local government), semi-governmental, local governmental or judicial body, entity, department or authority and includes any self-regulatory organisation established under statute.

"Intellectual Property Right" means any patent, registered design, trademark or name, copyright or other protected right.

"Modern Slavery" means slavery, forced labour, bonded labour, human trafficking, child labour, debt bondage and any other slavery like practices prohibited under any Modern Slavery Laws.

"Modern Slavery Laws" means the Modern Slavery Act 2018 (Cth), Divisions 270 and 271 of the Criminal Code Act 1995 (Cth), and any other laws or regulations prohibiting or regulating Modern Slavery in force in Australia.

"Personnel" means the officers, employees, secondees, agents, consultants, contractors and subcontractors of the Consultant or Client as the situation requires.

Entura in Australia is certified to the latest version of ISO9001, ISO14001, and OHSAS18001.

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A Single Consultancy Contract – General Conditions of Contract

3. Our approach

Entura will provide design and test services to ensure the delivered package of works meshes with TI requirements. The following services are offered:

3.1 Primary electrical design

3.1.1 Connection arrangement selection and procurement support

- Assist TI to decide on pole or ground mounted interconnection and HV metering arrangements
- Liaise with TN standard suppliers for confirmation of arrangements and quotations of major equipment

3.1.2 Design

- Entura will undertake the HV electrical design from the TasNetworks interface boundary at the TI recloser/MCB through to the kiosk substations
- Prepare layout and details drawings utilising TN standards and previous TI project drawings
- For the interconnection between the metering and kiosk substation Prepare HV cable ratings calculations and basic cable specifications for procurement, based on assumed typical soil thermal resistivity values.

3.1.3 Deliverables

Entura will undertake/deliver the following specific items as part of this offer:

- HV electrical drawings including underground cabling plans, HV and LV single line diagrams (within substations), details of precast plinths, conduit locations and equipment selection
- HV electrical design report outlining the design basis and proposed equipment

3.2 High Voltage Earth system design

3.2.1 Soil resistivity measurements

Entura will conduct soil resistivity measurements at each site, to ascertain the soil electrical characteristics at each location as an input into the design. These soil measurements will be undertaken using the Wenner 4 probe method (up to a probe spacing of 132m) in line with industry accepted standards.

3.2.2 Design

To ensure the earthing design complies with the appropriate standards and is fit for purpose, Entura will design each earthing system to a target impedance, based on protection system modelling. This target impedance will be selected to ensure the protection systems will operate under a minimum fault scenario with an accepted level of tolerance. After this initial design constraint is met, consideration will be given to minimise or eliminate potential step-touch voltages that may occur

- TI will provide existing site survey, and design drawings for proposed site layout (including pump station details), operational clearance zones, and preferred electrical infrastructure locations (in CAD format).
- TI will provide TN's augmentation/connection design prior Entura's layout of the design
- TI will provide TasNetworks design contacts for coordination of protection settings between the TasNetworks recloser and any downstream limitations
- TI will provide minimum and maximum HV fault levels for the Poatina Pump Station and the Valleyfield Pump Station.
- TI to co-ordinate access with landowners for the purpose of site testing.

3.6 Additional services

A provisional price for the items below can be provided on request

- Earth system pre-commissioning
- HV pre-commissioning
- Protection relay pre-commissioning
- HV certification
- As-installed drafting and engineering signoff

4. Our people

Our staff are suitably trained and have the appropriate experience in carrying out the works.

- Adam Youd – Drafting
- Andrew Baird – Engineer (Design)
- Chris Masters – Senior Engineer (Design)
- Dan De Groot – Senior Engineer (Design)
- Matthew Simmons – Specialist Engineer (Design)

7. Fees, terms and management systems

7.1 Proposed fees

The combined fee to complete both sites is given below:

Cost (ex GST)	Condition
[redacted]	Fixed Fee

7.2 Contract terms and conditions

This proposal is subject to administration under the Entura Single Service Consultancy Arrangements. It is provided in Appendix A.

7.3 Insurances

Entura is covered by the Hydro-Electric Corporation's general liability insurance with QBE 386 (Lead). The insurance is placed through our broker AON and a copy of their 'Certificate of Currency' is available on request. The policy is current to 30 September 2022 and is for:

- public liability (policy # CSINT2001856)
- professional indemnity (policy # CSINT2001856).

Workers compensation policies are also in place in Tasmania, Victoria, New South Wales, South Australia, and Queensland and are current until 30 June 2022.

7.4 Management systems

To us, quality means meeting or exceeding your requirements on all projects.

We're continually improving and refining our systems and processes in all areas of our business for the benefit of our people, the environment and our clients.

Our quality management system meets the requirements of ISO 9001:2015, which is continually maintained and improved. Standard operating procedures are supplemented if necessary to meet the requirements of a particular project.

We consider quality to be everyone's personal responsibility. All our employees are responsible for performing their work in accordance with our management system, and for taking the initiative to ensure that we consistently provide reliable services.

Our processes are reviewed and certified by independent experts to ensure we maintain our high standards. Certifications we currently hold include:

8. About Entura

Entura is one of the world's most experienced specialist power and water consulting firms.

We own. We operate. We consult. And that's what makes us different.

From strategy, planning, design and construction through to operation, maintenance, risk management and training, we create safe and sustainable power and water solutions that make a positive and enduring contribution to our clients and communities.

Due to our unique asset-owner heritage, our technical expertise is grounded in more than 100 years of experience contributing to the development, operation and maintenance of renewable energy and water infrastructure.

We have first-hand insights and a deep understanding of the real-life pressures that asset owners face. That's why our clients trust us to deliver practical and commercially sound solutions across the whole lifecycle of their assets, helping them to manage risks and achieve valuable outcomes.

And we do so with one purpose: to create a sustainable future through better power and water solutions.

A Single Consultancy Contract – General Conditions of Contract

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

1. THE SERVICES

1.1 The Consultant shall perform the Services in accordance with the Contract.

1.2 The Consultant represents and warrants that:

(a) it has informed itself as to the general nature of the Services and the requirements of the Contract;

(b) it has examined the contents of the Contract and any other information provided by the Client (or anybody acting on behalf of the Client) to the Consultant prior to the execution of the Contract; and

(c) it shall perform the Services in a proper and workmanlike manner to the standard prescribed in the Contract and, to the extent that it is not so prescribed, to a standard consistent with good practice for carrying out services of a nature similar to the Services.

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(c) as soon as practicable after becoming aware of any matter or circumstance which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Client detailing the matter or circumstance and its anticipated effect on the Services;

(d) comply with all legislative requirements of which it has been notified by the Client in carrying out the Services;

(e) when on the Client's premises, and when using the Client's facilities, comply with all directions, procedures and policies relating to occupational health, safety and security requirements relating to the Client's premises and facilities of which it has been notified by the Client;

(f) take reasonable care of the Client's property provided to the Consultant in connection with carrying out the Services; and

(g) commence the performance of the Services on the Commencement Date and provide the Services on the terms of this Contract until the End Date.

3. RESPONSIBILITIES AND OBLIGATIONS OF THE CLIENT

3.1 The Client shall:

(a) when and as required under the Contract, provide the Consultant with relevant documents, samples, patterns, moulds and other information in the possession or control of the Client sufficient to enable the Consultant to carry out the Services;

(b) give or cause to be given to the Consultant in writing timely directions, instructions, decisions and information sufficient to define the Services required and facilitate the provision of the Services by the Consultant;

(c) provide the Consultant with such access to premises or sites of the Client as is necessary for the Consultant to carry out the Services; and

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4. INSURANCE

4.1 From the Commencement Date, the Consultant must effect and have in place the following insurances:

(a) a professional indemnity insurance policy for the Services with a total aggregate cover of not less than $2,000,000.00 which shall:

(i) include provision for loss of documents; and

(ii) be maintained until the End Date and thereafter for a period of 6 years;

(b) a public liability policy until the End Date for an amount in respect of any one claim or series of claims arising from the one original cause of not less than $5,000,000.00; and

(c) a workers' compensation policy until the End Date for the maximum amount permitted by law, covering the Consultant's liability under common law and statute for death or injury to any person employed by the Consultant.

5. PAYMENT

5.1 The Client shall pay the Consultant the Contract Sum in accordance with this Contract.

5.2 The Consultant shall submit to the Client claims for payment progressively in accordance with the Contract Particulars.

5.3 All monies due and payable by the Client to the Consultant must be paid within 14 days of the receipt by the Client of a properly prepared tax invoice from the Consultant in accordance with clause 6.4.

5.4 If the Client does not pay the amount of the claim the Client shall, either with the payment or not later than the time for payment, provide the Consultant with a written statement of the reason for any difference between the amount claimed and the amount paid or to be paid.

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6. GST

6.1 Words or expressions used in this clause 6 which are defined in *A New Tax System (Goods and Services Tax) Act* 1999 (Cth) have the same meaning in this clause.

6.2 All amounts stated in and payable under or in connection with this Contract exclude GST unless otherwise indicated.

6.3 If a payment to a party under this Contract is a reimbursement or indemnification, calculated by reference to a loss, cost or expense incurred by that party, then the payment will be reduced by the amount of any input tax credit to which that party is entitled for that loss, cost or expense.

6.4 The recipient will not be liable to pay the supplier for a taxable supply made under or in connection with this Contract until the supplier has given the recipient a tax invoice for the supply to which the payment relates.

6.5 Where an adjustment event occurs in relation to a supply made by the supplier under or in connection with this Contract, the supplier will issue an adjustment note to the party providing consideration in respect of that supply within 28 days after becoming aware of the relevant adjustment.

7. VARIATIONS

7.1 The Client may, by written notice to the Consultant, reasonably direct the Consultant to vary the Services and, provided that the variation does not change the general scope of the Services, the Consultant shall be bound to comply with that direction ("Variation").

7.2 The parties must use their best endeavours to agree in writing on the value of a Variation, but in the event that the parties are unable to agree within 7 days of the issue of the direction, then the value of the Variation shall be determined using reasonable rates and prices.

7.3 If a new legislative requirement or a change in a legislative requirement after the date of the Contract could not reasonably have been anticipated at the date of the Contract, then the extent to which the Services are changed by that legislative requirement shall be deemed to be a Variation pursuant to clause 7.1.

7.4 Where, due to circumstances beyond the reasonable control or anticipation of the Consultant, the Consultant is required to alter, add to or delete documents or other things previously submitted and which otherwise would have complied with the Contract, the Consultant shall inform the Client and seek directions and any subsequent alteration, addition or deletion shall be deemed to be a Variation pursuant to clause 7.1.

SINGLE USE CONSULTANCY CONTRACT- GENERAL CONDITIONS OF CONTRACT

(b) it does and will continue to comply with all laws relating to Modern Slavery;
(c) it does and will continue to take reasonable steps to ensure that there is no Modern Slavery in its supply chains or in its sub-contractor's supply chains;
(d) neither they or any any of their Personnel:
(i) has been convicted of any offence involving Modern Slavery; and
(ii) having made reasonable enquiries, to the best of its knowledge, has been or is the subject of any investigation, inquiry or enforcement proceedings by any Government Agency regarding any offence or alleged offence of or in connection with Modern Slavery.

17.2 Compliance

Both Parties must:
(a) implement and maintain throughout the Term appropriate due diligence procedures for its own suppliers and sub-contractors to ensure that there is no Modern Slavery in its supply chains; and
(b) do all things necessary to immediately rectify or avoid any Modern Slavery risk in its supply chains.

17.3 Notification

The Consultant and Client must promptly notify the other party as soon as it becomes aware of any actual or suspected Modern Slavery in a supply chain which has a connection with this agreement.

17.4 Records

Both Parties must:
(a) maintain a complete set of records to trace the supply chain of all goods and services provided to it and in connection with this agreement; and
(b) provide all information reasonably required by the other party to comply with any law or legal requirement to provide a compliance statement in relation to Modern Slavery.

18. FORCE MAJEURE

18.1 Consequences of Force Majeure

The relevant party is not liable for any delay or failure to provide the services caused by a Force Majeure Event.

18.2 Notification of Force Majeure

The relevant party must notify the other party in writing as soon as practical of any anticipated or actual (if not already notified as anticipated) delay or failure caused by a Force Majeure Event.

18.3 Remedy Force Majeure

(a) The relevant party must remedy the Force Majeure Event to the extent reasonably practicable and resume performance of its obligations as soon as practicable.
(b) The relevant party is not required under this clause to settle any labour dispute against its will or to test the validity or refrain from testing the validity of Federal, State, Territory or local law, order, rule or regulation.

18.4 Suspension of obligations

The provision of the services by the relevant party is suspended for the period of delay caused by the Force Majeure Event.

18.5 Termination right

If:
(a) performance of the services is prevented by a Force Majeure Event for more than one month; or
(b) a delay caused by the Force Majeure Event exceeds three months,
the relevant party may terminate this Contract at the expiration of not less than 30 days written notice to the other party.

19. GOVERNING LAW

19.1 This Contract is governed by and construed with reference to the laws stated in the Contract Particulars.

20. DEFINITIONS

20.1 In this Contract, the following capitalised terms have the meanings given in this clause 20.1:

"Force Majeure Event" means an event or cause listed below to the extent that the event or cause is beyond the reasonable control of the relevant party:
(a) act of God, lightning, storm, flood, fire, earthquake or explosion, cyclone, tidal wave, landslide or adverse weather conditions;
(b) strike, lockout, or other labour difficulty but not a strike or lockout at the premises of the party claiming force majeure; or
(c) act of public enemy, war (declared or undeclared), terrorism, sabotage, blockage, revolution, riot, insurrection civil commotion, epidemic or pandemic;
(d) the enactment or amendment of any laws, rules, regulations, orders or decrees of the Australian Federal Government, State or Territory Government, any local government or of any statutory authority, not resulting from the wrongful act or omission of the relevant party; or
(e) travel or other restrictions imposed by the Australian Federal Government, State or Territory Government, any local government or of any statutory authority as a result of outbreak of disease or declaration of an epidemic or pandemic

"Government Agency" means any government or any public, statutory, governmental (including a local government), semi-governmental, local governmental or judicial body, entity, department or authority and includes any self-regulatory organisation established under statute.

"Intellectual Property Right" means any patent, registered design, trademark or name, copyright or other protected right.

"Modern Slavery" means slavery, forced labour, bonded labour, human trafficking, child labour, debt bondage and any other slavery like practices prohibited under any Modern Slavery Laws.

"Modern Slavery Laws" means the Modern Slavery Act 2018 (Cth), Divisions 270 and 271 of the Criminal Code Act 1995 (Cth), and any other laws or regulations prohibiting or regulating Modern Slavery in force in Australia.

"Personnel" means the officers, employees, secondees, agents, consultants, contractors and subcontractors of the Consultant or Client as the situation requires.

[redacted]

[redacted]

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From: [redacted]
Sent: [redacted]
To: [redacted]
Subject: [redacted]

[redacted]

[redacted]

[redacted]

Hydro Tasmania

[redacted]

As we all adapt to new ways of working, I may be emailing you outside of standard business hours. I do not expect an immediate response and understand you will reply when it is convenient for you.

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From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Thursday, 28 April 2022 8:09 AM
To: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Cc: Eric Shegog <Eric.Shegog@tasirrigation.com.au>; James Hipwood <james.hipwood@tasirrigation.com.au>; Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: Northern Midlands Water Supply Agreement

Good Morning Ian.

I hope you are well and you had an enjoyable time in Victoria

Please advise where you are at in regard to advancing the Northern Midlands Water supply agreement?

Our position remains unchanged in that we are not in a position to agree to the broad principles as outline in your recent letter, particularly as they relate to our existing schemes. We are committed to keep working towards designing our schemes to minimise any requirement for forced runnin.g

We have completed our analysis and believe that the buffer storage we are constructing as part of the Northern Midlands scheme will mitigate the requirement for forced running and mean that there will be very few time when this would be required to ensure the reliability of our supply.

We need some form of water supply agreement no matter how qualified to keep our project moving forward.

I have a Board meeting next Wednesday and I will need to provide an update. Please advise
Best Regards
Andrew

Andrew Kneebone
CEO Tasmanian Irrigation
LinkedIn | Twitter | Facebook

Tasmanian Irrigation

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Lara Henley

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Monday, 14 November 2022 9:39 AM
To: Chris Masters
Subject: Update for NMIS HV

Hi Chris,

How was your break? Just checking in with you on how things are looking for completion of the NMIS HV design?

We are hoping to get the final design information from TN for Valleyfield PS this week. We should get some information for Poatina as well but that will still need to be updated once we get access on to the property – which is still pending.

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



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Lara Henley

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Thursday, 1 September 2022 3:24 PM
To: Chris Masters
Cc: Jacob Gerke
Subject: Poatina Pump Station site Soil Resistivity Testing

Hi Chris,

This is still subject to the notification with the landowner, so this needs to remain confidential but we are planning to undertake our access to the Poatina Pump Station site in the week starting the 19th September. Can you please ready your team for the Soil Resistivity Testing and advise if there will be challenges with completing the work then?

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
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PO Box 84 Evandale TAS 7212



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Lara Henley

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Monday, 29 August 2022 1:14 PM
To: Chris Masters
Cc: Jacob Gerke
Subject: Valleyfield Electrical Drawing
Attachments: NMIS-350-DWG-4410 RB.pdf

As discussed.

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 24 June 2019 2:26 PM
To: Gregory Carson
Cc: Bill Cohen
Subject: Request to access Hydro Tasmania - Lake River stream gauge data

Dear Greg,
Further to our meetings, Tasmanian Irrigation has engaged Entura to undertake preliminary hydrological assessment of the Lake River. Accordingly, we seek approval for Bill Cohen (Entura) to have access to data from Hydro Tasmania stream gauges located on the Lake River to inform modelling and stream characteristics.
It is likely that the best approach for this will be for Bill to deal directly with Hydro staff to ensure that the correct information and background is sought.

If you can please confirm this is acceptable and an appropriate contact person for Bill to deal with?

Many thanks

Ian Smith
Project Manager

Tasmanian Irrigation

Tasmanian Irrigation is a multi-award winning organisation. Achievements include winning multiple 2014 Engineering Australia, Tasmanian Engineering Excellence Awards and CCI Earth Awards. The company was also a 2014 Infrastructure Partnerships Australia Smart Project Award finalist.

Lara Henley

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Monday, 1 August 2022 1:47 PM
To: Chris Masters
Cc: Jacob Gerke
Subject: TI Standard Drafting
Attachments: Tas Irrigation Template.dwg; TIDB_PDF.ctb; GEN-0001.dwg

Hi Chris,

Please find the drawing titleblock, the standard drafting drawings and our pen plot style.

The drawing numbers for each site will be in the following series.

Poatina
NMIS-200-DWG-4150 to 4199

Valleyfield
NMIS-350-DWG-4450 to 4499

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
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Lara Henley

From: Ian Dunbabin
Sent: Thursday, 8 July 2021 4:29 PM
To: Jacob Gerke
Subject: RE: Tasmanian Irrigation - Northern Midlands Irrigation Scheme - Formal Request for Water

Hi Jacob,

Sorry I couldn't take your recent call. We have to do some more detailed modelling associated with the increase to 25.5 GL to provide assurance to our Board prior to approval.

The position is still that Hydro will be able to make the allocation; however, as foreshadowed in our latest HT/TI catch-up (which you may not have been at), it is anticipated there may be some years where the seasonal inflow to *yingina* / Great Lake will require reduced operation of Poatina in the period prior to the irrigation season to ensure irrigation demand can be met without the lake entering into the established environmental risk zones.

At this point, I expect we will make a recommendation to the Board at the August meeting.

I'm about to drop Di Shearer a note for another HT/TI catch up and we can discuss this some more then.

Regards, Ian

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Thursday, 20 May 2021 15:51
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Cc: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>; Stacey Woods <stacey.woods@tasirrigation.com.au>
Subject: Tasmanian Irrigation - Northern Midlands Irrigation Scheme - Formal Request for Water

Ian

As per the ongoing discussions regarding access to water for the Northern Midlands Irrigation, Tasmanian Irrigation would like to formally request access to the water from the Poatina Tailrace.

The specific details of the request are as follows:

Details:

Take period/ Season:	1 October – 31 March each year
Summer Season Volume:	25,500ML
Max Daily Flow Rate:	170ML/day
Offtake Location:	497766, 5374568 Upstream of Drop Structure 1 on Poatina Tailrace (exact location to be confirmed during detailed design)
Offtake Method:	Tasmanian Irrigation propose to build a dam directly to the south of drop structure No 1. beside the Tailrace. (see attachment) The Proposed dam is approximately 580ML and will be filled via an inlet channel from the tailrace. The dam is conceptually being designed to be filled at a rapid rate (<12hrs). A pump station will then pump the water from the dam into the pipeline network at the max rate of 170ML/day.

Out of Season Water:	TI would like to have access to water outside this period if Poatina is operating up to our daily flow rate - 170ML/day. This water would be additional to the 25,500ML volume stated above.
Expected First Season:	Commence October 2024

Happy to discuss as required or provide any additional information that will assist you.

Thanks

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Monday, 1 August 2022 1:17 PM
To: Hugh Abetz; Chris Masters
Subject: RE: NMIS HV and Earthing Design
Attachments: 12556374-C001-Layout1.pdf

Pump Station GA

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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-----Original Appointment-----
From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Tuesday, 19 July 2022 9:22 PM
To: Hugh Abetz; Chris Masters; Andrew Baird; Jacob Gerke
Subject: NMIS HV and Earthing Design
When: Monday, 1 August 2022 1:00 PM-1:30 PM (UTC+10:00) Hobart.
Where: Microsoft Teams Meeting

Microsoft Teams meeting

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Click here to join the meeting

Or join by entering a meeting ID
Meeting ID: 483 340 929 228
Passcode: iiWUwQ

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Lara Henley

From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Friday, 26 August 2022 12:31 PM
To: Matthew McMullen
Cc: Jacob Gerke; NMIS
Subject: TI Survey of Poatina Tail
Attachments: Threaded Benchmark Installation-LAYOUT-001.pdf

G'Day Matthew,

As discussed on the phone, TI would like to do a survey of the Poatina tailrace from approx. 100m upstream of drop structure 1 through to the upstream side of drop structure 5. The survey is to inform elements of the design around the proposed buffer dam for the Northern Midlands Irrigation scheme. We are hoping we can do this in the upcoming Poatina shutdown.

Can you please advise what processes we need to follow and training/inductions we would need to do the surveying?
We will be using Pinion Advisory (formerly Macquarie Franklin) for the work with Brock Nadler leading. Brock oversaw the installation of an irrigation offtake from the tail race in the same area a couple years ago so may have done some of the required training.

If possible, when doing the surveying we would like to install a survey benchmark close to the boundary fence about 100m upstream of drop structure 1. The benchmark would be like the attached drawing.

If you need any further information please give me a call.

Regards

Aaron Cassidy

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: aaron.cassidy@tasirrigation.com.au
W: www.tasirrigation.com.au

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Lara Henley

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Thursday, 21 July 2022 12:20 PM
To: Chris Masters
Subject: RE: NMIS HV and Earthing Design

Hi Chris,

I have created a new invite for progress meetings for NMIS HV and Earthing Design works by Entura. Starting 1st August when Jake is back in the office.

However, I am keen to hear from you when you think the Soil Resistivity testing can be carried out for Valleyfield? And that everything else is on track and if you need anything from TI?

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Thursday, 6 June 2019 4:42 PM
To: Gregory Carson
Subject: Lake River eflow report

Hi Greg,
Further to our meeting today, if possible, can you please investigate if it is possible to share the Lake River eflow report prepared for Hydro we discussed.
Many thanks

Ian Smith



Lara Henley

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Monday, 11 July 2022 3:05 PM
To: Chris Masters
Subject: NMIS HV Options

Hi Chris,

We have discussed the NMIS HV options internally last week. We were not able to talk to our lead electrician as he was on leave but as far as we are aware there should be no issue with the hybrid option as we have similar arrangements for most schemes with HV infrastructure. Possibly only Meander Mini Hydro is the only location where it is all in a kiosk.

On this basis we are happy for Entura to proceed with the design of the hybrid option and should anything change due to advice from our lead electrician when he is back later this week we will let you know.

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



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Lara Henley

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Tuesday, 3 May 2022 9:46 AM
To: Chris Masters
Cc: Andrew Baird
Subject: FW: [External]FW: Poatina Pump Station - Site Plan
Attachments: NMIS-200-DWG-3000-RA_(DRAFT).pdf

Hi Chris,

As requested, please see attached the Poatina PS site layout.

Kind Regards,
Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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From: Brad Davie <Brad.Davie@ghd.com>
Sent: Monday, 2 May 2022 5:09 PM
To: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Subject: RE: [External]FW: Poatina Pump Station - Site Plan

Hi Hugh,

Please see attached.

Regards
Brad

Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Tuesday, 9 July 2019 11:36 AM
To: Gregory Carson
Subject: Poatina water supply option

Greg,

I think I have a scenario as a combination of Poatina / Midlands Water that could work. You mentioned that currently, participating in NMIS is unlikely to meet your investment criteria.
What are the elements that impact hydro participation, and what would need to be achieved to make it work? Ie is it fixed costs / variable costs etc. It would be good to understand as I think there are wider capital benefits for the scheme to be able to have hydro participation.

