



**SHIRE OF
FLINDERS**

HUGHENDEN OFFSTREAM WATER STORAGE

BUSINESS CASE

Summary

PREPARED BY

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1. Background and context

Over recent years Flinders Shire Council (FSC) has been pursuing a range of projects to address a declining population, with the following key objectives:

- Increase economic activity in the Shire
- Provide greater capacity for the regional community and farm businesses to cope with climate variability and adapt to the likely impacts of climate change – i.e. increase regional economic resilience and better ability to manage climate and market-related impacts
- Create the environment for new value-adding industries
- Increase job opportunities for both non-skilled and skilled labour
- Create specialist farming jobs and job growth which leverage the existing base, and build additional capacity in the community
- Increase the breadth of permanent job opportunities, making the Shire more attractive/feasible to young people leaving school and university, which in turn will address the observed population decline
- Drive down the existing age demographic
- Reduce unemployment and underemployment in the Shire
- Improve utilisation of community and Government assets – e.g. natural (i.e. land and water) and built (e.g. schools, hospitals, roads, railways, ports etc.)
- Increase FSC's rates base and permanent population, which drives increased revenues and financial resilience of FSC and community services
- Alignment with the Government's policy objective of sustainably developing the North-West region of Queensland/Northern Australia.

In responding to the above objectives, FSC has been implementing a range of water acquisition and development projects, including:

- Investigating alluvial groundwater potential to support the 15-Mile Irrigation Project. This led to the development and equipping of several alluvial-based bores to support this development
- Procuring additional groundwater allocation from the Great Artesian Basin and developing this resource in support of the 15 Mile Irrigation Project and attracting a private sector investor (Marciano Table Grapes) which has delivered Stage 1 of the irrigation development
- Securing additional surface water allocation from the Flinders River in recent State Government water tenders
- Signing the Hughenden Processing Facility Project Development Deed and its partner CNVM Investment Pty Ltd in 2019
- Undertaking surface water supply investigations of the options available to best meet FSC's needs
- Advancing a further tender to procure the required amount of additional volume of surface water allocation from the Flinders River general reserve via the current water tender process.

2. Drivers of the project

The Hughenden Offstream Storage has been a priority of FSC as an enabling project to support the ongoing development of the 15 Mile Irrigation Development Project (Stage 2, noting Stage 1 of development is mainly complete) and the proposed Hughenden meatworks and feedlot, which in turn will assist address many of the objectives mentioned above. Both developments are contingent on a secure and reliable water supply.

In addition to the above drivers, securing additional water allocations through the current tender in the Flinders catchment will further ensure water for the development of irrigated agriculture in the Hughenden region.

3. Identifying the service need

A service needs assessment was undertaken to understand the project's demand along with a structured analysis of potential solutions and benefits resulting from addressing any identified problems. The evaluation was done to determine the need for investment and formalise through an Investment Logic Mapping (ILM) process. During this process, a total of three main problems were identified. These can be briefly summarised as follows:

- Decreasing economic activity is driving population decline and impacting liveability and community sustainability factors.
- The lack of reliable and affordable water supply is reducing the ability to attract private sector investment in major regional economic development projects
- Climate change impacts are expected to challenge existing and emerging agriculturally-based enterprises across the region over time. This further highlights the need to secure reliable water resources to facilitate an appropriate adaptive strategy for the community, businesses, and the local economy.

These problem statements all indicated the need for reliable water supply in the region and showed that the lack of this is negatively affecting the region.

The 15 Mile Irrigation Development Project (Stage 2) and the proposed Hughenden meatworks and feedlot require a reliable average annual water supply of approximately 4,860 ML.

In addition to the above initiatives, the service need exists in the Hughenden region to further expand the agricultural industry by securing additional water supply.

4. Benefits of the project

Five key benefits have been identified from the project delivery by addressing the above problems. These are:

1. Regional economic growth – Preliminary stages of work found that at a 7% real discount rate, the project returns a Net Present Value (NPV) of \$5.0 million and a Benefit Cost Ratio (BCR) of 1.09. At a discount rate of 4%, the results improve to \$19.5 million and 1.33, respectively
2. Increased regional employment opportunities
3. Optimised utilisation of existing natural resource base (land and water resources)
4. Improved financial sustainability and rate base.
5. Community resilience and sustainability

These benefits also align with the wider strategic vision of FSC.

5. Project options and staging

5.1 Overview

The associated works to identify potential water storage options are proposed to be completed in two stages:

- **Stage 1:** Investigation into storage options to support the next phase of the 15 Mile Irrigation Project and the Hughenden Meatworks development (preferred sizing selected of 7GL)
- **Stage 2:** Expansion of Stage 1 off-stream storage sizing to a nominal capacity of 10GL.

