Phillip Island Recycled Water Scheme

Regional Health & Environmental Management Plan

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(rev. 5)

Quality Information

Document Phillip Island Regional Health & Environmental Management Plan

Revision History

Revision	Revision Date	Details
0	30/09/2011	Draft for internal review.
1	23/04/2012	Final draft for review by Department of Health and EPA.
2	30/05/2012	Final draft for review following comments by EPA.
3	31/05/2012	Final draft following internal review by Westernport Water, issued for approval by EPA.
4	27/06/2012	Final changes following EPA review (refer Section 12.5 & 12.6)
5	09/08/2012	Internal review with WPW development and construction staff

Westernport Water Authorisation:

Signature: .....

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GLOSSARY OF ABBREVIATIONS

CSMP	Customer Site Management Plan
DH	Department of Health
DSE	Department of Sustainability and Environment
EPA	Environment Protection Agency
ESC	(Victorian) Essential Services Commission
HEMP	(Regional) Health and Environmental Management Plan
LCA	Land Capability Assessment
PIC	Plumbing Industry Commission
RWQMP	Recycled Water Quality Management Plan
RWTP	Recycled Water Treatment Plant
SEPP	Sate Environment Protection Policy
WPW	Westernport Water
WWTP	(Cowes) Wastewater Treatment Plant

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1. Introduction

1.1. Project Overview

Westernport Region Water Corporation (Westernport Water) is responsible for the provision of water supply and sewerage services to nearly 15,000 water and 14,000 sewerage customers located generally along the eastern side of Western Port Bay, south east of Melbourne.

Westernport Water's region includes the mainland town areas of The Gurdies, Pioneer Bay, Grantville, Coronet Bay, Corinella, Bass, San Remo, Kilcunda, Daylston, Archie's Creek and the Phillip Island towns of Newhaven, Cape Woolamai, Sunset Strip, Surf Beach, Smiths Beach, Wimbledon Heights, Rhyll, Ventnor, Silverleaves and Cowes. The region also includes the interlinking farming areas which mainly support grazing and some horticulture.

The region is a major tourism destination for up to 3 million visitors from interstate and overseas each year. During the summer holiday period from December to February the population increases to over 50,000 on Phillip Island compared to a regular resident population of about 8,000 people.

Westernport Water operates under a broad range of operational licences and regulations and reports its performance to various regulatory bodies such as the Environment Protection Authority (EPA), Victorian Essential Services Commission (ESC), the Victorian Department of Sustainability and Environment (DSE) and the Department of Health (DH).

Securing water supplies for current and future needs in the area was supported when Westernport Water was awarded a $2.85 million Federal grant to partly fund a new state of the art Class A recycled water plant at the Cowes Waste Water Treatment Plant (WWTP). The Australian Government grant has been made available through the National Water Security Plan for Cities and Towns, on behalf of the Commonwealth's Water for the Future strategy.

The main aim of the Phillip Island Recycled Water Scheme is to construct the treatment and delivery infrastructure that will provide fit-for-purpose water to residential, commercial and agricultural customers located in and around the main townships on Phillip Island. The primary objectives are:

- For existing potable water use to be replaced in target areas with Class A recycled water, and
- Potable water use in new dual pipe (recycled water) estates to be reduced.

The combination of replacing and reducing current and future potable consumption contributes to an increase in the region's water supply security.

Complementary objectives are:

- To positively affect the environment by reducing the volume of treated effluent discharged to ocean, and

- To support Bass Coast Shire policies for development, planning, and recreation.

A new Class A Recycled Water Treatment Plant (RWTP) is to be constructed at the existing Cowes Wastewater Treatment Plant (WWTP). The new RWTP will have an initial capacity of 1.3 ML/d, with the ability to upgrade to 3 ML/d to cater for urban growth over time.

To accommodate the forecast instantaneous and peak daily demands from the area to be serviced by the Scheme, a 2 ML (Megalitre) buffer storage tank located at Wimbledon Heights (a topographical high point on Phillip Island) has been constructed. The buffer storage tank allows for economic sizing of the proposed Class A treatment process by designing for average rather than peak demands. The tank will also provide a service level at least equivalent to that from a potable water distribution network.

To deliver the Class A recycled water product to existing and new recycled water customers on Phillip Island a 10.5 km backbone distribution system has been constructed. This new distribution system is a vital piece of infrastructure that will allow Westernport Water to proactively engage with developers and increase the number of recycled water customers. To support the new infrastructure an upgrade to 1.5km of existing pipework between the Cowes WWTP and Wimbledon Heights is also required.

A plan of the recycled water scheme is shown in **Figure 1-1**.

Provision of Class A recycled water from the Cowes RWTP will make a key contribution to the Victorian Government's target to provide 10GL of potable substitution by 2030.

