



## Report for Proposed CWMS at Port Vincent March 2021



YORKE PENINSULA COUNCIL 8 Elizabeth Street Maitland SA 5573

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## 1. Introduction/Overview

The Local Government Association (LGA) receives funding from the state government to manage the Community Wastewater Management System (CWMS) Program (CWMS Program). The purpose of the CWMS Program is to provide funding to councils to subsidise the construction and management of new CWMS schemes. The CWMS Program is managed by the CWMS Management Committee (CMC) who assesses applications from councils for new CWMS schemes and maintains a list of schemes that are ranked based on the priority of the potential environmental and/or public health risk as well as benefit to the township.

The current Port Vincent CWMS was installed in 2000 to service the Port Vincent Foreshore Caravan Park.

The system was extended to service the Marina and Vincent Rise developments between 2003 and 2005. This resulted in approximately 30 percent of the township being connected.

In 2005 the Environment Protection Authority (EPA) identified an environmental risk due to nutrients from overloaded onsite systems in summer resulting in reduced seagrass health.

As a result, and on account of the existing CWMS capacity not being sufficient to service the entire township, in 2006, the CMC ranked Port Vincent CWMS as a high priority for upgrade/replacement.

In 2011 Council effected a review and preliminary design for a whole of township scheme in Port Vincent. This resulted in a concept report being developed in 2012; however, at that time no funding was available through the LGA CWMS Subsidy Fund.

In 2017 a new 10 year CWMS funding agreement was reached between the state government and the LGA.

As a result of this renewed funding, in March 2018, the CMC agreed to provide funding to update the preliminary design and the concept report for the whole of township scheme in Port Vincent.

In 2019 Wallbridge Gilbert Aztec (WGA) engineering consultants updated the preliminary design and concept report for all existing residential and commercial allotments in the township that are not currently connected to the existing CWMS. A total of 641 properties will be connected to the new scheme in addition to the 189 properties that are currently connected to the existing scheme. The report included a number of different options for the collection system and alternative treatment plant designs.

The recommended option preliminary design has 5 new pump stations to add to the existing 3 pump stations in Port Vincent. The wastewater will be transferred to a new wastewater treatment lagoon system located west of the township. Reuse of treated water will be for irrigation adjacent to the treatment plant.

This report has been prepared by Council to satisfy the requirements of Section 151(6) of the *Local Government Act 1999* (SA) regarding reasons for change, the proposed change, issues of equity and the potential cost impacts to ratepayers of the change if adopted.

## 2. Project Objectives and Benefits

The objectives of installing a CWMS for the whole township of Port Vincent are:

1. Address the current risk to the environment that was identified by the EPA in 2005 and more recently in 2019.

The EPA has identified that the proximity of septic tanks and soakage systems close to the coast in the townships of Port Vincent, Stansbury and Edithburgh places pressure on the nearshore marine waters. This is largely due to the release of nutrients from the wastewater passing through the soil directly into the marine environment which is impacting on seagrass health.

2. Assist with the development and economic prosperity potential of the town.
3. Facilitate better community health outcomes.

### 2.1 Environment

The expansion of the Port Vincent CWMS will ensure that there will be no discharge into the marine environment. This will be achieved by installing a collection system throughout the township and by treating the water to an acceptable standard for re-use away from the marine environment.

This outcome supports Council's Strategic Management Plan 2021-2025 Goal 3 – Valued and Restored Environment, under which Council will be an investor, activator and custodian of our spectacular coastline and pristine environment.

Another benefit of a CWMS scheme is the removal of the need for soakage beds on residential property some of which may have insufficient land area for effective soakage. Over time soakage beds become full, and are required to be removed and replaced at considerable cost to ratepayers. A whole of town CWMS scheme removes the need for soakage beds as the wastewater is transferred to a wastewater treatment system away from the property.

At present septic tank owners are responsible for sludge removal costs. An additional benefit for properties connected to a CWMS scheme is Council de-sludge their septic tanks every 4 years at Council's expense.

