

# Quipolly Water Project

## Project Plan

### Liverpool Plains Shire Council

NOVEMBER 2021



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# About this Project Plan

## Background

Liverpool Plains Shire Council (LPSC) are procuring the Quipolly Water Project to improve the reliability and quality of water supply to the townships of Werris Creek, Quirindi and Willow Tree.

A Design and Construct contract has been awarded to Gongues Constructions Pty Ltd (Gongues)

LPSC have engaged Hunter H2O Holdings Pty Ltd (Hunter H2O) for the provision of project management, contract management and technical engineering support for the design and construction phase of this project. Under this arrangement, Hunter H2O are working in close collaboration with and act on behalf of LPSC.

## Purpose of this Project Plan

This Project Plan sets out the objectives and methodologies for the delivery of the project. It is provided to assist with briefs to project teams and stakeholders regarding the approach to delivery and management and control of project risks.

The overarching methodology for the project management of the project is the application of Project Management Body of Knowledge (PMBOK) as recognised by the Australian Institute of Project Management. This Project Plan refers to PMBOK areas and identifies how project management methodologies will be integrated to deliver a successful outcome.

This Project Plan is not a commercial document. It does not constitute an offer to any party, remains independent of and does not affect any existing or future contracts for the Quipolly Water Project.






## Document control and governance






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# Executive Summary

<p><b>Project Scope Management</b></p> 	<ul style="list-style-type: none"> <li>▪ The primary objectives of the project are to enable extraction, treatment and transport of water from Quipolly Dam to reservoirs at Werris Creek and North Quirindi at 6ML/d. There are secondary objectives to cater for future upgrades and to enable enhanced operability and maintainability for LPSC.</li> <li>▪ To achieve these objectives a contract scope of works has been written in terms of functional outcomes, minimum infrastructure, quality / engineering standards.</li> <li>▪ The minimum assets generally comprise of destratification and dam intake infrastructure, two pumping stations, ~20km of pipelines, a 0.4KL reservoir, a modern multi-barrier treatment plant and associated infrastructure.</li> </ul>
<p><b>Project Quality Management</b></p> 	<ul style="list-style-type: none"> <li>▪ One of the key selection criteria for the procurement of the D&amp;C contract, was a demonstrated capability of the Contractor and certified quality systems.</li> <li>▪ The contract specifies quality requirements that the works must meet with respect to process, civil, mechanical, electrical engineering specifications, and standards.</li> <li>▪ The Contractor has prepared and will work to project quality management plan. This includes inspection and test plans (ITPs).</li> <li>▪ The design phase of the project requires a phased review, which will include assessment and comment by LPSC, Hunter H2O and NSW's DPIE.</li> <li>▪ During construction, a surveillance team will periodically check compliance of the Contractor's construction to standards, the approved design and ITPs.</li> <li>▪ Gongues will pass two Proof of Performance Tests (POPTs) at project completion.</li> </ul>
<p><b>Project Procurement &amp; Governance</b></p> 	<ul style="list-style-type: none"> <li>▪ A Design and Construction procurement strategy was selected which affords Gongues some flexibility to deliver performance outcomes, but within the constraints specified in the contract.</li> <li>▪ A GC21 contract was selected which has provisions to promote co-operative contracting. It includes provisions to resolve disputes amicably and promptly.</li> <li>▪ The contract payment structure is lump sum, but it does include schedule of rate items and may give rise to legitimate entitlement for variations to the contract award sum in some circumstances.</li> </ul>
<p><b>Project Time Management</b></p> 	<ul style="list-style-type: none"> <li>▪ The contract specifies a timeframe for completion in accordance with four milestones for design and construction. The original contract date for overall completion is in May 2023. This is followed by a 12-month period for second proof of performance test and correction of any latent defects.</li> <li>▪ There are a number of issues which will give rise to legitimate extensions of the contract such as wet weather, external stakeholder approvals and COVID 19.</li> <li>▪ With regard to these issues, a realistic forecast for completion is August 2023. The project team continues to proactively manage the program.</li> </ul>
<p><b>Project Cost Management</b></p> 	<ul style="list-style-type: none"> <li>▪ The project has been established with a budget from which contributions have been made from Federal, State and Local Government.</li> <li>▪ The D&amp;C contract award sum is \$32,454,960 in lump-sums plus schedule of rate items.</li> <li>▪ A cashflow forecasting tool has been developed to monitor and control costs and this is reviewed on a monthly basis by an internal steering committee.</li> </ul>

<p><b>Project Risk Management</b></p> 	<ul style="list-style-type: none"> <li>▪ The project team have undertaken a risk assessment (including with input from LPSC, Hunter H2O and Gongues) and an overarching management plan has been prepared with assessments based on likelihood and consequence.</li> <li>▪ Gongues have prepared several management plans to address the management of design, safety, environmental, quality, cutover and commissioning matters in delivery. These will be supported by several, detailed safe work method statements and ITPs that will be progressively developed.</li> <li>▪ The design review includes a number of hold-points and interactive workshops to assess and vet risks in design relating to safety, operability &amp; maintainability.</li> <li>▪ Specific time, cost &amp; commercial risks are tracked separately and confidentially.</li> </ul>
<p><b>Project Resource Management</b></p> 	<ul style="list-style-type: none"> <li>▪ A project management team has been assembled to action the management tasks in this plan. This includes resources focussed on: <ul style="list-style-type: none"> <li>○ overarching project management</li> <li>○ contract administration</li> <li>○ Design / technical review ('Owner's Engineer')</li> <li>○ Site surveillance</li> </ul> </li> <li>▪ This team includes both Hunter H2O and LPSC staff (including operators).</li> <li>▪ This team includes experienced personnel and emerging professionals.</li> </ul>
<p><b>Project Stakeholder Management</b></p> 	<ul style="list-style-type: none"> <li>▪ The project team have identified numerous stakeholders who have either been directly consulted or whose needs have been considered. Significant stakeholders external to LPSC are: <ul style="list-style-type: none"> <li>○ Local contractors / community members capable of performing works</li> <li>○ Regulatory authorities (particularly DPIE, EPA &amp; DoH)</li> <li>○ Statutory Authorities (particularly Essential Energy &amp; ARTC)</li> <li>○ Neighbouring property landowners</li> </ul> </li> <li>▪ Several stakeholders were consulted in procuring planning approvals for the project; this was documented in a Review of Environmental Factors.</li> </ul>
<p><b>Project Communications Management</b></p> 	<ul style="list-style-type: none"> <li>▪ A communications plan is being prepared to formalise the approach to liaison with external stakeholders.</li> <li>▪ Contract communications are facilitated through monthly contract meetings, formal correspondence, RFIs and contract submissions.</li> <li>▪ Remote communications, document sharing, and collaboration are being facilitated through Microsoft Teams.</li> </ul>
<p><b>Project Integration Management</b></p> 	<ul style="list-style-type: none"> <li>▪ This Project Management Plan is the primary tool for ensuring that Project Management services are integrated and prioritised to achieve successful project outcomes that align with the aspirations of LPSC.</li> <li>▪ During the contract start-up workshop, a number of success criteria were discussed, and these are reviewed on a monthly basis. They include communication &amp; relationships, local participation, time, financial, safety / environmental, operations. These are scored on a scale of 1-5 to identify trends and opportunities for improvement.</li> <li>▪ The Project Team will also arrange quarterly reviews with LPSC to check in on overall progress and lessons learned for continuous improvement.</li> </ul>

