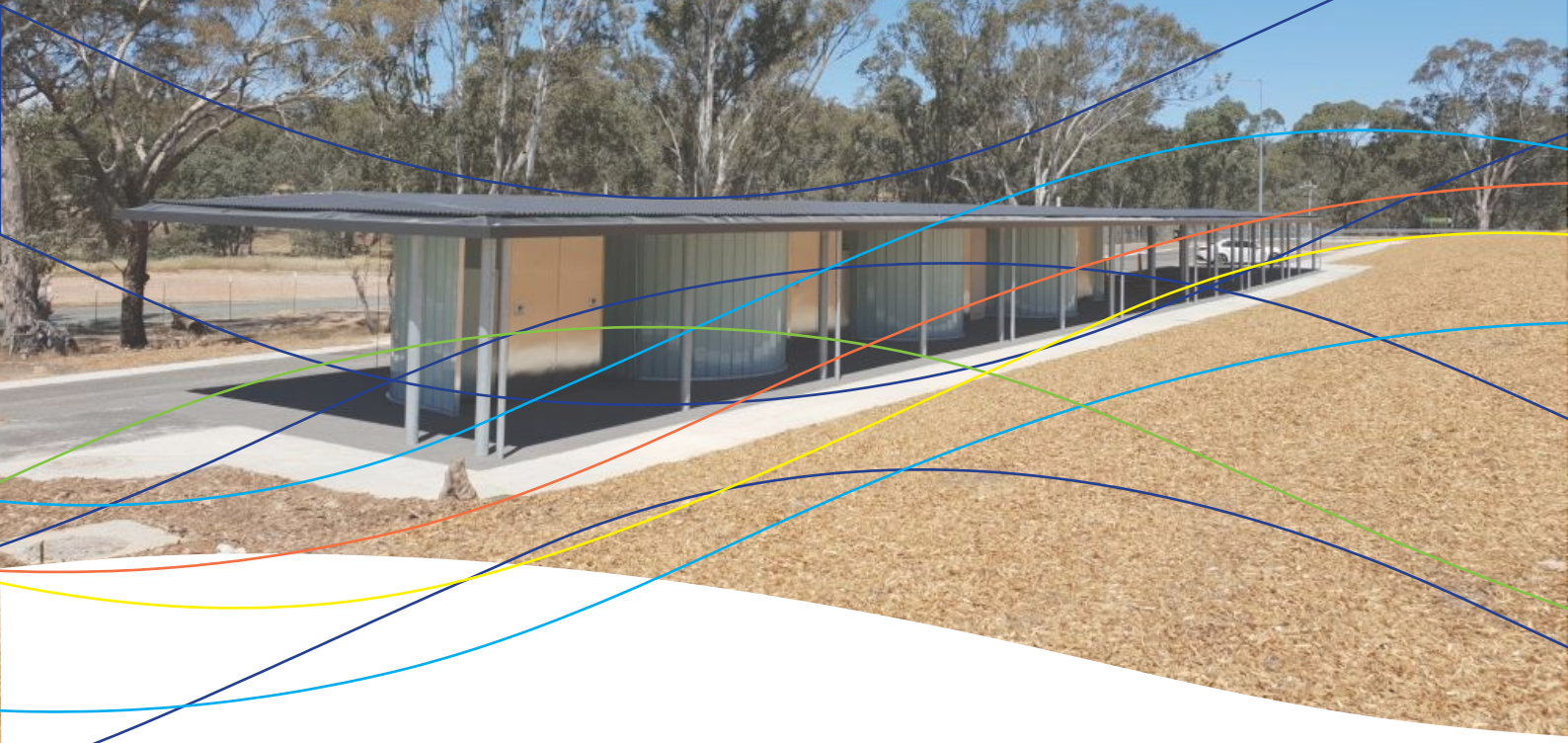

JOCK COMINI REST AREA INTEGRATED WATER MANAGEMENT STRATEGY AND DESIGN

VicRoads

CATEGORY: D.1.c Integrated Water Modelling, Assessment and Management

PROJECT SCOPE

VicRoads engaged Engeny to prepare an Integrated Water Management Strategy for the proposed redevelopment of the Jock Comini Rest area, located on the Calder Highway near Ravenswood. The project was a collaboration between VicRoads' technical services and northern region groups. The investigation phase of the project combined hydraulic modelling (undertaken in TUFLOW) to estimate flood levels and extents at Bullock Creek and define the limit of works, MUSIC water quality modelling software to investigate water quality treatment options and water supply and demand modelling analysis to assess options for supplying water to the rest stop (including rainwater, stormwater, groundwater and desalination). The water balance model used 10 years of rainfall data and demands based on VicRoads traffic estimates and recent peer reviewed articles on user demand at rest stops was used as the basis for assessing supply reliability. A range of above and below ground storages types were considered together with the treatment requirements to reduce the risk of algal blooms and the capital cost of each system was considered. All models were developed by Engeny.

The integrated water management plan that ultimately proceeded to detailed design and construction included the following:

- Rainwater harvesting for handwashing and toilet flushing.
- Vegetated swales and a sediment basin for stormwater quality treatment in excess of best practice environmental management targets.
- Passive stormwater irrigation of garden beds.
- Fully contained on-site wastewater treatment system.
- Enhancement of habitat values by planting endemic vegetation in swales and in treatment buffer strips.

Various integrated water management options were developed to inform the selection of the preferred option. The options were workshopped with various internal stakeholders, North Central Catchment Management Authority and with input from the City of Greater Bendigo to determine the preferred option which was ultimately developed into a detailed design by VicRoads with assistance from Engeny.

The project has been constructed and is now delivering reliable rainwater, wastewater and stormwater treatment to the rest stop, which is otherwise disconnected from potable water supply mains and sewer.

ENGENY
WATER MANAGEMENT

START DATE

May 2015

COMPLETION DATE

January 2018

CLIENT CONTACT

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RELEVANCE TO CATEGORY

- Water supply and demand modelling and analysis including the development of new models.
- Assessment of water supply demands and assessments of alternative supply options.
- Development of integrated water management servicing options for water supply, sewerage and stormwater management to achieve affordable life and liveability outcomes.
- Risk and opportunity analysis options to recommend preferred servicing proposals.
- Engineering (and approvals) of waterway improvement works including erosion control works.
- Assessment of opportunities to improve waterway health.

PROJECT INNOVATION

The investigation of alternative water supply and water quality treatment options facilitated significant learning at VicRoads on the viability of certain methodologies given site constraints and maintenance practicalities. Engeny's collaborative approach including numerous workshops, graphical presentations and coaching on how to use MUSIC water quality modelling software was in excess of what is typically undertaken for these types of projects. As a result, VicRoads became highly engaged with the water cycle requirements for the project and it is understood that the project is likely to be used as a blue-print by VicRoads for future rest stop refurbishments located in areas without sewer or potable water supply.

PROJECT OUTCOME

The range of benefits to the Jock Comini Rest Area project include protection of the environment through best practice stormwater quality treatment, rainwater harvesting and measures to mitigate the risk of pollutants entering the receiving waterway. It will benefit the community through improved greening of the open space via passive irrigation of trees and the potential to actively irrigate with collected rainwater. The strategy is for sustainable assets that are safe in the public environment and can be easily maintained by VicRoads. The strategy has saved time and money on approvals, fostered relationships between organisations and delivered on VicRoads and other key stakeholder's objectives.