

Fact Sheet: Bundaberg Water Supply Scheme Network Capacity Assessment

March 2021

This fact sheet shares information about the project Sunwater is undertaking to better understand constraints in the Bundaberg Water Supply Scheme (BWSS) channel network and opportunities to address those constraints. It is being shared with our scheme customers to ensure that they have access to information that may impact how they operate and plan for their irrigation needs.

Introduction

The BWSS is now being utilised in a way that differs significantly from how it was designed to operate. In parallel with the Paradise Dam Detailed Business Case (DBC) to determine the long-term remediation solution for Paradise Dam, Sunwater is working on a project to understand constraints in the channel, pipeline and pump station infrastructure that delivers irrigation water throughout the scheme and how that infrastructure will need to be upgraded over time to meet changing demand.

Background

The BWSS was developed using a two-staged approach to supplement existing water supplies in the region. Stage one was considered as a groundwater rescue initiative to stabilise and relieve pressure on groundwater aquifers. Areas included in this initial stage were Gooburrum, Woongarra, Givelda and Abbotsford areas. The second stage was to provide a supplementary water supply to improve the success of previously dry land farms in the Gin Gin/Bingera and Isis areas.

The scheme delivery assets include more than 600 km of channel and pipelines that currently supply more than 1000 properties and consists of five distinct channel and pipeline systems. The basis of the current footprint and sizing of channel and pipelines was derived from land area under production for sugar cane in 1970.

The original design reduced the size and cost of the channels and pipelines by adopting rostered irrigation. However, the rostering system has rarely been used.

A large proportion of the distribution scheme (pump stations, channels, and pipelines) has reached capacity and cannot meet the irrigation demands associated with the major diversification away from cane cropping to permanent plantings, horticulture, and monoculture.

Sunwater has been advised that customers seeking assistance to design on-farm irrigation systems may not be aware of the operational constraints of the scheme delivery system and may proceed with plans that are beyond the capacity of the system. We encourage all of our customers to contact us when planning on-farm irrigation changes and not to make assumptions about the capacity of the Sunwater distribution system.

Project objectives

The Network Capacity Assessment Project aims to answer the following questions, in specific areas of the network:

- What are the current infrastructure (pump stations, channels, and pipelines) constraints?
- What infrastructure upgrades can alleviate these constraints?
- What further infrastructure upgrades are required to meet future demand, specifically in the Isis and Woongarra systems?
- What are the indicative infrastructure upgrade costs?

Building Queensland's consultant, NCEconomics, is undertaking a future water demand study focused on the areas of the BWSS supplied by Paradise Dam (i.e. the Isis and Woongarra systems) and will supply its results for input to this project.

Location priorities

The priority locations to model are the Woongarra and Isis irrigation areas in the Burnett River Sub-scheme. These areas receive water from Paradise Dam, and we want to ensure that modelling information is available to be considered in the Paradise Dam DBC.

Modelling of the irrigation areas in the Kolan Sub-scheme (Abbotsford, Bingera, Gin Gin and Gooburrum) will follow. The current project does not include an assessment of future demand and infrastructure requirements in the Kolan Sub-scheme.

Project challenges

Sunwater has a very good understanding of the spatial distribution of demands, but we also need to know how demands vary in time. We are looking to understand how customers use water on an hourly, daily, weekly, and seasonal basis as well as how temperature, rainfall, and climate change impact the timing of demand.

We do not have bulk flow metering and our customer meters are read every three months. This does not provide sufficient detail to determine instantaneous peak flowrates, which are required for sizing pipes and channels. As such, we are estimating time dependant demand patterns from first principles.

The goal is to establish a good understanding of demand at each offtake and to have a good representation of the total peak demand for each section of pipe or channel.

Project timing

Modelling and infrastructure concept design and initial costing work for the Woongarra and Isis irrigation areas is scheduled to be completed shortly. Work for the irrigation areas in the Kolan sub-scheme will follow.

Project activities

Activity	Undertaken by	Status
<p>Develop a digital representation of the irrigation network, from river to customer, in Sunwater's Geographic Information System (GIS) mapping</p> <p>This includes all pumps, balancing storages, channels, pipes, regulating structures, customer offtakes, etc</p>	Sunwater	Nearly complete
Prepare a time-varying hydraulic model using TUFLOW proprietary software, linked to the Sunwater GIS (for simulations and output)	SMEC engineering consultants	In progress
Model the current and future customer demands and irrigation patterns	SMEC engineering consultants	<p>Current demands - progressing</p> <p>Future demands - pending feedback from NCE Demand Study</p>
Identify hydraulic constraints and prepare concept designs and indicative cost estimates of potential infrastructure upgrades	Greg Munck & Associates	Pending modelling outputs