## Acronyms used in this Project Plan

Acronym	Definition
<b>ARTC</b>	Australian Rail Track Corporation
<b>ADWG</b>	Australian Drinking Water Guidelines
<b>CHAIR</b>	Construction Hazard and Implementation Risk
<b>CST</b>	Continuously Stirred Tank
<b>HAZOP</b>	Control Hazard Operability
<b>D&amp;C</b>	Design and Construct
<b>DOC</b>	Dissolved Organic Carbon
<b>DoH</b>	Department of Health
<b>DPIE</b>	Department of Planning, Industry and Environment
<b>EPA</b>	Environmental Protection Authority
<b>EMS</b>	Environmental Management Services
<b>FAT</b>	Factory Acceptance Testing
<b>GC21</b>	General Conditions of Contract (Edition 2)
<b>HAZOP</b>	Hazard and Operability
<b>HSEQ</b>	Health, Safety, Environment & Quality
<b>HH2O</b>	Hunter H2O
<b>LGA</b>	Local Government Area
<b>LPSC</b>	Liverpool Plains Shire Council
<b>LTI</b>	Lost Time Injury
<b>NSW</b>	New South Wales
<b>PEPO</b>	Preliminary Environmental Planning Overview
<b>PLC</b>	Programmable Logic Controller
<b>PMCA</b>	Project Management and Contract Administration
<b>PoP</b>	Proof of Performance
<b>QWP</b>	Quipolly Water Project
<b>REF</b>	Review of Environmental Factors
<b>RFS</b>	Rural Fire Service
<b>SAT</b>	Site Acceptance Testing
<b>WAC</b>	Work-As-Constructed
<b>WHS</b>	Work, Health & Safety
<b>WTP</b>	Water Treatment Plant

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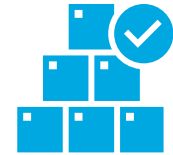
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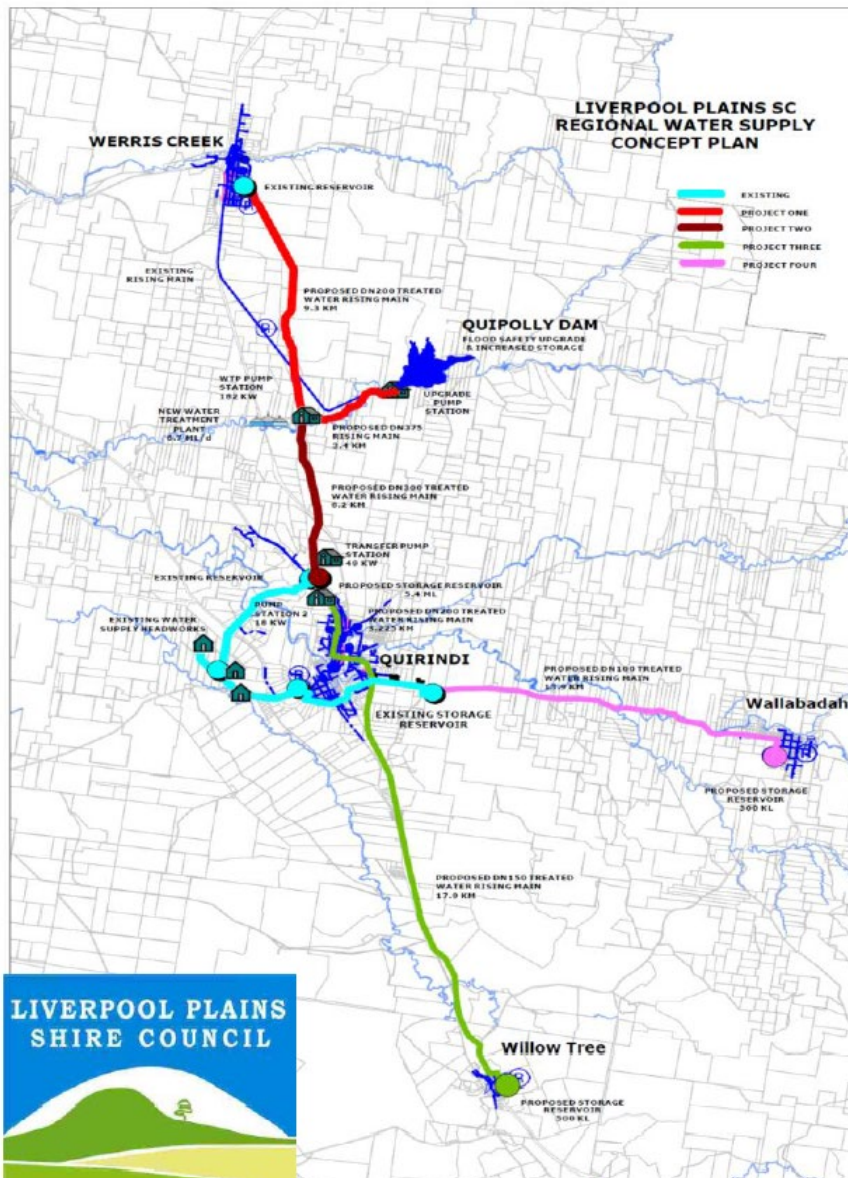
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# 1 Project scope



## 1.1 Project strategic background

The Shire of Liverpool Plains is a Local Government Area (LGA) located within the North West Slopes region of NSW and is 367 km north west of Sydney. The total area of Liverpool Plains is 5,086 km<sup>2</sup> and it contains the municipal townships of Werris Creek, Quirindi, Willow Tree and Wallabadah whose commercial centres support local industry.



Liverpool Plains Shire Council's (LPSC) have developed a regional water supply strategy to improve water security to the region through an integrated scheme that links water supply to each of these townships and surrounding areas. This strategy is being delivered in a staged manner, the final phase of which is the Quipolly Water Project.

The Quipolly Water Project will enable the harvest, treatment and transport of surface water within Quipolly Dam to reservoirs at Werris Creek and North Quirindi which will enhance the capacity, quality and resilience of supply of potable water.

In addition to surface water from Quipolly Dam, an existing bore field at Borambil forms a secondary source of supply. The Quipolly Water Project will also have a benefit of enabling the supply of groundwater from this bore field to the township of Werris Creek in the event that water within Quipolly Dam is no longer available. Thus, the integrated scheme substantially improves resilience by replacing aged infrastructure that does not meet current standards.

Figure 1 - Overview of regional strategy

A *Regional Water Supply Strategy Design Basis Report* (GHD, 2014) defined the required capacity of the Quipolly WTP as 9 ML/day. The report outlined demand estimates in combination with population projections to support the nominated sizing. Following an optimisation study, an opportunity was identified to procure transport infrastructure at 9ML/d, but to stage the construction of the Quipolly water treatment plant so that it is initially constructed at 6ML/d, but design in such a way so that it can be efficiently upgraded to 9ML/d in future without requiring replacement of major civil assets.

## 1.2 Concept development

A concept design had been prepared for the Quipolly water treatment plant and water transfer infrastructure (GHD, March 2014). The concept included infrastructure to extract and treat raw water from Quipolly Dam at a site nearby to existing raw water pumping station.