Regards

Ian



Lara Henley

From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Monday, 2 May 2022 1:47 PM
To: Chris Masters; Andrew Baird
Cc: Jacob Gerke
Subject: RE: NMIS HV and Earthing Design Kick Off Meeting Minutes.
Attachments: NMIS-300-DWG-3200-RC(1).pdf; NMIS-350-DWG-3300-RC (1).pdf

Hi Gents,

I see that I may not have previously provided the latest PDF layouts of the pump stations. Please find them attached.

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
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From: Hugh Abetz
Sent: Monday, 11 April 2022 2:53 PM
To: Chris Masters <Chris.Masters@entura.com.au>; Andrew Baird <Andrew.Baird@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: NMIS HV and Earthing Design Kick Off Meeting Minutes.

Hi Gents,

Thanks for the meeting earlier today. I have put together some notes and actions from our meeting.

Discussion:

- HV Sites – Poatina and Valleyfield.

- Work completed to date – TN interaction, pump station layouts, review of capital costs of kiosks – ground vs overhead
- Summary of TasNetworks infrastructure and brainstorming options for connection.
- Resistivity Testing planning

Decisions:

- Design based on ground mounted transformers – concept level sketch to be prepared for the TN connection applications to be completed by Entura.
- Valleyfield transformer to be located between road and pump station building – 6m offset from building.
- Specify the metering infrastructure and ensure the enclosure is suitably sized to house it.
- Poatina resistivity testing is on hold until landowner negotiations are resolved. If necessary, information from previous testing at Palmerston switchyard could be used.
- To meet fortnightly for group progress meetings.

Actions:

- TI:
  - To provide the most recent PDF drawings of the Pump Station Layouts.
  - To make TN connection applications for each site (pending receipt of concept sketches from Entura). Emtura to be listed as the designer and to receive TN correspondence.
- Entura:
  - Prepare concept sketches for each site to include in the TN connection application.
  - Develop a solution for soil resistivity measurement for fill and subsequent design basis for earthing at Valleyfield.

Please let me know if I missed anything.

Kind Regards,

Hugh Abetz
Project Engineer

Tasmanian Irrigation

M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212



COVID-19 –During the Covid-19 pandemic Tasmanian Irrigation has established a working from home environment to ensure our essential services work continues, as deemed by the Tasmanian Government. All field work is adhering to strict hygiene rules in accordance with Government policy. For more information please refer to our website https://www.tasmanianirrigation.com.au/.

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Lara Henley

From: Emily Tys <emily.tys@tasirrigation.com.au>
Sent: Thursday, 8 January 2015 9:33 AM
To: Chris Masters
Subject: DBYD - SEQ 43247988 - Tasmanian Irrigation Pty Ltd
Attachments: DBYD JOB_8690734 SEQ_43247988 - 31668 Tasman Highway Derby TAS 7264.pdf; WISA-M1390-000 31668 Tasman Highway Derby.pdf

Hello Chris ,

Please find attached a map confirming the presence of TI pipeline assets within your area of interest as submitted through Dial Before You Dig - (DBYD JOB: 8690734 SEQ: 43247988 – USER REF: E304313)

Please contact the Scheme Operator, [redacted] mobile [redacted] or email [redacted] for further information relating to the pipeline.

Regards,

Emily Tys
GIS Coordinator

Tasmanian Irrigation

p 63988431
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PO Box 84 Evandale TAS 7212

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 23 September 2019 12:32 PM
To: Gregory Carson
Cc: Brendan Groves
Subject: RE: Access to the Poatina Tail Race @ Cressy offtake (Structure 1)

Thanks Greg,
I will call Brendan
Ian

Tasmanian Irrigation

p 04[redacted]
e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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From: Greg Carson <Greg.Carson@hydro.com.au>
Sent: Monday, 23 September 2019 12:31 PM
To: Ian Smith <Ian.Smith@tasirrigation.com.au>
Cc: Brendan Groves <Brendan.Groves@hydro.com.au>
Subject: RE: Access to the Poatina Tail Race @ Cressy offtake (Structure 1)

Site access needs to be arranged with the local Poatina team.

Please contact Brendan Groves (ph [redacted]) to discuss. As you are simply clibing over/through the fence with Bill, and won't being going near the water or need special flows it should be fine but please confirm with Brendan.

Please wear high vis.

Thank you

Greg

Greg Carson
Hydro Tasmania
mob: [redacted]

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 23 September 2019 10:14 AM
To: Greg Carson <Greg.Carson@hydro.com.au>
Subject: Access to the Poatina Tail Race @ Cressy offtake (Structure 1)
Importance: High

Hi Greg,

I am meeting with Bill Scott-Young tomorrow in relation to potential pump station site at drop 1. Is it OK if we also access Hydro land please (from Scott-Young's) for a preliminary look at conditions on-ground?

Thanks Ian

Tasmanian Irrigation

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e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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Lara Henley

From: Chris Masters
Sent: Monday, 3 April 2023 4:19 PM
To: Aaron Cassidy
Subject: Poatina HV Connection - Tender design package
Attachments: Poatina HV Connection - Tender Design.pdf; ENTURA-21ED90 TI Poatina Connection Scope of Work.docx

Good afternoon Aaron,
Please find the Poatina HV connection tender design package and SOW.

Please give me a buzz if you have any queries.

Thanks and regards,

Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
Connect with us on Facebook, Twitter and LinkedIn

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TI Northern Midlands Irrigation Scheme - HV and Earthing Design

Poatina connection scope of work

ENTURA-21ED90
3 April 2023

Prepared by Hydro-Electric Corporation ABN48 072 377 158

Choose an item.

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Document information

Title	TI Northern Midlands Irrigation Scheme - HV and Earthing Design
	Poatina connection scope of work
Client organisation	Tasmanian Irrigation Pty Ltd.
Client contact	Aaron Cassidy
Document number	ENTURA-21ED90
Project manager	Chris Masters
Project reference	E310000 - P518713

Revision history

Revision 0

Revision description	Original issue		
Prepared by	Andrew Baird	Signed on original	03/04/23
Reviewed by	Chris Masters	Signed on original	03/04/23
Approved by	Chris Masters	Signed on original	03/04/23
	(name)	(signature)	(date)
Distributed to	Aaron Cassidy	Tasmanian Irrigation Pty Ltd.	03/04/23
	(name)	(organisation)	(date)

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A Design drawings, reference documents and standards

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B Appendix – Safety in Design (SiD)

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1. Project intent

Tasmanian Irrigation (TasIrrigation / TI) is building a new pump station at Poatina as part of the North Midlands Irrigation Scheme. The intent of the works covered by this document is to provide an HV connection to the TasNetworks 22kV overhead network.

The design intends to comply with the TasNetworks distribution overhead line design and construction manuals. The successful contractor is expected to be familiar with TasNetworks designs and its construction standards.

Note: This design is preliminary for pricing. A detailed design will be prepared for construction during the tender period, and changes will be negotiated with the successful tenderer.

2. Procedural requirements

2.1 Documents provided by the contractor

Prior to the contractor commencing works, the contractor must provide the following key information and documentation to the client's representative for acceptance and approval:

- Project plan
- Project schedule
- Proof that all personnel have completed Instructed person training and where applicable Person in Charge.
- All personnel operating plant and equipment have the required level of training and current verification of competency.
- List of plant and equipment to be used onsite.
- Required first aid training as per client requirements.
- Pre-commencement survey (dilapidation report)
- ITRs and ITPs
- SWMS and JHA
- Agreed project risk matrix.
- Project schedule.
- Traffic management plan for road crossings (as required and deemed necessary).
- Permit to work.
- Design drawings.
- Environmental management plan (weeds and silt control etc.).

- Confirmation a physical route walk-through of the works has been completed and agreement that the works can be executed according to the design and the project schedule.
- Weed free certificates for selected bedding sand
- A field record demonstrating compliance to specifications at different stages of the works shall be submitted.

The contractor shall submit the following documentation to Tasmanian Irrigation during the project execution:

- Periodic project progress reports
- Manufacturer's data report
- Factory Acceptance Test report(s)
- Safety management plan
- Quality management plan
- Inspection and Test Plans
- Installation instruction
- Operations and maintenance instructions
- Commissioning report
- Red line drawings
- Project completion report

2.2 Kick-off meeting

Tasmanian Irrigation will require a kick off meeting with the contractor on site to start off the Project. The following aspects will be discussed generally at the project kick-off meeting:

- Project schedule, critical path items and hold points
- Works management structure and project team (IPs, PIC, PMs etc.)
- Risks (safety, schedule, and procurement etc.)
- Preparation of necessary documents, procedures and permits
- Permitting requirements (concealed services, excavation, road authority approvals etc.)
- Necessary interfaces and parallel works
- Site establishment and security

2.3 Site laydown area

It is the contractor's responsibility to provide suitably sized secure storage (containers or secure area) and site management facilities (de-mountable office) onsite if deemed to be required. It may be possible to integrate with the civil contractor compound.

In the event the contractor deems such facilities necessary the contractor will be responsible for provision of temporary power and communications to such facilities.

2.4 Safety procedures, permits and approvals

All works undertaken under this scope of work must be done so in strict accordance with the latest versions of Tasmanian Irrigation's safe works procedures and permits. Such documents will be provided on request to the contractor by the Tasmanian Irrigation representative.

2.5 Inspection and test records and plans

As part of the approval to start site works the contractor must submit a suite of ITRs and ITPs associated with capturing the key requirements set-out within the technical requirements of this document. At this point in time, it is envisaged that ITRs will be required for the following key elements all of which will be brought together on an ITP:

- Trenching
- Cable installation and backfill
- Cable termination and testing
- Pole top equipment installation and commissioning
- Kiosk substation installation and commissioning
- Earthing installation and testing

Depending on the way in which trenching, and conduit installation is carried-out it is envisaged that for conduit and trenching several ITRs divided into several sections will be required to ensure staged capture and quality control is kept across the installation as it progresses.

2.6 Environmental impact management and considerations

The contractor must ensure that all necessary control and precautions are taken to reduce and eliminate any impact on the surrounding environment due to the proposed works. For further details on the requirements when working on Tasmanian Irrigation's sites please refer to Environment Impact Assessment (EIA) undertaken for this project in accordance with the Tasmanian Irrigation Health, Safety and Environmental Management Plan.

2.7 Damages

The contractor shall take all necessary precautions to ensure damage to existing Tasmanian Irrigation, TasNetworks and other infrastructure (including existing electrical services) does not occur. The contractor will be liable for any costs incurred for repairing damage to any plant, equipment or infrastructure including down time costs due to the execution of the contractual work.

2.8 Defects

A comprehensive defects list will be created and maintained by the contractor through a site walk through with the Tasmanian Irrigation representative 2 weeks prior to handover.

It will be Tasmanian Irrigation's expectation that all defects be resolved and actioned prior to handover.

All listed defect items can only be closed out through proof of completion photos being supplied to Tasmanian Irrigation or through a physical site walk through undertaken between the contractor and Tasmanian Irrigation.

2.9 As –built documents

It is the contractor's responsibility to ensure that through-out the installation process that any deviations from the design are captured on hand marked-up As-Built drawings. These drawings must be submitted to Tasmanian Irrigation both as electronic PDFs, and hard copies.

2.10 Handing over to Tasmanian Irrigation

Handover will include the following key deliverables being supplied and milestones being agreed to have been achieved:

- All defects closed-out
- All ITRs and ITPs signed off and accepted by Tasmanian Irrigation, with a photo pack documenting the process
- Site demobilisation completed and site clean-up completed and accepted by Tasmanian Irrigation
- All access key to site returned to Tasmanian Irrigation
- All panel keys have been issued to Tasmanian Irrigation
- All necessary component or parts manuals have been issued to Tasmanian Irrigation
- All red line drawing mark-ups have been issued and accepted by Tasmanian Irrigation
- Operator familiarisation walk through completed
- All open permits to work are closed and handed back to the issuing officer

2.11 Safety in design (SiD)

This design has been completed in compliance with the client-selected standard designs, design manual and design templates. This contributes towards safety in design, because the standard design has been proven and continuously improved in real world use over a long period of time. By using the standard design, many elements of safety in design are inherently managed because numerous risk-reduction measures are included, some of which are for risks that the designer might not even be aware of.

Refer to Appendix B for the preliminary safety in design residual risk register.

3. Project layout

Refer to the accompanying drawing set as listed in Appendix A.1.

4. General scope of work

The tenderer is to base its tender on this document, accompanying drawing, tender conditions, and other instructions advised by the Tasmanian Irrigation representative.

The contractor shall procure, transport, store, install and test all materials and equipment necessary to complete, prove the function and integrity of the installation of the scope of works.

The following sections detail the scope of works related to the described works as related to the installation.

The scope of works for the contractor includes but is not limited to the following activities:

1. Attendance at the kick-off meeting
2. Obtaining work permits and approvals for the works
3. Notifying the Tasmanian Irrigation representative of the works program within agreed timeframes.
4. Obtaining approval from the Tasmanian Irrigation representative if changes to the design are required.
5. Coordination with other contractors, as required.
6. Arrange lay down / site shed locations and sizes with the Tasmanian Irrigation representative.
7. Arrange appropriate waste disposal
8. Supplying the necessary trained personnel in accordance with works carried out under Tasmanian Irrigation's safe work procedures
9. Supplying all necessary PPE, tools, plant, and equipment to undertake the works (except where explicitly listed as being free-issued by Tasmanian Irrigation)
10. Pick-up of free-issue materials from Tasmanian Irrigation stores
11. Traffic management and control, if required
12. Pre-commencement survey (dilapidation report) of the site.
13. Earth works (marking out, trenching, bedding sand, back fill, compaction, reinstatement) to facilitate the installation of underground conduits and pits from end to end
14. Installation of the following as indicated on the design drawings:
    (a) Conduits (underground and aboveground)

(b) Cable trench marker detectable tapes for below ground conduits

(c) Cable pits (incl. sealing of conduit entries)

(d) Poles and stays

(e) Pole top equipment

(f) Above ground cable markers

15. Termination of the cables
16. Ensuring that correct phasing, phase rotations & polarities are maintained on all circuits.
17. Survey of the cable route prior to back fill at 5m intervals.
18. Development of ITRs and ITPs
19. Marking up design drawings as built
20. Operator familiarisation walk through
21. Site de-mobilisation, clean-up, and site restoration
22. Handing over to Tasmanian Irrigation

4.1 Reference documents and standards

A list of reference drawings, document and standards can be found in Appendix 0. Note this list is not exhaustive.

The work shall be performed in accordance with the referenced documents and drawings, however in the event of conflicting information between documents referenced, the contractor shall apply the following sequential order to achieve resolution:

- Tasmanian Irrigation and TasNetworks standards
- This document
- The latest version of the applicable Australian Standards
- Acceptable alternative codes and standards

Where conflicting information is found to exist, the contractor must contact the assigned client's representative for further advice and clear direction on how to proceed pointing out clearly what the conflicting information is, how it affects the project (safety, time, cost etc.) and the urgency by which an agreed resolution must be reached.

5. Interfaces

Due to the wider extent of programmed works, it is anticipated that works falling under this scope may need to co-ordinate and interface with the civil contractor and other contractors.

Whilst these works are not anticipated to impede execution of the scope outlined within this document the Tasmanian Irrigation elected representative should be contacted prior to execution to ensure no unforeseen impacts or delays occur because of other works happening onsite.

As part of the broader project, the following works may concurrently be completed by others:

- Civil works
- Building construction
- Piping works
- Fencing works
- LV cabling to the kiosk substation LV breakers
- Connection of the TasNetworks 22kV network to the point of connection

6. Free issued plant and equipment

The following equipment will be free issued to the contractor by Tasmanian Irrigation to be picked-up by the contractor at the Tasmanian Irrigation stores. All other parts, plant and equipment required to complete these works is to be supplied by the contractor.

Table 5.1: Free issued plant and equipment

Item	Description
1	Schneider KPX 4/20 kiosk substation
2	Pole top HV meter (Circle C)
3	Pole top recloser (Schneider Nulec with LV supply, not VT supply)

All other materials necessary to complete the works will need to be procured by the successful contractor.

7. Overhead scope of work

The overhead line must not be energised if there is substandard ground or vegetation clearance. It is assumed that recent vegetation clearing works are likely to be sufficient for the project. However, if there are any issues with vegetation clearance, please raise these with the Tasmanian Irrigation representative.

The contractor is to install the poles, stays, 22kV poles top arrangements, bare conductor, and pole mounted plant, as indicated on the drawing.

All works shall be undertaken in accordance with TasNetworks standards unless deviations are explicitly stated on the drawings.

Pole locations will be not be pegged for construction. The contractor will setout the works using the dimensions and coordinates on the drawings.

The contractor shall be responsible for the following:

- Install new poles and stays as show on the drawing
- Install new pole top equipment as per plan and this scope
- Install HV and minor LV cables to poles, terminate, test and commission
- Install, test & commission pole top equipment
- Install HV and LV earthing
- Energising and commissioning the connection to the existing distribution system

See Section 11 for commissioning and testing scope.

8. Kiosk substation installation

The contractor shall prepare the earth mat, foundation, and plinth for the substation, and install the kiosk substation on the plinth when it arrives at site. The contractor shall terminate and connect the HV, LV and earthing cables to the kiosk substation. All works shall be undertaken in accordance with TasNetworks standards unless deviations are explicitly stated on the drawings.

9. Earthing installation

Install earthing as per the design drawings:

- Install earthing conductors and electrodes as shown on the drawings including bonds to structures installed by others
- Install earth mat around the kiosk substation as per the drawings
- Remove MEN link from kiosk substation
- Terminate protective earth neutral cables from main switchboard to kiosk substation LV neutral bar
- Terminate HV cable screens to HV earth bar in kiosk substation
- Terminate HV cable screens to HV earth conductor on cable pole
- Bond earth down conductors from poles to earth grid
- Test and commission earthing system.

10. Underground installation

The contractor is responsible for all trenching works associated with installing the cables underground, where indicated on the drawing.

Installation of underground HV, minor LV and surface restoration shall be undertaken in accordance with the drawings, this document, and the relevant TasNetworks standards.

10.1 General

Trenching must be carried-out in strict accordance with the design drawings and must achieve the minimum dimensions detailed on the design drawings.

The contractor must ensure that that it has sufficient photo evidence that the installation is compliant with the design prior to the installation of bedding, back-fill, and marker tapes. If Tasmanian Irrigation has any doubt that the installation is compliant, the contractor may be requested to expose or pothole the installation to prove compliance at their own cost.

The base of the trench shall be firm and of smooth contour and shall be free from any sharp material/ pebbles, etc. Where the trench span changes level, the bottom of the trench shall rise and fall gradually along ensuring that the bottom of the conduit is supported well.

The contractor is free to select the most appropriate machinery to use for the purpose of the trenching task, however the plant selected must give due consideration to the closeness of any adjacent infrastructure.

Due to the nature of the environment, it may be likely that installation will be occurring during wet weather. On this basis, the contractor will need to consider approved methods for pumping, disposing of and managing pooled water within cable trenches. Such processes must be in strict accordance with the approved environmental management plan.

10.2 Ground conditions

The tenderer will price excavation works based on a site assessment, with assumptions communicated with Tasmanian Irrigation. In general, the contractor will deliver the works for the agreed sum. Only in exceptional circumstances, if unforeseen geological conditions are encountered, will cost variations be discussed with the Tasmanian Irrigation works manager.

In the event rock is encountered on site that requires jack hammering, protective measures shall be taken to ensure the adjacent assets are protected against flying stones that may occur during the jack hammering process. In such instances, the Tasmanian Irrigation representative must be contacted prior to jack hammering occurring.

10.3 Safety precautions

During trenching activities, safety must be always observed and adhere to the following requirements:

- Depths of the trenches are not to exceed the designed depths, unless agreed with the Tasmanian Irrigation representative.

- Where practicable, open trenching left at the end of each day shall be kept to a minimum (a few metres).

- Where open trenching is unavoidable, the contractor must install appropriate safety barricading/ fencing surrounding the open trench along with visible safety signage to warn of the open trenches prior to leaving the work area. Signage and barricading must remain in place until the trench is fully backfilled.

- At defined entry and exit points to the trenching zone the contractor must install safety signage warning of open excavations approaching personnel and displaying the UHF channel which is being used by the plant operator.

- Excavated materials must be piled at least 1m from the edge of the excavation to avoid loose rocks and materials falling inadvertently back into the trench.

- At the completion of each day trench ends must be battered to form an escape pathway in the event native fauna fall into the trench.

- At the completion of each day, conduit ends must be sealed using push-on conduit end caps and duct tape to avoid foreign materials and vermin from entering the conduits and the conduits becoming a drainage point in the event of rain.

10.4 Bedding sand

The design will include bedding sand to be used above, below and around all underground conduits and cables.

Installation of bedding sand shall not be commenced until Tasmanian Irrigation has been given opportunity to inspect the trench conditions and laying of the conduits. It will be up to the discretion of Tasmanian Irrigation whether it chooses to inspect or not at any point in time.

The bedding sand used shall be nominally free of soluble salts, free of organic material (e.g., twigs, leaves, bark, wood, shells etc.), pebbles, stones, and clay. The bedding sand shall be graded with the particle distribution from approximately 0.05mm to 2mm, but consideration will be given to similar sand having additional particles up to 5mm making no more than ten percent of the total by weight. Generally, sandy loam is considered compliant with these above requirements.

The selected material must be certified weed free and submitted for approval prior to delivery and installation on site.

Compaction of bedding sand must adhere to requirements set out in the TasNetworks standards.

10.5 Back-fill

If deemed suitable by the Tasmanian Irrigation representative, the material which has been excavated from the trench excavation can be used as back-fill. Based on the bedding sand being in place to buffer and protect the conduits, the back-fill material can consist of stone sizes up to a nominal diameter of 50mm (15% to the total volume) with a good portion of fines and variable stones less than 50mm diameter. The backfill shall not include large stones (greater than 50mm diameter) unless part of the design or at the direction of the Tasmanian Irrigation representative.

Installation of back fill material shall not be commenced until Tasmanian Irrigation has been given opportunity to inspect the trench conditions and installation of the bedding sand. It will be up to the discretion of Tasmanian Irrigation whether it chooses to inspect or not at any point in time.

The back-fill material shall be compacted. The depth of compacted layers shall be suitable for the compaction equipment used but shall not exceed 300mm. The trench backfill shall be compacted to a minimum 98% standard compaction within 3% of the optimum moisture content.

The backfill material shall be tested in accordance with AS1289 parts 5.1.1, 5.8.1, and 5.4.1, and VicRoads test method, RC31600 Density Ratio and Moisture Ratio Lot Characteristics 2019, to ensure suitable compaction has been achieved.

Back fill material shall achieve the original ground level, but with an additional slight mounding of soil to allow for final settling of materials. In the event excessive excess soil remains, the Tasmanian Irrigation representative is to be contacted for advice on where to place excess materials. In the event no suitable location on site exists to dump or spread excess materials the contractor must remove all excess materials from site.

10.6 Electrical services marker tapes

During the backfilling process the contractor must ensure that electricity type marker tapes are installed at the designed depth and located centrally above the conduit system according to the design. The colour of the marker tapes shall be in accordance with the Table 1 of AS 2648.1.

Marker tape specified for this project are to be 150mm wide.

10.7 Above ground cable markers

Upon completion of trenching above ground cable markers must be installed as follows:

- At all changes of direction (both horizontally and vertically)
- For straight runs every 50 metres
- On both sides of any road crossing

Flexible guidepost style orange marker posts or equivalent are considered acceptable for this project.

All marker post shall be marked with clear legible long life UV stabilised labelling with the words:

- **Line 1**: Warning

- **Line 2**: Buried electrical cable below
- **Line 3**: Contact Tasmanian Irrigation and Before You Dig Australia (formerly Dial Before You Dig) for further details.

11. Commissioning

11.1 General

It is the Contractor's overall responsibility under this contract, to make ready for service and finally point-to-point test all items of plant associated with this installation such that the complete system functions to the satisfaction of TasIrrigation and in accordance with TasNetworks standard "Electrical Testing Specification Pre-commissioning & Commissioning (Document R0000390068)".

After installation but prior to energisation:

- Make a detailed inspection of the pad mounted substation to ensure no damage has occurred during installation, including checking all bolts are tight and cable terminations are correct.
- Test the new pad mounted substation after installation in accordance with the manufacturer's recommendations and AS2067.
- Test the new recloser after installation in accordance with the manufacturer's recommendations and AS2067.
- Test all HV and LV cabling after installation in accordance with the manufacturer's recommendations and AS2067.
- Provide type test certificates for all equipment connected to the HV system.
- Secondary injection test, timing tests and trip test certificates for HV circuit breaker only.
- IR and ratio tests for transformer.
- Provide test certificates for all testing prior to energisation.
- Provide copy of Certificate of Electrical Compliance (CEC) form for installation.

After energisation:

- Voltage checks.
- Polarity checks.
- Final functional check of equipment operation.
- Load checks of all circuits.

11.2 Earthing system

The earth grid installation must be inspected by the designer prior to back-filling to ensure compliance with design. It is recommended that the earthing system designer or other qualified and competent person inspects the earth grid joints prior to backfilling.