### 2.2 Development and Economic Catalyst

Areas that have access to a CWMS are more attractive to develop and subdivide over un-serviced areas. There are less upfront capital costs for developers to incur relating to wastewater treatment.

Also land allotments can be more effectively used without the need to have land tied up with standalone waste treatment and trench ground absorption systems. The issue with standalone aerobic Secondary Treatment Systems is that a large amount of irrigation area is required, and that this area is irrigated even if it is raining. They are also sensitive to holiday loads and do not operate well in this situation.

In terms of interest rates, grant support and affordability, the opportunity is now. If such is passed over now by the community and Council, the Port Vincent community may not see this confluence of opportunity again for many years and remain stuck with the consequences of health infrastructure underinvestment. Other communities on the state government's priority list will advance and Port Vincent will lose its current priority.

## 2.3 Better Community Health Outcomes

Another consideration for property owners relates to failing trench absorption systems along with reduced quality of life reduction and odour generated from the same. A CWMS scheme overcomes such.

## 3. Project Scope

The most recent preliminary design was undertaken by WGA and includes high-level plans for the collection system and a preliminary cost estimate. The WGA cost estimate was reviewed by and altered by Building Quantity Surveyors Rider Levett Bucknall (RLB). The RLB estimate was used to calculate the cost of the proposed scheme and the amount of subsidy paid by the CWMS Program.

Project infrastructure proposed is grouped into 2 categories, namely Collection System and Treatment System.

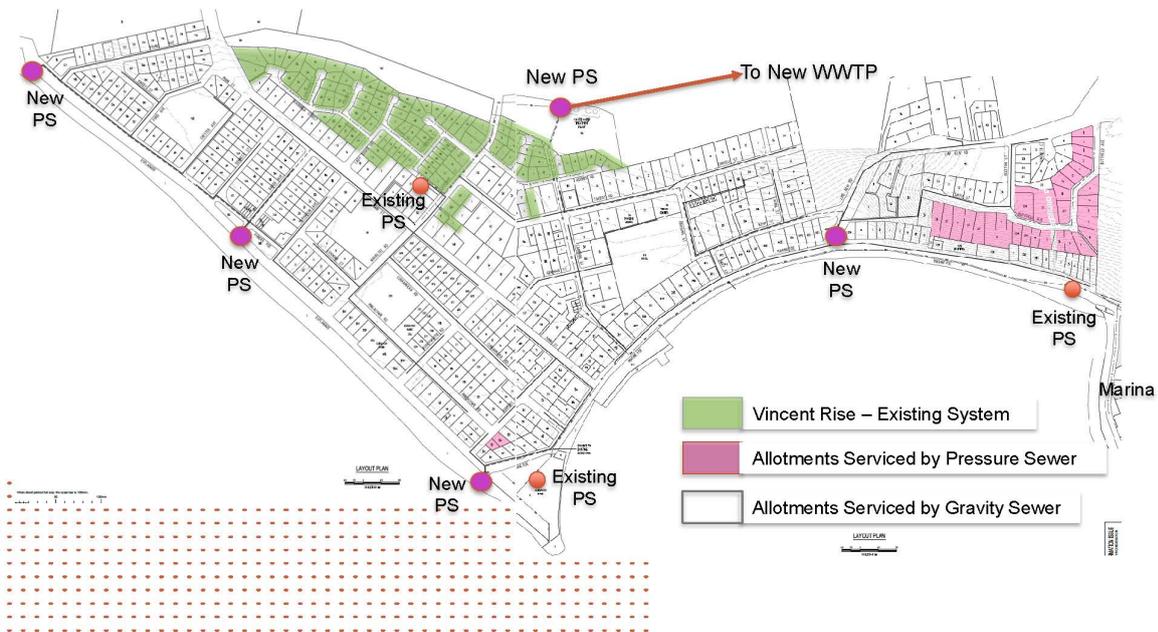
- New Wastewater Collection System comprising pipes, pumps and inspection maintenance point provision per the following 6 networks:
    - A1 Southern Network;
    - A2 Southern Network;
    - A3 Central Network #2;
    - A4 Central Network 3A;
    - A5 Talbot Road Gravity Mains;
    - A6 Central and Northern Gravity and
    - Pressure Pump Station.
  - 10,671m of gravity main sewer reticulation pipework.
  - 114 maintenance and inspection chambers.
  - Allotment connection points.
  - 7,966m CCTV survey and cleaning of sewer system.
  - Pressure Sewer Pump Station 1A.
  - 3,352m pressure pipeline (i.e. sewer rising main).
  - Disturbed pavement reinstatement.
- New Wastewater Treatment Plant (WWTP) inclusive of:
    - storage lagoon earthworks;
    - 309m of pressure sewer main extension;
    - 1,034m fencing;
    - chlorination building;
    - irrigation area; and
    - transfer pump station.