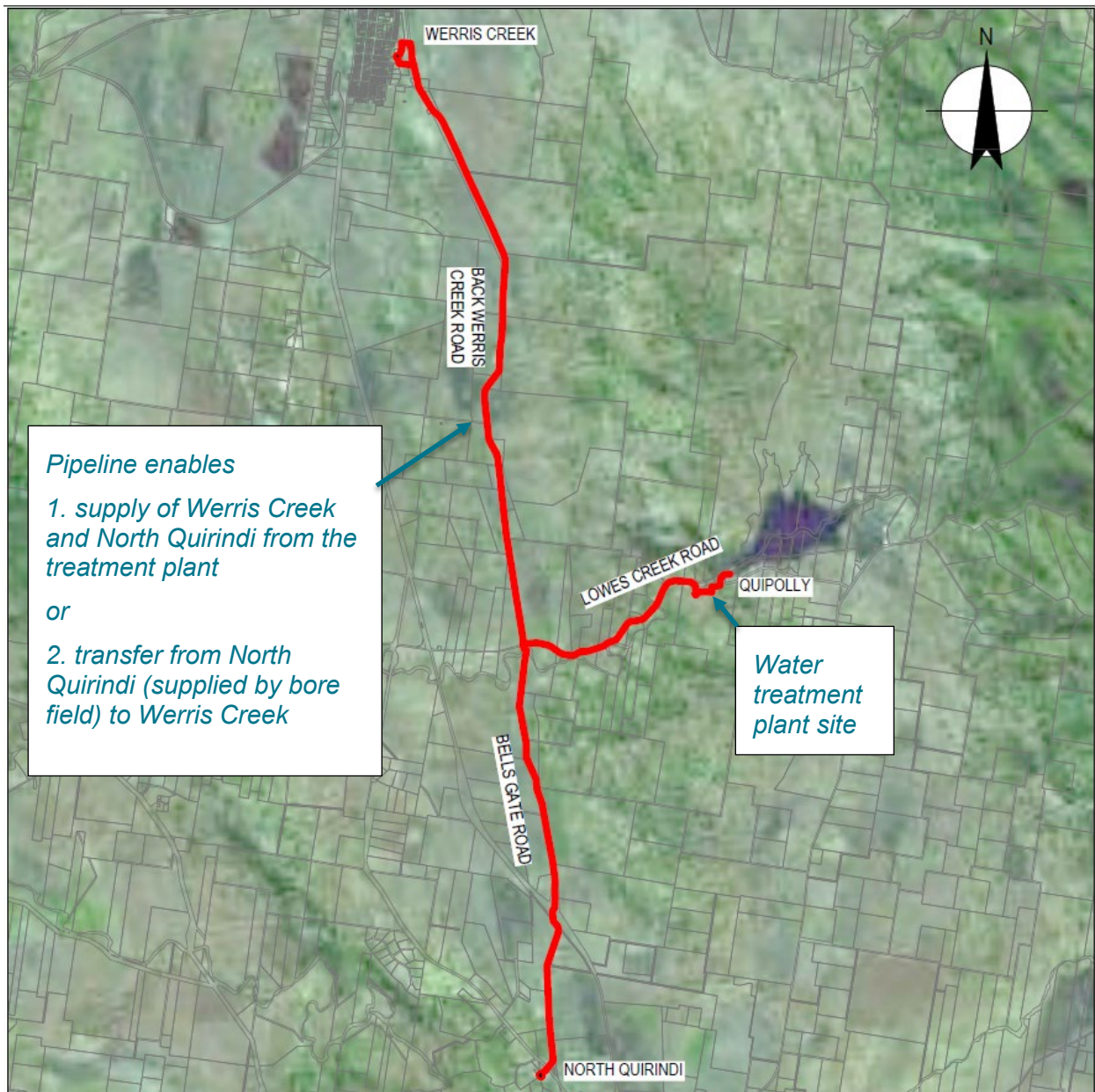


Figure 2. Quipolly Water Project Network Alignment (Water Network Concept Design Report, GHD, 2014)

### 1.3 Assessment of raw water quality at Quipolly Dam

Following development of the concept, further analysis was undertaken of the raw water quality within Quipolly Dam. This included consideration of algal bloom event (which is indicated on the right-hand side of the tiled image and in the photograph shown in Figure 3). Water quality jar testing that was completed in May 2018 shortly after an algal event identified treatment challenges due to the presence of high levels of blue green algae and taste and odour compounds in the raw water, along with high pH, high alkalinity, and elevated levels of dissolved organic carbon (DOC).

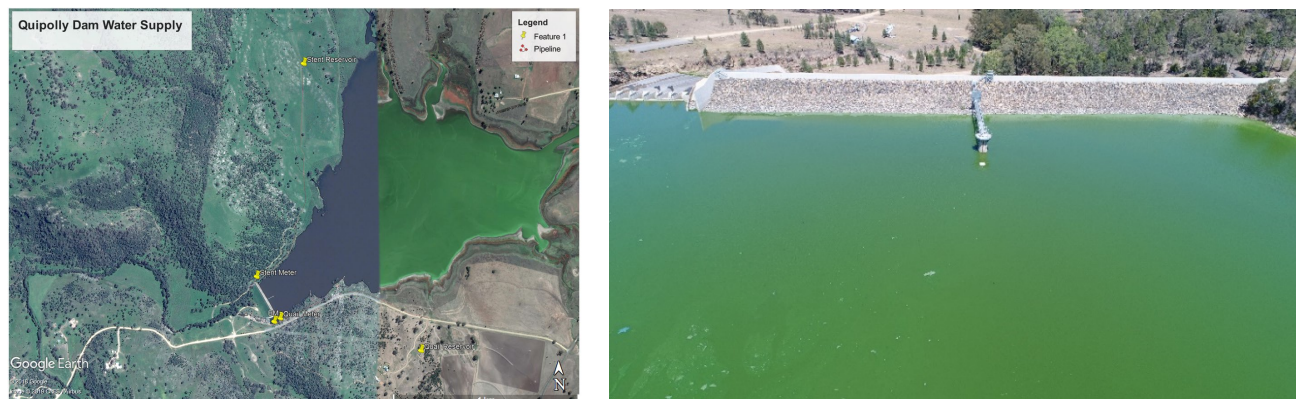


Figure 3 - Quipolly Dam tiled image and photograph in algal bloom

### 1.4 Development of a Reference Design for a treatment plant

An options study completed by Hunter H2O assisted LPSC in identifying treatment processes that could be utilised to address some of the raw water quality challenges observed, and to facilitate consultation with stakeholders and procurement of project approvals.

A Reference Design for the treatment plant was prepared which incorporated modern, multi-barrier approaches to treatment. Site layouts were developed to determine construction footprints and environmental impacts. Figure 4 is a model of the reference design from the treatment plant.



Figure 4 - WTP 3D model overview

A Review of Environmental Factors (REF) was prepared assuming environmental footprints and likely impacts based on the Reference Design. This REF involved consultation with various authorities as described in section 8 of this Project Plan. Planning approval was determined under the SEPP Infrastructure. Consultation was undertaken with NSW Department of Primary Industries and the Environment (DPIE) to confirm concurrence that the proposed treatment process is an effective and cost-efficient solution.

## 1.5 Project objectives

Following the strategic planning and concept development described above, the following objectives were confirmed to define the scope of the project:

### 1.5.1 General objectives

Provide all things and undertake all actions necessary for the complete design, validation, construction, pre-commissioning, commissioning, establishment and testing of Project Infrastructure and a Project Operational System to safely and reliably achieve the functional requirements as follows:

### 1.5.2 Primary Functional requirements

The Works must, under Normal Operating Conditions:

- destratify Raw Water in Quipolly Dam
- draw destratified Raw Water from Quipolly Dam at variable offtake levels
- transfer Raw Water to a modern Water Treatment Plant to within the boundaries of the nominated water treatment plant site shown in the Reference Design
- immediately treat Raw Water to a standard that complies with the requirements of a Process Specification
- transfer Treated Water from the Water Treatment Plant to Quirindi North Reservoir and/or to an existing reservoir at Werris Creek located as shown in the Reference Design
- include a new reservoir with a storage of 0.4ML at Werris Ck
- measure chlorine residual and enable secondary chlorination of Treated Water at North Quirindi reservoir and Werris Creek reservoirs
- in general, be capable of producing treated water to Quirindi and/or Werris Creek at a production rate of 6ML within a 23hour operating period.