All joints shall be tested using a four-wire resistance tester, the test result recorded with a location and photo. If a joint measures higher than the expected calculated value, the joint shall be replaced and re-tested.

A commissioning schedule for the HV energisation of the electrical installation must be commissioned in accordance with AS2067-2008. For this installation, current injection testing shall be performed using the off-frequency method to verify the safety of the earthing system.

The remote current injection point should be established based on the interconnection, fault location and soil resistivity at the site under test.

To verify the safety of the installed earthing system in accordance with AS 2067, ENA EG 1, ENA EG 0, the testing should include the following:

- Measurement of earth grid voltage and earth system resistance.
- Measurement of prospective step, touch and hand-to-hand voltages in and around the site and surrounding areas, in accordance with the relevant zone of influence.
- Investigation and measurement of transferred voltages outside the site
- Visual inspection.
- Continuity testing using a 4 wire DC resistance meter.

The installation and commissioning processes shall determine the validity and compliance of the design to ensure the earthing safety requirements are met and thus certify compliance. Any non-compliance will be reviewed and mitigated by subsequent coordinated works between the designer and installer.

Appendices

A Design drawings, reference documents and standards

A.1 Design drawings

TITLE	REF NO.
NMIS ELECTRICAL SERVICES POATINA PUMP STATION HV & EARTHING INSTALLATION SITE LAYOUT, INDEX	NMIS-200-DWG-4150
NMIS ELECTRICAL SERVICES POATINA PUMP STATION HV & EARTHING INSTALLATION SITE LAYOUT GENERAL ARRANGEMENT	NMIS-200-DWG-4151
NMIS ELECTRICAL SERVICES POATINA PUMP STATION HV & EARTHING INSTALLATION SITE LAYOUT KIOSK SUBSTATION AND POLE SETOUT DETAILS	NMIS-200-DWG-4152
NMIS ELECTRICAL SERVICES POATINA PUMP STATION HV & EARTHING INSTALLATION BUILDING EARTHING ARRANGEMENT AND DETAILS	NMIS-200-DWG-4153
NMIS ELECTRICAL SERVICES POATINA PUMP STATION HV & EARTHING INSTALLATION SUBSTATION EARTHING ARRANGEMENT AND DETAILS	NMIS-200-DWG-4154
NMIS ELECTRICAL SERVICES POATINA PUMP STATION HV & EARTHING INSTALLATION 4/20 2000kVA KIOSK SUBSTATION ONE LINE DIAGRAM	NMIS-200-DWG-4159
NMIS ELECTRICAL SERVICES POATINA PUMP STATION HV & EARTHING INSTALLATION TRENCH SECTIONS, NOTES AND TABLE DETAILS	NMIS-200-DWG-4160

A.2 Project reference drawings

TITLE	REF NO.
NMIS ELECTRICAL SERVICES POATINA PUMP STATION SINGLE LINE DIAGRAM	NMIS-350-DWG-4100
NMIS ELECTRICAL SERVICES POATINA PUMP STATION SINGLE LINE DIAGRAM 24VDC SHEET 1 OF 2	NMIS-350-DWG-4101-1
NMIS ELECTRICAL SERVICES POATINA PUMP STATION SINGLE LINE DIAGRAM 24VDC SHEET 2 OF 2	NMIS-350-DWG-4101-2
NMIS ELECTRICAL SERVICES POATINA PUMP STATION EMERGENCY STOP CIRCUIT	NMIS-350-DWG-4102
NMIS ELECTRICAL SERVICES POATINA PUMP STATION PUMP MOTOR DRIVES TYPICAL POWER AND CONTROL CIRCUIT	NMIS-350-DWG-4103
NMIS ELECTRICAL SERVICES POATINA PUMP STATION REMOTE TELEMETRY UNIT LAYOUT	NMIS-350-DWG-4104
NMIS ELECTRICAL SERVICES POATINA PUMP STATION DIGITIAL INPUT MODULES WIRING DIAGRAM SHEET 1 OF 3	NMIS-350-DWG-4105-1
NMIS ELECTRICAL SERVICES POATINA PUMP STATION DIGITIAL INPUT MODULES WIRING DIAGRAM SHEET 2 OF 3	NMIS-350-DWG-4105-2
NMIS ELECTRICAL SERVICES POATINA PUMP STATION DIGITIAL INPUT MODULES WIRING DIAGRAM SHEET 3 OF 3	NMIS-350-DWG-4105-3
NMIS ELECTRICAL SERVICES POATINA PUMP STATION DIGITIAL OUTPUT MODULE WIRING DIAGRAM	NMIS-350-DWG-4106
NMIS ELECTRICAL SERVICES POATINA PUMP STATION ANALOGUE INPUT MODULES WIRING DIAGRAM SHEET 1 OF 2	NMIS-350-DWG-4107-1
NMIS ELECTRICAL SERVICES POATINA PUMP STATION ANALOGUE INPUT MODULES WIRING DIAGRAM SHEET 2 OF 2	NMIS-350-DWG-4107-2
NMIS ELECTRICAL SERVICES POATINA PUMP STATION ANALOGUE OUTPUT MODULE WIRING DIAGRAM	NMIS-350-DWG-4108
NMIS ELECTRICAL SERVICES POATINA PUMP STATION LOW VOLTAGE EARTHING DIAGRAM	NMIS-350-DWG-4109
NMIS ELECTRICAL SERVICES POATINA PUMP STATION SITE ELECTRICAL PLAN	NMIS-350-DWG-4110
NMIS ELECTRICAL SERVICES POATINA PUMP STATION GENERAL LIGHT & POWER PLAN	NMIS-350-DWG-4111
NMIS ELECTRICAL SERVICES POATINA PUMP STATION SWITCHBOARDS GENERAL ARRANGEMENT PLAN	NMIS-350-DWG-4112
NMIS ELECTRICAL SERVICES POATINA PUMP STATION CONDUIT PLAN	NMIS-350-DWG-4113

NMIS ELECTRICAL SERVICES POATINA PUMP STATION ELECTRICAL & CABLE BLOCK DIAGRAM SHEET 1 OF 2	NMIS-350-DWG-4114-1
NMIS ELECTRICAL SERVICES POATINA PUMP STATION ELECTRICAL & CABLE BLOCK DIAGRAM SHEET 2 OF 2	NMIS-350-DWG-4114-2
NMIS ELECTRICAL SERVICES POATINA PUMP STATION CABLE SCHEDULE SHEET 1 OF 2	NMIS-350-DWG-4115-1
NMIS ELECTRICAL SERVICES POATINA PUMP STATION CABLE SCHEDULE SHEET 2 OF 2	NMIS-350-DWG-4115-2
NMIS ELECTRICAL SERVICES POATINA PUMP STATION VIBRATION MONITORING EQUIPMENT TYPICAL WIRING DIAGRAM SHEET 1 OF 2	NMIS-350-DWG-4116-1
NMIS ELECTRICAL SERVICES POATINA PUMP STATION VIBRATION MONITORING EQUIPMENT NOTES AND TABLES SHEET 2 OF 2	NMIS-350-DWG-4116-2
NMIS ELECTRICAL SERVICES POATINA PUMP STATION DISTRIBUTION BOARD 1 SINGLE LINE DIAGRAM	NMIS-350-DWG-4117
NMIS ELECTRICAL SERVICES POATINA PUMP STATION MECHANICAL SERVICES POWER AND CONTROL SCHEMATIC	NMIS-350-DWG-4118
NMIS ELECTRICAL SERVICES POATINA PUMP STATION SMOKE DETECTION PLAN	NMIS-350-DWG-4119
NMIS ELECTRICAL SERVICES POATINA PUMP STATION SECURITY DETECTION PLAN	NMIS-350-DWG-4120
NMIS ELECTRICAL SERVICES POATINA PUMP STATION COMMUNICATIONS DIAGRAM	NMIS-350-DWG-4121
NMIS ELECTRICAL SERVICES POATINA PUMP STATION MAJOR EQUIPMENT SCHEDULE	NMIS-350-DWG-4122

A.3 Australian Standards

TITLE	REF NO.
Telecommunication cables - Insulation, sheath and jacket	AS 1049 series
Methods of testing soils for engineering purposes	AS 1289 series
Safety signs for the occupational environment	AS 1319
Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium	AS 1397
Conduits and fittings for electrical installation	AS/NZS 2053 series
Substations and high voltage installations exceeding 1kV a.c.	AS 2067
Underground marking tape	AS/NZS 2648
Colour standards for general purposes	AS 2700
Electrical installations (known as the Australian/New Zealand Wiring Rules)	AS/NZS 3000
Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation conditions	AS/NZS 3008.1.1
Electrical installations – Testing and inspection guidelines	AS/NZS 3017
Degrees of protection provided by enclosures for electrical equipment (IP Code)	AS 60529

The contractor may propose alternative codes and standards provided, if it is proven that it gives an equivalent degree of quality or compliance that is more stringent than the referenced codes and standards. Acceptability of any alternative codes or standard is at the discretion of the client.

A.4 TasNetworks standards

TITLE	REF NO.
Distribution Overhead Design – version 2, October 2018	R1213216
Distribution Overhead Standard – Overhead Construction Standard – version 1, February 2020	R1563643
Distribution Design Standard – Underground Systems – version 1, February 2016	R0392089
Construction Drawings – Underground System – version 3, November 2017	R0393235
Electrical Testing Specification Pre-commissioning & Commissioning	R0000390068

B Appendix – Safety in Design (SiD)

IRBM risk assessment matrix -
showing risk categories based on assessment of risk likelihood and consequence

Likelihood	Consequence (impact)					
	1 Insignificant	**2** Minor	**3** Moderate	**4** Major	**5** Extreme	**6** Catastrophic
A. Almost Certain	L	M	H	E	E	E
B. Likely	L	M	H	E	E	E
C. Possible	L	L	M	H	E	E
D. Unlikely	L	L	L	M	H	E
E. Rare	L	L	L	L	M	H
F. Extremely Rare	L	L	L	L	L	M
E	**Extreme Risk** – Risk threatens business sustainability			Intolerable - Requires urgent attention		
H	**High Risk** - Risk poses significant threat to corporation business strategies and objectives			Intolerable - requires addressing at an early date		
M	**Moderate Risk** – Risk poses moderate threat to corporation business strategies and objectives			Must be incorporated into project or business risk management programs with timing to fit overall program		
L	**Low Risk** – Risk poses minimal threat to corporation business strategies and objectives			Timing to suit normal operations		

Risk likelihood categories using IRBM

Level	Description	Probability range	Example likelihood
A	Almost Certain	$0.9 \leq p \leq 1.0$	Event is expected in the 12 month period
B	Likely	$0.6 \leq p < 0.9$	Event is likely to occur in the 12 month period
C	Possible	$0.2 \leq p < 0.6$	Event may occur (but not likely) in the 12 month period
D	Unlikely	$0.05 \leq p < 0.2$	Event not expected in the 12 month period.
E	Rare	$0.001 \leq p < .05$	Event extremely unlikely in 12 month period
F	Extremely Rare	$0 \leq p < 0.001$	May only occur in extreme and exceptional circumstances over 12 month period.

Risk consequence categories using IBRM

Level	Description	Example consequences		Consequence value
		Health and safety	***Legal / Compliance***	
6	Catastrophic	Significant number of fatalities (>50)	Serious regulatory compliance breach - prosecution resulting in jail terms for employees, directors Loss of operating licences Legal impact (contract or tort) or loss of business	>$150M
5	Extreme	Multiple fatalities, or significant irreversible effects to >50 persons	Extreme regulatory compliance breach - prosecution likely Temporary suspension of operating licences Legal impact (contract or tort) or loss of business control	$50M to $150M
4	Major	Single fatality and/or severe irreversible disability (>30%) to one or more persons	Regulatory compliance breach – possible prosecution but not likely Operating licences restrictions on operations Legal impact (contract or tort)	$10M to $50M
3	Moderate	Serious injury, e.g. permanent disability, amputation	Regulatory Compliance breach – no prosecution Breaches of operating licence conditions – system changes needed Moderate Legal impact (contract or tort)	$100K to $10M
2	Minor	Medical treatment injury	Minor compliance breach Operating licences unaffected Minor Legal impact (contract or tort)	$1K to $100K
1	Insignificant	First-aid treatment, e.g. minor cuts, bruises, bumps	Low-level legal compliance issue dealt with in-house Negligible Legal impact (contract or tort)	≤ $1K

B.1 Hierarchy of controls

The ***hierarchy of controls*** indicates the order in which risks/hazards should be controlled. Where possible, risks should be eliminated through the design process. Where it is not possible to completely eliminate a risk, controls should be implemented following the hierarchy (i.e. if a risk cannot be managed by elimination, try designing a substitution control next, followed by an isolation control):



The hierarchy of controls

- **Elimination** - eliminate the hazard by removing it completely.
  - remove hazardous plant or equipment from the design
  - cease work with inherently dangerous activities or designs
- **Substitution** - where it is not possible to completely eliminate the hazard, minimise the risk by substituting it with a hazard of lower risk.
  - use low voltage electrical plant instead of high voltage
  - replace hazardous materials with suitable non or less hazardous alternatives
- **Isolation** - isolate people from the hazard.
  - place hazardous plant or equipment in enclosures with controlled access
  - add safety barricades to designs
- **Engineering** - apply engineering controls to remove or reduce the hazard.
  - use safety switches to protect electrical sockets supplying plant

- put guards on machinery, install automatic cut-off switches, provide assistive equipment

- **Administration** - use administrative controls to remove or reduce the hazard
  - perform regular inspection and tests on plant and equipment
  - develop safety procedures, provide training or supervision
- **Personal Protective Equipment** - as a last resort, use PPE to minimise the risk without addressing the hazard.
  - use rubber mats, insulated gloves, eye protection, boots, ear protection and/or helmets
  - to be used in conjunction with measures further up the hierarchy, not as the sole control measure

Risk register								
Description of hazards	**L**	**C**	**R**	**Mitigation**	**L**	**C**	**R**	**Residual Risk Owner**
Working in the electrical supply industry - electrocution	B	4	E	Design is for safe clearances, design is to industry standards, utilise industry standard installation procedures and industry testing standards, follow power system safety rules, undertake appropriate training, and ensure appropriate supervision. Isolate supplies where deemed necessary. Installation shall be constructed on de-energised equipment. All works to be undertaken de-energised until complete. Coordinate outages with the asset owner.	E	3	L	contractor, designer, and asset owner
Isolations - electrical/heights/interlocking/	C	4	H	Asset owner to perform all isolations utilising existing safe work method statements. All isolations can be performed from the ground.	E	3	L	asset owner, contractor
Earth moving/ heavy construction equipment used during construction. – crushing, electrocution, vehicle damage/fire	C	4	H	Correct clearances to live conductors to be observed. Safety observer to be always used when digging, and when operating in vicinity of live conductors near the Point of Connection (POC). Hand digging to be used when close to existing infrastructure including earthing to avoid damage. Make eye, radio contact with operators, and only proceed when and how approval is given.	E	3	L	asset owner, contractor
Earthing hazards, i.e., voltage hazard occurring because of a fault occurring during works - electrical.	C	2	L	Perform earthing modifications/extensions on the network when de-energised unless special insulated work practices are employed. Ensure earthing is in accordance with design.	E	2	L	contractor
Excavations for new poles, foundations, and cable/duct - slip/strains/ crushing	C	3	M	Correct clearances to live conductors to be observed. Safety observer to be always used when operating in vicinity of live conductors. Hand digging to be used when close to existing subsurface infrastructure including earthing to avoid damage. Maintain safe approach to excavations. Do not enter excavations, except where required and trained e.g., cable jointers in pits.	E	3	L	contractor
Handling of oils and oil filled equipment - oil	C	3	M	Consult Safety Material Datasheet for safe handling requirements of any oils. Regulations regarding oil spill prevention and management to be adhered to. Appropriate PPE to be worn when handling oils.	E	3	L	asset owner, contractor
Installation of poles - electrical/handling/crushing	C	4	H	Installation method to allow for sufficient clearance from live conductors. Always use lifter-borer / crane and trained dog men / riggers with safety observer. Use temporary stays where needed to counteract unbalanced forces during construction.	E	3	L	contractor
Open excavations – collapse, crushing	C	3	M	Construction method to allow for suitable barriers where required to prevent accidental falling into open excavations e.g., cable pits and trenches. Appropriate temporary works including methods of shoring will need to be considered as required to ensure that open excavations do not collapse.	C	2	L	contractor
Installation of new cables and conductors – entanglement/mechanical/ handling/slips	C	4	H	Design minimises risks associated with cable routes and is designed in accordance with Australian standards, including industry standard mechanical protection and support for above ground sections. Adhere to cable bending radius and pulling tension requirements. Use suitable machinery to reduce or eliminate manual handling, use appropriate manual handling techniques where required. Create a work plan and follow company and equipment specific Safe Work Method Statements (SWMS). Neatly handle conductors and cables in preparation for installation. ADSS cable is to be carefully and neatly handled and coiled on poles where required.	E	3	L	contractor
Installing new primary equipment – mechanical/slip/oil/height/access/ handling/crushing	C	3	M	Ensure clearances to live lines are adhered to and a safety observer is always used. Plan elevated work platform (EWP) locations and equipment paths prior to lifting operation.	E	3	L	contractor

				Develop suitable crane operation plan, including safety measures, for positioning the transformer, and employ operator with appropriate certificate for heavy machinery operation. Organize on-site HV acceptance test in a safe manner to avoid inadvertently crossing working area and ensure sufficient clearance to the adjacent live parts. Avoid malfunction of protection devices during the wiring work on protection panel. Use appropriate machinery and lifting equipment to reduce or eliminate manual handling, create a work plan, and follow company and equipment specific Safe Work Method Statements (SWMS).				
Existing underground services – electrocution/contamination	C	4	H	Foundation location, cable route and conduit route selected to minimise disturbance to known existing underground services. Undertake services location before excavation. Suitable construction techniques to be used (i.e., vac excavation) where services are present.	E	3	L	contractor
Working in live environment, risk of incorrect isolations - electrocution	C	4	H	Qualified personnel used to perform work and ensure that isolations have been carried out and permits maintained.	D	3	L	contractor
Steep terrain – slips/trips/mechanical/handling	C	4	H	Operators to be trained and experienced in using equipment on steep and/or slippery terrain. Develop work and access plans for appropriate equipment for steep sections of the route.	D	3	L	contractor
Cable / conductor tensions - mechanical	C	4	H	Use industry standard techniques to ensure that new cables and conductors being pulled to not exceed maximum pulling tensions. Use industry standard techniques to ensure that conductors being installed overhead are tensioned as per the design to avoid cable breakage, flying cables, pole collapse, lack of ground clearance, etc. Use of tension meter recommended.	E	3	L	contractor
Coordination of contractors on the same site	C	4	H	Participate in coordination / sequencing workshops with the asset owner and other contractors.	E	3	L	contractor

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Monday, 23 September 2019 12:40 PM
To: Brendan Groves
Cc: Gregory Carson
Subject: Site access to the Poatina Tail Race

Hi Brendan,

Further to the email ex Greg Carson and my message;

TI is investigating a possible new Irrigation Scheme "Northern Midlands" which conceptually would pump from the Poatina Tail race at weir 1 opposite the Cressy Longford offtake.

I have a site meeting tomorrow (24/9/19) with Bill Scott-Young to discuss potential impacts to his property, including siting of a pump station and infrastructure. To date we have been planning from aerial photos and have not been to site.

I would appreciate if we are able to step through to Hydro land for purposes of site familiarisation approximately 10-11 am tomorrow. We would not be trying to do other than stand on bank and get a couple of photos.

Preliminary thoughts of location etc per the attached image;



If there are any concerns or issues, please do not hesitate to contact me.

Regards

Ian Smith
Project Manager

Tasmanian Irrigation

p 04[redacted]
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PO Box 84 Evandale TAS 7212

Tasmanian Irrigation is a multi-award winning organisation. Achievements include winning multiple 2014 Engineering Australia, Tasmanian Engineering Excellence Awards and CCF Earth Awards. The company was also a 2014 Infrastructure Partnerships Australia Smart Project Award finalist.







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Lara Henley

From: Chris Masters
Sent: Tuesday, 28 March 2023 8:14 PM
To: Aaron Cassidy
Subject: Valleyfield HV Connection - Tender design package
Attachments: Valleyfield HV Connection - Tender Design.pdf; ENTURA-21B95F TI Valleyfield Connection Scope of Work.docx

Good morning Aaron,
Please find the Valleyfield HV connection tender design package and SOW.

The Poatina SOW and drawings will follow soon.

Please give me a buzz if you have any queries.

Thanks and regards,

Chris Masters | Electrical Engineer

entura

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TI Midlands Irrigation Scheme HV and Earthing Design

Valleyfield Connection Scope of Work

ENTURA-21B95F
28 March 2023

Prepared by Hydro-Electric Corporation ABN48 072 377 158

t/a Entura, 4 Elizabeth Street, Hobart TAS 7000, Australia

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Document information

Title	TI Midlands Irrigation Scheme HV and Earthing Design
	Valleyfield Connection Scope of Work
Client organisation	Tasmanian Irrigation Pty Ltd.
Client contact	Aaron Cassidy
Document number	ENTURA-21B95F
Project manager	Chris Masters
Project reference	E310000 - P518713

Revision history

Revision 0

Revision description	Issued for Acceptance		
Prepared by	Andrew Baird	Signed on Original	28/03/23
Reviewed by	Chris Masters	Signed on Original	28/03/23
Approved by	Chris Masters	Signed on Original	28/03/23
	(name)	(signature)	(date)
Distributed to	Aaron Cassidy	Tasmanian Irrigation Pty Ltd.	28/03/23
	(name)	(organisation)	(date)

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B Appendix – Safety in Design (SiD)

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1. Project intent

Tasmanian Irrigation is building a new pump station as part of the North Midlands Irrigation Scheme. The intent of the works covered by this document is to provide an HV connection to the TasNetworks 22kV overhead network.

The design intends to comply with the TasNetworks distribution overhead line design and construction manuals. The successful contractor is expected to be familiar with TasNetworks designs and its construction standards.

Note: This design is preliminary for pricing. A detailed design will be prepared for construction during the tender period, and changes will be negotiated with the successful tenderer.

2. Procedural requirements

2.1 Documents provided by the contractor

Prior to the contractor commencing works, the contractor must provide the following key information and documentation to the client's representative for acceptance and approval:

- Project plan
- Project schedule
- Proof that all personnel have completed Instructed person training and where applicable Person in Charge.
- All personnel operating plant and equipment have the required level of training and current verification of competency.
- List of plant and equipment to be used onsite.
- Required first aid training as per client requirements.
- Pre-commencement survey (dilapidation report)
- ITRs and ITPs
- SWMS and JHA
- Agreed project risk matrix.
- Project schedule.
- Traffic management plan for road crossings (as required and deemed necessary).
- Permit to work.
- Design drawings.
- Environmental management plan (weeds and silt control etc.).

- Confirmation a physical route walk-through of the works has been completed and agreement that the works can be executed according to the design and the project schedule.
- Weed free certificates for selected bedding sand
- A field record demonstrating compliance to specifications at different stages of the works shall be submitted.

The contractor shall submit the following documentation to Tasmanian Irrigation during the project execution:

- Periodic project progress reports
- Manufacturer's data report
- Factory Acceptance Test report(s)
- Safety management plan
- Quality management plan
- Inspection and Test Plans
- Installation instruction
- Operations and maintenance instructions
- Commissioning report
- Red line drawings
- Project completion report

2.2 Kick-off meeting

Not later than fifteen (15) days after the contract award Tasmanian Irrigation will require a kick off meeting with the contractor on site to start off the Project. The following aspects will be discussed generally at the project kick-off meeting:

- Project schedule, critical path items and hold points
- Works management structure and project team (IPs, PIC, PMs etc.)
- Risks (safety, schedule, and procurement etc.)
- Preparation of necessary documents, procedures and permits
- Permitting requirements (concealed services, excavation, road authority approvals etc.)
- Necessary interfaces and parallel works
- Site establishment and security

2.3 Site laydown area

It is the contractor's responsibility to provide suitably sized secure storage (containers or secure area) and site management facilities (de-mountable office) onsite if deemed to be required. It may be possible to integrate with the civil contractor compound.

In the event the contractor deems such facilities necessary the contractor will be responsible for provision of temporary power and communications to such facilities.

2.4 Safety procedures, permits and approvals

All works undertaken under this scope of work must be done so in strict accordance with the latest versions of Tasmanian Irrigation's safe works procedures and permits. Such documents will be provided on request to the contractor by the Tasmanian Irrigation representative.

2.5 Inspection and test records and plans

As part of the approval to start site works the contractor must submit a suite of ITRs and ITPs associated with capturing the key requirements set-out within the technical requirements of this document. At this point in time, it is envisaged that ITRs will be required for the following key elements all of which will be brought together on an ITP:

- Trenching
- Cable installation and backfill
- Cable termination and testing
- Pole top equipment installation and commissioning
- Kiosk substation installation and commissioning
- Earthing installation and testing

Depending on the way in which trenching, and conduit installation is carried-out it is envisaged that for conduit and trenching several ITRs divided into several sections will be required to ensure staged capture and quality control is kept across the installation as it progresses.