Decommissioning and removal of the existing WWTP.

# Pt Vincent CWMS



## Proposed Collection System



## 4. Financial Proposal

### 4.1 Scheme Costs

The project capital cost is currently estimated at \$13,337,533.

### 4.2 CWMS Subsidy Funding

The level of funding that can be contributed towards the project is dependent on property values and the extent of other funding sources outside of Council.

**If no Federal funding** assistance was available, the CWMS Program contribution would be \$6,910,921 and Council through the Port Vincent rate base would need to fund \$6,426,612.

**If the Federal Government contribute** to the project, the envisaged contributions that are expected of the 3 levels of government are:

- Subsidy amount from the CWMS Program: \$4,328,140
- Council through the Port Vincent rate base contribution: \$3,007,503
- Federal funding amount: \$6,001,890

### 4.3 Federal Government's Building Better Regions Funding

Council applied to the Federal Government's Building Better Regions Fund – Round 5 for \$6,001,890 of grant funding in March 2021 and should know the outcome in July 2021.

### 4.4 Costs to ratepayers

People already connected to the CWMS will pay no more than the annual service charge that is levied by Council each year.

If Council receives the federal grant it has applied for, all occupied properties will be levied with the prevailing annual "occupied service charge" (currently \$525/year), and such will cover the repayment, operations, maintenance and depreciation. Properties without any building occupation in place will be levied a lesser annual "vacant service charge" (currently \$390/year).

If Council does not receive federal funding assistance, Council will need to charge a "special rate" of \$301/annum for 10 years to all properties currently not connected to the existing CWMS. This special rate will be in addition to the above referenced annual service charge.

## 5. Consultation

Under Section 151(6) of the *Local Government Act 1999* (SA) Council must prepare a report addressing:

- (a) the reasons for the proposed change;
  - (b) the relationship of the proposed change to Council's overall rates structure and policies;
  - (c) in so far as may be reasonably practicable, the likely impact of the proposed change on ratepayers (using such assumptions, rate modelling and levels of detail as the council thinks fit);
  - (d) issues concerning equity within the community,
- and address other issues considered relevant by the council.

In addition, Section 151(7) specifies that a public consultation policy for the purposes of subsection 151(5)(e) must at least provide for:

- (a) the publication in a newspaper circulating within the area of the council a notice describing the proposed change, informing the public of the preparation of the report required under subsection 151(5)(d), and inviting interested persons:
  - (i) to attend a public meeting in relation to the matter to be held on a date (which must be at least 21 days after the publication of the notice) stated in the notice; or
  - (ii) to make written submissions in relation to the matter within a period (which must be at least 21 days) stated in the notice; and
- (b) the council to organise the public meeting contemplated by paragraph 151(7)(a)(i) and the consideration by the council of any submissions made at that meeting or in response to the invitation under paragraph 151(7)(a)(ii).