The Works must, under all conditions:

- be resilient to adverse weather conditions and raw water quality deviations outside of the design envelope so that the works can immediately recommence operation when Normal Operating Conditions resume
- provide an onsite laboratory at the Water Treatment Plant equipped with all apparatus required for testing in accordance with Project Operational System

### 1.5.3 Secondary Functional requirements

The Works must, under Normal Operating Conditions:

- enable discharge of Raw Water into Quipolly Creek (riparian flow)
- provide supply of treated water directly to specified users at Quipolly Dam
- enable the Principal to apply tapping bands to the pipelines between the Treatment Plant Site, Quirindi North and Werris Creek for supply of treated water to <20 users who reside along these pipelines with individual usage not exceeding 1l/s.
- enable the direct transfer of treated water from the Quirindi Bores Balance Tank at Quirindi to the reservoir at Werris Creek at a flow rate of 6 ML/day when the supply from Quipolly Dam is not in use.

A detailed set of specifications describe in more detail specific elements of the above objectives that must be achieved with respect to process, civil, mechanical and electrical / control engineering requirements. It also includes requirements for testing / demonstrating performance. This is described further in Section 3 of the Project Plan.

#### 1.5.4 Operability and maintainability requirements

The project scope of works has also been defined with respect to general safety, operability and maintainability requirements which are prescribed in detail in the construction contract. This includes various training, asset management obligations.

One specific element of the contract is to enable LPSC to use the Water Treatment Plant site as a secondary centre for the housing of Council operational staff and control of other essential infrastructure and services (for example, in the event that other Council assets are unavailable). The Project Infrastructure at the Water Treatment Plant must operate under all conditions (including adverse weather conditions):

- provide an administration building complete with power, air-conditioning, telephony and data communications, all office equipment, furnishings, IT equipment that will comfortably accommodate all operational personnel required for operation of the plant plus 4 additional Council staff
- provide security, site lighting and emergency power provisions
- have robust perimeter and building security, landscaping and visual screening.

### 1.6 Minimum Infrastructure

In addition to specifying functional outcomes, the contract obligations specify the minimum infrastructure which must be provided and tasks which must be undertaken. This is summarised as follows:

#### 1.6.1 General construction tasks

- Site establishment and implementation of management plans
- Site restoration
- Roadworks and hardstand areas
- FAT and SAT
- Flow testing of the works

#### 1.6.2 Network infrastructure

- Installation of temporary and permanent site stormwater and drainage systems
- Installation of high-level reservoir at Werris Creek
- Connection / bypass pipework and monitoring equipment at North Quirindi
- Upgrades to pumping arrangements and flow control at existing Quirindi Bores Balance Tank
- Trunk water mains from the treated water pumping station to the townships of Werris Creek and Quirindi
- Upgrades to dam intake tower
- Installation of raw water pipeline from Quipolly Dam to the raw water pumping station and associated works
- Installation of raw water pumping station
- Installation of raw water main from the raw water pumping station to the Quipolly WTP
- Installation of water trunk mains from the treated water pumping station at the treatment plant connection

#### 1.6.3 Treatment infrastructure

- Provision of proprietary treated water supply system
- Installation of diesel fire booster pump set
- Connection of two (2) LPSC customers to treated water supply
- Installation of dam destratification system and control system

- Extension of HV network and new service
- Telemetry works at four (4) reticulation outstations
- Installation of Quipolly WTP mechanical and electrical equipment
- Installation of Quipolly WTP Amenities Building
- Installation of firehose reels, washdown hose reels, and emergency showers / eyewash stations
- Installation of packaged aerobic wastewater treatment system that distributes to a sub-surface irrigation system
- Installation of blower building
- SCADA integration works for the scheme
- Installation of electrical switchroom
- Construction of Ozone, PSA and DAF facilities
- Signage, labelling and equipment tags
- Installation of chemical storage and dosing facilities
- Laboratory fit-out
- Installation of workshop and equipment storage depot
- Installation of treated water / backwash pumping station
- Installation of PAC contact tank
- Installation of flash mixer
- Installation of inclined plate settler
- Installation of Biological Activated Carbon (BAC) filters
- Installation of filtered, washwater and treated water storage tanks
- Installation of UV disinfection facility
- Installation of sludge thickener
- Installation of supernatant return pumping station
- Construction of sludge lagoons and emergency overfly pond
- Installation of wet and dry chemical dosing facility
- Installation of potable water ring main with mechanical fittings
- Construction of emergency generator laydown area
- Demolition, removal and disposal of redundant assets

## 1.7 Adherence to Reference Design

Further to the contract obligations described in above, the contractor will also validate and adhere to the Reference Design provided by the Principal unless otherwise approved.

## 1.8 Managing scope changes

### 1.8.1 Authorising and recording scope changes

A **Principal's Authorised Person** has been nominated in the contract as the only person who is authorised to issue instructions that represent a change to the project scope. The Principal's Authorised Person takes the lead role in ensuring that scope is managed, and that any changes are recorded in a variation register within the tracking sheet.

Prior to issuing any instructions to change a scope, the Principal's Authorised Person is to confer with LPSC's Manager of Water Services.



## 2 Project quality management

### 2.1 Quality management prior to contract award

#### 2.1.1 Quality assurance on contract

The contract specifications and the reference design which define the contractor's obligations were checked for quality through:

- application of internal quality assurance checks by Hunter H2O
- a review by LPSC staff
- consultation and review with NSW Department of Industry and Environment
- receipt of feedback through an Early Tenderer Involvement phase.

#### 2.1.2 Quality assurance on selection of preferred contractor

As part of the tender evaluation process, the capability of contractors to undertake the contract scope were checked through:

- evaluation of skills and experience of the Contractor's key personnel
- evidence of success on past similar projects (including referee checks)
- evidence of the Contractor having a certified corporate quality management system

The evaluation included mandatory (threshold) criteria to qualify for assessment as well as comparative scoring. The selected Contractor, Gongues, scored medium to high against these quality measures.

## 2.2 Administrative quality controls

### 2.2.1 Quality Management Plan

As part of the contract scope of works, Gongues will submit and adhere to a Quality Management Plan that complies with NSW Government *Quality Management Systems Guidelines (QMS Guidelines)* and ISO9001.

### 2.2.2 Inspection and test plans

Prior to the commencement of works, Gongues will submit Inspection and Test Plans (ITPs) which indicate how the works will be checked for compliance to the approved design and contract specifications. Conformance records are required to be submitted prior to progress claims.

## 2.3 Quality management in design

### 2.3.1 Design Management Plan

As part of the contract scope of works, Gongues will submit and adhere to a Design Management Plan which identifies who will undertake and check the design for quality. This plan describes the QA processes which will be applied.

### 2.3.2 Design review

As part of the contract scope of works, Gongues will progressively submit designs for review by LPSC. These include submissions at 25%, 40%, 70%, 90% and 100% ('For Construction') stages. Hunter H2O's technical team will review the designs with discipline specialists mobilised as relevant for each design submission. LPSC's project management, engineering and operational staff will also be given the opportunity to review the design. Comments will be collated on a log sheet and returned.



### 2.3.3 Design workshops

The contract requires the holding of design presentation and review sessions at each submission so that the submission can be properly understood and discussed with those who undertake the design.

