



CRC for
Water Sensitive Cities

Park Orchards Community Sewerage Trial

Location:
Park Orchards
and Ringwood
North,
VIC



Case Study — Prepared by Cooperative Research
Centre for Water Sensitive Cities, September 2018



Business
Cooperative Research
Centres Programme

Insight

Provision of a fit-for-purpose sewerage system for residents in unsewered areas who are unable to contain their wastewater within their property using septic systems

Project description

Yarra Valley Water's Community Sewerage Program seeks to provide properties that cannot contain wastewater via customer owned and maintained septic systems, with a fit-for-purpose sewerage system.

As part of one of the delivery projects of the Park Orchards and Ringwood North Community Sewerage Area, a trial area of 100 properties in the Park Orchards area has been selected to test and understand the potential to maximise the use of on-property treatment and application of wastewater within the local community. Technologies

under evaluation include the use of upgraded on-site septic systems, with irrigation where possible, and the construction of a sewer network for remaining properties that cannot contain their wastewater on-site. It is intended that the outcomes of this trial will inform the provision of a fit-for-purpose sewerage system for the broader Park Orchards Community Sewerage area, encompassing over 1,200 properties in both Park Orchards and Ringwood North. The servicing approach used could include installing a reticulated sewerage network, installing on-site systems or a combination of both.



What does this case study demonstrate?

Each case study has been selected to demonstrate specific solutions, benefits or enabling structures that support the creation of water sensitive cities. This case study focuses on:

Wastewater management and recycling

Community engagement

The drivers

Improve waterway and public health, and public amenity by providing a fit-for-purpose sewerage solution




- Reduce excess nutrients entering waterways, and address unpleasant odours and soggy backyards as a result of poorly performing septic systems.
- Gain an improved understanding of alternative wastewater management options.
- Understand community perceptions around sewerage servicing options, and ensure these are considered in Yarra Valley Waters decision-making process.
- Obtain feedback and guidance from the community to assist in the delivery of the trial.
- Monitor and evaluate the performance of the trialled technologies across a range of social, financial, environmental variables and health of the local environment, to confirm assumptions and inform a broader wastewater management strategy for the Park Orchards and Ringwood North Community Sewerage area.

The innovations

Maximise the use of on-property wastewater treatment in a sustainable manner

- **New insights into wastewater management opportunities** – The initial findings from the design phase of the trial indicate there is potential to maximise the application of treated wastewater on most of the properties in the trial area. Installing these technologies in the trial area will allow these early findings to be further tested. The trial will also evaluate the potential for the current on-site septic system supplier market to deliver such an approach, and evaluate the differing system brands in the marketplace.
- **Servicing approach to properties unable to contain wastewater on-site** – For the small proportion of properties (approximately 15%) unable to manage their wastewater on-site, an alternative solution was required. Two main sewerage servicing options were shortlisted: the installation of a local wastewater treatment plant, or connection of the properties to Melbourne's existing sewerage system. The connection to the existing sewerage network was the preferred option for Yarra Valley Water and the local community, because it is less expensive, simpler to operate and maintain, resulted in fewer overall risks to delivery and resulted in greater flexibility for residents in the area. However, there was also a strong desire by the community to maximise on-site containment so opportunities will be sought to maximise irrigation on these properties where possible.
- **Monitoring on-site system performance to inform future investments** – Five different on-site septic systems have been used in the trial upgrades, including a new on-site septic system currently under development by Yarra Valley Water. These systems will be monitored over a two-year period to assess performance, cost, benefits and challenges. The outcomes of this monitoring will help to identify the preferred technologies to use as part of developing a preferred alternative on-site technology for Yarra Valley Water to consider.
- **Community engagement** – This trial was suggested by Yarra Valley Water in response to community feedback highlighting a strong community opinion to explore the use of on-site wastewater treatment systems. The Park Orchards Trial Community Engagement Panel (POTCEP) has been operating since 2013 to allow interested customers and community groups to proactively provide feedback on the trial and the corresponding communication strategy with residents.