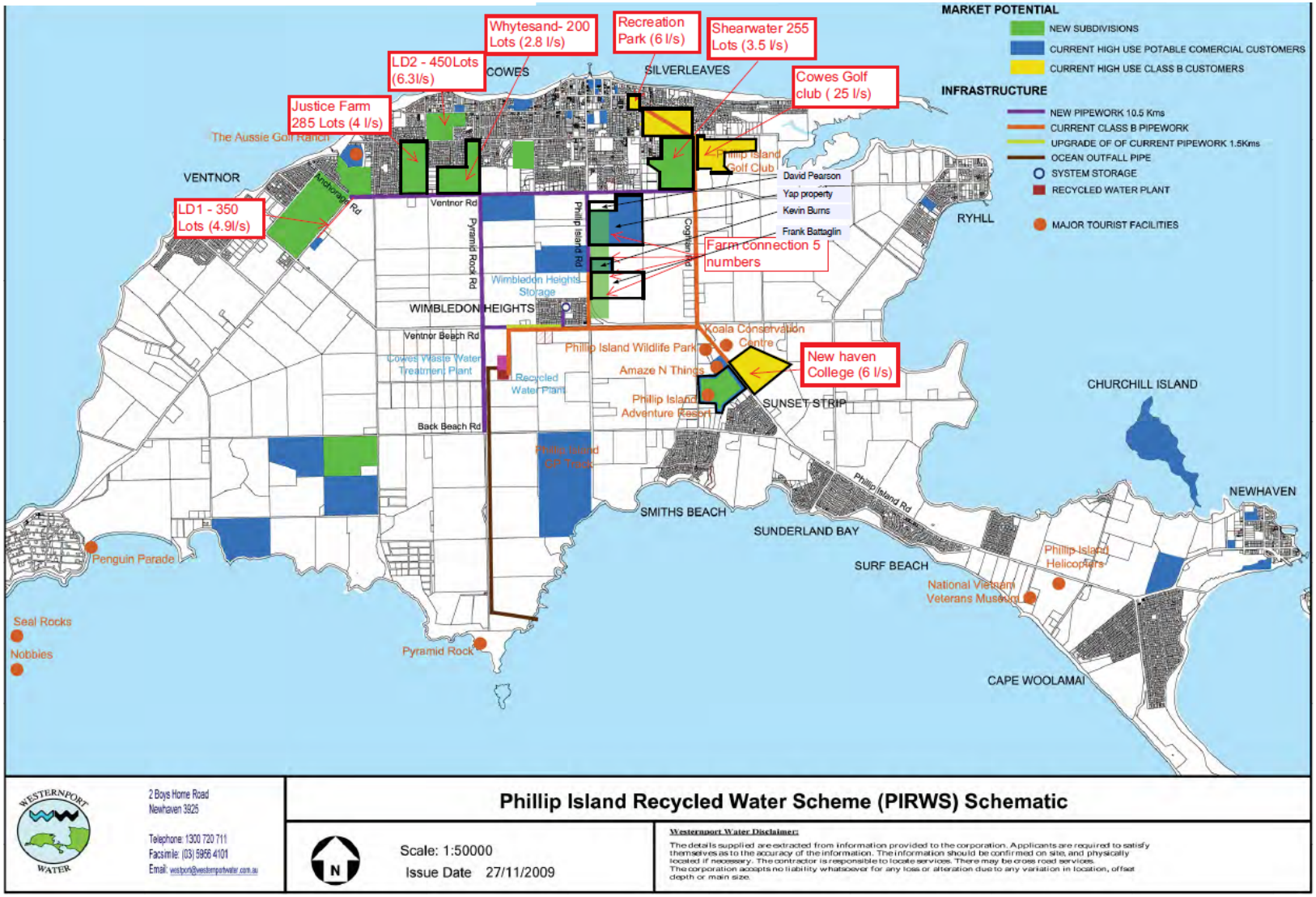


Figure 1-1: Phillip Island Recycled Water Scheme Plan

1.2. Quality of Recycled Water

The water to be supplied for the Phillip Island Recycled Water Scheme will be Class A recycled water from the Cowes Recycled Water Treatment Plant (RWTP). This source provides recycled water of very high quality and meets all requirements as prescribed in the *Guidelines for Environmental Management – Dual Pipe Water Recycling Schemes* (EPA Victoria, 2005), and *Environmental Management – Use of Reclaimed Water* (EPA Victoria, 2003).Further details regarding water quality are provided in the Recycled Water Quality Management Plan and in individual Customer Site Management Plan's (CSMP).

The recycled water is fit for the purposes it is intended to be used for which is provided in this document (refer Section 2). The treated water produced by the Cowes RWTP is classified as Class A quality, meaning that pathogen levels are low. In addition, heavy metal concentrations are very low and meet Australian guidelines for irrigation purposes (EPA, 1991).

Nutrient concentrations in the recycled water are as per typical treated wastewater concentrations, allowing for some level of removal through the Cowes WWTP in combination with the RWTP.

The salinity of the recycled water to be supplied will typically be about 980 mg/L (EC of 1400 µS/cm, assuming TDS = 0.7 EC).

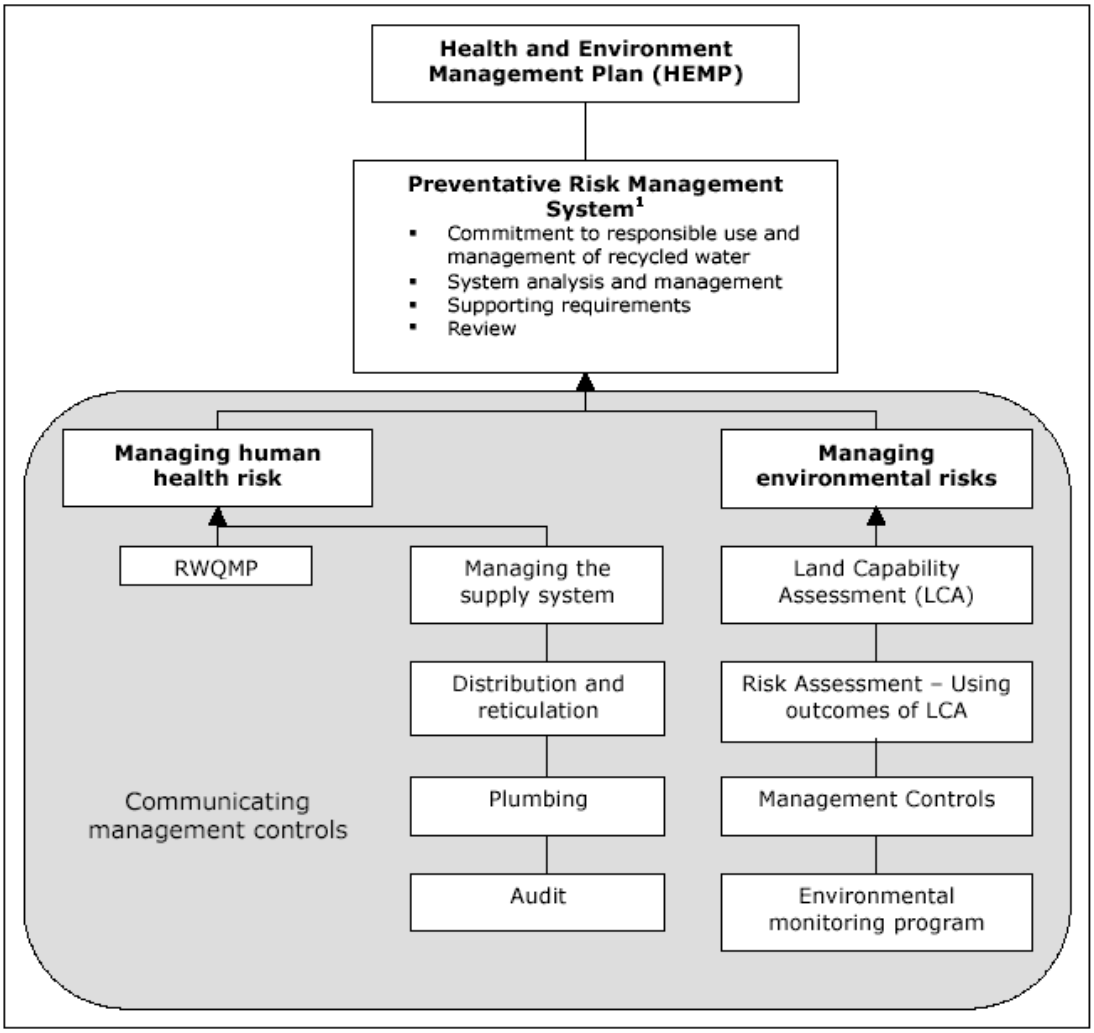
As a comparison, the above salinity and nutrient levels are lower than recycled water currently being supplied to public open spaces from Melbourne Water's Western Treatment Plant (which contains approx. salinity 1200 mg/L TDS, phosphorus 9-15 mg/L, and nitrogen 10-20 mg/L).

1.3. Purpose and Scope of this Regional HEMP

This document is the Regional Health and Environmental Management Plan (HEMP) for various applications receiving recycled water from the Cowes RWTP. It details the management practices required to control health and environmental risks associated with the end use of the recycled water. The purpose is to inform end users of their responsibilities and the limitations relating to use of the recycled water and further provide a framework to manage the human health and environmental risks associated with the treatment, distribution and use of Class A recycled water.

This Regional HEMP is supported by a number of other documents as outlined in Figure 1-2.