In addition to general review workshops, there are also workshops that are targeted at managing risk in design which is described in section 6 of this Project Plan.

### 2.3.4 Field work to inform the design

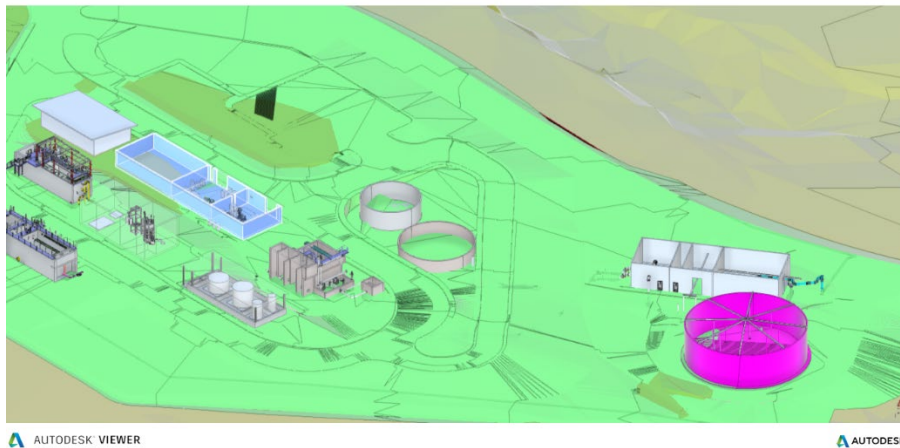
Gongues will undertake their own investigations of the site (including some survey and geotechnical investigation) to validate or inform the development of the design.

LPSC and Hunter H2O arranged for a joint site inspection (particularly along the pipeline route) to assess site conditions and ensure that the design considers site-specific factors.

### 2.3.5 Design model

A 3D model is a requirement of the contract to enable detailed review.

12524170-QUIPOLLY\_WTP\_COORD\_MODEL.nwd.png



*Figure 5 - Detailed design model in early development*

## 2.4 Quality management in construction

### 2.4.1 Construction surveillance

Hunter H2O will mobilise a surveillance team to periodically inspect works during construction to observe on site compliance with the contract and proper implementation of the contractor's quality management plan. This team will comprise of project engineers of various disciplines who are experienced in construction and/or who have been involved with the review.

### 2.4.2 Release of witness and hold points

Gongues will develop ITPs which identify witness and hold points which Hunter H2O will attend.

### 2.4.3 Proof of performance tests

The contract requires implementation of a proof of performance test to ensure that the commissioned works achieve the functional outcomes specified in the contract. The successful passing of this test is a prerequisite for completion of the contract. Hunter H2O will oversee the implementation of this test.

The contract also requires implementation of a second proof of performance test within the first 12 months of completion of the contract. This test can be undertaken at a time selected by the Principal, which might be on an occasion when the weather is warm and/or the water quality in Quipolly Dam is challenging.

## 3 Project procurement and governance



### 3.1 Procurement strategy

#### 3.1.1 Type of contract

A Design and Construction procurement strategy was selected as a seamless contract to achieve the project functional objectives whilst affording a level of flexibility to the Contractor for refinement and innovation.

#### 3.1.2 Form of contract

A GC21 contract was selected which is a standard form of contract commonly used throughout NSW. This contract has provisions to promote co-operative contracting such as:

- express conditions that require co-operation from both the Principal and the Contractor
- provisions for early warning of issues
- establishment of a contract structure to enable prompt and amicable escalation and resolution of issues.
- Procedures to enhance co-operation such as start-up meetings and monthly evaluation processes.

#### 3.1.3 Early Tenderer Involvement

Early Tenderer Involvement was implemented prior to the award of contract to obtain feedback from tenderers, resolve any ambiguities in the contract and to make provisions for innovations to obtain the best contract price.

### 3.2 Contract structure

#### 3.2.1 Use of milestones

The contract has been structured with milestones to enable LPSC to procure parts of the works sequentially. Completion of the design is required as a prerequisite to construction to ensure there is confidence in the design and also to assist in managing third-party approvals (particularly DPIE) prior to construction commencing.

*Table 3-1 - Contract milestones*

Key milestone	
Design main pipeline	Milestone 1A
Design water treatment plant (WTP)	Milestone 1B
Construction main pipeline	Milestone 2
Construction / commissioning WTP	Milestone 3
Process proving completion	Milestone 4

#### 3.2.2 Contract pricing structure

The contract price is based on lump-sums for each milestone.

The contract does include a schedule of rates for contingent items which are payable subject to certain conditions and certification by the Principal. These rates apply in particular to responding to materially adverse site conditions such as excavation of rock on pipeline routes or improving foundations if soft ground is encountered.

The contract does provide entitlement for claims if other site conditions are encountered which are materially averse to what could have been anticipated by the Contractor at the time of tender.

### 3.3 Contract roles

#### 3.3.1 Authorised Persons

GC21 nominates roles which must be fulfilled described as follows. In general terms the Principal's Authorised Person is the only person under the contract who is authorised to issue instructions unless expressly advised otherwise by the Principal.

##### **Authorised persons**

###### **Contractor's Authorised Person**

- .1 The Contractor must ensure that, at all times, there is a person appointed to act as the *Contractor's Authorised Person*. The *Contractor's Authorised Person* acts with the Contractor's full authority in all matters relating to the Contract. The Contractor must promptly notify the Principal of the name and contact details of the *Contractor's Authorised Person* and of any change in those details. If the Principal reasonably objects to the *Contractor's Authorised Person* at any time, the Contractor must replace that person.

###### **Principal's Authorised Person**

- .2 The Principal must ensure that, at all times, there is a person appointed to act as the *Principal's Authorised Person*. The Principal must promptly notify the Contractor of the name and contact details of the *Principal's Authorised Person* and of any change in those details.
- .3 The *Principal's Authorised Person* does not act as an independent certifier, assessor or Valuer. The *Principal's Authorised Person* acts only as an agent of the Principal.
- .4 The *Principal's Authorised Person* may delegate any of its contractual functions and powers to others by written notice to the Contractor.

#### 3.3.2 Senior executives

GC21 also nominates Senior Executive roles. These are roles which are filled by senior management positions within the organisations of the Principal and Contractor with sufficient authority to make executive level decisions. These roles require leadership and oversight of the project to ensure that the project is being delivered effectively and that a co-operative approach is being maintained. Should there be a disagreement in the contract, the Senior Executives are required to resolve it as follows.

#### 3.3.3 Governance

An internal governance structure has been established internally

#### 3.3.4 Co-operative contracting

Proactive measures have been undertaken to promote a co-operative contracting relationship and avoidance of disputes. A contract start-up workshop was held confirming a commitment to this approach, and health checks are held on the contract relationship and overall performance at monthly meetings.

# 4 Project Time Management



## 4.1 Project time drivers and constraints

### 4.1.1 Drought relief

At the time of project planning, most of regional NSW was in drought conditions and LPSC's surface water supplies were low. This was one of the key reasons for dividing the project delivery into milestones as described in section 2.3.1 of this plan. At the date of issue of this Project Plan, drought conditions had abated, but the driver to improve the resilience to the regional water supply remains an ongoing driver.