Stage 2 of the project is contingent on FSC being awarded unallocated water as part of the recent water tender in the Flinders catchment, which the Council has applied for. The two stages are summarised in the following sections.

5.2 Stage 1: Hughenden Offstream storage to support 15 Mile and Meatworks

FSC was fully involved in developing and assessing potential water supply options associated with the project, including a range of groundwater and surface water supply options to support projects in the area.

As a consequence of these investigations, FSC has identified and developed several groundwater supply options, with additional works being advanced on four production bores accessing the alluvial aquifer.

However, the options assessment identified that developing additional groundwater resources would require augmentation from available surface water sources.

As such, a range of potential water storage was identified, shortlisted, and subjected to further investigation to establish the Reference Project – i.e. the Hughenden 7,000 ML off-stream storage.

The location of the proposed facility is shown in *Figure E.1*.

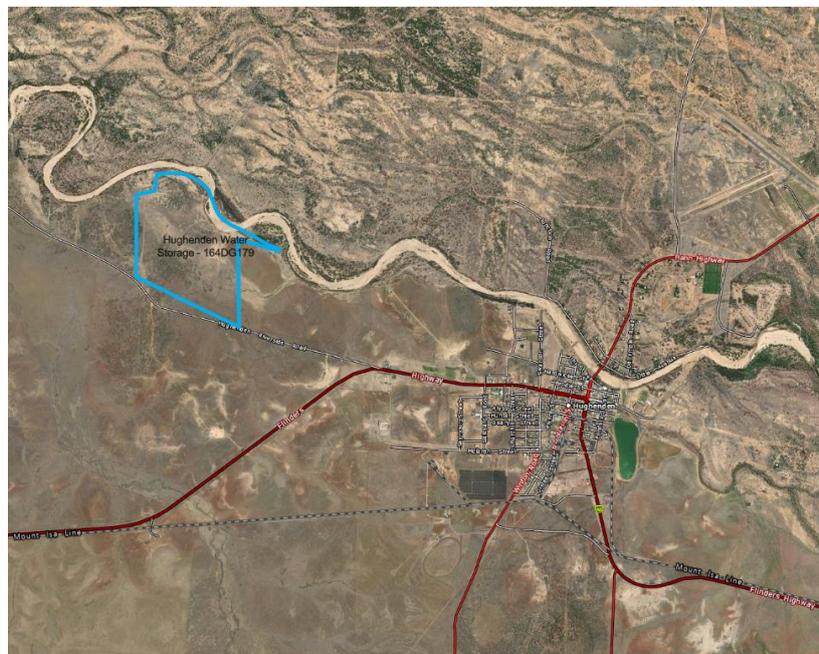


Figure E.1 Offstream storage location

The 7,000ML storage was identified to support the next phase of the 15 Mile Irrigation project and the proposed Hughenden Meatworks project. As part of Stage 1 works, a Business Case was also developed to assess the viability and support for obtaining funding for the project. The business case and reference design for the 7,000ML off-stream storage selected the following as the preferred option:

- **Pump chase and sump diverting surface water flow from the Flinders River.** The pump chase is to be approximately 50 m wide to sustain a diversion capacity of approximately 13,000 L/s (about 1,125 ML/d)
- **The water harvesting pumping facility transfers water from the pump chase and sump into the 7,000 ML off-stream storage.** The water harvesting pumping facility draws water from the sump. It discharges it over the bank to a concrete chute delivering water to a concrete dissipator in the bed of the off-stream storage. The pumping facility comprises four centrifugal pumps with a pumped flow ranging from 95ML/d to 884ML/d depending on flows in the Flinders River.

- **An electric submersible pump is to be located on the southern wall of the off-stream storage.** This pump draws water from the off-stream storage. It discharges to the water distribution pipeline, delivering water to the expanding 15 Mile Irrigation Project and the proposed meatworks and feedlot. Power to this pump is sourced from the powerline running north-south to the immediate west of the off-stream storage.

6. Stage 2: Securing additional surface water for 10 GL storage

The Department of Regional Development, Manufacturing and Water (DRDMW) has recently released 110,000 ML of general reserve unallocated water for purposes related to 'rural' or 'any' within the Water Plan (Gulf) 2007. Following the initial stage of work, it was recommended to pursue additional surface water supply from this recent release.

Stage 2 works included investigating and applying additional water sources stored in the Hughenden off-stream storage to further secure water supply for agricultural use.