Figure 1-2 HEMP Supporting Documentation



The documents incorporated as part of the Regional HEMP include:

- Health and Environment Management Plan (HEMP) (this document)- addresses environmental and health issues associated with the operation of the system as a whole from treatment to use by the customers. The HEMP includes a detailed risk assessment.
- Commercial customer's site-specific details relating to end use of the recycled water will be addressed in Customer Site Management Plans (CSMPs).
- Recycled Water Quality Management Pan – a document produced by the recycled water scheme manager (Westernport Water), approved by Victoria Department of Health (DH) and EPA to guarantee the supply of fit for purpose recycled water. It details the treatment process used to achieve Class A recycled water, including an ongoing management and monitoring program.

The HEMP details the management of recycled water supply to the public open space off-takes from the Westernport Water recycled water reticulation system, but the management of usage for the public open space is detailed in specific Customer Site Management Plans (CSMPs). Public Open Spaces may consist of council parklands, council ovals and a school. Other commercial open spaces include Commercial Golf Courses or Adventure Parks/ Recreational Facilities. The CSMP is owned and developed by the public open space manager with assistance from Westernport Water.

The HEMP is also supported by a Stakeholder Engagement Strategy (refer Section 8), which outlines the communications process for all stakeholders, including end users. The overarching goals for the communications process are to:

- Provide an open and transparent process for all stakeholders.
- Allow the community to come to their own conclusions about water recycling and its importance to a sustainable water supply for Phillip Island.
- Minimise public and stakeholder objections and reduce concerns.
- Show leadership – demonstrate long-term plans/solutions to the community.
- Develop a shared responsibility for solving the water supply problem for Phillip Island.
- Ensure end users use their water for the purposes it is fit.

1.4. Management Commitment

Westernport Water's management is committed to providing recycled water delivery systems which manage both environmental and health risks. Westernport Water will ensure its best endeavours to provide adequate resources for recycled water programs including adherence to the RWQMP, HACCP plans and the Regional HEMP (this document). Westernport Water will also ensure that the public and customers are educated about the risks and correct use of recycled water.

Westernport Water is committed to stakeholder engagement, of which there are a number of components, including:

- The State Government (incorporating Department of Sustainability and Environment (DSE), EPA Victoria (EPA), Department of Health (DH) and the Department of Planning and Community Development;
- Developers incorporating recycled water into new urban developments
- Local Government Authorities
- The local community, including recycled water customers.

Westernport Water has identified key roles and responsibilities and engaged with stakeholders accordingly throughout the implementation of the Phillip Island Recycled Water

Scheme. Provision of recycled water to the Island's existing recycled water customers as well as future recycled water customers via the residential dual reticulation scheme will both be aspects of the water and wastewater services Westernport Water provide to its customers; and as such will be incorporated within established programs of customer service and communication.

Westernport Water will check that these programs are adhered to by conducting audits of recycled water management systems and by investigating reported health and environment incidents. Westernport Water's management systems involving monitoring, auditing and research and development will be used to review recycled water management systems and improve these systems where deficiencies are found.

2. Description of End Uses

2.1. Overview

Westernport Water is responsible for the supply and use of recycled water by the residential customers within the Phillip Island Recycled Water Scheme for the following permitted uses:

- Household toilet flushing, garden irrigation including vegetables (both above and below ground), and car washing.
- Filling household ornamental ponds and water features.
- Public open space irrigation
- Fire fighting

Westernport Water is also responsible for the supply of recycled water to non-domestic areas, consisting of the parklands and proposed, but yet confirmed council reserve and school. Westernport Water will also supply recycled water to customers for irrigation purposes. As detailed earlier, the customers will manage the use in accordance with site specific CSMPs which are separate to this HEMP.

Westernport Water will enter into a condition of connection with each user (residents and non-domestic) when they apply to connect to recycled water.

Supply of recycled water within the estate will be via a dedicated distribution and reticulation system that is owned, operated and maintained by Westernport Water. Additionally, as is the normal practice, the drinking water supply system and sewage collection services for the estate will also be owned, operated and maintained by Westernport Water.

Westernport Water's recycled water distribution and reticulation system will include the following:

- A 250mm diameter distribution main, of approximate length of 11.8 km, that transfers recycled water from the 2 ML Wimbledon Heights Storage Tank. At the Wimbledon Heights Storage Tank there will be a drinking water backup with a permanent air gap between the drinking water supply line and the tank top water level.
- A reticulation system through each residential stage to the outlet side of the recycled water meter at each customer service.

It is estimated that at full development, the peak daily recycled water demand for residential and open space use will be in the range of 0.5 – 1.3 ML/day, with a peak hourly demand of 64.5L/s. An additional future demand of up to 35 L/s is also envisaged, but this will require duplication of the RWTP to provide this demand. The supply pressure will be in the range of 30-40m depending on the location and demand within the region.

2.2. Acceptable Uses

The recycled water is of very high quality. However, there are some restrictions that must be understood by all customers prior to the use of any recycled water.

The expected quality of the recycled water to be supplied, in relation to environmental and human health risk factors, is summarised in Table 2-1. Further details can be found in the Land Capability Assessment (Appendix A) and in the Recycled Water Quality Management Plan.

Table 2-1 Water Quality Parameters

Parameter	Recycled Water	Suitable for the end uses listed in this document
Microbiological[1]	< 10 *E.coli* org/100mL	Yes
Turbidity	< 2 NTU	Yes
BOD_5	< 3 mg/L	Yes
Suspended Solids	< 1 mg/L	Yes
pH	6 – 9	Yes
Salinity	< 1000 mg/L	Yes
Total Nitrogen	< 30 mg/L	Yes
Total Phosphorus	< 10 mg/L	Yes
Heavy Metals and other chemicals (aluminum, arsenic, cadmium, copper, cyanide, lead, mercury nickel, zinc)	Within irrigation water standards and stock drinking water standards	Yes

Notes:

1. The treatment process in place at the Cowes RWTP will achieve EPA Class A recycled water standard with microbial criteria as follows:

- *Bacteria 6-log reduction from raw sewage to recycled water*
- *Viruses 7-log reduction from raw sewage to recycled water*
- *Protozoa 6-log reduction from raw sewage to recycled water*

Recycled water of the quality outlined in Table 2-1 is suitable for the following purposes:

- Irrigation of public open spaces, such as parks and sports fields, where public access is unrestricted.
- Toilet flushing.
- General outdoor uses such as dust suppression and wash down.
- Filling water features and ponds that are not used for swimming.

- Firefighting and fire protection systems, including hydrants and sprinkler systems.

The recycled water is NOT considered acceptable for the following uses:

- **Drinking.**
- **Cooking or other kitchen purposes.**
- **Bathing and showering.**
- **Filling swimming pools and spas.**
- **Children's water toys.**

2.3. Recycled Water Users

Table 2-2 provides a list of the proposed recycled water users based on predicted growth and development over the next ten years. The recycled water quantities shown in Table 2-2 are based on ultimate development and maximum allowable irrigation quantities based on the land capability assessment. The residential developments will occur at a projected growth rate of approximately 2% per annum. Therefore, the uptake of recycled water use will be gradual over the next ten years. The actual usages will be reported annually and reviewed accordingly.