## 4.2 Contract program

### 4.2.1 Contract requirements for on time completion

The contract award date was 10 June 2021. The contract has durations applied to each of its milestones as summarised below:

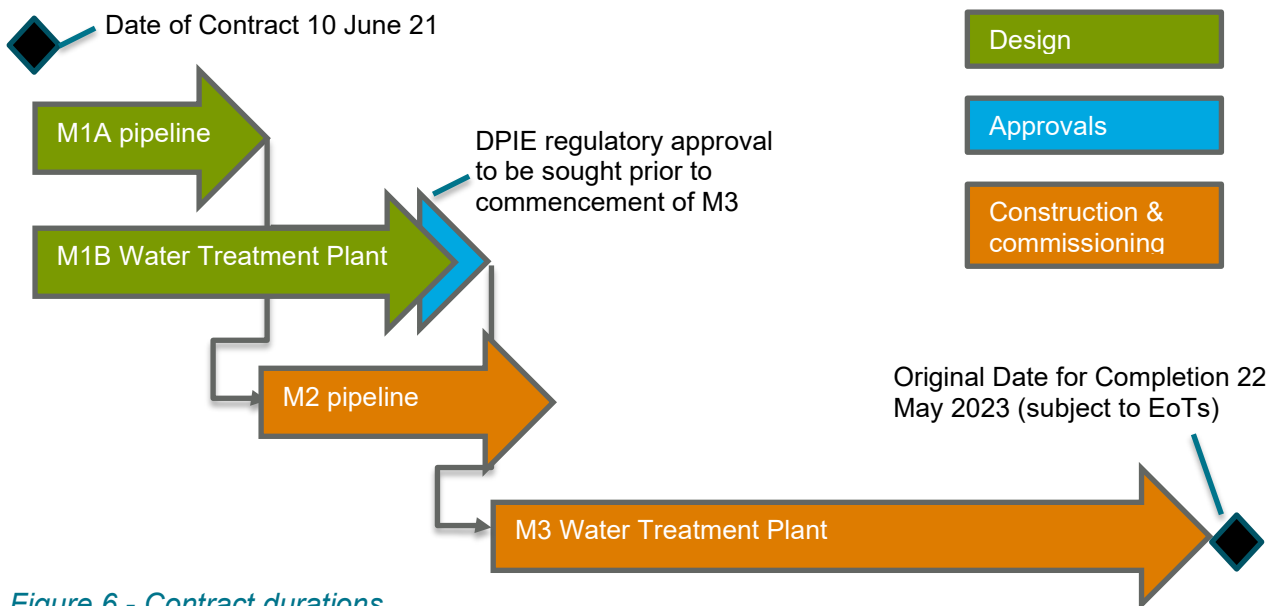


Figure 6 - Contract durations

Table 4-1 - Key Milestones dates

Key milestone		Contract duration	Earliest contract completion date	Estimated date with allowance for expected EoTs (e.g., rain)
Design main pipeline	M1A	18 weeks	15 Oct 2021	4 Nov 2021
Design water treatment plant	M1B	33 weeks	14 Feb 2022	6 Mar 2022
Construction main pipeline	M2	24 weeks after 1A	20 April 2022	7 June 2022
Construction / commissioning*	M3	60 weeks after 1B	13 May 2023	20 Aug 2023
Process proving completion	M4	4 weeks from direction*	19 Jun 2024	17 Sept 2024

\* Milestone 3 requires successful passing of a Proof of Performance Test (POPT). The Principal may give a direction to perform a second POPT within 12 months of the completion of Milestone 3.

## 4.2.2 Contract Program

Gongues have prepared a contract program. The critical path for the overall completion includes, or may include the following key activities:

- Design M1B
- DPIE approval of the design of M1B
- Establishment
- Bulk earthworks
- Switchroom & building construction
- Ozone tank (including concrete works)
- Filtered water tank (including concrete works, coating, hydrostatic testing)
- Commissioning
- Testing

## 4.3 Overall program

### 4.3.1 Project closure activities

Following completion of commissioning and testing of the works, there will be approximately 2 months required to close the project (settle all claims under the contract, confirm closure of minor omissions, complete project filing, training and documentation and capture lessons learned). The earliest estimated completion is July 2023 although this may be subject to delays as described in section 4.4.

### 4.3.2 Defects rectification and second proof of performance test.

Following completion of the works, LPSC will retain a security for a period of 12 months and will be liable for the rectification of any latent defects. The Principal may optionally also require undertaking a second proof of performance test at a time of LPSC's choosing.

## 4.4 Time risks / possible Extensions of Time (EoT)

### 4.4.1 Matters likely to delay or give rise to EoTs

The contract permits extensions of time in relation to various events. Some of the key issues likely to give rise to a legitimate extension of time are:

- Wet weather
- Third party approvals to or changes to the design
- Covid 19 (including supply chain considerations)
- Materially adverse site conditions

The approach to management of time-related risks is described in Section 6 of this Project Plan and the attached risk register.

# 5 Project Cost Management



## 5.1 Project funding

The project has been established with a budget from which contributions have been made from Federal, State and Local Government. LPSC appreciates the support provided by its funding partners.

## 5.2 Contract award

The D&C contract award sum is \$32,454,960 in lump-sums.

The contract also includes various schedule of rate provisions which are applied in response to particular scenarios (e.g. poor ground conditions during excavation).

## 5.3 Project financial control

Financial control of the Quipolly Water Project will be administered through a centralised Project Control Sheet (PCS) which comprises of a multi-tab spreadsheet which collectively provide functionality for budgeting, expenditure tracking, forecasting and for ongoing assessment of commercial risks.

This is updated and reported to LPSC in confidence on a monthly basis with a risk assessment being undertaken by an internal project steering committee.

A cashflow forecasting tool has been developed to monitor and control costs and this is reviewed on a monthly basis by an internal steering committee.

# 6 Project Risk Management



## 6.1 Project risk assessment

The primary tool for tracking and managing project risk and an overarching risk management plan has been prepared in the form of a risk and opportunity register which is used by an internal project steering committee on a monthly basis.

The risk and opportunity register has been developed by the project team through a number of risk assessment meetings including a risk assessment session completed as part of the GC21 Start-up Workshop, involving LPSC, Hunter H2O, Gongues and GHD.

Identified risks have been allocated mitigation measures that will be implemented throughout the project to reduce the overall likelihood and consequence of the risk to LPSC. Considering the completion of mitigation measures, each item has been given an estimated residual likelihood and consequence rating so that high impact risks and opportunities can be prioritised.

## 6.2 Safety risk management

To ensure that the design adequately addresses safety in construction, maintenance activities and operation, a number of interactive Safety in Design workshops will be undertaken utilising the Construction Hazard Assessment Review Process (CHAIR) tool. These have been included in the Contract as hold points and are to occur progressively throughout the design development, aligning with design submissions. During the workshops a hierarchy of controls are used to eliminate or reduce risk as much as possible, with the design modified as necessary to allow this.

Gongues have an ISO9001 accredited integrated management system (including safety) and have been granted Federal Safety Commission accreditation. Aligning with their accredited systems, Gongues have prepared several management plans to address the management of design, safety, environmental, quality, cutover and commissioning matters in delivery. These plans will be supported by detailed safe work method statements (SWMS) for all high-risk construction works and inspection and test plans (ITPs) and inspection check sheets (ICSs) for quality management that will be progressively developed.

During construction and commissioning Hunter H2O will provide site surveillance and periodic auditing to monitor compliance with the management plans.

## 6.3 Environmental risk management

LPSC engaged NGH Environmental to undertake a Review of Environmental Factors (REF) covering the project scope, prior to tendering. The review identified environmental risks that would be encountered during the project and outlined mitigation and control measures that were required to manage these risks.

Gongues will implement the control measures as outlined in the REF. As part of the REF development the Department of Fisheries were consulted on the proposed design including the water way crossings with input to the REF provided.