2.6 Environmental impact management and considerations

The contractor must ensure that all necessary control and precautions are taken to reduce and eliminate any impact on the surrounding environment due to the proposed works. For further details on the requirements when working on Tasmanian Irrigation's sites please refer to Environment Impact Assessment (EIA) undertaken for this project in accordance with the Tasmanian Irrigation Health, Safety and Environmental Management Plan.

2.7 Damages

The contractor shall take all necessary precautions to ensure damage to existing Tasmanian Irrigation, TasNetworks and other infrastructure (including existing electrical services) does not occur. The contractor will be liable for any costs incurred for repairing damage to any plant, equipment or infrastructure including down time costs due to the execution of the contractual work.

2.8 Defects

A comprehensive defects list will be created and maintained by the contractor through a site walk through with the Tasmanian Irrigation representative 2 weeks prior to handover.

It will be Tasmanian Irrigation's expectation that all defects be resolved and actioned prior to handover.

All listed defect items can only be closed out through proof of completion photos being supplied to Tasmanian Irrigation or through a physical site walk through undertaken between the contractor and Tasmanian Irrigation.

2.9 As –built documents

It is the contractor's responsibility to ensure that through-out the installation process that any deviations from the design are captured on hand marked-up As-Built drawings. These drawings must be submitted to Tasmanian Irrigation both as electronic PDFs, and hard copies.

2.10 Handing over to Tasmanian Irrigation

Handover will include the following key deliverables being supplied and milestones being agreed to have been achieved:

- All defects closed-out
- All ITRs and ITPs signed off and accepted by Tasmanian Irrigation, with a photo pack documenting the process
- Site demobilisation completed and site clean-up completed and accepted by Tasmanian Irrigation
- All access key to site returned to Tasmanian Irrigation
- All panel keys have been issued to Tasmanian Irrigation
- All necessary component or parts manuals have been issued to Tasmanian Irrigation
- All red line drawing mark-ups have been issued and accepted by Tasmanian Irrigation
- Operator familiarisation walk through completed
- All open permits to work are closed and handed back to the issuing officer

2.11 Safety in design (SiD)

This design has been completed in compliance with the client-selected standard designs, design manual and design templates. This contributes towards safety in design, because the standard design has been proven and continuously improved in real world use over a long period of time. By using the standard design, many elements of safety in design are inherently managed because numerous risk-reduction measures are included, some of which are for risks that the designer might not even be aware of.

Refer to Appendix B for the preliminary safety in design residual risk register.

3. Project layout

Refer to the accompanying drawing set as listed in Appendix A.1.

4. General scope of work

The tenderer is to base its tender on this document, accompanying drawing, tender conditions, and other instructions advised by the Tasmanian Irrigation representative.

The contractor shall procure, transport, store, install and test all materials and equipment necessary to complete, prove the function and integrity of the installation of the scope of works.

The following sections detail the scope of works related to the described works as related to the installation.

The scope of works for the contractor includes but is not limited to the following activities:

1. Attendance at the kick-off meeting
2. Obtaining work permits and approvals for the works
3. Notifying the Tasmanian Irrigation representative of the works program within agreed timeframes.
4. Obtaining approval from the Tasmanian Irrigation representative if changes to the design are required.
5. Coordination with other contractors, as required.
6. Arrange lay down / site shed locations and sizes with the Tasmanian Irrigation representative.
7. Arrange appropriate waste disposal
8. Supplying the necessary trained personnel in accordance with works carried out under Tasmanian Irrigation’s safe work procedures
9. Supplying all necessary PPE, tools, plant, and equipment to undertake the works (except where explicitly listed as being free-issued by Tasmanian Irrigation)

10. Pick-up of free-issue materials from Tasmanian Irrigation stores
11. Traffic management and control, if required
12. Pre-commencement survey (dilapidation report) of the site.
13. Earth works (marking out, trenching, bedding sand, back fill, compaction, reinstatement) to facilitate the installation of underground conduits and pits from end to end
14. Installation of the following as indicated on the design drawings:
    (a) Conduits (underground and aboveground)
    (b) Cable trench marker detectable tapes for below ground conduits
    (c) Cable pits (incl. sealing of conduit entries)
    (d) Poles and stays
    (e) Pole top equipment
    (f) Above ground cable markers
15. Termination of the cables
16. Ensuring that correct phasing, phase rotations & polarities are maintained on all circuits.
17. Survey of the cable route prior to back fill at 5m intervals.
18. Development of ITRs and ITPs
19. Marking up design drawings as built
20. Operator familiarisation walk through
21. Site de-mobilisation, clean-up, and site restoration
22. Handing over to Tasmanian Irrigation

4.1 Reference documents and standards

A list of reference drawings, document and standards can be found in Appendix A. Note this list is not exhaustive.

The work shall be performed in accordance with the referenced documents and drawings, however in the event of conflicting information between documents referenced, the contractor shall apply the following sequential order to achieve resolution:

- Tasmanian Irrigation and TasNetworks standards
- This document
- The latest version of the applicable Australian Standards
- Acceptable alternative codes and standards

Where conflicting information is found to exist, the contractor must contact the assigned client's representative for further advice and clear direction on how to proceed pointing out clearly what the conflicting information is, how it affects the project (safety, time, cost etc.) and the urgency by which an agreed resolution must be reached.

5. Interfaces

Due to the wider extent of programmed works, it is anticipated that works falling under this scope may need to co-ordinate and interface with the civil contractor and other contractors.

Whilst these works are not anticipated to impede execution of the scope outlined within this document the Tasmanian Irrigation elected representative should be contacted prior to execution to ensure no unforeseen impacts or delays occur because of other works happening onsite.

As part of the broader project, the following works may concurrently be completed by others:

- Civil works
- Building construction
- Piping works
- Fencing works
- LV cabling to the kiosk substation LV breakers
- Connection of the TasNetworks 22kV network to the point of connection

6. Free issued plant and equipment

The following equipment will be free issued to the contractor by Tasmanian Irrigation to be picked-up by the contractor at the Tasmanian Irrigation stores. All other parts, plant and equipment required to complete these works is to be supplied by the contractor.

Table 6.1: Free issued plant and equipment

Item	Description
1	Schneider KPX 4/15 kiosk substation
2	Pole top HV meter (Circle C)
3	Pole top recloser (Schneider Nulec with LV supply, not VT supply)

All other materials necessary to complete the works will need to be procured by the successful contractor.

7. Overhead scope of work

The overhead line must not be energised if there is substandard ground or vegetation clearance. It is assumed that recent vegetation clearing works are likely to be sufficient for the project. However, if there are any issues with vegetation clearance, please raise these with the Tasmanian Irrigation representative.

The contractor is to install the poles, stays, 22kV poles top arrangements, bare conductor, and pole mounted plant, as indicated on the drawing.

All works shall be undertaken in accordance with TasNetworks standards unless deviations are explicitly stated on the drawings.

Pole locations will be not be pegged for construction. The contractor will setout the works using the dimensions on the drawings.

The contractor shall be responsible for the following:

- Install new poles and stays as show on the drawing
- Install new pole top equipment as per plan and this scope
- Install HV and minor LV cables to poles, terminate, test and commission
- Install, test & commission pole top equipment
- Install HV and LV earthing
- Energising and commissioning the connection to the existing distribution system

See Section 11 for commissioning and testing scope.

8. Kiosk substation installation

The contractor shall prepare the earth mat, foundation, and plinth for the substation, and install the kiosk substation on the plinth when it arrives at site. The contractor shall terminate and connect the HV, LV and earthing cables to the kiosk substation. All works shall be undertaken in accordance with TasNetworks standards unless deviations are explicitly stated on the drawings.

9. Earthing installation

Install earthing as per the design drawings:

- Install earthing conductors and electrodes as shown on the drawings including bonds to structures installed by others
- Install earth mat around the kiosk substation as per the drawings
- Remove MEN link from kiosk substation

- Terminate protective earth neutral cables from main switchboard to kiosk substation LV neutral bar
- Terminate HV cable screens to HV earth bar in kiosk substation
- Terminate HV cable screens to HV earth conductor on cable pole
- Bond earth down conductors from poles to earth grid
- Test and commission earthing system.

10. Underground installation

The contractor is responsible for all trenching works associated with installing the cables underground, where indicated on the drawing.

Installation of underground HV, minor LV and surface restoration shall be undertaken in accordance with the drawings, this document, and the relevant TasNetworks standards.

10.1 General

Trenching must be carried-out in strict accordance with the design drawings and must achieve the minimum dimensions detailed on the design drawings.

The contractor must ensure that that it has sufficient photo evidence that the installation is compliant with the design prior to the installation of bedding, back-fill, and marker tapes. If Tasmanian Irrigation has any doubt that the installation is compliant, the contractor may be requested to expose or pothole the installation to prove compliance at their own cost.

The base of the trench shall be firm and of smooth contour and shall be free from any sharp material/ pebbles, etc. Where the trench span changes level, the bottom of the trench shall rise and fall gradually along ensuring that the bottom of the conduit is supported well.

The contractor is free to select the most appropriate machinery to use for the purpose of the trenching task, however the plant selected must give due consideration to the closeness of any adjacent infrastructure.

Due to the nature of the environment, it may be likely that installation will be occurring during wet weather. On this basis, the contractor will need to consider approved methods for pumping, disposing of and managing pooled water within cable trenches. Such processes must be in strict accordance with the approved environmental management plan.

10.2 Ground conditions

The tenderer will price excavation works based on a site assessment, with assumptions communicated with Tasmanian Irrigation. In general, the contractor will deliver the works for the agreed sum. Only in exceptional circumstances, if unforeseen geological conditions are encountered, will cost variations be discussed with the Tasmanian Irrigation works manager.

In the event rock is encountered on site that requires jack hammering, protective measures shall be taken to ensure the adjacent assets are protected against flying stones that may occur during the jack hammering process. In such instances, the Tasmanian Irrigation representative must be contacted prior to jack hammering occurring.

10.3 Safety precautions

During trenching activities, safety must be always observed and adhere to the following requirements:

- Depths of the trenches are not to exceed the designed depths, unless agreed with the Tasmanian Irrigation representative.
- Where practicable, open trenching left at the end of each day shall be kept to a minimum (a few metres).
- Where open trenching is unavoidable, the contractor must install appropriate safety barricading/ fencing surrounding the open trench along with visible safety signage to warn of the open trenches prior to leaving the work area. Signage and barricading must remain in place until the trench is fully backfilled.
- At defined entry and exit points to the trenching zone the contractor must install safety signage warning of open excavations approaching personnel and displaying the UHF channel which is being used by the plant operator.
- Excavated materials must be piled at least 1m from the edge of the excavation to avoid loose rocks and materials falling inadvertently back into the trench.
- At the completion of each day trench ends must be battered to form an escape pathway in the event native fauna fall into the trench.
- At the completion of each day, conduit ends must be sealed using push-on conduit end caps and duct tape to avoid foreign materials and vermin from entering the conduits and the conduits becoming a drainage point in the event of rain.

10.4 Bedding sand

The design will include bedding sand to be used above, below and around all underground conduits and cables.

Installation of bedding sand shall not be commenced until Tasmanian Irrigation has been given opportunity to inspect the trench conditions and laying of the conduits. It will be up to the discretion of Tasmanian Irrigation whether it chooses to inspect or not at any point in time.

The bedding sand used shall be nominally free of soluble salts, free of organic material (e.g., twigs, leaves, bark, wood, shells etc.), pebbles, stones, and clay. The bedding sand shall be graded with the particle distribution from approximately 0.05mm to 2mm, but consideration will be given to similar sand having

additional particles up to 5mm making no more than ten percent of the total by weight. Generally, sandy loam is considered compliant with these above requirements.

The selected material must be certified weed free and submitted for approval prior to delivery and installation on site.

Compaction of bedding sand must adhere to requirements set out in the TasNetworks standards.

10.5 Back-fill

If deemed suitable by the Tasmanian Irrigation representative, the material which has been excavated from the trench excavation can be used as back-fill. Based on the bedding sand being in place to buffer and protect the conduits, the back-fill material can consist of stone sizes up to a nominal diameter of 50mm (15% to the total volume) with a good portion of fines and variable stones less than 50mm diameter. The backfill shall not include large stones (greater than 50mm diameter) unless part of the design or at the direction of the Tasmanian Irrigation representative.

Installation of back fill material shall not be commenced until Tasmanian Irrigation has been given opportunity to inspect the trench conditions and installation of the bedding sand. It will be up to the discretion of Tasmanian Irrigation whether it chooses to inspect or not at any point in time.

The back-fill material shall be compacted. The depth of compacted layers shall be suitable for the compaction equipment used but shall not exceed 300mm. The trench backfill shall be compacted to a minimum 98% standard compaction within 3% of the optimum moisture content.

The backfill material shall be tested in accordance with AS1289 parts 5.1.1, 5.8.1, and 5.4.1, and VicRoads test method, RC31600 Density Ratio and Moisture Ratio Lot Characteristics 2019, to ensure suitable compaction has been achieved.

Back fill material shall achieve the original ground level, but with an additional slight mounding of soil to allow for final settling of materials. In the event excessive excess soil remains, the Tasmanian Irrigation representative is to be contacted for advice on where to place excess materials. In the event no suitable location on site exists to dump or spread excess materials the contractor must remove all excess materials from site.

10.6 Electrical services marker tapes

During the backfilling process the contractor must ensure that electricity type marker tapes are installed at the designed depth and located centrally above the conduit system according to the design. The colour of the marker tapes shall be in accordance with the Table 1 of AS 2648.1.

Marker tape specified for this project are to be 150mm wide.

10.7 Above ground cable markers

Upon completion of trenching above ground cable markers must be installed as follows:

- At all changes of direction (both horizontally and vertically)

- For straight runs every 50 metres
- On both sides of any road crossing

Flexible guidepost style orange marker posts or equivalent are considered acceptable for this project.

All marker post shall be marked with clear legible long life UV stabilised labelling with the words:

- **Line 1**: Warning
- **Line 2**: Buried electrical cable below
- **Line 3**: Contact Tasmanian Irrigation and Before You Dig Australia (formerly Dial Before You Dig) for further details.

11. Commissioning

11.1 General

It is the Contractor's overall responsibility under this contract, to make ready for service and finally point-to-point test all items of plant associated with this installation such that the complete system functions to the satisfaction of TasIrrigation and in accordance with TasNetworks standard "Electrical Testing Specification Pre-commissioning & Commissioning (Document R0000390068)".

After installation but prior to energisation:

- Make a detailed inspection of the pad mounted substation to ensure no damage has occurred during installation, including checking all bolts are tight and cable terminations are correct.
- Test the new pad mounted substation after installation in accordance with the manufacturer's recommendations and AS2067.
- Test the new recloser after installation in accordance with the manufacturer's recommendations and AS2067.
- Test all HV and LV cabling after installation in accordance with the manufacturer's recommendations and AS2067.
- Provide type test certificates for all equipment connected to the HV system.
- Secondary injection test, timing tests and trip test certificates for HV circuit breaker only.
- IR and ratio tests for transformer.
- Provide test certificates for all testing prior to energisation.
- Provide copy of Certificate of Electrical Compliance (CEC) form for installation.

After energisation:

- Voltage checks.
- Polarity checks.

- Final functional check of equipment operation.
- Load checks of all circuits.

11.2 Earthing system

The earth grid installation must be inspected by the designer prior to back-filling to ensure compliance with design. It is recommended that the earthing system designer or other qualified and competent person inspects the earth grid joints prior to backfilling.

All joints shall be tested using a four-wire resistance tester, the test result recorded with a location and photo. If a joint measures higher than the expected calculated value, the joint shall be replaced and re-tested.

A commissioning schedule for the HV energisation of the electrical installation must be commissioned in accordance with AS2067-2008. For this installation, current injection testing shall be performed using the off-frequency method to verify the safety of the earthing system.

The remote current injection point should be established based on the interconnection, fault location and soil resistivity at the site under test.

To verify the safety of the installed earthing system in accordance with AS 2067, ENA EG 1, ENA EG 0, the testing should include the following:

- Measurement of earth grid voltage and earth system resistance.
- Measurement of prospective step, touch and hand-to-hand voltages in and around the site and surrounding areas, in accordance with the relevant zone of influence.
- Investigation and measurement of transferred voltages outside the site
- Visual inspection.
- Continuity testing using a 4 wire DC resistance meter.

The installation and commissioning processes shall determine the validity and compliance of the design to ensure the earthing safety requirements are met and thus certify compliance. Any non-compliance will be reviewed and mitigated by subsequent coordinated works between the designer and installer.

Appendices

A Design drawings, reference documents and standards

A.1 Design drawings

TITLE	REF NO.
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION HV & EARTHING INSTALLATION SITE LAYOUT INDEX AND NOTES	NMIS-350-DWG-4450
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION HV & EARTHING INSTALLATION SITE LAYOUT GENERAL ARRANGEMENT	NMIS-350-DWG-4451
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION HV & EARTHING INSTALLATION SITE LAYOUT KIOSK SUBSTATION AND POLE SETOUT DETAILS	NMIS-350-DWG-4452
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION HV & EARTHING INSTALLATION BUILDING EARTHING ARRANGEMENT AND DETAILS	NMIS-350-DWG-4453
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION HV & EARTHING INSTALLATION TRENCH SECTIONS, NOTES AND TABLE DETAILS	NMIS-350-DWG-4454
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION HV & EARTHING INSTALLATION SUBSTATION EARTHING ARRANGEMENT AND DETAILS	NMIS-350-DWG-4455
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION HV & EARTHING INSTALLATION SUBSTATION CONCRETE PLINTH ARRANGEMENT AND DETAILS	NMIS-350-DWG-4456
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION HV & EARTHING INSTALLATION 4/15 1500kVA KIOSK SUBSTATION ONE LINE DIAGRAM	NMIS-350-DWG-4457

A.2 Project reference drawings

TITLE	REF NO.
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION SINGLE LINE DIAGRAM	NMIS-350-DWG-4400
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION SINGLE LINE DIAGRAM 24VDC SHEET 1 OF 2	NMIS-350-DWG-4401-1
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION SINGLE LINE DIAGRAM 24VDC SHEET 2 OF 2	NMIS-350-DWG-4401-2
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION EMERGENCY STOP CIRCUIT	NMIS-350-DWG-4402
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION PUMP MOTOR DRIVES TYPICAL POWER AND CONTROL CIRCUIT	NMIS-350-DWG-4403
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION REMOTE TELEMETRY UNIT LAYOUT	NMIS-350-DWG-4404
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION DIGITIAL INPUT MODULES WIRING DIAGRAM SHEET 1 OF 3	NMIS-350-DWG-4405-1
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION DIGITIAL INPUT MODULES WIRING DIAGRAM SHEET 2 OF 3	NMIS-350-DWG-4405-2
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION DIGITIAL INPUT MODULES WIRING DIAGRAM SHEET 3 OF 3	NMIS-350-DWG-4405-3
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION DIGITIAL OUTPUT MODULE WIRING DIAGRAM	NMIS-350-DWG-4406
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION ANALOGUE INPUT MODULES WIRING DIAGRAM SHEET 1 OF 2	NMIS-350-DWG-4407-1
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION ANALOGUE INPUT MODULES WIRING DIAGRAM SHEET 2 OF 2	NMIS-350-DWG-4407-2
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION ANALOGUE OUTPUT MODULE WIRING DIAGRAM	NMIS-350-DWG-4408
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION LOW VOLTAGE EARTHING DIAGRAM	NMIS-350-DWG-4409
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION SITE ELECTRICAL PLAN	NMIS-350-DWG-4410
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION GENERAL LIGHT & POWER PLAN	NMIS-350-DWG-4411
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION SWITCHBOARDS GENERAL LAYOUT PLAN	NMIS-350-DWG-4412

NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION CONDUIT PLAN	NMIS-350-DWG-4413
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION ELECTRICAL & CABLE BLOCK DIAGRAM SHEET 1 OF 2	NMIS-350-DWG-4414-1
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION ELECTRICAL & CABLE BLOCK DIAGRAM SHEET 2 OF 2	NMIS-350-DWG-4414-2
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION CABLE SCHEDULE SHEET 1 OF 2	NMIS-350-DWG-4415-1
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION CABLE SCHEDULE SHEET 2 OF 2	NMIS-350-DWG-4415-2
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION VIBRATION MONITORING EQUIPMENT TYPICAL WIRING DIAGRAM SHEET 1 OF 2	NMIS-350-DWG-4416-1
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION VIBRATION MONITORING EQUIPMENT NOTES AND TABLES SHEET 2 OF 2	NMIS-350-DWG-4416-2
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION DISTRIBUTION BOARD 1 SINGLE LINE DIAGRAM	NMIS-350-DWG-4417
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION MECHANICAL SERVICES POWER AND CONTROL SCHEMATIC	NMIS-350-DWG-4418
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION SMOKE DETECTION PLAN	NMIS-350-DWG-4419
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION SECURITY DETECTION PLAN	NMIS-350-DWG-4420
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION COMMUNICATIONS DIAGRAM	NMIS-350-DWG-4421
NMIS ELECTRICAL SERVICES VALLEYFIELD PUMP STATION MAJOR EQUIPMENT LIST	NMIS-350-DWG-4422

A.3 Australian Standards

TITLE	REF NO.
Telecommunication cables - Insulation, sheath and jacket	AS 1049 series
Methods of testing soils for engineering purposes	AS 1289 series
Safety signs for the occupational environment	AS 1319
Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium	AS 1397
Conduits and fittings for electrical installation	AS/NZS 2053 series
Substations and high voltage installations exceeding 1kV a.c.	AS 2067
Underground marking tape	AS/NZS 2648
Colour standards for general purposes	AS 2700
Electrical installations (known as the Australian/New Zealand Wiring Rules)	AS/NZS 3000
Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation conditions	AS/NZS 3008.1.1
Electrical installations – Testing and inspection guidelines	AS/NZS 3017
Degrees of protection provided by enclosures for electrical equipment (IP Code)	AS 60529

The contractor may propose alternative codes and standards provided, if it is proven that it gives an equivalent degree of quality or compliance that is more stringent than the referenced codes and standards. Acceptability of any alternative codes or standard is at the discretion of the client.

A.4 TasNetworks standards

TITLE	REF NO.
Distribution Overhead Design – version 2, October 2018	R1213216
Distribution Overhead Standard – Overhead Construction Standard – version 1, February 2020	R1563643
Distribution Design Standard – Underground Systems – version 1, February 2016	R0392089
Construction Drawings – Underground System – version 3, November 2017	R0393235
Electrical Testing Specification Pre-commissioning & Commissioning	R0000390068

B Appendix – Safety in Design (SiD)

IRBM risk assessment matrix -
showing risk categories based on assessment of risk likelihood and consequence

Likelihood	Consequence (impact)					
	1 Insignificant	**2** Minor	**3** Moderate	**4** Major	**5** Extreme	**6** Catastrophic
A. Almost Certain	L	M	H	E	E	E
B. Likely	L	M	H	E	E	E
C. Possible	L	L	M	H	E	E
D. Unlikely	L	L	L	M	H	E
E. Rare	L	L	L	L	M	H
F. Extremely Rare	L	L	L	L	L	M
E	**Extreme Risk** – Risk threatens business sustainability			Intolerable - Requires urgent attention		
H	**High Risk** - Risk poses significant threat to corporation business strategies and objectives			Intolerable - requires addressing at an early date		
M	**Moderate Risk** – Risk poses moderate threat to corporation business strategies and objectives			Must be incorporated into project or business risk management programs with timing to fit overall program		
L	**Low Risk** – Risk poses minimal threat to corporation business strategies and objectives			Timing to suit normal operations		

Risk likelihood categories using IRBM

Level	Description	Probability range	Example likelihood
A	Almost Certain	$0.9 \leq p \leq 1.0$	Event is expected in the 12 month period
B	Likely	$0.6 \leq p < 0.9$	Event is likely to occur in the 12 month period
C	Possible	$0.2 \leq p < 0.6$	Event may occur (but not likely) in the 12 month period
D	Unlikely	$0.05 \leq p < 0.2$	Event not expected in the 12 month period.
E	Rare	$0.001 \leq p < .05$	Event extremely unlikely in 12 month period
F	Extremely Rare	$0 \leq p < 0.001$	May only occur in extreme and exceptional circumstances over 12 month period.