The outcomes

 Cities providing ecosystem services	 Cities as water supply catchments	 Cities comprising water sensitive communities
<ul style="list-style-type: none"> • Improved waterway health – Fewer nutrients are entering downstream waterways. 	<ul style="list-style-type: none"> • Local use of water – Wastewater will be treated on-site and used for irrigation. • Testing innovative solutions – Five different on-site technologies will be trialed to inform future investment across the Park Orchards area. • Development of a new on-site system – The new on-site system has potential for use within the industry to reduce ongoing maintenance and electricity consumption. 	<ul style="list-style-type: none"> • Engaged community – The community has been proactively involved and informs the decision-making process through a community panel and online forums. • On-site solutions – Approximately 85% of the properties in the trial area are able to contain wastewater on-site.



Signage for project works



Map showing Park Orchards trial area

Business case

Costs	Benefits
<ul style="list-style-type: none"> Ongoing maintenance costs for an on-site approach are approximately double that of sewer connection. Project offers \$90 p.a. per property electricity costs via an on-site approach compared with \$60 pa.a via sewer connection. There is reduced duplication of costs from residents building their own septic system (\$15,000-20,000k) to connect via a sewer connection. Private plumbing costs for connection to on-site systems are comparable with sewer connection via pressure sewer systems. 	<ul style="list-style-type: none"> There are average up-front capital cost savings of over \$8,000 per property via a decentralised servicing approach when compared with a traditional sewer connection. Improved management of wastewater in the Park Orchards community sewerage area will address over 1,800kg of nutrients and 18 trillion viruses that are currently entering the local environment. There is local reuse of wastewater for beneficial purposes and reduced potable water use for irrigation purposes. Reduced large scale infrastructure construction from on-site systems minimises deep excavations and associated vegetation damage. This approach for low density properties is a familiar servicing approach, compared with using metropolitan based sewerage technologies.

* These are preliminary costs incorporating the cost of maximising the use of on-site systems as well as reticulated sewer for properties where on-site containment is not possible for the 1,250 lot service area.

The lessons

- Ongoing relationship building with stakeholders is positive** – The trial was understood from the onset to likely raise numerous regulatory, accountability and legislative uncertainties. To address these uncertainties, Yarra Valley Water proactively developed a Memorandum of Understanding (MoU) with key stakeholders including the local council, EPA Victoria, the Department of Environment, Land, Water and Planning and Melbourne Water. The MoU provided a framework to allow authorities to clarify their intentions with the trial and outlined an agreed methodology for resolving uncertainties.
- Combination of solutions required** – Most of the properties in the Park Orchards area will be able to contain their wastewater on-site, because they have suitable area available for treatment and reuse (irrigation). However, an alternative option was required to service the small number of properties without this area available (e.g. shopping precinct and some residential properties). The trial is helping to determine how such sewerage technologies are best integrated to transition properties from an on-site approach to a reticulated sewerage service.
- Community engagement identifies broader concerns** – Using an online forum, residents of properties unable to contain wastewater on-site provided feedback on the two alternative solutions. As well as voting on the preferred option, the community also sent through comments and concerns outside of these two options. Yarra Valley Water addressed responses in follow-up materials and used the feedback in its conceptualisation of the on-site servicing strategy. This proactive approach to gauging community views assisted Yarra Valley Water in incorporating this information into the design of the works.

Transferability

This project is applicable for unsewered areas across Australia that are investigating potential upgrades to address poorly performing septic systems. This project is particularly suitable for remote unsewered areas where conventional sewerage servicing is not practical or feasible. Finally, the technologies explored allow increased customer choice in servicing (on-property sewer management vs sewer connection).

Project collaborators

- Yarra Valley Water
- Decentralised Water Consulting P/L
- Department of Environment, Land, Water and Planning
- Environment Protection Authority Victoria
- Manningham City Council
- Melbourne Water

Awards

- New Zealand Land Treatment Collective (NZLTC) Annual Conference Best Overall Paper for conference paper titled 'Baseline and verification monitoring from Yarra Valley Water's on-site wastewater management trial'.



Before, during and after septic system replacement



Additional information

More information about the Park Orchards Community Sewerage Program can be found at:

- [Yarra Valley Water: Park Orchards Sewerage Program](#)
- [Yarra Valley Water: Map of Park Orchards Sewerage Program](#)