Table 2-2 Proposed Recycled Water Users

Customer	Proposed End Uses	Maximum Allowable Quantity (ML/yr)*
Bass Coast Shire Council		
• **Whyte Sands Development**	Residential estate – 25 ha irrigation of residential dwellings (300 lots) including gardens. Toilet flushing and car washing.	55
• **Justice Farm Development**	Residential estate – 15 ha irrigation of public open space and residential dwellings (285 lots) including gardens. Toilet flushing and car washing.	38
• **Shearwater Development**	Residential estate – 15 ha irrigation of public open space and residential dwellings (253 lots) including gardens. Toilet flushing and car washing.	38
• **Newhaven College**	Sporting fields Football/cricket oval - used for football in winter and cricket in summer: Size ~ 1.9 ha Proposed football/cricket oval – to be located to the north of the existing football/cricket: Estimated size ~1.9 ha Proposed soccer pitch – to be located to the north of the existing football/cricket: Estimated size ~1.2 ha	5.3
• **Cowes Recreation Reserve**	Sporting fields Football/cricket oval - used for football in winter and cricket in summer: Size ~ 1.6 ha	4.5
Private Enterprise		
• **Kevin Burns (farm)**	Site formerly used as a driving range. The site area totals around 7 ha.	17.5
• **Yap property (farm)**	Farm used for stock grazing (mainly cattle).	1.3
• **Frank Battaglin (farm)**	The Battaglin farm occupies around 32 ha of land, with 6.4 ha used to grow vegetables (2 ha) and Christmas trees (4.4 ha).	27.8
• **Adventure Resort**	Holiday and conferencing resort occupying approximately 32ha. The site includes garden beds around the buildings and multiple turf activity areas.	5.2
• **Phillip Island Golf Club**	Irrigation of 18 hole golf course consisting of warms season turf.	56

Note: *The quantity ML/yr is the maximum volume based on the land capability assessment

3. Roles and Responsibilities

Production, management and use of Class A recycled water comprise the three main components of a dual reticulation scheme (EPA, 2005).

The following parties for the Phillip Island Recycled Water Scheme (PIWRS) undertake these key roles as defined in the EPA (2005) Guidelines:

- The Scheme Manager and retail supplier of Class A recycled water within the PIWRS is **Westernport Water**.
- The end users will be the **residents** of Phillip Island.

This HEMP details the roles and responsibilities of parties involved in the management of dual pipe water recycling within the PIWRS.

3.1. Westernport Water

Westernport Water is the bulk supplier and retailer of the recycled water. Westernport Water is responsible for:

- Supplying recycled water in accordance with agreements with customers, and in accordance with the RWQMP and this HEMP;
- Operating and maintaining the Class A treatment plant, pump station and pipeline to achieve the quality standard;
- In conjunction with its non-domestic customers, providing the information required to develop and maintain Customer Site Management Plans (CSMPs);
- Obtaining approval (from the EPA) and endorsement (from DH) for the HEMP, and ongoing maintenance of the HEMP;
- Providing an annual report on findings and compliance to the EPA and DH;
- Keeping a register of information about its customers, including location information, quality and quantity of supply, and end use of the water;
- Informing customers of the potential risks associated with use of recycled water and assisting in the management of those risks;
- Providing a reliable system for recording and responding to complaints;
- Responding to incidents, auditing functions and establishing use agreements with relevant parties.

3.2. Recycled Water Customers

3.2.1 Residential Developers and Residents

Residential Developers will be required to assist Westernport Water with delivering the communications strategy as required, although ultimate responsibility sits with Westernport Water.

Residents will be responsible for obtaining consent to connect to the recycled water system from Westernport Water.

Residents will be responsible for using recycled water as directed and to follow guidance provided by Westernport Water, in accordance with a signed agreement between Westernport Water and the resident (similar to a customer charter).

Residents will be audited on an annual basis to ensure they are meeting their responsibilities. Refer to Section 12 for further details.

3.2.2 Commercial Customers

Commercial customers including golf course operators and agricultural farmers will be required to prepare their individual CSMPs for their sites, in accordance with the recommendations of the land capability assessments. Westernport Water will provide assistance with each customer in preparation of the CSMPs.

Commercial customers will be responsible for obtaining consent to connect to the recycled water system from Westernport Water. Each customer will be required to enter into a contractual agreement with Westernport Water for the supply of recycled water.

Commercial customers will be responsible for using recycled water in accordance with their CSMPs.

Customers will be audited on an annual basis to ensure it is meeting its responsibilities. Refer to Section 12 for further details.

3.3. EPA Victoria

The EPA is responsible for the approval of this HEMP. They provide formal agreement that the project is environmentally sustainable, provided all the documentation is complied with.

EPA is also responsible for:

- Administering the Guidelines and to ensure that audits of the HEMP are conducted by the Scheme Manager for scheme compliance.
- Audit and review the effectiveness of the Guidelines to ensure developments are in best practice for recycled water use in Australia and overseas are reflected in the Guidelines.
- Produce technical supplements for the Guidelines where additional guidance on interpretation of requirements is required.

3.4. Department of Health

The Department of Health (DH) is responsible for ensuring that Class A water quality criteria are protective of public health.

Specific responsibilities of DH in relation to endorsing documentation for the recycled water scheme are to assess the Class A recycled water treatment plant and the associated RWQMP and aspects relating to public health in the HEMP.

3.5. Plumbing Industry Commission

The Plumbing Industry Commission (PIC) through powers of the Building Act 1993 is responsible for:

- Ensuring that the Recycled Plumbing Guidelines are adhered to for every house built;
- Educating plumbers regarding plumbing standards and requirements for plumbing inspections; and
- Undertaking plumbing inspections upon notification by plumber.

3.6. Plumbers

Plumbers are responsible for the installation of plumbing to the required standards and book the necessary PIC inspections as required by Westernport Water in the conditions of connection.

4. Hazard Identification

Understanding the hazards and risks associated with the supply and use of recycled water is a key element of a recycled water supply. Clear distinction between risks and hazards is required to ensure actions and resources are allocated based on the level of risk rather than the presence of a hazard.

A hazard is a chemical, physical, biological or radiological agent that has the potential to cause harm. When a situation occurs that can lead to exposure to a hazard this is known as a hazardous event. Risk is the likelihood of the hazardous event occurring, considered in conjunction with the consequence of exposure.

The following is a list of generic key hazards that can be present in recycled water and must be assessed to establish if there is a risk that needs to be managed to ensure safe and sustainable recycled water supply.

Microorganisms or pathogens
Pathogenic micro-organisms are excreted by humans and therefore found at high numbers in raw wastewater. Pathogen removal occurs during secondary treatment and additional removal occurs through advanced treatment and disinfection of the recycled water. Pathogens in raw wastewater such as bacteria, viruses, protozoa and helminths pose direct human health risks through ingestion and other exposure routes.

Chlorine Residual
Disinfection of recycled water with chlorine is one available component of a treatment process that can be used to achieve Class A recycled water. However, high levels of chlorine residual can pose a risk to the environment through ecotoxicity. Ecotoxicity is the effect that chemicals have on the environment and organisms that live in it.