To control environmental risks during construction and commissioning, Gongues will prepare an Environmental Management Plan and a number of sub plans including:

- Soil and water management plan
- Waste management plan
- Noise and vibration management plan

During construction and commissioning Hunter H2O will provide site surveillance and periodic auditing to monitor compliance with the management plans.

## 6.4 Water quality risk management

To minimise the risk of water quality issues to the community, a formal risk assessment and Hazard Analysis Critical Control Points (HACCP) was undertaken focussing specifically on the water quality risks that could lead to water quality issues experienced by LPSC customers. This process involved a workshop integrating the expertise of GHD, Hunter H2O, LPSC, the Department of Primary Industries and Environment and the Department of Health.

The risk assessment reviewed the raw water quality expected to be encountered in the WTP catchment and the resulting contaminants and water quality issues that could develop. The review also looked at contaminants that could be produced during the treatment process.

HACCP is a process-oriented system originally designed to identify, evaluate and control hazards that might occur in the food production process. The HACCP technique of hazard management has also been adopted worldwide for drinking water treatment systems. This technique of process control utilises preventative as well as reactive measures to manage potential hazards to the product and correct deviations in quality as soon as they occur. In this case, the product is water.

From the workshop the Critical Control Points (CCPs) and Critical Operational Points (COPs) for the plant were determined. These along with the risks and mitigation measures identified are to be incorporated into the design. Through the design review Hunter H2O will monitor and report on completion.

## 6.5 Commissioning and operational risk management

Commissioning and operational risks have been highlighted in the Risk and Opportunity register referenced above but also via formal processes during the design phase. Gongues and their lead designer GHD have convened a formal Hazard and Operability Analysis (HAZOP) including consultation with LPSC and Hunter H2O operational and technical representatives.

To manage commissioning risks Gongues will prepare detailed cut-over and commissioning plans which will detail their proposed methodology for commissioning. During commissioning, Hunter H2O's commissioning engineer will provide surveillance onsite to enforce compliance with the agreed commissioning plan.

After commissioning Gongues will complete Proof of Performance Testing which specifically tests that the plant is performing to the performance requirements of the Specification. It is possible that this occurs at a period where the water quality in the dam is relatively good and so the plant is not fully tested. To manage this risk the contract includes a second POPT period which is to be completed a time within 12 months of the first POPT. This allows LPSC to instruct the second POPT at time when water quality in the dam is at its poorest, typically in the warmer months.



## 7 Key Project Personnel

A project management team has been assembled to action the management tasks in this plan. This includes resources focussed on:

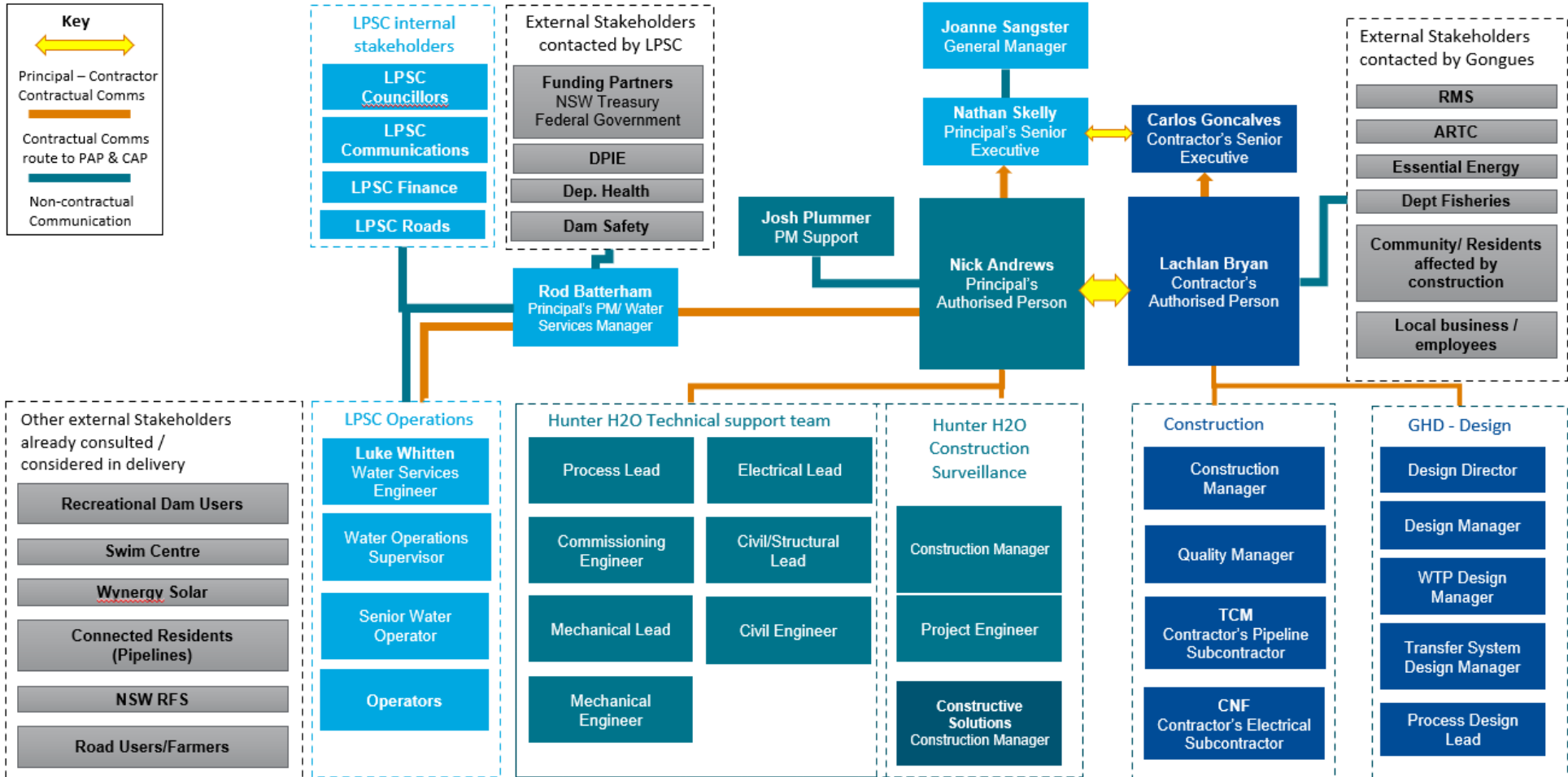
- Overarching project management
- Contract administration
- Design / technical review ('Owner's Engineer')
- Site surveillance

This team includes both Hunter H2O and LPSC staff (including operators).

To support LPSC in delivering the project, Hunter H2O will provide a team of both experienced and emerging professionals to act in the interest of LPSC as the Owner's Engineer and to fulfil the role of Principal's Authorised Person. Hunter H2O have been engaged by LPSC under the Namoi Unlimited Partnership.

# 7.1 Project team roles, stakeholder engagement and communication plans

## Quipolly Water Project – Stakeholder engagement and communications plan



## 8 Stakeholder Engagement

The project team have identified numerous stakeholders who have either been directly consulted or whose needs have been considered. Significant stakeholders external to LPSC are:

- Regulatory authorities (particularly DPIE, DoH & EPA)
- Statutory Authorities (particularly Essential Energy & ARTC)
- Neighbouring property landowners
- Local contractors / community members capable of performing works

The sections below detail the project's internal and external stakeholders and includes their key interests and the proposed method of engagement with the project.