Risk consequence categories using IBRM

Level	Description	Example consequences		Consequence value
		Health and safety	***Legal / Compliance***	
6	Catastrophic	Significant number of fatalities (>50)	Serious regulatory compliance breach - prosecution resulting in jail terms for employees, directors Loss of operating licences Legal impact (contract or tort) or loss of business	>$150M
5	Extreme	Multiple fatalities, or significant irreversible effects to >50 persons	Extreme regulatory compliance breach - prosecution likely Temporary suspension of operating licences Legal impact (contract or tort) or loss of business control	$50M to $150M
4	Major	Single fatality and/or severe irreversible disability (>30%) to one or more persons	Regulatory compliance breach – possible prosecution but not likely Operating licences restrictions on operations Legal impact (contract or tort)	$10M to $50M
3	Moderate	Serious injury, e.g. permanent disability, amputation	Regulatory Compliance breach – no prosecution Breaches of operating licence conditions – system changes needed Moderate Legal impact (contract or tort)	$100K to $10M
2	Minor	Medical treatment injury	Minor compliance breach Operating licences unaffected Minor Legal impact (contract or tort)	$1K to $100K
1	Insignificant	First-aid treatment, e.g. minor cuts, bruises, bumps	Low-level legal compliance issue dealt with in-house Negligible Legal impact (contract or tort)	≤ $1K

B.1 Hierarchy of controls

The ***hierarchy of controls*** indicates the order in which risks/hazards should be controlled. Where possible, risks should be eliminated through the design process. Where it is not possible to completely eliminate a risk, controls should be implemented following the hierarchy (i.e. if a risk cannot be managed by elimination, try designing a substitution control next, followed by an isolation control):



The hierarchy of controls

- **Elimination** - eliminate the hazard by removing it completely.
  - remove hazardous plant or equipment from the design
  - cease work with inherently dangerous activities or designs
- **Substitution** - where it is not possible to completely eliminate the hazard, minimise the risk by substituting it with a hazard of lower risk.
  - use low voltage electrical plant instead of high voltage
  - replace hazardous materials with suitable non or less hazardous alternatives
- **Isolation** - isolate people from the hazard.
  - place hazardous plant or equipment in enclosures with controlled access
  - add safety barricades to designs
- **Engineering** - apply engineering controls to remove or reduce the hazard.
  - use safety switches to protect electrical sockets supplying plant

- put guards on machinery, install automatic cut-off switches, provide assistive equipment

- **Administration** - use administrative controls to remove or reduce the hazard
  - perform regular inspection and tests on plant and equipment
  - develop safety procedures, provide training or supervision
- **Personal Protective Equipment** - as a last resort, use PPE to minimise the risk without addressing the hazard.
  - use rubber mats, insulated gloves, eye protection, boots, ear protection and/or helmets
  - to be used in conjunction with measures further up the hierarchy, not as the sole control measure

Risk register								
Description of hazards	**L**	**C**	**R**	**Mitigation**	**L**	**C**	**R**	**Residual Risk Owner**
Working in the electrical supply industry - electrocution	B	4	E	Design is for safe clearances, design is to industry standards, utilise industry standard installation procedures and industry testing standards, follow power system safety rules, undertake appropriate training, and ensure appropriate supervision. Isolate supplies where deemed necessary. Installation shall be constructed on de-energised equipment. All works to be undertaken de-energised until complete. Coordinate outages with the asset owner.	E	3	L	contractor, designer, and asset owner
Isolations - electrical/heights/interlocking/	C	4	H	Asset owner to perform all isolations utilising existing safe work method statements. All isolations can be performed from the ground.	E	3	L	asset owner, contractor
Earth moving/ heavy construction equipment used during construction. – crushing, electrocution, vehicle damage/fire	C	4	H	Correct clearances to live conductors to be observed. Safety observer to be always used when digging, and when operating in vicinity of live conductors near the Point of Connection (POC). Hand digging to be used when close to existing infrastructure including earthing to avoid damage. Make eye, radio contact with operators, and only proceed when and how approval is given.	E	3	L	asset owner, contractor
Earthing hazards, i.e., voltage hazard occurring because of a fault occurring during works - electrical.	C	2	L	Perform earthing modifications/extensions on the network when de-energised unless special insulated work practices are employed. Ensure earthing is in accordance with design.	E	2	L	contractor
Excavations for new poles, foundations, and cable/duct - slip/strains/ crushing	C	3	M	Correct clearances to live conductors to be observed. Safety observer to be always used when operating in vicinity of live conductors. Hand digging to be used when close to existing subsurface infrastructure including earthing to avoid damage. Maintain safe approach to excavations. Do not enter excavations, except where required and trained e.g., cable jointers in pits.	E	3	L	contractor
Handling of oils and oil filled equipment - oil	C	3	M	Consult Safety Material Datasheet for safe handling requirements of any oils. Regulations regarding oil spill prevention and management to be adhered to. Appropriate PPE to be worn when handling oils.	E	3	L	asset owner, contractor
Installation of poles - electrical/handling/crushing	C	4	H	Installation method to allow for sufficient clearance from live conductors. Always use lifter-borer / crane and trained dog men / riggers with safety observer. Use temporary stays where needed to counteract unbalanced forces during construction.	E	3	L	contractor
Open excavations – collapse, crushing	C	3	M	Construction method to allow for suitable barriers where required to prevent accidental falling into open excavations e.g., cable pits and trenches. Appropriate temporary works including methods of shoring will need to be considered as required to ensure that open excavations do not collapse.	C	2	L	contractor
Installation of new cables and conductors – entanglement/mechanical/ handling/slips	C	4	H	Design minimises risks associated with cable routes and is designed in accordance with Australian standards, including industry standard mechanical protection and support for above ground sections. Adhere to cable bending radius and pulling tension requirements. Use suitable machinery to reduce or eliminate manual handling, use appropriate manual handling techniques where required. Create a work plan and follow company and equipment specific Safe Work Method Statements (SWMS). Neatly handle conductors and cables in preparation for installation. ADSS cable is to be carefully and neatly handled and coiled on poles where required.	E	3	L	contractor
Installing new primary equipment – mechanical/slip/oil/height/access/ handling/crushing	C	3	M	Ensure clearances to live lines are adhered to and a safety observer is always used. Plan elevated work platform (EWP) locations and equipment paths prior to lifting operation.	E	3	L	contractor

				Develop suitable crane operation plan, including safety measures, for positioning the transformer, and employ operator with appropriate certificate for heavy machinery operation. Organize on-site HV acceptance test in a safe manner to avoid inadvertently crossing working area and ensure sufficient clearance to the adjacent live parts. Avoid malfunction of protection devices during the wiring work on protection panel. Use appropriate machinery and lifting equipment to reduce or eliminate manual handling, create a work plan, and follow company and equipment specific Safe Work Method Statements (SWMS).				
Existing underground services – electrocution/contamination	C	4	H	Foundation location, cable route and conduit route selected to minimise disturbance to known existing underground services. Undertake services location before excavation. Suitable construction techniques to be used (i.e., vac excavation) where services are present.	E	3	L	contractor
Working in live environment, risk of incorrect isolations - electrocution	C	4	H	Qualified personnel used to perform work and ensure that isolations have been carried out and permits maintained.	D	3	L	contractor
Steep terrain – slips/trips/mechanical/handling	C	4	H	Operators to be trained and experienced in using equipment on steep and/or slippery terrain. Develop work and access plans for appropriate equipment for steep sections of the route.	D	3	L	contractor
Cable / conductor tensions - mechanical	C	4	H	Use industry standard techniques to ensure that new cables and conductors being pulled to not exceed maximum pulling tensions. Use industry standard techniques to ensure that conductors being installed overhead are tensioned as per the design to avoid cable breakage, flying cables, pole collapse, lack of ground clearance, etc. Use of tension meter recommended.	E	3	L	contractor
Coordination of contractors on the same site	C	4	H	Participate in coordination / sequencing workshops with the asset owner and other contractors.	E	3	L	contractor

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Lara Henley

From: Gregory Carson
Sent: Wednesday, 2 October 2019 1:17 PM
To: Ian Smith
Subject: RE: Lake River - Hydro supply

We eventually need to be able to supply approx 30-35,000ML between Woods Lake and the confluence of the Macquarie River and Brumbys Creek.

Thank you

Greg

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Wednesday, 2 October 2019 12:22 PM
To: Greg Carson <Greg.Carson@hydro.com.au>
Subject: Lake River - Hydro supply

Hi Greg,
I am just reviewing some background reports, can I reconfirm again please that your current plan is to provide 35,000ML through Lake River as a total volume?

Thanks

Ian

Tasmanian Irrigation

p 04[redacted]
e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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Lara Henley

From: Chris Masters
Sent: Thursday, 2 March 2023 1:26 PM
To: Aaron Cassidy
Subject: RE: NMIS Poatina Pump Station
Attachments: Overall Site General Arrangement.dwg

Good afternoon Aaron,
I apologise for the delay getting the attached CAD file through to you.

Regarding the preparation of the scope of works documentation for the HV electrical connection.
The scope of works will specifying the particulars for the following components:

- Overhead lines and poles
- Kiosk transformer
- HV earthing
- Protection
- Commissioning, detailing minimum test types
- Scope boundaries
- Free issue of equipment
- Hold points if required.

We estimate that we can undertake this do-and-charge up to a notifiable limit of [redacted]

Please let me know if you are happy for us to proceed.

Thanks and regards,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
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From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Wednesday, 1 February 2023 11:21 AM
To: Chris Masters <Chris.Masters@entura.com.au>
Cc: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Subject: NMIS Poatina Pump Station

G'Day Chris,

We are in the process of developing a General Arrangement drawing for the whole of the Poatina Pump Station and Buffer Dam site with GHD. Would we be able to get an AutoCad native drawing from you with all the HV for the site similar to the attached?

Regards

Aaron Cassidy
Technical Officer

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: aaron.cassidy@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Tuesday, 8 October 2019 8:56 AM
To: Gregory Carson
Subject: Arthurs Lake Modelling and concept catch-up
Attachments: AL Modelling 3

Hi Greg,

I have been looking at the potential for additional water ex Arthurs Lake through Floods Creek, which is something we need to catch up on as a concept. To support the theory, I was looking to do some update work from the MWS hydrology from 2011 and additional work Fiona Ling did in 2016.
Mike O'Shea has been able to provide some email correspondence in relation to the 2016 work however we do not seem to be able to find a final report. Are you aware if a final report was prepared, and if so, would you have a copy you are able to share please? A copy of email attached if it assists.

Clearly the concept is interconnected with your Lake River plans and then overall any concepts that TI might come up with for NMIS.

I was looking to touch base again after you had further information from the proposals you were putting up to the Hydro board (as discussed a couple of weeks ago) so probably opportune to catch up if we can so that I can compare notes of current concepts with Hydro plans and therefore any hydrology assessments for Arthurs and their relevance.

In summary;

1. Do you have a report from modelling undertaken in 2016 which you are able to share; and
2. Do you have sufficient information to be able to catch up again in terms of reviewing current TI concept and water sources.

Thanks

Ian

Tasmanian Irrigation

p 04[redacted]
e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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Lara Henley

From: Chris Masters
Sent: Wednesday, 15 February 2023 10:10 AM
To: Aaron Cassidy
Cc: Hugh Abetz
Subject: RE: [External][CN22-130654] Letter of Offer - Palmerston 4336 Poatina Road CRESSY TAS 7302

Good morning Aaron,
Apologies for the delay getting back to you.
As discussed yesterday we have reviewed the contract documents and Negotiated Connection Schedule and have not identified and issues or additional restrictions which should impose any difficulties for TasIrrigation.

An item worth noting is that unlike Valleyfield TasNetworks have not specified a second recloser on their pole which will reduce their cost and make the protection grading slimpler.

Similar to Valleyfield there are a couple of design inputs that were missing from their package.

TasNetworks
Can tasNetworks please provide the following:

- Single phase to earth fault magnitude at the point of connection, including:
  - sequence impedances
  - Primary and backup clearing time
- TasNetworks protection settings for upstream protection devices (fuses and switchgear)

Thanks and regards,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
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From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Monday, 30 January 2023 11:45 AM
To: Chris Masters <Chris.Masters@entura.com.au>
Cc: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Subject: Fw: [External][CN22-130654] Letter of Offer - Palmerston 4336 Poatina Road CRESSY TAS 7302

G'Day Chris,

Attached is the offer to connect for the NMIS Poatina Pump station from TasNetworks, can you please review the relevant elements and advise if it is in accordance with the design you have been working on?

Regards

Aaron Cassidy
Technical Officer

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: aaron.cassidy@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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[redacted]





Lara Henley

From: Chris Masters
Sent: Wednesday, 18 January 2023 4:53 PM
To: Hugh Abetz; Aaron Cassidy
Cc: Jacob Gerke
Subject: RE: [External][CN22-76045] Pituncarty 0 Valleyfield Rd CAMPBELL TOWN TAS 7210

Good afternoon Hugh, Aaron,
I have had a look over the Negotiated Connection Schedule and cannot find any issues with the quoted maximum capacity, maximum demand and fault level values.
There doesn't seem to be any additional restrictions listed in the document which should impose any difficulties.

One query that we have raised with TasNetworks is the requirement for a TasNetworks owned recloser and TasIrrigation recloser on adjacent poles, as outlined in
TasNetworks initial Connection Capability Report from 10/2021. Protection grading has been identified as potentially difficult and we believe a TasNetworks owned load break switch should be more suitable.

An additional query that TasIrrigation may want to confirm with TasNetworks is what extent of easement is required for their overhead line, given that there is no road reserve over Valleyfield Rd this will need to be included in the easement. To avoid the need to twice negotiate the easement deeds with the landowner we recommend the TasNetworks designer confirm the proposed easement with the TN Land Access Coordinator before we seek easement deed completion.

Regarding the current status of the design, both Valleyfield and Poatina are currently have completed preliminary designs.
We are initiating the detailed design for the Valleyfield site however we will require additional inputs (detailed below) from TasNetworks to progress the design to completion.
I have also listed some inputs we will need from GHD regarding the LV system

Required design inputs

TasNetworks
Can tasNetworks please provide the following:

- TasNetworks to confirm the requirement for a TasNetworks owned recloser immediately upstream of the TasIrrigation recloser or indicate if a load break switch is suitable.
- Single phase to earth fault magnitude at the point of connection, including:
  - sequence impedances
  - Primary and backup clearing time
- TasNetworks protection settings for upstream protection devices (reclosers and switchgear)
- Proposed stringing tensions for the new TasNetworks spans
  - these are for our own tipload calculations. If it becomes an issue or are unavailable, such short spans are unlikely to be strung to a high tension and we should be able to mitigate most tensions by staying the meter pole.
- We recommend that that the TN designer indicates an existing S5/22/3 crossarm on TasIrrigation's recloser pole and that we'll provide it. TasNetworks are currently indicating a new DE5/22/3 FRP crossarm on the same pole which will be redundant.

GHD
Can GHD please provide the following:

- We currently have included 5 x 150mm conduits from the kiosk to the pump station. Can GHD please indicate where they would like the conduits to penetrate into the building
- Please indicate the number and size of LV cables. So that we can ensure sufficient termination space within the kiosk

- Specify the number and size of the LV main ACB within the kiosk substation, this will need to be included in the kiosk order.

TasIrrigation

Can TasIrrigation please confirm the following

- Is and air break switch required on the recloser pole? One was provided at Scottsdale as a visual tell for operators
- Does TasIrrigation require remote operation functionality in the recloser

Please let me know if you have any queries,
Regards,

Chris Masters | Electrical Engineer

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From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Thursday, 22 December 2022 11:30 AM
To: Chris Masters <Chris.Masters@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Subject: FW: [External][CN22-76045] Pituncarty 0 Valleyfield Rd CAMPBELL TOWN TAS 7210

Hi Chris,

With respect to the information supplied by TasNetworks for Valleyfield Pump Station can you please confirm the supply and fault loads are in line with the design completed for the TasIrrigation infrastructure?

Just to note that I will be on leave until the 1st February, so if you could remain in contact with Jacob G and Aaron that would be much appreciated.

Kind Regards,
Hugh Abetz
Engineer

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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From: Negotiated Connections DPD <NegotiatedConnectionsDPD@tasnetworks.com.au>
Sent: Tuesday, 20 December 2022 7:44 AM
To: Engineering Services <Engineering.Services@tasirrigation.onmicrosoft.com>
Cc: Minor.Works@tasnetworks.com.au; chris.masters@entura.com.au; brad.davie@ghd.com.au
Subject: [External][CN22-76045] Pituncarty 0 Valleyfield Rd CAMPBELL TOWN TAS 7210

Dear Hugh,

Please find attached your Letter of Offer for the above connection.

Please return the included forms by mail to TasNetworks Attn: Design Project Support Officer PO Box 419 Launceston Tas 7250 or by email to negotiatedconnectionsDPD@tasnetworks.com.au

Please note the tax invoice for payment will be sent on a separate email from TasNetworks Accounts within 24 hours.

If you do not receive the tax invoice please check your junk mail folder and if you are unable to locate the invoice email please let us know.

Thanks
On behalf of Alan Hunter
Designer/Estimator

To contact us, please reply to this email or call our general enquiry line on 1300 137 008.

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Lara Henley

From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Friday, 31 March 2023 11:18 AM
To: Chris Masters
Subject: FW: [External]Poatina Drawings
Attachments: 12556374-XC_DESIGN_DAM.dwg; 12556374-XC_UNDER_DRAIN.dwg; Poatina_PS.dwg; 12556374_GHD Digital Disclaimer.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Chris,

Here is the info from GHD for the Poatina Pump Station and adjacent buffer dam, they should overlay correctly (you wont need the under drain).

Note the disclaimers. Any issues let me know.

Pic below for reference

[redacted]

Aaron Cassidy
Technical Officer

Tasmanian Irrigation

T: (03) 6398-8433
M: 0400 143 114
E: aaron.cassidy@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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[redacted]

Lara Henley

From: Ian Smith <Ian.Smith@tasirrigation.com.au>
Sent: Thursday, 7 November 2019 9:16 AM
To: Gregory Carson
Subject: Northern Midlands - preliminary

Hi Greg,
I have some preliminary engineering returns, there are a couple of items I am keen for some feedback on;

1. Potentially there is a gravity feed option from the first drop, via pipe. The pipe would be quite substantial however and the intake construction would require a fair amount of earthworks adjacent to the tail race. Thoughts?
2. To carry 100ML/day essentially doubles the size of the water we are looking at – we now have EOI of 17,000ML over the Hydro. What issues does this present?
3. The preliminary pipe sizing to do what you are looking at is circa 21km of DN1200 pipe. This has a potential install cost of $[redacted]

I am still working through implications etc but thought I would see what your initial thoughts were. I have not looked at the 200ML/day scenario, but it would be safe to assume that once in 1200mm pipes it is near enough to a straight duplication.

Will stay in touch as I am still working my head around numbers and options, including pumping from the tail race.

Thanks

Ian

Tasmanian Irrigation

p 04[redacted]
e ian.smith@tasmanianirrigation.com.au
w www.tasmanianirrigation.com.au
PO Box 84 Evandale TAS 7212

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Lara Henley

From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Thursday, 9 February 2023 7:27 AM
To: Chris Masters
Cc: NMIS
Subject: Fwd: [External]RE: [CN22-76045] Pituncarty 0 Valleyfield Rd CAMPBELL TOWN TAS 7210
Attachments: Valleyfield Pumps for Tas Irrigation HV Summary Information CN22-76045.pdf; D-74-0268-RP-001 VALLEYFIELD PUMP STATION ROUTE PLAN.dwg

Follow Up Flag: Follow up
Flag Status: Completed

Chris,

Please see attached and below for responses from TN to you questions for the VPS (Pituncarty) site.

Regards

Aaron Cassidy
P [redacted]
E aaron.cassidy@tasirrigation.com.au
Aaron Cassidy
Technical Officer

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
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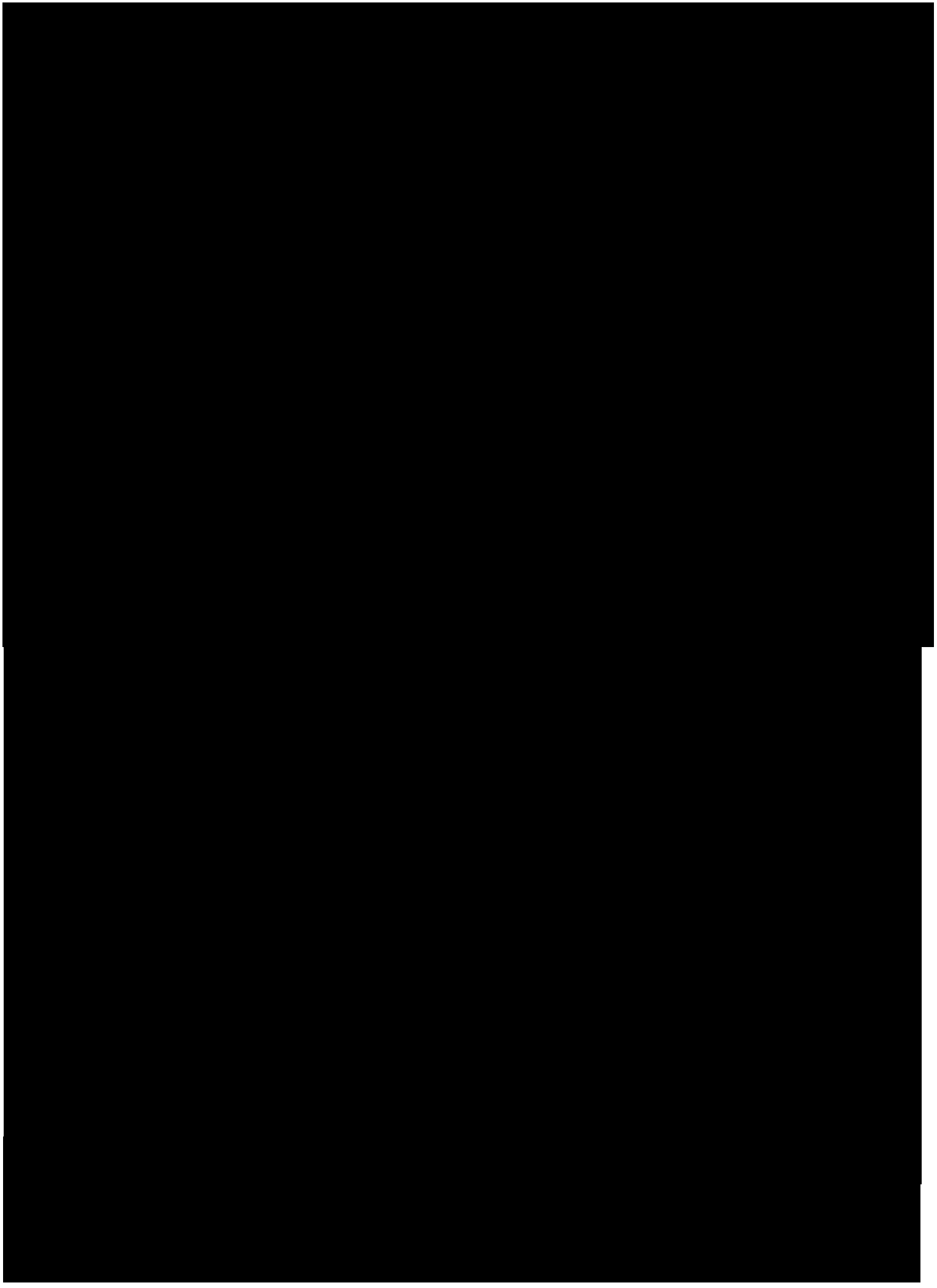
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[redacted]





Lara Henley

From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Wednesday, 1 February 2023 11:21 AM
To: Chris Masters
Cc: Hugh Abetz
Subject: NMIS Poatina Pump Station
Attachments: Poatina Pump Station - Concept Connection Arrangement_Rev 2.pdf

G'Day Chris,

We are in the process of developing a General Arrangement drawing for the whole of the Poatina Pump Station and Buffer Dam site with GHD. Would we be able to get an AutoCad native drawing from you with all the HV for the site similar to the attached?

Regards

Aaron Cassidy
Technical Officer

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: aaron.cassidy@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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Lara Henley

From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Monday, 30 January 2023 11:45 AM
To: Chris Masters
Cc: Hugh Abetz
Subject: Fw: [External][CN22-130654] Letter of Offer - Palmerston 4336 Poatina Road CRESSY TAS 7302
Attachments: NECF CONNECTION STANDARD TERMS AND CONDITIONS.pdf; CN22-130654 Easement Deed - Cover LetterPalmerston 4336 Poatina Road CRESSY TAS 7302 20230117013907.pdf; D-C54-0690-LY-002.pdf; N_008743_N5 - Negotiated Connection Schedule Substation.pdf; CN22-130654 Letter of Offer - EASEMENT REQUIREDPalmerston 4336 Poatina Road CRESSY TAS 7302 20230117020408.pdf; N_008743_Easement Deed - 4336 Poatina Road.pdf

G'Day Chris,

Attached is the offer to connect for the NMIS Poatina Pump station from TasNetworks, can you please review the relevant elements and advise if it is in accordance with the design you have been working on?

Regards

Aaron Cassidy
Technical Officer

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: aaron.cassidy@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Monday, 23 January 2023 4:55 PM
To: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Subject: Fwd: [External][CN22-130654] Letter of Offer - Palmerston 4336 Poatina Road CRESSY TAS 7302

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Hugh Abetz
Engineer
T: (03) 6398-8433
M: [redacted]
E: hugh.abetz@tasirrigation.com.au

[redacted]

Lara Henley

From: Ian Dunbabin
Sent: Monday, 17 August 2020 9:28 AM
To: Gregory Carson
Subject: FW: TI meeting

FYI

From: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Sent: Monday, 17 August 2020 08:41
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Cc: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: RE: TI meeting

Good morning Ian

Attendees for this afternoon's meeting will be;

[redacted]
Jacob Gerke (NMIS PM)
[redacted]
Di Shearer (minutes)
Andrew Kneebone is an apology.