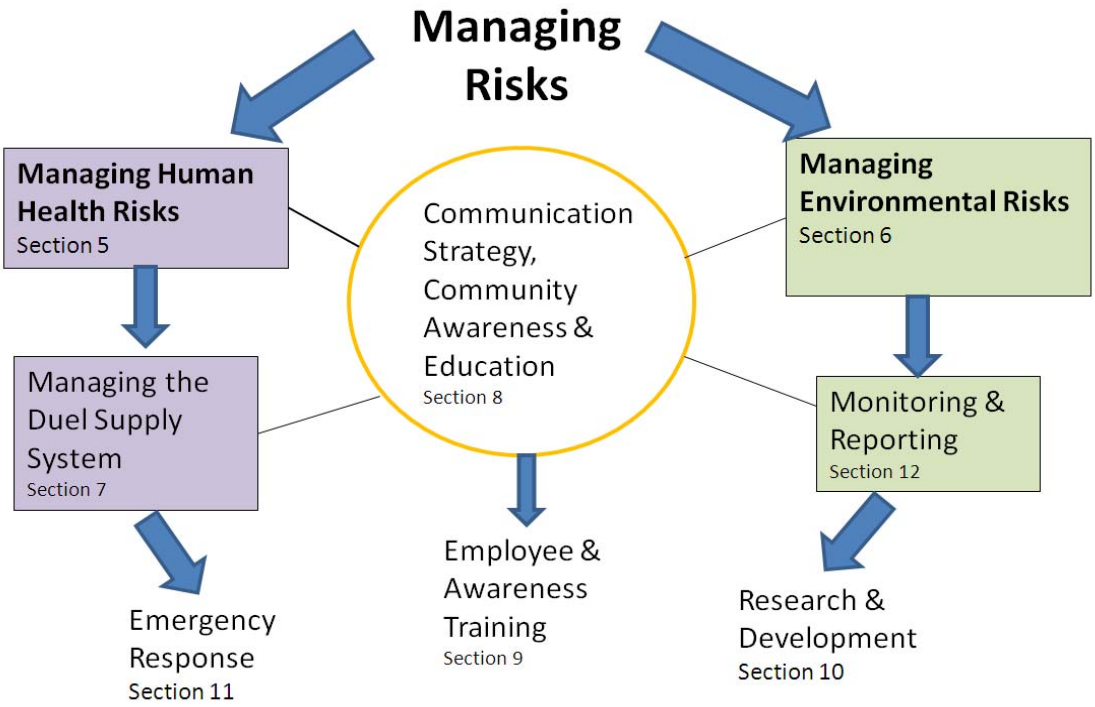
Nutrients
Nutrients are present in wastewater with domestic waste being the primary source. Nutrient removal occurs through the secondary treatment process at the Cowes WWTP and some limited, additional removal through reduction in the suspended solids concentration at the RWTP, however nutrients are still present in Class A recycled water. Nutrients pose an environmental risk to nutrient sensitive plants and through movement into groundwater and surface waters. Excess nutrient in surface water can cause problems such as algae growth and impact on the beneficial use of groundwater.

Salinity and Sodicity
Recycled water can contain elevated salinity, which is only removed by treatment that is specifically designed to remove salt. Irrigation of salty water and the accumulation of salts in soil can potentially impact on soil structure and plant growth. Sodicity is the proportion of sodium ions relative to the amount of magnesium, potassium and calcium ions in the soil. Excessive concentrations of sodium can impact on soil integrity and affect the drainage capability of the soil.

Inorganic and Organic compounds
Inorganic and organic compounds are found in raw wastewater from domestic, commercial and industrial sources and thus can be present in recycled water. These chemicals pose a

risk through ecotoxicity and accumulation in the soil. However the levels typically found in recycled water are very low and well below drinking water limits.

The risk assessment for the above mentioned hazards and corresponding control measures identified for the Phillip Island Recycled Water Scheme are outlined in the following chapters. The schematic diagram below depicts how the risk management framework ties together and where the respective sections are detailed in this document.



5. Managing Human Health Risks

5.1. Overview

This section outlines the risks to human health for a dual reticulation scheme and the associated management controls. Risks to human health could arise from:

1. Inadequate recycled water quality causing deviation from Class A due to inadequate treatment or contamination during reticulation.
2. Drinking water contamination due to a cross connection with recycled water.
3. Recycled water contamination due to a cross connection.
4. Inappropriate end use of recycled water.

This section focuses on the practices required to manage the risks relating to end use for residential users that are supplied with recycled water from the dual reticulation scheme. In regards to human health, the risks are relatively low due to the high level of treatment undertaken. However, due to this higher level of treatment, access to the Class A recycled water is uncontrolled; this therefore requires a higher level of risk management (compared to traditional agricultural recycling schemes) due to the reduced ability of the recycled water provider to tightly control residential behavior (EPA, 2005). A summary of the human health risks is provided in Table 5-1. The management practices that need to be implemented by recycled water users in order to maintain these risk levels are detailed in sections 5.2 to 5.6.

Table 5-1 Overview of Human Health Risks

Risk	Mitigation Measure	Mitigated Risk Level
Health risks for workers exposed to recycled water.	The health risk from the recycled water is minimal. Class A Recycled Water has been treated to a standard that makes it safe to come into direct contact with. It is not always necessary to wash hands after handling Class A Recycled Water. However, it is always wise to wash hands after undertaking outdoor activities and before eating and drinking. Westernport Water to communicate to on-site workers and visiting workers (e.g. plumbers) the requirements relating to recycled water. These include washing hands before eating, drinking or smoking.	Low.
Contamination of the drinking water supply with recycled water due to cross connection between the two supplies within customer properties.	Dedicated recycled water pipeline only for recycled water use. All plumbing works will be undertaken in accordance with AS/NZS 3500:2003 – National Plumbing and Drainage Code which is consistent with the Plumbing Industry Commission Recycled Water Plumbing Guide. Above-ground recycled water and drinking water	Low.

	infrastructure will be separated by at least 100 mm and below-ground infrastructure by at least 300 mm. Above-ground pipes carrying recycled water will be clearly identifiable.	
Human exposure due to drinking from recycled water outlet.	Customers will be advised that the recycled water is not suitable for drinking. Warning signs to be located on all recycled water taps in public areas – no further than 150mm from the tap handle. These signs should read “Do Not Drink”. Properties where recycled water is in use will be signposted. Recycled water taps and above ground pipework to be coloured purple / lilac. Recycled water taps located in public areas to have removable handles.	Low.
Inappropriate use of recycled water (e.g. filling swimming pools).	Advice will be provided to customers regarding acceptable use of the recycled water. Drinking water is supplied from an alternative source (potable supply).	Low.
Offsite water movement or spray drift from irrigation systems.	No buffer distances are prescribed for Class A recycled water. As one of the uses of the recycled water is for irrigation some level of misting may occur. However, spray drift should be minimised to avoid nuisance aspects of the water. Customers will be provided with advice regarding management of spray drift. Customers will also be provided with advice regarding prevention of surface runoff.	Low.
Contaminants (heavy metals, chlorine residuals) impact on human health.	Contaminant levels post-treatment are within guideline limits for the approved end uses.	Low.
Blue-green algae (BGA) outbreak in customer storage dams/ water bodies due to increase in nutrient levels in recycled water.	Nutrient concentrations (N and P) in recycled water are relatively high which means that BGA outbreaks may occur within customers’ on-site storage dams and potentially within ornamental ponds or water features. Potential for algal blooms will be assessed on a case by case basis through the Blue Green Algae Management Plans (Refer Appendix C) attached as part of individual CSMPs should an outbreak occur.	Medium.