### 8.1 Internal stakeholders

The key internal stakeholders (groups with LPSC) with an interest in the project and delivery of project objectives include:

*Table 8-1 Internal Project Stakeholders.*

Internal Project Stakeholders		
Stakeholder	Key issues in relation to the project	Engagement
<b>LPSC</b>	To ensure that LPSC meets the treated water needs of LPSC customers. To ensure compliance with the ACT Public Health Code of Practice 2007 and <i>ADWG</i> . Successful delivery of project in accordance with this Project Plan under budget and on time	Project Principal Formal updates provided via monthly reports
<b>LPSC Operations</b>	To ensure the Quipolly WTP and network is designed and constructed to be as easily operable and maintainable as possible.	Participation in design review, construction and commissioning planning
<b>HH2O Design and Project Delivery</b>	Successful delivery of project in accordance with this Project Plan. Completion under budget, on time and achieve nominated process performance. Satisfaction of LPSC and LPSC stakeholders.	All levels
<b>Gongues and its subcontractors</b>	Gongues have been awarded the QWP contract as the Primary Contractor. Gongues will be aiming to deliver the project within all time, cost, and quality constraints as to not suffer financial and/or reputational penalties.	D&C Contractor Contract communication from Principals' Authorised Person

### 8.2 External stakeholders

The key external stakeholders of this project are groups who are not within LPSC or HH2O. The interests of these stakeholders compiled with their actual and potential influence on the delivery of this project have been summarised in Table 1-2. Details have also been provided on how each stakeholder will be consulted about the project and who is responsible for communications with that stakeholder.

Table 8-2 Key External Project Stakeholders.

External Project Stakeholders		
Stakeholder	Key Interest(s) & Considerations	Engagement
<b>LPSC Residents</b>	The residents of LPSC are the primary consumers of treated water from the WTP.  LPSC residents will also require information of temporary water shut-off periods and works taking place via community bulletin.	Community Consultation management plan being prepared by LPSC.
<b>Local Businesses</b>	Local businesses operating within LPSC require the same liaison as LPSC residents due to reliant consumerism of water supply from the WTP.	Local business register being maintained by LPSC.
<b>Department of Planning, Industry and Environment (DPIE)</b>	Under Section 60 of the Local Government Act 1993, local water utilities (LWUs) are required to obtain ministerial approval for the construction or modification of water or sewage treatment works. The Section 60 approval provides an independent assessment of the proposed works to ensure they are fit for purpose and provide robust, safe, cost-effective and sound solutions that meet public health and environmental requirements.	LPSC and DPIE are proactively liaising throughout the development of the design of the treatment plant.
<b>NSW Department of Health (DoH)</b>	Consultation with DoH will ensure that appropriate water quality targets are set for LPSC Operations.	LPSC consulting with DoH
<b>NSW Department of Primary Industry (DPI) - Fisheries</b>	DPI Fisheries has responded to LPSC outlining they have no objections with the proposed works of the QWP.  DPI Fisheries require a permit to be applied for any construction activity that requires trenching through ephemeral watercourses.	LPSC consulted with fisheries in planning, Gongoes to seek permits during design and construction.
<b>Rural Fire Service (RFS) Quirindi</b>	RFS Quirindi will be responsible for extinguishing any fires that break out at the site of the Quipolly WTP or water network infrastructure.	Enquiries have been made with the RFS regarding fire services.
<b>NSW Department of Primary Industry (DPI) - Fisheries</b>	DPI Fisheries has responded to LPSC outlining they have no objections with the proposed works of the QWP.  DPI Fisheries require a permit to be applied for any construction activity that requires trenching through ephemeral watercourses.	LPSC consulted with fisheries in planning, Gongoes to seek permits during design and construction.
<b>NSW EPA</b>	The NSW EPA have been identified as a key stakeholder that are responsible for monitoring of environmental approvals submitted to undertake the scope of works at Quipolly WTP.	Enquiries made in relation to environmental approvals.
<b>NSW Workcover and Office of the Federal Safety Commissioner</b>	NSW Workcover are the governing body that enforce safe and practical construction code of conduct in NSW.  The Office of the Federal Safety Commissioner (OFSC) acts to improve workplace health and safety practices on building and construction sites across Australia.	Contractor certification and audit processes.

## 9 Communication Management

A standalone communications plan is being prepared to formalise the approach to liaison with external stakeholders including the community.

Internally the communications plan for the project is summarised in the organisational chart in Section 7.1. The chart includes the communications lines between all parties and highlights formal contractual lines of communication between the Principal and the Contractor.

Formal Contract communications are facilitated through monthly contract meetings, formal correspondence and Requests for Information (RFIs). Additionally, communications for design reviews and contract submissions are completed via an agreed comments log.

Remote communications, document sharing, and collaboration are being facilitated through Microsoft Teams and SharePoint.

### 9.1 Internal communication between LPSC and HH2O

Project progress will be communicated by Hunter H2O to LPSC via monthly reports which are to be presented to the monthly council meeting.

Formal communications from Hunter H2O to the LPSC will be between the Principal's Authorised Person and the Water Services Manager via letter sent via email. Informal correspondence will be via email between these parties.

For collaboration and document sharing a Quipolly Water Project Microsoft Teams site has been established with shared access by Hunter H2O and LPSC. An agreed file structure has been set up to store project files with notifications of updates provided on the notification board. Utilising the functions in Microsoft Team a Tasks and Program tab have been created. These are updated regularly with task allocations made to relevant team members. The program tab identifies the key milestones for the Principal relating to design reviews and workshops.

An informal weekly team meeting is also held via video conference inner HH2O and LPSC project team members.

For design reviews and agreed comments log template has been developed to communicate the Principal's design review. When a design submission is received by the PAP, the documents are transferred to the Quipolly Water Project Team site and placed in a new folder which contains a blank comments log. The comments log includes a tab for both Hunter H2O and LPSC. Each party then completes their review separately and record the comments on the central comments log. Prior to submission to Gongues the PAP reviews and consolidates the comments.

### 9.2 Communication between the Principal and Gongues

The key line of formal communication between the Principal and Gongues is via the Principal's Authorised Person and the Contractor's Authorised person. Formal contract correspondence between these parties is via formal monthly contract meetings, written correspondence (letter or email) and requests for information. An agreed structure has been developed for email subjects and document names which aims to assist in the archiving of correspondence. Additionally, a project email address has been created to store project correspondence. This is done by carbon copying (cc) the email address.

To facilitate document submissions Gongues has created a project SharePoint site which Hunter H2O and LPSC have access to. An agreed file structure has been created with documents and contract submissions are uploaded to the SharePoint site and an email notification sent to the PAP. Within this SharePoint site the project RFI register is maintained and updated as a live document.

Design review comments are communicated via the Comments Log as described in Section 9.3. When received Gongues responds to each comment with a description of the completed action. The reviewer from LPSC then updates the status of the comment as part of the next round of review.

# 10 Integration Management

This Project Plan is the primary tool for ensuring that Project Management services are integrated and prioritised to achieve successful project outcomes that align with the aspirations of LPSC.

## 10.1 Project success criteria and continuous improvement

During the contract start-up workshop, a number of project success criteria were discussed, and these are reviewed on a monthly basis as part of the monthly contract meeting. They include:

- communication & relationships,
- local participation,
- time,
- financial,
- safety / environmental,
- operations.

These are scored on a scale of 1-5 to identify trends and opportunities for improvement. This process facilitates discussion between parties and is aimed at identifying the source of issues early before they impact the successful project completion.

## 10.2 Internal quarterly review and lessons learned

The Project Team will arrange quarterly reviews with LPSC to check in on overall progress and performance of the project against the requirements of the Project Plan. As part of this review a lessons learned register will be developed and updated with each review. This will help inform decisions on the remainder of the project and will build into a total project lessons learned register which will be shared with the project team to aid continuous improvement.