Further to this, Council must follow the requirements of its Community Engagement Policy (PO057) when undertaking any public consultation.

Under Council's PO057 Community Engagement Policy, Council staff have determined that a Level 3 consultation is required.

The required stages for this public consultation and the associated timeframes are detailed in the table below:

Stage	Activity	Date(s)
Stage 1	Mailout with Report	31 March 2021
Stage 2	Publication of a Public Notice in the Yorke Peninsula Country Times	7 April 2021
Stage 3	Alternative Public Meetings at the Port Vincent Institute	2 May 2021 at 3.00pm and 4 May 2021 at 6.00pm
Stage 4	Survey	31 March 2021 – 18 May 2021
Stage 5	Final Report to Council	9 June 2021

## 6. Next Steps

Following the completion of the public consultation process outlined in Section 5, a report will be presented to Council outlining the results of the survey and making a recommendation as to whether or not to proceed with the Port Vincent CWMS Expansion Project.

**N.B.:** Under the Essential Services Commission of South Australia guidelines a council cannot implement a scheme that results in increased costs to users without the support of the majority of affected users.

## 7. FAQs

- **How will our say be recorded?**

Council will send a single page survey form to each rateable property along with this report. There will be 1 vote per rateable property. The public survey will commence on 31 March 2021 and close on 18 May 2021. The survey form will need to be received by Council by the date of survey close on 18 May 2021 otherwise it may not be counted.

- **Who will pay for septic tank/property connection?**

The property owner will be responsible for all costs associated with connecting their property to the Council supplied property connection point on the boundary.

- **Who will pay for septic tank desludging? How often? Who will organise it?**

The desludging of septic tanks connected to a CWMS is undertaken by a contractor on Council's behalf every 4 years. This program of works is organised and paid for by Council. Property owners receive a letter notifying them that their septic tank is due to be de-sludge and when this will occur.

- **I have a pumped connection. How will this be managed? Who will pay for power?**

You will continue to pay for power like now.

- **When will works commence?**

September 2021 subject to majority community acceptance and Council endorsement.

- **I have an aerobic system. Do I need to connect?**

Aerobic system owners generally place a high value on the recycled water produced by their systems and are reluctant to decommission their systems. Therefore, Council will allow for the retention of aerobic systems provided that the following are complied with:

- systems must have been approved by Council;
- systems must be maintained in accordance with the Council and Department of Health and Wellbeing approval required, including regular maintenance;
- a bypass connection must be installed; and
- connecting the system to the CWMS within 2 years.

- **I am a pensioner and can't afford it. Will there be rebates?**

Public health is something we all have to contribute to.

Rebates are not expected.

Council will deal with cases of financial hardship on a case by case basis.

Staggered payment plans may be a possibility to assist.

- **Do all properties need to connect?**

Yes. If the entire township CWMS is implemented all properties will be required to connect. Such is in the interests of the environment and the wider wellbeing of the Port Vincent community.

- **What happens if my property is damaged during installation?**

All efforts will be made to minimise damage to fences, driveways, trees, lawn, garden beds, etc.; however, should damage occur as a result of the work being undertaken by Council's contractor to install the boundary connection the cost of repair will be borne by Council or Council's contractor. Any damage that occurs on the property as a result of the works to connect the septic tank to the boundary connection will be borne by the property owner. Prior to the installation of the boundary connection you will be asked where you believe the most suitable location for this connection is.

- **Why can't septic tanks be desludged more frequently?**

The provisions of the *South Australian Public Health (Wastewater) Regulations 2013* require a CWMS scheme to be maintained. As part of its maintenance program Council desludges septic tanks connected to a CWMS every 4 years. Council has determined that more frequent desludging of septic tanks is not required as a 4 yearly program is sufficient to prevent the septic tank from becoming overloaded and transferring sludge to the network.