Residential customers will receive the recycled water via a dedicated pressurised pipeline and so issues relating to BGA are low.

Risks relating specifically to on-site storage of recycled water in some customer's storage dams have been assessed, and documented in a discussion paper titled "On-Site Storage of Recycled Water", which is attached as part of Appendix C. While the BGA risk for these customers has been initially assessed as medium (Table 5-1), Westernport Water require that a specific BGA Management Plan be developed as part of the CSMPs and will support any customers that have BGA episode in any open water storages in accordance with the BGA management Plan (refer Appendix C).

5.2. Recycled Water Quality Risks and Controls

One of the key controls for protecting human health is to produce the required quality of Class A recycled water and to ensure the water quality does not deteriorate within the delivery system to end users. The process for achieving this are detailed in the Recycled Water Quality Management Plan.

5.3. Workers Exposed to Recycled Water

On-site workers who operate irrigation systems must be informed that recycled water is in use, and of the requirement that workers must not drink the recycled water.

The site specific Customer Site Management Plans (CSMPs), to be prepared by the individual non-residential customer with support from Westernport Water, will detail the communication strategy to be implemented for on-site workers and visiting workers.

5.4. Cross-Connections

5.4.1. Irrigation Use

It is important to ensure that recycled water does not enter the reticulated drinking water supply within the site or external to it. The irrigation pipeline networks will be separated from the drinking water system on each of the customer's sites. This pipeline network and other recycled water plumbing infrastructure has been undertaken in accordance with AS/NZS 3500:2003 – *National Plumbing and Drainage Code,* which is consistent with the Plumbing Industry Commission *Recycled Water Plumbing Guide*.

As a precaution, Westernport Water requires the installation of a testable dual check valve on any drinking water supplies to a customer's site where recycled water is being used, to protect the mains water supply against any accidental cross-connection. This requirement is in accordance with specifications from the AS/NZS 3500:2003 – *National Plumbing and Drainage Code,*

Westernport Water's existing Standard Operating Procedures (SOPs) will be followed during maintenance and repairs of the recycled water network, which includes the requirement to ensure that sewer repair tools are not used to repair recycled water mains.

A site map will be included in the CSMP for each site, showing the layout of major features of the site, location of irrigated areas, location of recycled water pipelines, and location of irrigation infrastructure including each sprinkler head.

5.4.2. Residential Use

All plumbing works must be undertaken in accordance with AS/NZS 3500:2003 – *National Plumbing and Drainage Code,* which is consistent with the Plumbing Industry Commission *Recycled Water Plumbing Guide*. Plumbers undertaking works (either on the potable system or the recycled water system) should be made aware that recycled water is in use on the property.

Any above-ground infrastructure carrying recycled water will be coloured purple/lilac (this can be achieved by spray painting existing infrastructure).

There shall be no connection of any kind between the recycled water system and the reticulated drinking water supply. In accordance with the *Guidelines for Environmental Management – Dual Pipe Water Recycling Schemes* (EPA Victoria, 2005), above ground recycled water and drinking water infrastructure must be separated by at least 100 mm and below-ground infrastructure by at least 300 mm.

Westernport Water requires any drinking water supplies to a customer's site where recycled water is being used to be fitted with a water meter that has an inbuilt dual check valve, to protect the mains water supply against any accidental cross-connection.

Prior to the use of recycled water the system must be fully tested and commissioned by a licensed plumber in accordance with the requirements of AS/NZS 3500:2003 – *National Plumbing and Drainage Code.* Copies of all certificates of compliance are to be forwarded to Westernport Water. As part of the testing and commissioning process, a number of plumbing audits and inspections are to be carried out by the licensed plumber in conjunction with a representative of Westernport Water (and the Plumbing Industry Commission). The processes to be followed for the testing, commissioning, auditing and inspections of the recycled plumbing are described in a fact sheet to be provided to customers separately.

Any modifications, extensions, or major maintenance works to recycled water infrastructure on a customer's property must be notified to Westernport Water. Westernport Water will determine appropriate testing and commissioning processes (based on advice from the PIC) depending on the nature of the works undertaken.

On-going visual customer property inspections will be undertaken Westernport Water and any breaches will be reported and appropriate measures will be undertaken in accordance with this HEMP.

5.4.3. Training of Plumbers and Contractors

Westernport Water staff operating the system have access to and are supported by technical expertise within the broader organisation in a range of areas, including plumbing, health and environmental risk management and treatment processes. There is an on-going program to maintain this capacity in these core business areas. Staff will continue to undergo training both internal and external, to ensure that the organisation keeps abreast of plumbing issues.

Contract plumbers will be required to have undergone suitable training for maintenance of recycled water infrastructure.

5.5. Recycled Water Outlets

All recycled water taps must be labelled to indicate the water is not suitable for drinking. This will be achieved via:

- Warning signs placed no further than 150 mm from the tap handle. These signs should read 'Do Not Drink'.
- Use of purple / lilac taps and above ground pipework (can be achieved by spray painting existing fittings).
- Use of taps with removable handles.

It is recommended that recycled water taps in publicly accessible areas be avoided or kept to a minimum.

In addition the public must be informed that recycled water is in use, by installation of warning signs at site entrances to public areas (i.e. vehicle and pedestrian access points) and any water features (fountains or dams / ponds) where recycled water is being used, reading 'Recycled Water in Use. Do Not Drink.'

Recycled water must not be supplied to drinking fountains, drinking taps, or hand-washing facilities. Toilet blocks can be supplied with recycled water for toilet-flushing, but must be supplied with potable water for hand-washing, and the potential for cross-connections must be tested for and avoided as discussed in the previous section. Further guidance on the requirements for onsite plumbing can be obtained from Section 6.2 of EPA Publication 1015: "Dual Pipe Water Recycling Schemes – Health and Environmental Risk Management".

5.6. Inappropriate Use

Recycled water can be used for the purposes listed in section 2.2.

The recycled water is <u>NOT</u> considered acceptable for the following uses:

- **Drinking.**
- **Cooking or other kitchen purposes.**
- **Bathing and showering.**
- **Filling swimming pools and spas.**
- **Children's water toys.**

The permitted uses based on a supply of Class A recycled water, which is deemed fit for those purposes and requiring no end use control. Therefore the emphasis is on controls to ensure recycled water of Class A standard is continually supplied.

However, it is still important to inform users to avoid ingesting recycled water when using for the permitted uses and that ornamental ponds and pet drinking water may need changing due to algal growth. It is important to clearly inform people of the communications protocols.

Although significant controls exist in this area there remains a risk of end users using recycled water for non-permitted uses or unknowing use of recycled water. The sources of risk for this occurring, including the controls and the responsible party for ensuring the controls are implemented is detailed in Table 5-2.

Table 5-2 Human Health Risks from Non-Permitted Use or Unknowing Use

Health Risks	Controls	Responsibility
Recycled water could be used for unsafe uses. Source of Risk could be due to the following:		
Land or home buyers not informed of the existence of recycled water	Customer education	Real Estate Agents Westernport Water
New homeowners and customers not provided with Customer Information Kit	Customer education	Westernport Water
Visitors not informed of recycled water	Customer education	Resident
Poorly identified plumbing	Signage, fittings and markers	Residents
Education material not Effective	Customer education	Westernport Water
Poorly identified fire fighting hydrant.	Distribution and Reticulation System	Westernport Water

Westernport Water will use the auditing and monitoring processes to confirm that various stakeholders are meeting their responsibilities that are detailed in the table above.