The key issues for us are:

[redacted]

NMIS

- Winter water
    - Does Poatina generally operate at all in Winter?
    - Other Options other than Poatina for Winter Water?
        - How do others in the area access Winter Water?

[redacted]

Regards

Paul

From: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Sent: Friday, 14 August 2020 8:44 AM
To: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Subject: RE: TI meeting

Thanks Paul. On its way. May I ask you to forward to your team as appropriate please.

Regards, Ian

From: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Sent: Friday, 14 August 2020 08:35
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Subject: RE: TI meeting

Teams works for us.

From: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Sent: Friday, 14 August 2020 8:32 AM
To: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Subject: RE: TI meeting

Good morning Paul,

Meeting for Monday confirmed. Are you on the Teams platform or are we best to stick with Skype?

Regards, Ian

From: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Sent: Friday, 14 August 2020 08:20
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Subject: TI meeting

Hi Ian

Can you please send out a calendar invite for our meeting? 1pm Monday was what we discussed earlier this week.

Regards

Paul Ellery
General Manager Program Development and Delivery

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: paul.ellery@tasirrigation.com.au
W: www.tasirrigation.com.au

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Lara Henley

From: Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Sent: Friday, 20 January 2023 2:35 PM
To: Chris Masters; Hugh Abetz
Cc: Jacob Gerke
Subject: RE: [External][CN22-76045] Pituncarty 0 Valleyfield Rd CAMPBELL TOWN TAS 7210
Attachments: NMIS IFC Electrical drawings.zip

Thanks Chris,

Attached are the latest drawings from GHD that should have answers to your questions, I have included the full electrical set just to ensure it is all there.

We will pass on your request to TasNetworks.

Let me know if you have other questions.

Regards

Aaron Cassidy
Technical Officer

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: aaron.cassidy@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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From: Chris Masters <Chris.Masters@entura.com.au>
Sent: Wednesday, 18 January 2023 4:53 PM
To: Hugh Abetz <hugh.abetz@tasirrigation.com.au>; Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: RE: [External][CN22-76045] Pituncarty 0 Valleyfield Rd CAMPBELL TOWN TAS 7210

Good afternoon Hugh, Aaron,
I have had a look over the Negotiated Connection Schedule and cannot find any issues with the quoted maximum capacity, maximum demand and fault level values.
There doesn't seem to be any additional restrictions listed in the document which should impose any difficulties.

One query that we have raised with TasNetworks is the requirement for a TasNetworks owned recloser and TasIrrigation recloser on adjacent poles, as outlined in
TasNetworks initial Connection Capability Report from 10/2021. Protection grading has been identified as potentially difficult and we believe a TasNetworks owned load break switch should be more suitable.

An additional query that TasIrrigation may want to confirm with TasNetworks is what extent of easement is required for their overhead line, given that there is no road reserve over Valleyfield Rd this will need to be included in the easement. To avoid the need to twice negotiate the easement deeds with the landowner we recommend the TasNetworks designer confirm the proposed easement with the TN Land Access Coordinator before we seek easement deed completion.

Regarding the current status of the design, both Valleyfield and Poatina are currently have completed preliminary designs.
We are initiating the detailed design for the Valleyfield site however we will require additional inputs (detailed below) from TasNetworks to progress the design to completion.
I have also listed some inputs we will need from GHD regarding the LV system

Required design inputs

TasNetworks
Can tasNetworks please provide the following:

- TasNetworks to confirm the requirement for a TasNetworks owned recloser immediately upstream of the TasIrrigation recloser or indicate if a load break switch is suitable.
- Single phase to earth fault magnitude at the point of connection, including:
    - sequence impedances
    - Primary and backup clearing time
- TasNetworks protection settings for upstream protection devices (reclosers and switchgear)
- Proposed stringing tensions for the new TasNetworks spans
    - these are for our own tipload calculations. If it becomes an issue or are unavailable, such short spans are unlikely to be strung to a high tension and we should be able to mitigate most tensions by staying the meter pole.
- We recommend that that the TN designer indicates an existing S5/22/3 crossarm on TasIrrigation's recloser pole and that we'll provide it. TasNetworks are currently indicating a new DE5/22/3 FRP crossarm on the same pole which will be redundant.

GHD
Can GHD please provide the following:

- We currently have included 5 x 150mm conduits from the kiosk to the pump station. Can GHD please indicate where they would like the conduits to penetrate into the building
- Please indicate the number and size of LV cables. So that we can ensure sufficient termination space within the kiosk
- Specify the number and size of the LV main ACB within the kiosk substation, this will need to be included in the kiosk order.

TasIrrigation
Can TasIrrigation please confirm the following

- Is and air break switch required on the recloser pole? One was provided at Scottsdale as a visual tell for operators
- Does TasIrrigation require remote operation functionality in the recloser

Please let me know if you have any queries,
Regards,
Chris Masters | Electrical Engineer

entura

m +61 [redacted]
e chris.masters@entura.com.au | **w** entura.com.au
a 4 Elizabeth Street, Hobart TAS 7000, Australia
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From: Hugh Abetz <hugh.abetz@tasirrigation.com.au>
Sent: Thursday, 22 December 2022 11:30 AM
To: Chris Masters <Chris.Masters@entura.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Aaron Cassidy <aaron.cassidy@tasirrigation.com.au>
Subject: FW: [External][CN22-76045] Pituncarty 0 Valleyfield Rd CAMPBELL TOWN TAS 7210

Hi Chris,

With respect to the information supplied by TasNetworks for Valleyfield Pump Station can you please confirm the supply and fault loads are in line with the design completed for the TasIrrigation infrastructure?

Just to note that I will be on leave until the 1st February, so if you could remain in contact with Jacob G and Aaron that would be much appreciated.

Kind Regards,
Hugh Abetz
Engineer

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: hugh.abetz@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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[redacted]

[redacted]

[redacted]

[redacted]

[redacted]Accounts

[redacted]

[redacted]

[redacted]

[redacted]

Lara Henley

From: Gregory Carson
Sent: Monday, 17 August 2020 1:58 PM
To: jacob.gerke@tasirrigation.com.au
Subject: poatina winter duration curves.pdf
Attachments: poatina winter duration curves.pdf

Duration curve as discussed.

Greg

Lara Henley

From: Gregory Carson
Sent: Friday, 25 September 2020 5:01 PM
To: jacob.gerke@tasirrigation.com.au
Cc: Ian Dunbabin; Paul.Ellery@tasirrigation.com.au
Subject: FW: poatina winter duration curves.pdf
Attachments: poatina winter duration curves.pdf; cressy longford winter water take.pdf

Jacob

At the HT/TI meeting earlier today I was asked to provide you with the duration curves for the Cressy Longford irrigation scheme for winter water takes.

The colour scheme should be the same as the previous plot (also attached) for power station discharge.

Historically, my understanding is the CLIS has not taken much water for irrigation purposes, but rather some stock water, and a flow to stop the channel from drying out too much. They have also taken a flow to make sure there was sufficient water in Back Creek to dilute the effluent from the Longford meat works. Any water taken was opportunistic.

Whilst we have data for the releases from the re-regulation pond it is not very clean. The winter duration curves will have a similar shape to the #1 drop curves previous supplied on the basis that what goes into the pond is also released.

The original data can also be provided if required/requested.

Happy to discuss.

Thank you

Greg

Greg Carson
Climate and Environment Manager

Hydro Tasmania

m +61 [redacted]
e greg.carson@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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No trees were killed in the sending of this message, but a large number of electrons were terribly inconvenienced.

From: Greg Carson
Sent: Monday, 17 August 2020 1:58 PM
To: jacob.gerke@tasirrigation.com.au
Subject: poatina winter duration curves.pdf

Duration curve as discussed.

Greg

Lara Henley

From: Mark Willis
Sent: Monday, 21 December 2020 2:41 PM
To: jacob.gerke@tasirrigation.com.au
Cc: Ian Dunbabin; Jack Penny; Gregory Carson
Subject: RE: Tasmanian Irrigation - Poatina Tailrace Flow Data
Attachments: HydroTasmania_POATINA_DATA_exported 2020-12-21T124435.zip

Hi Jacob,

The data you have requested is attached as a zipped file of csv files. The data is average in preceding interval. That is 21/12/2020 02:00 is average starting 01:00 finishing 02:00.

I will also send thru a second email with zipped file of pdf plots of same data (There were too large to attach in the one email)

FYI – The flow measured at Poatina Tailrace No1 Drop does not measure the flow going down the Cressy Irrigation channel offtake and this has been provided also for your information. The flow measured at No1 Drop is effectively the same as No2 Drop.

Can you please confirm that you have received and extracted these ok, otherwise I can send via drop box.

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regards

Mark I. Willis
Senior Hydrographic Data Analyst

t ~~+61 3 62402248~~ | m +61 [redacted]
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w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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From: Greg Carson <Greg.Carson@hydro.com.au>
Sent: Monday, 21 December 2020 11:44 AM
To: Mark Willis <Mark.Willis@hydro.com.au>
Cc: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>; Jack Penny <Jack.Penny@hydro.com.au>
Subject: FW: Tasmanian Irrigation - Poatina Tailrace Flow Data

Mark

Tasmanian Irrigation are investigating building an irrigation scheme that draws water from the Poatina tailrace at drop #1/2.

As discussed, can you please prepare a data set of Poatina flows as follows:

- Poatina power station discharge
- Cressy Longford offtake
- Tailrace at drop #1 / #2 (whichever the monitoring site is at)
- Poatina reregulation pond

Data at half hourly time steps for the period since 1 Jan 2000.

Depending on the size of the file, I am happy for you to send the data directly to Jacob Gerke at Tasmanian Irrigation (cc me and Ian Dunbabin please).

Thank you

Greg

Greg Carson
Hydro Tasmania
mob: [redacted]

From: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Sent: Monday, 21 December 2020 10:04 AM

To: Greg Carson <Greg.Carson@hydro.com.au>
Subject: FW: Tasmanian Irrigation - Poatina Tailrace Flow Data

Good morning Greg.

Could you look at the information request below please?

Thanks, Ian

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Friday, 18 December 2020 14:17
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Cc: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Subject: Tasmanian Irrigation - Poatina Tailrace Flow Data

Afternoon Ian

I have been monitoring the flows at Drop Structure No. 1 and noticed that over the last few weeks that there have been periods of zero flow over the weir (Specifically Dec 12-13). See attached.

This triggered me into thinking how this would work for a TI pump station at this location for the NMIS scheme and how many days a season is there typically these no flow scenarios.

To enable TI to review these periods could we please access the following Raw data:

- Drop Structure No. 2 Flow Data
- Reg Pond Out flows Data

If we could have this data for the last 5-10 years that would be fantastic (or as long as the data records are.

I understand that we would implement some sort of water ordering process once our scheme was implemented so this data might then change but I think this is a good place to start in accessing the risk.

Any queries with this please let me know.

Thanks

Regards

Jacob Gerke

Tasmanian Irrigation

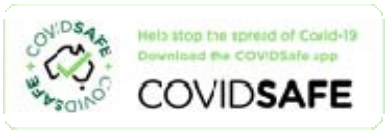
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Lara Henley

From: Mark Willis
Sent: Monday, 21 December 2020 2:43 PM
To: jacob.gerke@tasirrigation.com.au
Cc: Ian Dunbabin; Jack Penny; Gregory Carson
Subject: Tasmanian Irrigation - Poatina Tailrace Flow PLOTS
Attachments: HydroTasmania_Poatina_PLOTS.zip

Hi Jacob

The flow plots attached

Mark I. Willis
Senior Hydrographic Data Analyst

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e mark.willis@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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From: Mark Willis
Sent: Monday, 21 December 2020 2:40 PM
To: 'jacob.gerke@tasirrigation.com.au' <jacob.gerke@tasirrigation.com.au>
Cc: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>; Jack Penny <Jack.Penny@hydro.com.au>; Greg Carson <Greg.Carson@hydro.com.au>
Subject: RE: Tasmanian Irrigation - Poatina Tailrace Flow Data

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regards

Mark I. Willis
Senior Hydrographic Data Analyst

Hydro Tasmania

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From: Greg Carson <Greg.Carson@hydro.com.au>
Sent: Monday, 21 December 2020 11:44 AM
To: Mark Willis <Mark.Willis@hydro.com.au>
Cc: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>; Jack Penny <Jack.Penny@hydro.com.au>
Subject: FW: Tasmanian Irrigation - Poatina Tailrace Flow Data

Mark

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As discussed, can you please prepare a data set of Poatina flows as follows:

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Data at half hourly time steps for the period since 1 Jan 2000.

Depending on the size of the file, I am happy for you to send the data directly to Jacob Gerke at Tasmanian Irrigation (cc me and Ian Dunbabin please).

Thank you

Greg

Greg Carson
Hydro Tasmania
mob: 0408 176 143

From: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Sent: Monday, 21 December 2020 10:04 AM
To: Greg Carson <Greg.Carson@hydro.com.au>
Subject: FW: Tasmanian Irrigation - Poatina Tailrace Flow Data

Good morning Greg.

Could you look at the information request below please?

Thanks, Ian

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Friday, 18 December 2020 14:17
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Cc: Paul Ellery <Paul.Ellery@tasirrigation.com.au>
Subject: Tasmanian Irrigation - Poatina Tailrace Flow Data

Afternoon Ian

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Thanks

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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Lara Henley

From: Ian Dunbabin
Sent: Wednesday, 21 April 2021 8:12 AM
To: 'Jacob Gerke'
Cc: 'Stacey Woods'; 'Andrew Kneebone'
Subject: RE: Tas Irrigation - Northern Midlands

Hi Jacob,

Thanks for the update on TI's optioneering.

I like the offline dam option. Still, I will work around our team and come back to you later this week.

Regards, Ian

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Tuesday, 20 April 2021 09:48
To: Ian Dunbabin <Ian.Dunbabin@hydro.com.au>
Cc: Stacey Woods <stacey.woods@tasirrigation.com.au>; Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: Tas Irrigation - Northern Midlands

Good Morning Ian

I am just following up regarding the Northern Midlands and the access to the water ex Poatina.

It is now looking firmer that we would be after 25,500ML (170ML/day).

Can you confirm how your analysis is progressing and when you would be able to provide confirmation that this would be available?

Additionally, last time we spoke we discussed regarding Hydro's preference for TI to access the water from the Reg Pond.
TI are now reviewing an option of building its own dam, a smaller reg pond like dam, next to drop structure No. 1 to provide this buffer type storage that the Reg Pond would provide.
Our idea is that it would be a dam of 500-750ML that would be filled via a channel from the tailrace. Our Pump Station would then draw its water from there.
See the attached very indicative concept sketch.

The idea that the filling of this dam would be controlled by an automated gate that in the event the tailrace flow stopped then the gate would shut providing the buffer storage.
Having this dam at a more elevated position means lower ongoing pumping costs.

Would you be able to discuss this amongst your team and confirm if you have an issues with this proposed idea?

Happy to discuss further as required to assist in getting confirmation as we would like to be able to confirm the water volume ASAP as we need this to be able to progress the project to the next stage and confirm our water sales applications.

Thanks

Regards

Jacob Gerke

Tasmanian Irrigation

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Lara Henley

From: Adam Gall
Sent: Thursday, 28 July 2022 11:08 AM
To: Jacob Gerke
Cc: Gregory Carson; Prajit Parameswar
Subject: RE: [External]Re: Stalled Declaration of Irrigation District

Good morning Jacob,

I confirm that Hydro Tasmania has agreed in-principle to the terms indicated in Ian Brooksbank's letter of 5 May 2022 for the ability to take up to 25,500ML per annum of water from the Poatina Tailrace. Subject to further refinement of the take restriction flow over drop structure 1 (described below), we agree with your response to Bill's question #1 below.

To provide clarity on our intention to preserve the rights of the Cressy-Longford Irrigation Scheme, the Whitemore Irrigation Scheme and other downstream obligations: the intention is to implement a take restriction on the Northern Midlands Scheme for all flows less than 500ML/day **over drop structure 1 of the Poatina Tailrace** (as opposed to setting restrictions based on releases from the re-regulation pond). The purpose of this is to allow:

1. Cressy Longford a max daily take capacity of 200ML/day from above drop structure 1 when available;
2. Whitemore a max daily take capacity of 50ML/day from above drop structure 1 when available; plus,
3. 500ML/day flow over drop structure 1 for Hydro Tasmania to manage re-reg pond and other downstream obligations.

As indicated in Ian's letter, Tas Irrigation will have an ability to request additional water (at an additional cost) where take restrictions are in place. I understand that Hydro Tasmania and Tas Irrigation have indicatively agreed to the above take restrictions. Hydro Tasmania and Tas Irrigation will continue to work through the remaining terms of the agreement (highlighted in Ian's letter) before finalising and executing a formal Agreement. This will take some time to finalise.

I'm happy for you to pass this on to NRE Tas for their information and continued assessment of the Irrigation District. I'm otherwise happy to discuss further with NRE Tas and yourselves if you require any further information.

Kind Regards,

Adam Gall
Senior Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Wednesday, 27 July 2022 10:42 AM
To: Adam Gall <Adam.Gall@hydro.com.au>
Subject: FW: [External]Re: Stalled Declaration of Irrigation District

Good Morning Adam

The below is an email that we have provided to NRE to answer their questions to allow the Irrigation District to progress.

Are you able to read and confirm that the below summary outlines what has been agreed within Ian's email from 5 May 2022?

Any questions please reach out.

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
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From: Jacob Gerke
Sent: Thursday, 2 June 2022 3:13 PM
To: Shackcloth, Bill <Bill.Shackcloth@nre.tas.gov.au>
Cc: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: RE: [External]Re: Stalled Declaration of Irrigation District

Hi Bill

Below I have provided further details with respect to your questions. Please let me know if you provide further details or context.

1/ The source of water for the scheme. Whilst Im aware that negotiations have commenced to secure a water supply, Im am yet to be advised that an agreement has been executed with Hydro Tas. It is a fundamental requirement for the approval of an irrigation district that there is a source of water for the scheme.

- The water source for the scheme is now secured through in-principal agreement between Hydro and Tasmanian Irrigation.
    - The final Water Transfer Agreement is being developed with the main item to be

- With respect to the elements of the agreement that have the potential to affect other/existing water users and entities the in-principal agreement contains the following conditions in which have been agreed between the parties :

In broad terms, the conditions are as follows:

1. TI agrees to work with Hydro Tasmania on a new pricing methodology (to be complet to execution of Water Transfer Agreement) that facilitates a costs recovery regime to for the forced running of the Poatina Power Station to supply water whereby:

   a. TI will pay the current price per megalitre for water taken during the 'ordinary' ru the Poatina Power Station; and

   b. where TI seeks additional flows outside of 'ordinary' generation, an additional fe costs that arise from the forced running of the Poatina Power Station be paid.

2. In order to allow sufficient water to reach the Poatina Re-Regulation Pond (thereby e HT to meet its existing water release commitments) a minimum flow or water level w set at drop structure 1 of the Poatina Tailrace which will restrict TI from taking water that level (similar to clause 2.5 of the Whitemore Irrigation Scheme water agreement between HT and TI).

3. The final terms of any contract would be subject to HT Board approval, and a dam saf design process would need to be followed for any construction works and/or structur affecting the Poatina Tailrace (similar to Annexure 3 – the Design Approval Process in Midlands Irrigation Scheme agreement between HT and TI).

▪

Commentary with respect to the above conditions

1. With respect to condition 1, TI and Hydro have an agreed range for this pricing and are now working through the details of the methodology for pricing of forced running the Power Station if TI requests Hydro to operate.
2. TI have agreed to this item and have modelled the schemes water availability on this basis. For reference, clause 2.5 of the Whitemore Agreement is provided below)

   a.

   2.5 ***Restrictions on right to take water***

   If Hydro Tasmania's operational requiremen

   (a) less than 750 ML of water will be di day, Hydro Tasmania may notify TI take more than the Daily Cap of wat

   (b) the flow of water from the Poatina p flow requirements of the Cressy Lon ML per day) and TI, TI will reduce i Irrigation District can access the wat

3. TI is fully aware of the need for Dam Safety protocols. The dam being located on the southern side of the Poatina Tailrace means the offtake infrastructure will not impact the existing water users/entities offtake arrangements at Drop Structure 1.

2/ The exact location and method of water extraction hasn't been identified. This may have implications for other/existing water users and water entities.

The water will be extracted from the Southern Side of the Tailrace upstream of drop structure 1. Approximate coordinates are : 41°46'50.8"S 146°58'08.7"E

3/ The exact method of water delivery for the scheme hasn't been disclosed. Again this may have implications for other/existing water users and entities.
The water for the scheme will be delivered entirely by pipeline. No delivery of water via watercourse is proposed.

Regards

Jacob Gerke

Tasmanian Irrigation

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W: www.tasirrigation.com.au

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From: Shackcloth, Bill <Bill.Shackcloth@nre.tas.gov.au>
Sent: Monday, 28 March 2022 8:18 AM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Damien Butler <Damien.Butler@tasirrigation.com.au>
Subject: [External]Re: Stalled Declaration of Irrigation District

> You don't often get email from bill.shackcloth@nre.tas.gov.au. Learn why this is important

Hi Nik,
The application was advertised late last year with a 30 day period for Representations. Additionally the application was referred to the various Water Entities with districts that intersect with the proposed district, plus the local councils and Crown Lands.

The period for representations has now closed and we will need to consider all comments received before progressing the application. It may be necessary to seek input from TIPL if there are issues identified that need to be resolved.

Unfortunately the application was very thin on specifics/details, so there are already a number of unknowns that will need to be addressed.

1/ The source of water for the scheme. Whilst Im aware that negotiations have commenced to secure a water supply, Im am yet to be advised that an agreement has been executed with Hydro Tas. It is a fundamental requirement for the approval of an irrigation district that there is a source of water for the scheme.

2/ The exact location and method of water extraction hasnt been identified. This may have implications for other/existing water users and water entities.

3/ The exact method of water delivery for the scheme hasnt been disclosed. Again this may have implications for other/existing water users and entities.

Can you provide some information to address these 3 points?

I would note that the approval of the District is a matter that will need to be sent thru to the Minister (it is not something that is routinely done under delegation) therefore it will be imperative that all statutory requirements are addressed. Im more than happy to talk you thru the processes if this isnt something that you have had any experience with previously.

I would further note that until such time as the District is approved, then TIPL has not authority or powers to operate or function within the District. Therefore any construction activity can only be done with the express permission of the landowner(s).