- **Can other areas be irrigated instead of lucerne or possibly the oval?**

As part of its investigations Council explored the possibility of irrigating the foreshore area. Unfortunately, this is not possible due to the risk of seepage into the marine environment. In addition, there is the issue of increased capital costs associated with additional return line pipe and pump infrastructure.

## Appendix A

### Technical Overview of System

#### A.1 Collection

Properties will be connected to the collection network directly or via septic tanks, which makes the scheme a Septic Tank Effluent Disposal Scheme (STEDS). The septic tank at each property is used to primary treat wastewater. The septic tank used for STEDS has the same characteristics as the tank used for the onsite effluent disposal. Thus, all existing tanks within the township can be reused if they are in good condition.

The existing CWMS in Port Vincent is a majority STEDS type system. The current STEDS includes the Vincent Rise area and Foreshore Caravan Park. The Port Vincent Marina is a full sewer system.

The advantages and disadvantages of STEDS versus full sewer was looked at. When one takes into account water tables, the greater depths of full sewer systems, and relative cost of wastewater treatment plants associated with a full sewer arrangement as opposed to a STEDS/facultative lagoon treatment scenario, STEDS was the better all round solution.

The advantages and disadvantages of a STEDS system are outlined in the table below:

System Type	Advantages	Disadvantages
STEDS	<ul style="list-style-type: none"><li>• Smaller and flatter pipework can be used for gravity drains.</li><li>• Less access chambers are required.</li><li>• Less risk of blockages.</li><li>• Treatment is simpler and less expensive.</li></ul>	<ul style="list-style-type: none"><li>• Septic tanks must be desludged every 4 years.</li><li>• Sludge from septic tank must be safely disposed/utilised.</li><li>• Existing septic tanks, which are to be reused may be in poor condition and may require replacing.</li><li>• If septic tank is located far back in the property it may be difficult to connect to the system.</li><li>• Survey to locate existing septic tanks and outlet levels is required as a design input.</li></ul>

In the concept report prepared by WGA they recommended Council adopt the STEDS system for the CWMS upgrade. The key drivers of this recommendation are as follows:

- STEDS is cheaper to build than the full sewer system due to smaller and shallower pipes, and a smaller number of manholes.
- The majority of the existing system is STEDS.
- Existing residences not connected to the CWMS have septic tanks, which can be reused.
- A full sewer system will require steeper drains, which will result in deeper trenches and deeper pump stations. Deep excavation will be very expensive due to the sandy soils encountered within Port Vincent.
- The potential for network blockages within the STEDS is reduced.
- Facultative lagoons can be used to treat septic tank effluent unlike full sewer. The lagoon system is simple, requires little operator attention and effluent treatment is very effective and better suited for high load fluctuation taking place in the township.

- The full sewer option will require mechanical plant or additional anaerobic lagoons in front of the facultative lagoons. Mechanical plant requires more operator input, is more expensive to run and has higher risk of failure than the lagoon system.

The existing gravity wastewater collection and pumping system will be retained and extended where practical. The existing Vincent Rise collection system will include some new gravity drains.

Wastewater collected within the township will be transferred via the existing and new pumping systems to the existing WWTP area from where it will be pumped to the new WWTP. The existing WWTP will be decommissioned.

3 collection system options were considered by WGA in the preparation of the concept report. The collection system options considered different technologies: gravity, pressure and vacuum systems. These technologies were investigated and assessed to assist WGA in forming the recommendation that **a STEDS gravity system** is best suited for Port Vincent.