End use risks could also arise from exposure during recycled water system maintenance. These risks are outlined in Table 5-3.

Table 5-3 End Use Risks from System Maintenance

Source	Hazard(s)	Description	Controls	Responsibility
Discharge of water from mains cleaning	Chemical	Failure to contain water from mains cleaning which may contain concentrated levels of pathogens. People could enter waterways after discharge or affected land.	Operation according to SOP for mains flushing.	Westernport Water
	Pathogen		Discharge to sewer. Avoid discharge to waterways.	
	Physical		Trained staff.	

5.7. Contaminants

Contaminant concentrations in the recycled water are very low. No special management practices are required at sites of use. Trade Waste will be managed in accordance with the Trade Waste Agreements and Westernport Water will assess the associated risks and implement appropriate controls in accordance with the HACCP.

6. Managing Environmental Risks

6.1. Overview

Recycled water use can potentially impact on the environment regardless of its Class. The nutrient and salinity concentrations and sodicity characteristic of the recycled water have potential to create risks for the soil, plants, groundwater and surface waters.

6.2. Methodology

A Land Capability Assessment (LCA) was undertaken with the following steps to quantify the environmental risks and identify appropriate management controls:

a) Environmental Characterisation: To characterise the recycled water quality and customer usage patterns and also to characterise the soil, groundwater and surface water drainage scheme.

b) Environmental Risk Assessment for soils, plants, groundwater and stormwater.

c) Development of Management Controls for Phillip Island Recycled Water Scheme.

6.3. Risks and Controls

This Regional HEMP focuses on the practices required to manage the risks relating to end uses. In regards to the environment, these risks are relatively low due to the high level of treatment undertaken. A summary is provided in Table 6-1. The management practices that need to be implemented by public open space users in order to maintain these low risk levels are detailed in sections 6.3 to 6.7.

Table 6-1 Overview of Environmental Risks

Risk	Mitigation Measure	Mitigated Risk Level
Excess build-up of nutrients in soil resulting in adverse impact on surface waters or groundwater.	Nutrients applied in recycled water will be well below plant requirements. Build up is unlikely to occur as a result of irrigation with recycled water. Customers will be advised about the nutrient levels in the recycled water. A simple nutrient balance will be provided in each of the Customer Site Management Plans.	Low.
Salinity of recycled water impacts on plant health, soil structure, surface waters or groundwater.	Generally the risks related to the salinity of the recycled water are low. This is particularly the case in relation to the off-site environment. A simple nutrient balance will be provided in the Customer Site Management Plan.	Low.
Offsite water movement or spray drift from irrigation systems.	No buffer distances are prescribed for Class A recycled water. However, surface runoff and spray drift should be prevented to avoid nuisance aspects of the water. Customers will be provided with advice regarding management of spray drift and surface runoff.	Low.
Contaminants (heavy metals, chlorine residuals) impact on plant health, surface water or groundwater.	Contaminant concentrations post-treatment are within guideline limits for the approved end uses.	Low.

Note that a broader range of environmental risks, including groundwater, were considered in the detailed risk assessment included. Risks for elements not listed above were assessed as low and no specific management practices are required at the end-use sites.

A summary of the Land Capability Assessment for the Phillip Island Recycled Water Scheme is detailed in Table 6-2 and Appendix A provides a detailed assessment report.

Table 6-2 Summary of the Phillip Island Land Capability Assessment

Risk Category	Risk Description	Management Controls	Monitoring	Critical Level	Corrective Action
Risk to Soils and Plants	Phosphorus released to environment due to excess application via recycled water.	Cowes RWTP and monitoring results by Westernport Water. Advise customers to restrict fertiliser use, except for high nutrient requiring plants such as vegetables. Provide customers with information to assist them in watering their gardens efficiently to minimise overuse.	Westernport Water recycled water quality. Monitor soil nutrient levels in public open spaces. Customer recycled water meter readings.	Annual average nutrient levels increase >20%. Soil Olsen P increases by more than 1.5 mg/kg/yr or increases to > 30 mg/kg. Annual usage >20% above expected	Reassess risk to the environment and reassess communications strategy.
	Soil Salinity (osmotic effect): LOW Foliar Injury: LOW TO MODERATE	Cowes RWTP catchment monitoring and reduction in saline ingress to keep levels at a maximum of 1,000 mg/L.	Westernport Water recycled water quality.	Annual average recycled water salinity or sodicity increase >20%	Reassess risk to the Environment.
	Sodic soils: LOW	Advise customers on the following: -Methods to improve drainage - Salt sensitive plants - Methods to manage salt sensitive plants - How to monitor the health of your plants - Contacts for professional advice	Monitor customer concerns/ complaints received by Westernport Water. Monitor soil salinity, sodicity (ESP) in Public Open Spaces	Multiple annual Complaints. Soil salinity > 2.0 dS/m ECe ESP>10	Assess cases through site assessment and/or customer soil sampling. Establish cause of elevated salinity. The addition of gypsum will help manage the sodic soils.
Risk to Groundwater	Risk to Beneficial Use: MODERATE Waterlogging/ Salinisation: VERY LOW to LOW Offsite Impact: LOW	Provide customers with information to assist them in watering their gardens efficiently to minimise overuse.	Customer recycled water meter readings.	Annual usage >20% above expected. Soil salinity > 2.0 dS/m ECe and nitrogen annual average levels increase > 20%.	Reassess risk to the environment and reassess communications strategy. Investigate the cause of elevated soil salinity, may be due to groundwater rise. Reassess risk of leaching to groundwater if elevated nitrogen levels.

Risk Category	Risk Description	Management Controls	Monitoring	Critical Level	Corrective Action
Risk to Stormwater	Excess application of P resulting in a P load increase in stormwater.	Provide customers with information to assist them in watering their gardens efficiently to minimise overuse and minimise fertiliser use.	Customer recycled water meter readings. Soil Olsen P and Nitrogen levels in Soil.	Annual usage >20% above expected Soil Olsen P increases by more than 1.5 mg/kg/yr to > 30 mg/kg. Annual average nitrogen levels increase >20%	Reassess risk to the environment and reassess communications strategy.
	Flow of recycled water directly into the stormwater system due to bursts, over use and misuse.	Respond to burst, with discharge of flush water to land if practicable, otherwise to stormwater. Water Industry Construction Standards to minimise burst frequency. Advise customers to use appropriately including car washing on pervious areas. Cowes RWTP and on-going monitoring results by Westernport Water.	Number of annual Bursts Customer audits during summer Westernport Water monitoring results	Bursts>10/yr Expected annual stormwater discharge > twice assumed. Annual average nutrient levels increase >20%	Reassess risk to the environment and reassess communications strategy.

6.4. Blue Green Algae

Nutrient concentrations (N and P) in recycled water are relatively high which means that BGA outbreaks may occur within customers' on-site storage dams and potentially within ornamental ponds or water features. Potential for algal blooms will be assessed on a case by case basis through a risk assessment within the BGA Management Plan (refer to Appendix C) that forms a part of the Individual CSMPs. The incident response outlined in the individual BGA Management Plans will be followed should an outbreak occur.