Regards

~~~
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From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Friday, 25 March 2022 1:18 PM
To: Shackcloth, Bill <Bill.Shackcloth@nre.tas.gov.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Damien.Butler <Damien.Butler@tasirrigation.com.au>
Subject: Stalled Declaration of Irrigation District

Hi Bill,

I'm hoping that you can assist me in chasing up the status of an application to have an irrigation district declared.

Around 6 months ago, TI submitted an application to have the "Northern Midlands Irrigation District" approved, and according to emails below, DPIPWE (now NRE?) and/or the minister had not yet processed/approved it by 25th November last year. The staff member who submitted the application has since left TI, but as far as I know, this has still not been completed.

Are you able to check up on it and see if anything can be done to have this irrigation district finalized?

Construction of an irrigation scheme is expected to commence there very soon, and it could get awkward if the district has not yet been officially declared.

Cheers,
Nik.

From: Steven Maycock <steven.maycock@tasirrigation.com.au>
Sent: Monday, 13 December 2021 12:50 PM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>; Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: RE: Registered CPR Plan for Northern Midlands Irrigation District

Hi Nik

Its is still with DPIPWE. After enquiring where the approval was up to, TI was advised on 25/11 that, without consultation with TI, DPIPWE decided it was "not a matter of high priority". TI immediately requested that it be prioritised. I have not heard anything since that time.

Cheers

Steven Maycock
General Counsel/Company Secretary

Tasmanian Irrigation

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M: [redacted]
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From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Monday, 13 December 2021 11:27 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Steven Maycock <steven.maycock@tasirrigation.com.au>
Subject: RE: Registered CPR Plan for Northern Midlands Irrigation District

Hi Steve and Jacob,

Did we end up submitting an application to DPIPWE/the minister to declare an irrigation district for Northern Midlands?

I can't recall if it ever went any further than having the plan registered in the Central Plan Register (below). I can't see any record of a district having been gazetted.

Let me know if you need anything from me to progress this.

Cheers,
Nik.

Nik Sands
Spatial Information Specialist

T: 03 6398 8433
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W www.tasirrigation.com.au

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From: Nik Sands
Sent: Wednesday, 4 August 2021 9:50 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Steven Maycock <steven.maycock@tasirrigation.com.au>
Subject: Registered CPR Plan for Northern Midlands Irrigation District

Hi Jacob,

The plan for the Northern Midlands Irrigation District boundary has now been fully registered in the CPR (signed and registered version is attached).

Cheers,
Nik.

From: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Sent: Wednesday, 4 August 2021 9:39 AM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>
Subject: RE: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Nik.

The CPR plan is now fully registered and added to the DIL.

A signed copy is attached. Good job.

Cheers

Rod

From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Tuesday, 3 August 2021 4:23 PM
To: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Subject: RE: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Rod,

Thanks for your assistance. I have attached an updated PDF with the CPR number included and the amendments lines removed (I hope I understood this correctly).

I'll look forward to receiving the signed PDF in good time.

Cheers,
Nik.

From: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Sent: Tuesday, 3 August 2021 1:44 PM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>
Subject: RE: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Nik.

I have registered the plan and the number i**s CPR 11085.**
Can you do one small amendment to you plan. In the title box area, can you remove the No. 2 and 3 Amendment row AUTHOIRTY to DATE information. Because this is a draft plan no amendment information is necessary.

After you do this and added the CPR number to your plan send a PDF copy to me where I will add the Surveyors General signature and date to the Plan than add it to the DIL and send you a signed copy back. I used the 3rd of August as the registering date.

In the future, not including this plan, there will be a registration fee of $80 per plan.

Regards

Rod Gergely

From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Friday, 30 July 2021 11:28 AM
To: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Subject: FW: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Rod,

As per the email below from Scott, would you please arrange for the attached plan to be lodged in the Central Plan Register?

Note that this is the first CPR plan that I've attempted to draft myself, so please let me know if you notice any further issues with the plan that need to be addressed.

Cheers,
Nik.

From: Strong, Scott <Scott.Strong@dpipwe.tas.gov.au>
Sent: Friday, 30 July 2021 9:35 AM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>
Cc: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Subject: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Nik,

Thanks for this, overall it's a good effort in terms of the interest you are trying to specify.

Just a couple of minor corrections / observations :

- The contour interval stated in the title block (10 metres) is incorrect. It is 20m on the enlargements and unknown on the actual plan, although that could presumably be determined from the zoom level parameters on LISTmap. However, as it isn't critical information for what the plan is identifying (more just background information) I would just leave it blank in the title block in this instance.
- The scale 1:120000 isn't a standard ISO scale. Although there is often a tendency to plot pdfs at fairly arbitrary scale these days the CPR hardcopy plan is still a prime legal document and we should endeavour to utilise accepted ISO metric scales for mapping. Standard metric scales follow the 1-2-5 rule, 1:10000, 1:20000. 1:50000, 1:100000, 1:200000, 1:500000 etc and multiples but an acceptable variation is to use 2.5 based scales (1:12500, 1:25000) and multiples. Hence recommend you change the base plan to 1:125000.
- Given the level of doubt as to the area, it should be rounded to 4 significant figures i.e. +/-128300ha.
- I think it would aid clarification if you name the enlargement next to each one on the plan "See Enlargement ?" next to each enlargement.

Once the plan is finalised it should be sent to Rod Gergely who will arrange for its lodgement.

Regards,

Scott Strong | Program Manager Cadastral Standards | Delegate of Surveyor General
Location Services | ***Land** Tasmania*

Department of Primary Industries, Parks, Water and Environment
134 Macquarie Street Hobart TAS 7000
GPO Box 44 Hobart TAS 7001
T: 03 616 54175 | M: [redacted] | E: Scott.Strong@dpipwe.tas.gov.au
www.dpipwe.tas.gov.au | www.thelist.tas.gov.au | www.tasmap.tas.gov.au

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From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Wednesday, 28 July 2021 10:10 AM
To: Strong, Scott <Scott.Strong@dpipwe.tas.gov.au>
Subject: CPR Plan for new "Northern Midlands Irrigation District"

Hi Scott,

Jason Guinan has sent me your email address as the person who can arrange for a new plan to be registered in the CPR.

Would you please review the attached draft CPR plan, and arrange for it to be registered in the CPR, or if you notice any problems or have any suggestions for corrections or improvements, please let me know.

(Note that this is my first attempt at drafting my own CPR plan, after DPIPWE advised that they will be discontinuing this service, so I'm open to feedback on how to improve, if there are any deficiencies. Jason has also been very helpful with advising me regarding these drafts.)

Thanks for your help, and I look forward to hearing from you soon regarding progressing this into the CPR.

Cheers,
Nik.

Nik Sands
Spatial Information Specialist

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Lara Henley

From: Adam Gall
Sent: Wednesday, 12 October 2022 5:18 PM
To: Jacob Gerke
Cc: Prajit Parameswar
Subject: NMIS - impact of Poatina Re-regulation Pond take

Hi Jacob,

As discussed today, I thought I'd share some high level findings from my preliminary view of the Poatina Re Regulation Pond (PRP) take:

1. The proposed take of 170ML per day from the PRP would have a significant effect on the usable storage capacity of the PRP, reducing the usable capacity by approximately 40%.

2. Hydro Tasmania does not operate at Full Supply Level, nor does it seek to maintain the PRP at its highest operational level. The primary purpose of the PRP is to regulate outflows from the Poatina Power Station to reduce the magnitude of the daily and weekly fluctuations downstream.

3. The PRP may also be used to manage minimum flows (incl environmental flows), water supply commitments and other obligations downstream of the PRP when the station is not running.

4. The PRP commonly operates across an approximate 0.5m range (between 25th & 75th percentile), which ordinarily gives approximately 2-3 days of storage to meet downstream obligations without any inflows. Adding the proposed 170ML/day take from the PRP would reduce the storage to approximately 1 - 1¾ days across the same range.

5. At the upper operational limit, Hydro Tasmania has approximately 4.6 days storage to meet downstream obligations without any inflows. Hydro Tasmania commonly seeks to use the upper limit during station outages, so that it may maintain downstream obligations over longer periods. This would reduce to a 2.7 day storage with the 170ML/day take.

6. At the lower operational limit HT is able to generate continuously at full capacity for approximately 6hrs, assuming no releases from the PRP.

7. The reduction in usable storage of the PRP represents a material risk increase in our ability to meet to a number of statutory, environmental and agreed obligations, downstream of the PRP.

Happy to continue discussions on a range of other suitable alternatives. Let's talk more next week.

Kind Regards,

Adam Gall
Senior Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au

Lara Henley

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Friday, 2 September 2022 10:59 AM
To: Adam Gall; Prajit Parameswar
Cc: Josh Marshall
Subject: Tasmanian Irrigation - Messaging Regarding Regulation Pond

Hi Adam/Praj

The following are extracts regarding our messaging regarding TI no utilising the Re-Regulation Pond

Ministerial Wording:

1. TI investigated the use of a range of dam locations including but not limited to the following:
    a. Hydro's Poatina Re-Regulation Pond
    b. Pumping/channelling the water to a dam not within the vicinity of the tailrace
    c. Dam located directly beside the tailrace.
2. During Business case development TI assessed all these locations from an initial capital perspective for construction and for the ongoing operational costs for the scheme (and therefore the irrigators) for its 100yr life. The following summarises the options:
    a. When all options were considered the Re-Regulation pond did have the lowest initial construction costs but had the following serious weaknesses:
        i. The volume within the Re-Regulation pond is not dedicated for TI use.
            1. When Hydro is not operating Poatina, the volume within the pond is utilised to smooth the flows within Brumby's creek to minimise environmental impacts.
            2. Additional to the smoothing, the volume within the pond is allocated to satisfying the existing Irrigator demand with the Re-Regulation Pond (Macquarie Settlement Pipeline Partnership and others) and hydro's environmental flow requirements.
            3. Therefore, when discussing with Hydro, the volume within this pond could not be guaranteed to be allocated to TI.
            4. An option of increasing the capacity of this dam was investigated but presented technical difficulties and did require additional acquisition of the surrounding land.
        ii. The Regulation Pond is approx. 30m lower in elevation than Drop Structure 1 on the tailrace. This additional pumping requirement into the scheme for the entire 100yr life of the scheme is approximately $500,000/yr ($20/ML).

The pump station also provides an increase in maintenance and replacement costs throughout the life of the scheme due to its additional size.

Response in Ministerial with respect to concerns raised by Landowner

Oliver has stated his thought that the Regulation Pond will provide a higher level of surety than the proposed buffer dam with no change to the Poatina Power Station operation model. Hydro has advised that the current Poatina Power

station model is highly likely to change in the future and will run less frequently and when running deliver large volumes of water in a short amount of time.

- By Adding an additional ~600ML of storage into the tailrace systems provides a dedicated volume to TI during periods of non-operation. This would leave the ~1500ML of volume within the regulation pond to Hydro and the existing irrigators to utilise during periods of non-operation.
- In the event that the scheme took directly from the regulation pond, in these periods of non-operation the ~1500ML of volume in the regulation would need to be shared between Hydro, existing irrigators and the NMIS scheme leaving a smaller total volume spread across more users.
- The additional charge to the NMIS irrigators by pumping from the regulation pond are a factor but the deciding factor of not utilising the regulation pond is accessing any of the volume within the regulation pond specifically for NMIS use.

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

Tasmanian Irrigation | PO Box 84 | Evandale | TAS 7212

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Lara Henley

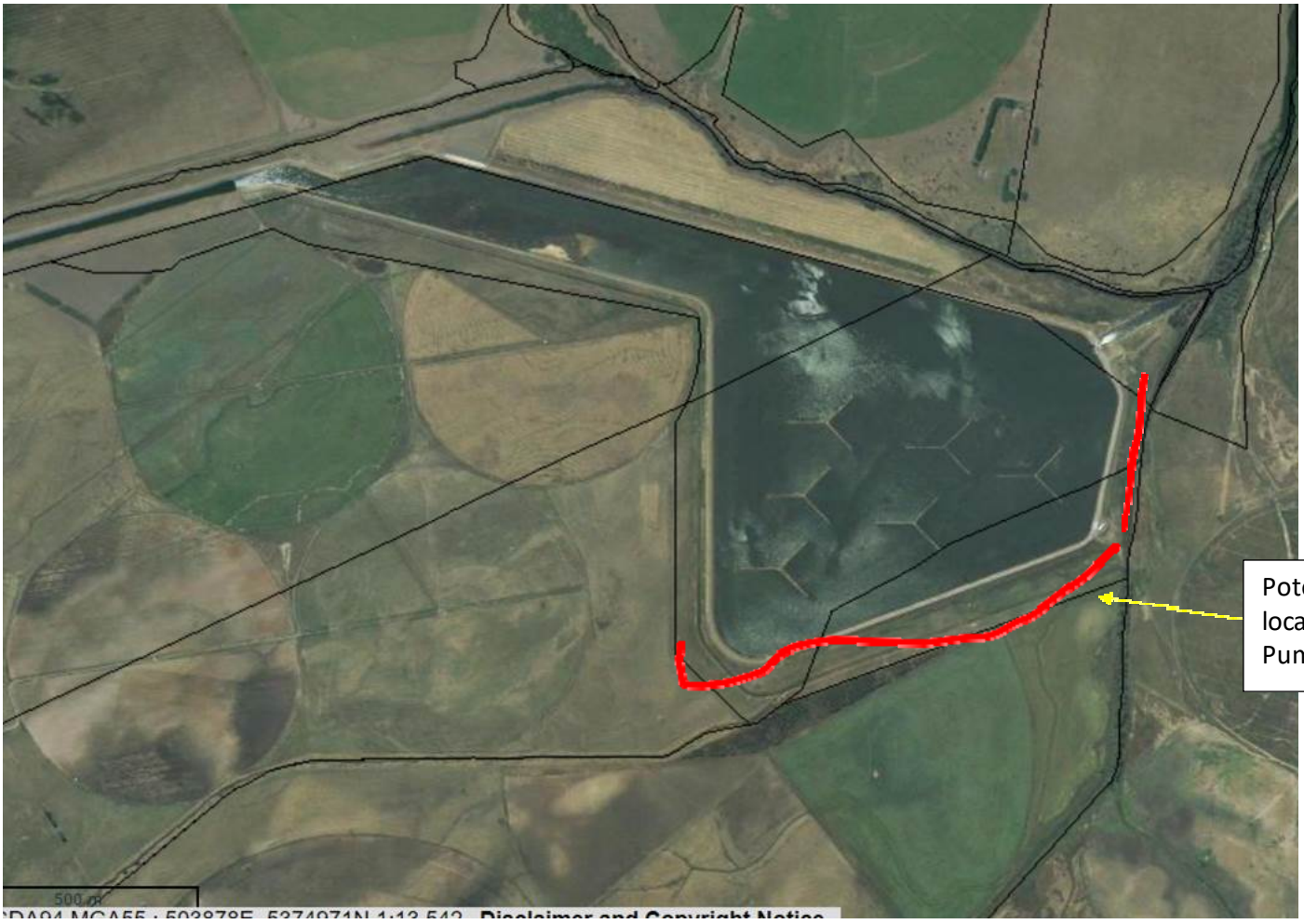
From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Tuesday, 4 October 2022 9:04 AM
To: Adam Gall
Subject: Reg Pond - Drawings

Hi Adam

To enable us to develop a concept of what a pumping arrangement would look like at the reg pond are you able to provide any as built drawings for the dam.
Also any info that shows the deepest location within the reg pond would be also very beneficial.

We can then look at how we would place our outlet pipes into the dam/through the wall.

This will allow us to determine a price for the works.



Regards

Jacob Gerke

T: 03 6398 8433
M: [redacted]
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W: www.tasirrigation.com.au

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[redacted]

From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Friday, 10 March 2023 11:56 AM
To: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Subject: RE: [External]RE: Northern Midlands Water Supply issues : Confidential information

Thanks Ian
We are certainly cognisant of the uncertainty associated with modelling this, unfortunately we are now in a period where a decision between water supply options for our Scheme will have to be made on the information available at the time and in short order.

So just to be clear if we put up the slide as it stands a cost difference between the Re regulation pond option and the Buffer storage dam of [redacted] will be explicit. This currently consists of Hydro charges and additional pumping costs. Are you say you are comfortable that we state this without putting and explicit number on the Hydro costs. Or are you saying don't put up the cost difference at all and keep the amount absolutely confidential? If it is second we will be not putting up a dollar figure just saying its a significant increase, which isn't helpful to be frank. If you could clarify that would be most helpful.

In respect to capex savings , we don't have an opportunity cost of capital because we are a solely cost recovery business. If we save capital it just means we don't spend more state and commonwealth money. The ongoing costs to irrigators is what the [redacted] is that just the average difference in variable pricing impact between 2 options.

In respect to managing the messaging, we are doing this to highlight to irrigators the various cost options on our plate at the moment and to inform them of the trade offs. I will be saying that we are working with Hydro to finalise the options. If you have some wording you would prefer us to use then please send it through

Thanks Andrew

Andrew Kneebone
Chief Executive Officer (CEO)

Tasmanian Irrigation

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M: [redacted]
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From: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Sent: Friday, March 10, 2023 11:38 AM
To: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: RE: [External]RE: Northern Midlands Water Supply issues : Confidential information

Andrew,

Thanks for running your stakeholder communications past us. While there are a lot of considerations to take into account, I'm pleased that my team could provide the reregulation pond proposal as an alternative option to potentially avoid any acquisition of property.

As we haven't finalised our internal approvals, legal reviews and Board approvals, I think it is best that you do not specifically make mention of the value of the Hydro water from the reregulation pond. We have previously provided a range, and this is largely to reflect the uncertainty of the future electricity system we may operate in. I understand that you have used the upper end of the range, which is fine, but we're hopeful that you and your stakeholders will understand the uncertain nature of the proposed methodology.

Otherwise I have no concerns with you sharing the other information proposed, however I'm keen to understand your proposed response to irrigators who may be unaccepting of the cost and to what extent Hydro Tasmania will be required to answer those questions?
Would you like my team to put some proactive key messages for you and the team?

What is perhaps unclear from our perspective is how the capex savings [redacted] compares to the increase in volumetric price to irrigators. [redacted]

Please let us know your thoughts, otherwise we'll continue to work closely with your team to progress with the relevant option you land on.

Regards,
Ian

Ian Brooksbank
Chief Executive Officer

Hydro Tasmania

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m +61 [redacted]
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From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Tuesday, 7 March 2023 3:40 PM
To: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Subject: RE: [External]RE: Northern Midlands Water Supply issues : Confidential information

Hi Ian
Further to our discussion the other morning about the public release of the confidential cost information you provided us a couple of weeks ago.

We have now briefed Minister Palmer on the water supply options for the NMIS including the option of using the Reregulation pond as the water supply option for our NMIS project.

The desire is to take this now to our irrigator representative committee, then probably all our irrigators, local members and members of the opposition.

We have an Irrigator representative committee meeting next Wednesday.

[redacted]

Its not our intent to leave copies of this with anyone at this stage.

Hydro Reregulation Pond

	Capital Cost	Total Annual Charge $2023	Land Acquisition Req	Likely Irrigator Position	Likely Community Position
Reregulation Pond	[redacted]	[redacted]	Minimal Hydro Land	Unaccepting of Cost Favourable to the lack of acquisition	Highly Supportive

Pros	Cons
• Cheaper capital. [redacted] • Land required owned by Hydro • Deliverable with current project timeframe • Avoids acquisition of part of Scott Young property	• Significant increase in ongoing volumetric price to farmers [redacted] • Translates to an additional [redacted] to [redacted] for many farmers • Reduces on farm margins and benefits that drove initial investment decisions. • Reduces net economic benefit • Few options to mitigate price impact

I appreciate your urgent consideration of this matter as I need to determine what I can tell our stakeholders about the relative cost of the options under consideration.

Happy as always to discuss.

Thanks, and best regards

Andrew Kneebone
Chief Executive Officer (CEO)

Tasmanian Irrigation

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From: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Sent: Thursday, February 16, 2023 5:14 PM
To: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: RE: [External]RE: Northern Midlands Water Supply issues

Andrew,

Happy for the Board to see the detail but not so comfortable with the public. Would it be possible to see what you would provide to irrigators beforehand please?

I expect our Minister will be contacted by irrigators if they feel the price is too high.

Ian Brooksbank
Chief Executive Officer

Hydro Tasmania

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From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Thursday, 16 February 2023 4:03 PM
To: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Subject: RE: [External]RE: Northern Midlands Water Supply issues

Hi Ian I note your Confidential label on this email

The intended audience of this information is our Board and Minister Palmer and advisors in the first instance. As part of an options analysis report comparing the costs and benefits of various water supply options.

We are planning on testing willingness to pay with our irrigators after the options analysis has been considered. It would be at this point it would essentially be in the public domain.

At that stage the costs quoted in your email will be rolled into total costs but it wont take a maths expert to back calculate the rough difference between options.

Please advise if any of this is of concern.

Thanks
Andrew

Andrew Kneebone
Chief Executive Officer (CEO)

Tasmanian Irrigation

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From: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Sent: Wednesday, February 15, 2023 12:38 PM
To: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: [External]RE: Northern Midlands Water Supply issues

Andrew,

Confidential

Thanks for your email,

To help TI with their business analysis we have arranged the following:

- An indication of the likely cost range to Hydro Tasmania (per ML) for taking water from the Poatina Reregulation Pond (PRP) (see detail below);
- A site visit on Wednesday 15 February 2023 (today) to review the access feasibility to the penstock at the hilltop valve.

See proposal below on pricing (subject to the caveats listed), including an indicative price for any water taken from the Poatina Reregulation Pond (PRP):

- Take up to 170ML/day from the PRP is potentially feasible, at an additional cost per ML for using water from the PRP.
- The price per ML will be set as follows:
    - The standard **Trevallyn Cost** per ML will be paid on all water extracted which will be set annually in the usual way ($24.12 for the current 2022-23 irrigation season); PLUS

- There will be an additional **PRP Cost** per ML taken, set every 5 years which reflects the total cost to Hydro Tasmania for the increased take from the PRP.
    - We have begun work to assess what the total cost to Hydro Tasmania would likely be (including forward modelling under different scenarios).
    - [redacted]

As per previous discussions between our teams, any agreements (including the pricing methodology) will need to go through a legal review (including competition law review), and will be subject to Hydro Tasmania Board and Senior management approval.

Hopefully this information will assist your next stages of the process.

Regards,
Ian

Ian Brooksbank
Chief Executive Officer

Hydro Tasmania

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From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Friday, 10 February 2023 12:26 PM
To: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Subject: Northern Midlands Water Supply issues

Good Afternoon Ian

Thanks again for making time on Tuesday.
Part of that discussion was in respect to the water supply for our proposed Northern Midlands Scheme.

I requested confirmation from you in writing about the projected costs associated with maintaining a volume in the Re-regulation pond and also whether it was technically feasible to access your penstock at the hill top valve.
I know our people have been continuing to work through the details of these issues.

We have subsequently met with our Minister, and I now need that information by mid next week so we can prepare an options paper. This will form the basis of a briefing for our Board, the Minister and Irrigators into the risks and benefits, the various cost options and implications for the project time frame of each of these options, in order for us to move this project forward.

I appreciate your urgent consideration of this matter.

Kind Regards
Andrew

Andrew Kneebone
Chief Executive Officer (CEO)

Tasmanian Irrigation

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Lara Henley

From: Adam Gall
Sent: Friday, 31 March 2023 4:47 PM
To: Jacob Gerke
Cc: Prajit Parameswar
Subject: CONFIDENTIAL: Questions for Northern Midlands Pipeline to Lake River

CONFIDENTIAL

Good afternoon Jacob,

Thanks for the discussions recently about the potential delivery of water to supply our Lake River Irrigation district. Apologies for the delay on sending these questions through after our chat, I caught a nasty virus earlier this week and was out of action.

I've done some initial analysis on our Woods Lake releases. The difference between releasing water from Arthurs Lake into Woods Lake, and supplying water from the Reregulation Pond (including forced running of Poatina costs) does represent some positive value to Hydro Tasmania, and it is worth exploring options for TI to potentially supply water to Lake River. To further understand the value of HT's benefit, can you kindly provide some further information:

1. **Delivery Point:**
   a. The reasonable point of delivery for the water would be to benefit Glenmilton Pty Ltd. Satellite imagery suggests the Glenmilton offtake point is (505933E,5364729N):
   b. 

   c. There are 2 irrigators above Glenmilton on Lake River with approximately 6,600ML/annum entitlements. **QUESTION:** We'd appreciate your thoughts on whether a pipeline could extend up to Connorville

Estates Pty Ltd, as that would represent additional value for HT to supply up to that point (unsure of exact offtake points).

i. Connorville Estates Pty Ltd - 6,140ML/annum (approx 5089050E,5360649N - second southmost red dot below)
ii. Robert Spencer - 500ML/annum (approx southmost red dot below)
iii.



2. <u>Offsetting Forced Running Costs:</u>

a. We've analysed the value of the benefit to HT of supplying water to Lake River, against TI taking 25,500ML/annum from the Reregulation Pond (without TI paying the PRP Cost - Just Trevallyn price).
b. To do so we have assumed that:
   i. TI can supply up to the same volume as we release from Woods Lake.
   ii. TI can deliver water up to Glenmilton Pty Ltd.
   iii. HT would pay no pumping costs or contributions to the CAPEX of the pipeline
   iv. TI taking their maximum annual take of 25,500ML.

c. While delivering water to Lake River represents value to HT, we can not offset the entire costs of TI taking 100% of their entitlement annually (with HT covering the forced running PRP Cost). We are however interested in continuing the discussion to bring the value of benefit to HT, much closer to the value of supplying TI with water from the PRP.
d. **QUESTION:** We understand that it is very unlikely that TI will be taking 100% of its annual entitlement in all years. Do you have an estimate of annual forecast usage for the first 10 years of the scheme?

[redacted]

If you can kindly answer some of the above questions, that would be greatly appreciated.

Kind Regards,

Adam Gall
Senior Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au

Lara Henley

From: Ian Brooksbank
Sent: Friday, 10 February 2023 1:31 PM
To: Prajit Parameswar; Rebecca Carter; Adam Gall
Subject: Fwd: Northern Midlands Water Supply issues

Team,

Can you prepare a response please?

Ian Brooksbank
0419 475 311
ianbrooksbank@bigpond.com

Begin forwarded message:

> **From:** Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
> **Date:** 10 February 2023 at 12:26:47 pm AEDT
> **To:** Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
> **Subject: Northern Midlands Water Supply issues**
>
> Good Afternoon Ian
>
> Thanks again for making time on Tuesday.
> Part of that discussion was in respect to the water supply for our proposed Northern Midlands Scheme.
>
> I requested confirmation from you in writing about the projected costs associated with maintaining a volume in the Re-regulation pond and also whether it was technically feasible to access your penstock at the hill top valve.
> I know our people have been continuing to work through the details of these issues.
>
> We have subsequently met with our Minister, and I now need that information by mid next week so we can prepare an options paper. This will form the basis of a briefing for our Board, the Minister and Irrigators into the risks and benefits, the various cost options and implications for the project time frame of each of these options, in order for us to move this project forward.
>
> I appreciate your urgent consideration of this matter.
>
> Kind Regards
> Andrew
>
> Andrew Kneebone
> Chief Executive Officer (CEO)

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Lara Henley

From: Adam Gall
Sent: Thursday, 22 December 2022 11:41 AM
To: Jacob Gerke
Subject: RE: [External]RE: Northern Midlands Water

Thanks Jacob,

I can tee up an initial conversation at 3:30pm today with Andrew Hickman, who is our Head of Civil Assets.

Let me know if that works and I'll send out a Teams Meeting.

Kind Regards,

Adam Gall
Senior Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
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e adam.gall@hydro.com.au

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Thursday, 22 December 2022 9:22 AM
To: Adam Gall <Adam.Gall@hydro.com.au>
Subject: FW: [External]RE: Northern Midlands Water

Hi Adam

See below.

Who will be the person to discuss this further with? I would like to have an initial conversation and then set something up in the new year.

Jacob Gerke
Program Manager - Project Delivery

Tasmanian Irrigation

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From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Thursday, 22 December 2022 7:05 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: Fwd: [External]RE: Northern Midlands Water

Fyi

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Andrew Kneebone
Chief Executive Officer (CEO)
T: (03) 6398-8433
M: [redacted]
E: Andrew.Kneebone@tasirrigation.com.au

From: Jesse Clark <Jesse.Clark@hydro.com.au>
Sent: Wednesday, December 21, 2022 11:43:41 PM
To: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Cc: Jesse Clark <Jesse.Clark@hydro.com.au>; Jo Morris <Jo.Morris@hydro.com.au>
Subject: [External]RE: Northern Midlands Water

You don't often get email from jesse.clark@hydro.com.au. Learn why this is important

Good evening Andrew,

I hope this email find you well.
Ian is now on leave for the Christmas break, however I'm on deck tomorrow and available by phone Friday, as such more than happy to touch base by phone or similar if you are still at work and it suits to talk.

In way of a brief update,

Our team have had a good look at the request. We see the option to tap into the penstock towards the bottom of the hill just prior to heading vertically into the station is deemed too risky, largely due to the high pressure. (team can provide more detail to your team)

The second option of tapping off the penstock further up the hill, where the pressure is lower is being strongly considered. While the initial assessment suggests there is significant risks to manage and it could be quite expensive to manage, it may be possible. Please note there is significant caveats around this due to the need to work through transients, pressure pulsation and the like, along with risk mitigation to protect the offtake and associated pipework, valves etc.

It feels like we are at a stage where we have a basic understanding and are ready to discuss the high level detail to build an understanding if it is something between TI and HT that we want to keep progressing to a more detailed understanding and options, or if the complexity, risk and possible cost would rule this out as a credible option.
To this end our team is now ready to engage and if they haven't reached out today they should in the next day or so.

As above, more than happy to chat through with you if that would help in the short term, however also stress this one is quite complex and would prefer to avoid jumping into too much detail and misrepresenting our technical team.

Kind Regards,

Jesse Clark
Executive General Manager – Assets & Infrastructure

Hydro Tasmania

m +61 [redacted]
e jesse.clark@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000

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From: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Sent: Tuesday, 20 December 2022 1:53 PM
To: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Cc: Jesse Clark <Jesse.Clark@hydro.com.au>
Subject: RE: Northern Midlands Water

Andrew,

Sorry for the slow reply, we have been getting our ducks lined up.

Jesse Clark (EGM Asset and Infrastructure) will take the lead liaising with TI on the options you have described below. He will be in touch in the next few days.

Have a great festive season and I will see you in 2023.
Ian

Ian Brooksbank
Chief Executive Officer

Hydro Tasmania

p +61 3 6240 2270
m +61 [redacted]
e ian.brooksbank@hydro.com.au
w hydro.com.au
a 4 Elizabeth Street, Hobart TAS 7000
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From: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Sent: Friday, 16 December 2022 9:09 AM

To: Ian Brooksbank <Ian.Brooksbank@hydro.com.au>
Subject: Northern Midlands Water

Hi Ian

I have been trying to contact Caroline on this but I understand she may not be with Hydro any longer.

Our teams have been working to consider another option for the Northern Midlands Water supply to try and understand if there are any fatal flaws with the concept.
We are struggling to get any sort of answer.

The concept is to tap into the Penstock prior to the Poatina power station so we are then not dependant on forced running and therefore the amount of water in the Tail race to supply the Northern Midlands scheme

We completely understand that access your assets in such a way is a risk and that's what we need to understand. Is this something that Hydro would even consider and if so is it even technically feasible. I am trying to get that high level fatal flaw analysis before we get too deep into the engineering of a solution

We understand that this would mean we pay great lake pricing, and we would have to develop our own Mini Hydro to mitigate the cost, but it avoids all of the issues with the Reg pond and the dam site that we are currently struggling with. IT also would allow the development of a winter water product so could potentially increase the utilisation of the investment.

Could I ask that you get involved and try and expedite an answer one way or the other in the short term

Thanks
Andrew
Andrew Kneebone
Chief Executive Officer (CEO)

Tasmanian Irrigation

T: (03) 6398-8433
M: [redacted]
E: Andrew.Kneebone@tasirrigation.com.au
W: www.tasmanianirrigation.com.au

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Lara Henley

From: Adam Gall
Sent: Friday, 29 July 2022 1:43 PM
To: Jacob Gerke
Cc: Gregory Carson; Prajit Parameswar
Subject: RE: [External]Re: Stalled Declaration of Irrigation District

Good news Jacob,

Keep us posted how you go.

Thanks,

Adam Gall
Senior Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672
m +61 [redacted]
e adam.gall@hydro.com.au

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Friday, 29 July 2022 1:02 PM
To: Adam Gall <Adam.Gall@hydro.com.au>
Cc: Gregory Carson <Greg.Carson@hydro.com.au>; Prajit Parameswar <Prajit.Parameswar@hydro.com.au>
Subject: RE: [External]Re: Stalled Declaration of Irrigation District

Thanks for the below Adam

I have provided this to NRE, and they have responded stating that this provides the clarity they were after.

Hopefully the district now proceeds

Thanks for your assistance.

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
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From: Adam Gall <Adam.Gall@hydro.com.au>
Sent: Thursday, 28 July 2022 11:08 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Gregory Carson <Greg.Carson@hydro.com.au>; Prajit Parameswar <Prajit.Parameswar@hydro.com.au>
Subject: RE: [External]Re: Stalled Declaration of Irrigation District

Good morning Jacob,

I confirm that Hydro Tasmania has agreed in-principle to the terms indicated in Ian Brooksbank's letter of 5 May 2022 for the ability to take up to 25,500ML per annum of water from the Poatina Tailrace. Subject to further refinement of the take restriction flow over drop structure 1 (described below), we agree with your response to Bill's question #1 below.

To provide clarity on our intention to preserve the rights of the Cressy-Longford Irrigation Scheme, the Whitemore Irrigation Scheme and other downstream obligations: the intention is to implement a take restriction on the Northern Midlands Scheme for all flows less than 500ML/day **over drop structure 1 of the Poatina Tailrace** (as opposed to setting restrictions based on releases from the re-regulation pond). The purpose of this is to allow:

1. Cressy Longford a max daily take capacity of 200ML/day from above drop structure 1 when available;
2. Whitemore a max daily take capacity of 50ML/day from above drop structure 1 when available; plus,
3. 500ML/day flow over drop structure 1 for Hydro Tasmania to manage re-reg pond and other downstream obligations.

As indicated in Ian's letter, Tas Irrigation will have an ability to request additional water (at an additional cost) where take restrictions are in place. I understand that Hydro Tasmania and Tas Irrigation have indicatively agreed to the above take restrictions. Hydro Tasmania and Tas Irrigation will continue to work through the remaining terms of the agreement (highlighted in Ian's letter) before finalising and executing a formal Agreement. This will take some time to finalise.

I'm happy for you to pass this on to NRE Tas for their information and continued assessment of the Irrigation District. I'm otherwise happy to discuss further with NRE Tas and yourselves if you require any further information.

Kind Regards,

Adam Gall
Senior Contracts Advisor

Hydro Tasmania

t +61 3 6240 4672

m +61 [redacted]
e adam.gall@hydro.com.au

From: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Sent: Wednesday, 27 July 2022 10:42 AM
To: Adam Gall <Adam.Gall@hydro.com.au>
Subject: FW: [External]Re: Stalled Declaration of Irrigation District

Good Morning Adam

The below is an email that we have provided to NRE to answer their questions to allow the Irrigation District to progress.

Are you able to read and confirm that the below summary outlines what has been agreed within Ian's email from 5 May 2022?

Any questions please reach out.

Regards

Jacob Gerke

Tasmanian Irrigation

T: 03 6398 8433
M: [redacted]
E: jacob.gerke@tasirrigation.com.au
W: www.tasirrigation.com.au

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From: Jacob Gerke
Sent: Thursday, 2 June 2022 3:13 PM
To: Shackcloth, Bill <Bill.Shackcloth@nre.tas.gov.au>
Cc: Andrew Kneebone <Andrew.Kneebone@tasirrigation.com.au>
Subject: RE: [External]Re: Stalled Declaration of Irrigation District

Hi Bill

Below I have provided further details with respect to your questions. Please let me know if you provide further details or context.

1/ The source of water for the scheme. Whilst Im aware that negotiations have commenced to secure a water supply, Im am yet to be advised that an agreement has been executed with Hydro Tas. It is a fundamental requirement for the approval of an irrigation district that there is a source of water for the scheme.

- The water source for the scheme is now secured through in-principal agreement between Hydro and Tasmanian Irrigation.
    - The final Water Transfer Agreement is being developed with the main item to be
    - With respect to the elements of the agreement that have the potential to affect other/existing water users and entities the in-principal agreement contains the following conditions in which have been agreed between the parties :

In broad terms, the conditions are as follows:

1. TI agrees to work with Hydro Tasmania on a new pricing methodology (to be complet to execution of Water Transfer Agreement) that facilitates a costs recovery regime to for the forced running of the Poatina Power Station to supply water whereby:

    a. TI will pay the current price per megalitre for water taken during the 'ordinary' ru the Poatina Power Station; and

    b. where TI seeks additional flows outside of 'ordinary' generation, an additional fe costs that arise from the forced running of the Poatina Power Station be paid.

2. In order to allow sufficient water to reach the Poatina Re-Regulation Pond (thereby e HT to meet its existing water release commitments) a minimum flow or water level w set at drop structure 1 of the Poatina Tailrace which will restrict TI from taking water that level (similar to clause 2.5 of the Whitemore Irrigation Scheme water agreement between HT and TI).

3. The final terms of any contract would be subject to HT Board approval, and a dam saf design process would need to be followed for any construction works and/or structu affecting the Poatina Tailrace (similar to Annexure 3 – the Design Approval Process in Midlands Irrigation Scheme agreement between HT and TI).

Commentary with respect to the above conditions

1. With respect to condition 1, TI and Hydro have an agreed range for this pricing and are now working through the details of the methodology for pricing of forced running the Power Station if TI requests Hydro to operate.
2. TI have agreed to this item and have modelled the schemes water availability on this basis. For reference, clause 2.5 of the Whitemore Agreement is provided below)

2.5 ***Restrictions on right to take water***

If Hydro Tasmania's operational requiremen

(a) less than 750 ML of water will be di
day, Hydro Tasmania may notify TI
take more than the Daily Cap of wat

(b) the flow of water from the Poatina p
flow requirements of the Cressy Lon
ML per day) and TI, TI will reduce i
Irrigation District can access the wat

a.

3. TI is fully aware of the need for Dam Safety protocols. The dam being located on the southern side of the Poatina Tailrace means the offtake infrastructure will not impact the existing water users/entities offtake arrangements at Drop Structure 1.

2/ The exact location and method of water extraction hasn't been identified. This may have implications for other/existing water users and water entities.
The water will be extracted from the Southern Side of the Tailrace upstream of drop structure 1. Approximate coordinates are : 41°46'50.8"S 146°58'08.7"E

3/ The exact method of water delivery for the scheme hasn't been disclosed. Again this may have implications for other/existing water users and entities.
The water for the scheme will be delivered entirely by pipeline. No delivery of water via watercourse is proposed.

Regards

Jacob Gerke

Tasmanian Irrigation

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From: Shackcloth, Bill <Bill.Shackcloth@nre.tas.gov.au>
Sent: Monday, 28 March 2022 8:18 AM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Damien Butler <Damien.Butler@tasirrigation.com.au>
Subject: [External]Re: Stalled Declaration of Irrigation District

You don't often get email from bill.shackcloth@nre.tas.gov.au. Learn why this is important

Hi Nik,
The application was advertised late last year with a 30 day period for Representations. Additionally the application was referred to the various Water Entities with districts that intersect with the proposed district, plus the local councils and Crown Lands.

The period for representations has now closed and we will need to consider all comments received before progressing the application. It may be necessary to seek input from TIPL if there are issues identified that need to be resolved.

Unfortunately the application was very thin on specifics/details, so there are already a number of unknowns that will need to be addressed.
1/ The source of water for the scheme. Whilst Im aware that negotiations have commenced to secure a water supply, Im am yet to be advised that an agreement has been executed with Hydro Tas. It is a fundamental requirement for the approval of an irrigation district that there is a source of water for the scheme.

2/ The exact location and method of water extraction hasnt been identified. This may have implications for other/existing water users and water entities.

3/ The exact method of water delivery for the scheme hasnt been disclosed. Again this may have implications for other/existing water users and entities.

Can you provide some information to address these 3 points?

I would note that the approval of the District is a matter that will need to be sent thru to the Minister (it is not something that is routinely done under delegation) therefore it will be imperative that all statutory requirements are addressed. Im more than happy to talk you thru the processes if this isnt something that you have had any experience with previously.

I would further note that until such time as the District is approved, then TIPL has not authority or powers to operate or function within the District. Therefore any construction activity can only be done with the express permission of the landowner(s).

Regards