The advantages and disadvantages of each of the technology options considered by WGA are outlined in the table below:

System	Advantages	Disadvantages
<b>Gravity system with limited pressure connections</b>	<ul style="list-style-type: none"> <li>• Only small number of properties (32) fitted with individual pumps.</li> <li>• Existing system is gravity and compatible with the new system.</li> <li>• Council is familiar with gravity system.</li> <li>• The cheapest option to construct.</li> <li>• The cheapest option to operate.</li> <li>• Additional connections are easy to fit in.</li> </ul>	<ul style="list-style-type: none"> <li>• 5 new pump stations – all installed close to shore.</li> <li>• Drains are deeper than pressure system or vacuum system.</li> <li>• Some properties could be difficult to connect by gravity connection.</li> <li>• Risk of construction cost increase for drains close to shore.</li> </ul>
<b>Hybrid gravity system and pressure system</b>	<ul style="list-style-type: none"> <li>• Properties located close to shore area and within busy commercial area have pressure connections.</li> <li>• Less disruption to traffic due to shallower pipes and smaller excavations.</li> <li>• Groundwater ingress through external pressure pipework is eliminated.</li> <li>• Easier to connect properties with difficult access to backyards.</li> <li>• Only 2 pump stations located close to foreshore.</li> </ul>	<ul style="list-style-type: none"> <li>• System more expensive than gravity system.</li> <li>• If Council is to maintain individual pumps, system will be more expensive to operate.</li> <li>• Council is less familiar with the pressure system rather than gravity system.</li> <li>• Cleansing velocity in pressure lines will not be achieved during off-season due to small number of residents. Frequent pipe flushing could be required.</li> <li>• Individual pumps will stay idle between holiday seasons.</li> <li>• More prone to power outage interruptions.</li> </ul>

<b>Hybrid vacuum system, gravity system and pressure system</b>	<ul style="list-style-type: none"> <li>• Only 2 new pump stations required: 1 conventional and 1 vacuum pump station.</li> <li>• Only 1 pump station is located close to foreshore.</li> <li>• Pipes are shallower than gravity system.</li> <li>• Lower potential of ground water ingress.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher costs than gravity system.</li> <li>• Overall more length of pipework due to vacuum pipes and gravity connection pipes installed parallel.</li> <li>• Collection pits could be difficult to install within Marine Parade.</li> <li>• Vacuum system not suitable for properties located within Buttfield Avenue and pressure system must be installed there. This results in 3 collection system technologies.</li> </ul>
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## A.2 Transfer (Pumps Stations)

The purpose of a pump station within a STEDS is to collect the effluent via the gravity network and transfer it to either the treatment plant or another pump station.

As part of this project 5 new pump stations will be installed alongside the existing 3 pump stations.

## A.3 Treatment

The following technologies for the WWTP were considered by WGA in the preparation of the concept report:

- Mechanical plant type Sequencing Batch Reactor (SBR)
- Mechanical plant type Intermittent Decanted Extended Aeration (IDEA) System (existing WWTP)
- Facultative lagoons (recommended option)
- High Rate Algal Ponds (HRAP)

Based on whole of life considerations, the facultative lagoon treatment option is preferred.

System	Advantages	Disadvantages
<b>Facultative lagoons</b>	<ul style="list-style-type: none"> <li>• Cheapest to construct of all options.</li> <li>• Easy to operate.</li> <li>• Very low energy consumption.</li> <li>• Operate fine with flow and load fluctuations.</li> <li>• Good water quality.</li> </ul>	<ul style="list-style-type: none"> <li>• Buffer zone is 350m, which is more than mechanical plant.</li> <li>• Larger area of land required for construction.</li> <li>• More water loss due to evaporation.</li> </ul>

## A.4 Disposal of Recycled Water

Currently treated effluent is used to irrigate lucerne via subsurface irrigation over 1.3ha of farm land in vicinity to the WWTP. There is no winter storage available and the effluent is disposed daily. Average daily flow is approximately 35 kL/day resulting in annual application of 980mm.

For the upgraded CWMS the instantaneous flow is expected to increase four-fold. It is proposed that treated effluent is disposed in the same method and the irrigation area is increased. In addition, a storage is proposed to more effectively dispose of the treated effluent by applying more irrigation water over summer and stopping or reducing the irrigation over winter. The land foot of the new wastewater treatment plant, lagoons and adjacent irrigation area may be of the order of 20ha.