As part of this additional water source, the lateral expansion of the reference design storage (7,000 ML) was assessed to produce nominal storage of 10,000 ML (additional 3,000 ML of storage). This arrangement is shown in *Figure 1*.

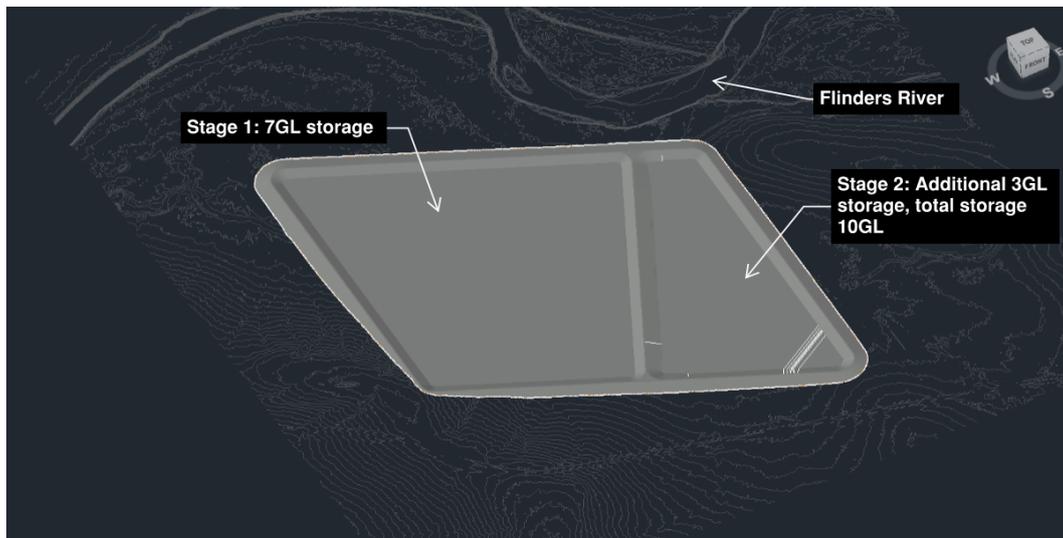


Figure 1 Stage 2: Potential expansion to total nominal capacity of 10,000 ML

The lateral expansion of the 7,000 ML storage to 10,000 ML storage is to the east. This expansion remains on the same property the 7,000 ML storage is on (Lot 164 on DG179). As part of Stage 1 works, this parcel of land was procured and investigated; therefore, the expansion location is anticipated to be suitable for undertaking the works.

The storage configuration would include a 2-cell arrangement (7,000 ML for cell 1 as part of Stage 1, and 3,000 ML for cell 2).

It should be noted that the feasibility of the Stage 2 expansion is subject to the outcomes of the current water tender that FSC has applied for.

Additional pump and pipeline infrastructure may be required to be constructed to extract additional water during flow periods in the Flinders River, subject to flow conditions in the water licences.

7. Current status

The current status of the project has been summarised below:

– Stage 1

- Reference Design and Business Case completed for the 7,000 ML storage size
- Flinders Shire Council (FSC) has secured funding for the project in the 2022-23 State Budget.
- FSC has commenced its procurement processes and is currently preparing an Expression of Interest (EOI) to seek interest for the construction of Stage 1 works from suitability qualified contractors. The EOI is anticipated to reduce price uncertainty in the current volatile market.
- Expression of Interest, EOI Construction - September /October 2022
- Shortlist contractors - December 2022
- Tender Phase - January to March 2023
- Construction commencement - May/June 2023
- Construction Completion/commissioning - December 2024
- Project operational/water supply to end users - April 2025
- Detailed design and approvals are in progress and are scheduled to be completed in 2022. Note that this stage's construction progress and completion depend on the funding availability and confirmation from the relevant stakeholders.

– Stage 2

- FSC has recently completed Stage 1 of the tender application for unallocated water in the Flinders River. The application aims to secure additional water supply for irrigated agriculture development. As part of the application, works were undertaken to define the water product, and select minimum and maximum volumes suitable for the tender application. Evaluation of this first phase of the tender is currently being assessed. If FSC progress through Stage 1, FSC will continue the works required for the following stages of the tender application.

8. Funding requirements

The project's total value (P90 estimates) is \$59.18 million. P90 Costs include:

- The Risk and contingency of about 28.57%.
- Construction of 7000 ML off-stream storage facility.
- Pumping infrastructure and 7 km of pipeline.

The proposed funding distribution is detailed below:

- State, confirmed - \$25.6
- Commonwealth, TBC - \$25.6
- Council confirmed - \$7.98