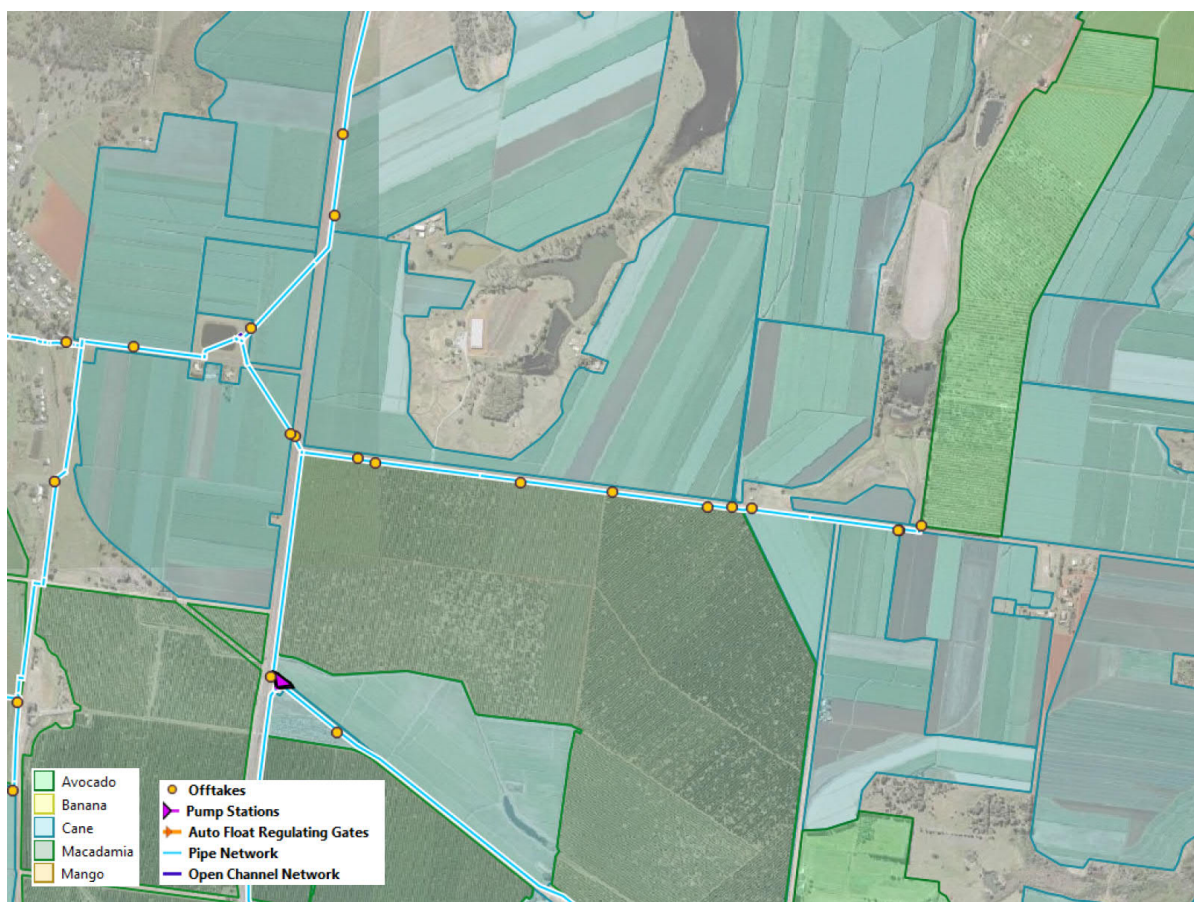


Figure 1 – Example of GIS Mapping

Stakeholder engagement

In developing the GIS mapping, SMEC is speaking with a selection of irrigators, agronomists, and industry representatives in the region to understand how customers use water on an hourly, daily, weekly, and seasonal basis, as well as how temperature, rainfall, and climate change impact the timing of demand.

Sunwater is committed to ongoing engagement with customers and the broader community to ensure transparency during the works at Paradise Dam and associated projects such as this one.

We will continue to share updates with a dedicated Community Reference Group and Paradise Dam Industry Forum that include representatives from local government, peak bodies, customers, and downstream residents.

Information is also regularly shared on Sunwater's Paradise Dam Facebook page and the project webpages on the Sunwater website.

Questions?

Please contact us on 3120 0270 or paradise.dam@sunwater.com.au with any questions about the BWSS Network Capacity Assessment project.

For general customer enquiries please contact us on 13 15 89, Monday–Friday 8.30am–4.30pm.