~~~
~~~

Bill Shackcloth | Section Head, Water and Dam Administration
Water Management and Assessment Branch| Agriculture and Water

Primary Industries and Water

Department of Natural Resources and Environment Tasmania

13 St Johns Avenue
New Town,

TASMANIA. 7008

T: (03) 6165 3001 | M: [redacted]

E: Bill.Shackcloth@nre.tas.gov.au

W: www.nre.tas.gov.au

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From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Friday, 25 March 2022 1:18 PM
To: Shackcloth, Bill <Bill.Shackcloth@nre.tas.gov.au>
Cc: Jacob Gerke <jacob.gerke@tasirrigation.com.au>; Damien.Butler <Damien.Butler@tasirrigation.com.au>
Subject: Stalled Declaration of Irrigation District

Hi Bill,

I'm hoping that you can assist me in chasing up the status of an application to have an irrigation district declared.

Around 6 months ago, TI submitted an application to have the "Northern Midlands Irrigation District" approved, and according to emails below, DPIPWE (now NRE?) and/or the minister had not yet processed/approved it by 25th November last year. The staff member who submitted the application has since left TI, but as far as I know, this has still not been completed.

Are you able to check up on it and see if anything can be done to have this irrigation district finalized?

Construction of an irrigation scheme is expected to commence there very soon, and it could get awkward if the district has not yet been officially declared.

Cheers,
Nik.

From: Steven Maycock <steven.maycock@tasirrigation.com.au>
Sent: Monday, 13 December 2021 12:50 PM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>; Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Subject: RE: Registered CPR Plan for Northern Midlands Irrigation District

Hi Nik

Its is still with DPIPWE. After enquiring where the approval was up to, TI was advised on 25/11 that, without consultation with TI, DPIPWE decided it was "not a matter of high priority". TI immediately requested that it be prioritised. I have not heard anything since that time.

Cheers

Steven Maycock
General Counsel/Company Secretary

Tasmanian Irrigation

T: 03 6398 8433
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From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Monday, 13 December 2021 11:27 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Steven Maycock <steven.maycock@tasirrigation.com.au>
Subject: RE: Registered CPR Plan for Northern Midlands Irrigation District

Hi Steve and Jacob,

Did we end up submitting an application to DPIPWE/the minister to declare an irrigation district for Northern Midlands?

I can't recall if it ever went any further than having the plan registered in the Central Plan Register (below). I can't see any record of a district having been gazetted.

Let me know if you need anything from me to progress this.

Cheers,
Nik.

Nik Sands
Spatial Information Specialist

T: 03 6398 8433
M: [redacted]
E: nik.sands@tasirrigation.com.au
W www.tasirrigation.com.au

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From: Nik Sands
Sent: Wednesday, 4 August 2021 9:50 AM
To: Jacob Gerke <jacob.gerke@tasirrigation.com.au>
Cc: Steven Maycock <steven.maycock@tasirrigation.com.au>
Subject: Registered CPR Plan for Northern Midlands Irrigation District

Hi Jacob,

The plan for the Northern Midlands Irrigation District boundary has now been fully registered in the CPR (signed and registered version is attached).

Cheers,
Nik.

From: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Sent: Wednesday, 4 August 2021 9:39 AM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>
Subject: RE: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Nik.

The CPR plan is now fully registered and added to the DIL.

A signed copy is attached. Good job.

Cheers

Rod

From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Tuesday, 3 August 2021 4:23 PM
To: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Subject: RE: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Rod,

Thanks for your assistance. I have attached an updated PDF with the CPR number included and the amendments lines removed (I hope I understood this correctly).

I'll look forward to receiving the signed PDF in good time.

Cheers,
Nik.

From: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Sent: Tuesday, 3 August 2021 1:44 PM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>
Subject: RE: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Nik.

I have registered the plan and the number i**s CPR 11085.**
Can you do one small amendment to you plan. In the title box area, can you remove the No. 2 and 3 Amendment row AUTHOIRTY to DATE information. Because this is a draft plan no amendment information is necessary.

After you do this and added the CPR number to your plan send a PDF copy to me where I will add the Surveyors General signature and date to the Plan than add it to the DIL and send you a signed copy back. I used the 3rd of August as the registering date.

In the future, not including this plan, there will be a registration fee of $80 per plan.

Regards

Rod Gergely

From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Friday, 30 July 2021 11:28 AM
To: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Subject: FW: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Rod,

As per the email below from Scott, would you please arrange for the attached plan to be lodged in the Central Plan Register?

Note that this is the first CPR plan that I've attempted to draft myself, so please let me know if you notice any further issues with the plan that need to be addressed.

Cheers,
Nik.

From: Strong, Scott <Scott.Strong@dpipwe.tas.gov.au>
Sent: Friday, 30 July 2021 9:35 AM
To: Nik Sands <Nik.Sands@tasirrigation.com.au>
Cc: Gergely, Rodney <Rodney.Gergely@dpipwe.tas.gov.au>
Subject: [External]CPR Plan for new "Northern Midlands Irrigation District"

Hi Nik,

Thanks for this, overall it's a good effort in terms of the interest you are trying to specify.

Just a couple of minor corrections / observations :

- The contour interval stated in the title block (10 metres) is incorrect. It is 20m on the enlargements and unknown on the actual plan, although that could presumably be determined from the zoom level parameters on LISTmap. However, as it isn't critical information for what the plan is identifying (more just background information) I would just leave it blank in the title block in this instance.
- The scale 1:120000 isn't a standard ISO scale. Although there is often a tendency to plot pdfs at fairly arbitrary scale these days the CPR hardcopy plan is still a prime legal document and we should endeavour to utilise accepted ISO metric scales for mapping. Standard metric scales follow the 1-2-5 rule, 1:10000, 1:20000. 1:50000, 1:100000, 1:200000, 1:500000 etc and multiples but an acceptable variation is to use 2.5 based scales (1:12500, 1:25000) and multiples. Hence recommend you change the base plan to 1:125000.

- Given the level of doubt as to the area, it should be rounded to 4 significant figures i.e. +/-128300ha.
- I think it would aid clarification if you name the enlargement next to each one on the plan “See Enlargement ?” next to each enlargement.

Once the plan is finalised it should be sent to Rod Gergely who will arrange for its lodgement.

Regards,

Scott Strong | Program Manager Cadastral Standards | Delegate of Surveyor General
Location Services | ***Land*** *Tasmania*

Department of Primary Industries, Parks, Water and Environment
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GPO Box 44 Hobart TAS 7001
T: 03 616 54175 | M: [redacted] | E: Scott.Strong@dpipwe.tas.gov.au
www.dpipwe.tas.gov.au | www.thelist.tas.gov.au | www.tasmap.tas.gov.au

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From: Nik Sands <Nik.Sands@tasirrigation.com.au>
Sent: Wednesday, 28 July 2021 10:10 AM
To: Strong, Scott <Scott.Strong@dpipwe.tas.gov.au>
Subject: CPR Plan for new "Northern Midlands Irrigation District"

Hi Scott,

Jason Guinan has sent me your email address as the person who can arrange for a new plan to be registered in the CPR.

Would you please review the attached draft CPR plan, and arrange for it to be registered in the CPR, or if you notice any problems or have any suggestions for corrections or improvements, please let me know.

(Note that this is my first attempt at drafting my own CPR plan, after DPIPWE advised that they will be discontinuing this service, so I’m open to feedback on how to improve, if there are any deficiencies. Jason has also been very helpful with advising me regarding these drafts.)

Thanks for your help, and I look forward to hearing from you soon regarding progressing this into the CPR.

Cheers,
Nik.

Nik Sands
Spatial Information Specialist

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W www.tasirrigation.com.au

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3 March 2022

Mr Andrew Kneebone
Tasmanian Irrigation
PO Box 84
EVANDALE TAS 7212

By email: Andrew.Kneebone@tasirrigation.com.au,
CC: Eric.Shegog@tasirrigation.com.au; jacob.gerke@tasirrigation.com.au

Dear Mr Kneebone

Northern Midlands Irrigation Scheme - Request for Water

We refer to Tasmanian Irrigation's (**TI**) request for 25,500ML per annum of water from the Poatina Tailrace to facilitate the proposed Northern Midlands Irrigation District (the **New District**).
This request represents a significant increase in the volume of water that is currently taken from the first drop structure of the Poatina Tailrace. Accordingly, we have made a preliminary assessment of the environmental, operational and commercial impacts of the request on energy generation at Poatina Power Station. Part of this preliminary assessment includes the fact that Hydro Tasmania (**HT**) has received a separate request for additional volume of water from the Cressy Longford Irrigation Scheme operators.

Further, the Department of Natural Resources and Environment Tasmania (**NRET**) has sought HT's position on whether your application to establish the New District would have a material adverse impact on HT's obligations as the Responsible Entity for the South Esk Hydro-Electric Water District and the Lake River Irrigation District.

HT understands the importance of water supply for irrigation and has been (and continues to be) supportive of increased water use for irrigation in the South Esk catchment. For example, HT has entered into agreements for more than 120,000ML per annum to support irrigation below the Poatina Power Station, which is in addition to HT's obligation to supply approximately 65,000ML per annum to the Lake River Irrigation District.

HT has always sought to charge for foregone revenue associated with water passing through power stations downstream of take locations. For water takes in the South Esk River the relevant station is the Trevallyn Power Station.

For most of the 50 years since the Poatina Power Station was commissioned, foregone revenue was reasonably straightforward to calculate. However, the electricity market is going through a period of rapid transition and this is leading to periods where HT is required to pay to run its power stations in order to deliver some irrigation water. Such costs are in addition to foregone revenues calculated via the existing water fee methodology.

These changes to our operating environment mean that HT must update its current methodology for calculating the water fees to a model that is designed to recover costs resulting from the forced running of the Poatina Power Station. In combination, the request from both TI and the operators of the Cressy Longford Irrigation Scheme could increase demand for water coming out of Poatina Power Station during periods of very low or negative electricity prices, which would result in an additional cost.

Against that background, the purpose of this letter is to set out in broad terms certain conditions that HT would require in any new Water Transfer Agreement/s with TI associated with the New Scheme (noting our current intention is to finalise an agreement before the end of 2022) and seek TI's in-principle agreement to those conditions.

In broad terms the conditions are as follows:

1. TI agrees there is a need to change the water pricing methodology that, in-principle, will facilitate a cost recovery regime to account for the forced running of the Poatina Power Station to supply water whereby:

    a. TI will pay the current price per megalitre for water taken during the 'ordinary' running of the Poatina Power Station; however

    b. where TI seeks additional flows outside of 'ordinary' generation, an additional fee will apply per megalitre to account for the additional costs that arise from the forced running of the Poatina Power Station. Forced running cost recovery regime will be developed in consultation with affected parties, including TI.

2. In order to allow sufficient water to reach the Poatina Re-Regulation Pond (thereby enabling HT to meet its existing water release commitments) a minimum flow or water level would be set at drop structure 1 of the Poatina Tailrace which will restrict TI from taking water below that level (similar to clause 2.5 of the Whitemore Irrigation Scheme water agreement between HT and TI).

The final terms of any contract would be subject to HT Board approval, and a dam safety and design process would need to be followed for any construction works and/or structures affecting the Poatina Tailrace (similar to Annexure 3 – the Design Approval Process in the Midlands Irrigation Scheme agreement between HT and TI).

If TI indicates its in-principle agreement to the above, HT will be in a position to conclude that there would be no material adverse impact caused by the establishment of the New Scheme (and NRET can be informed accordingly). Such agreement can be given by completing the execution clause at the end of this letter and returning same to me.

I await your reply.

Yours sincerely



Ian Brooksbank
Acting Chief Executive Officer
e Ian.Brooksbank@hydro.com.au

Acting for and on behalf of Tasmanian Irrigation, I hereby indicate that Tasmanian Irrigation agrees in-principle to the inclusion of the conditions set out in this letter in any Water Transfer Agreement that may be entered into between Hydro Tasmania and Tasmanian Irrigation regarding the New Scheme.

Andrew Kneebone
CEO Tasmanian Irrigation