6.5. Organic and Inorganic Contaminants

Westernport Water's assessment concluded that inorganic and organic compound hazards in recycled water have a low to moderate inherent risk for dual reticulation schemes, however Westernport Water will implement a program of ongoing monitoring and the following management controls:

- Periodic (annual) screening of recycled water to confirm continued low concentrations of inorganic and organic compounds such as surfactants, estrogens; solvents and pesticides.
- A continued watching brief on the scientific literature to identify any emerging issues.
- Annual confirmation of the ongoing appropriateness of these management controls.
- Refer to Appendix B for a table comparing the concentration of contaminants with recommended limits from various public health and environmental health guidelines.

6.6. Managing sewage inputs and the environmental implications

Due to the potential for changes in inputs to the sewerage system, there needs to be an ongoing program to ensure the adequacy of the environmental risk management controls. The process that will be undertaken by Westernport Water involves integration of input management programs with the dual pipe monitoring and review processes. The relationships between these key activity areas involve:

1) Risk assessment and review

There will be an annual review of key information sources (such as conference proceedings, review articles) to determine whether new information in the scientific literature suggests that the risk level (in relation to dual pipe water recycling) for an individual contaminant or contaminant group has significantly altered. If the risk level has significantly altered, the appropriateness of existing risk management controls and monitoring will be reviewed;

2) Monitoring of recycled water quality

There will be an ongoing program to monitor recycled water quality for key parameters and determine whether levels have either a) exceeded trigger values established in this HEMP or b) where trigger values have not been established, levels have significantly increased from the levels assumed in the land capability assessments/risk assessment processes. When these criteria are met, a refined risk assessment will be undertaken and either management controls refined, or actions implemented to reduce the levels;

3) Sewerage input management

Westernport Water will develop an appropriate trade waste framework including a process for managing the implications of trade waste in relation to dual pipe water recycling. Furthermore, the information from 1) and 2) is considered within an annual review of wastewater quality, where any contaminants considered to pose a risk to water recycling sustainability will be listed as a 'critical pollutant'. As an example, TDS is currently listed as a critical pollutant, due to the implications for water recycling. The listing as a 'critical pollutant' triggers further investigations into:

a) the sources of the compound;

b) the opportunities for addressing the levels of the compound, such as through altering trade waste standards, implementing waste minimisation programs, additional treatment, or reducing domestic sources;

c) the opportunities for increased management controls to be applied in the dual pipe recycling scheme; and

d) the relative costs-benefits of the options under b) and c).

The framework for managing the disposal of domestic chemicals to the sewerage system is more difficult for the water industry to address through direct control. This is an important consideration, since for many compounds domestic sources are the dominant source to the sewerage system. To ensure effective management, there is an ongoing program whereby the industry monitors wastewater from domestic catchments for critical pollutants. If domestic sources are significant, options for addressing the inputs could include attempting to remove the compound from the market or customer education to minimise the discharge of the compound to sewer.

7. Managing the Dual Supply System

7.1. Transfer Main

Westernport Water has systems in place for managing the recycled water distribution system from the Cowes RWTP and Wimbledon Heights Storage Tank. The management of these systems is covered under the RWQMP and the recycled water HACCP.

7.1.1 Design and Construction

All works on the recycled water system will be undertaken in accordance with the Water Services Association of Australia (WSAA) Dual Reticulation Supply System Standards and the Melbourne Metropolitan Retail Water Authority (MRWA) Dual Water Supply System supplementary manual. These standards detail the necessary identification of hydrants to clearly label which hydrants are for operational activities and which hydrants are for fire fighting. It is the objective of Westernport Water to have fire fighting off the recycled water system on Phillip Island. This is not currently being achieved, but is expected for reticulation constructed in future.

All works will be undertaken by the developer in accordance with Westernport Water's project management system for design and construction. Initially, there will be 100% of services visually inspected during construction and then further checked for correct configuration at the time that Westernport Water installs the meter assembly as detailed in section 6.3.1.

7.1.2 System Operation

Westernport Water has a number of Standard Operating Procedures (SOPs) that have been expanded to include the management of recycled water supply. These documents are regularly reviewed and updated and are located in Westernport Water's records management system. The documents will outline how Westernport Water will operate the recycled water system and as a minimum, these documents will address the following issues:

- Mains alterations and repair procedures that reduce the amount of recycled water discharged to the environment through discharge to land where practicable, otherwise to stormwater and prevent public exposure to flushed water. In particular, if flushing occurs due to elevated levels of pathogens. In the case that the recycled water is silt laden or suitable land is beyond the length of the flushing hose (typically 6 metres) it may be impracticable to discharge to land. Westernport Water will respond to recycled water and drinking water bursts and leaks using the same response time. The response time for a burst where this is a risk of a loss of supply or large volume of water being wasted will typically be within 1 hour. Response time for a major leak, such as a leaking tapping will be within8 hours.

- Recycled Water mains alteration process with preventative measures as detailed in the recycled water HACCP and includes the use of Westernport Water approved contractors who have Civil Contractors Federation of Australia accreditation and meet the OH&S requirements of Westernport Water.

- Recycled water storage operation and maintenance.

- Recycled water quality monitoring within the Westernport Water supply system and reporting to EPA.

- Shut down of recycled system when Class A recycled water cannot be supplied and switch to potable backup.

- Detection of out of spec recycled water quality within the supply catchment, such as from the quality control point at the Wimbledon Heights storage tank.

- Preventive measures for the drinking water system and including:
    - A permanent Air Gap will be provided between the potable water back up for the recycled water system in the Wimbledon Heights Storage Tank. This will be inspected by Westernport Water Operations staff regularly.

    - Use of approved contractors.

7.2. Parkland, School and Council Reserve Customers

- As is the case with residential connections to recycled water, these customers will need to apply to Westernport Water to connect to the recycled water main. Westernport Water will then issue a consent to connect with conditions of connection. This will include the need for a recycled water meter to be installed by a Westernport Water approved contractor/plumber in accordance with the requirements specified in the AS/NZS 3500:2003 – National Plumbing and Drainage Code, which is consistent with the Plumbing Industry Commission Recycled Water Plumbing Guide.

- Details of the irrigation system requirements and management will be detailed in the specific CSMPs for the sites.

7.3. House Hold Plumbing

7.3.1 Property Plumbing Standards

Plumbing will be installed in accordance with AS/NZ 3500:2003 – National Plumbing and Drainage Code, which includes standards for recycled water. It is the Plumbing Industry Commission's (PIC) responsibility to educate plumbers on the required standards for recycled water. This involves the PIC publishing additional material, such as the Recycled Water Plumbing Guide and undertaking on site information sessions as required. The main objective is to prevent cross connection with the drinking water supply within the property.

As is the case with all plumbing, only licensed plumbers will be authorised to undertake plumbing on Phillip Island. Plumbers will have to test both systems in accordance with AS/NZ 3500:2003 – National Plumbing and Drainage Code and issue a Compliance Certificate to the resident upon completion of the work.

In addition to the above, Westernport Water issues a condition of connection when applicants apply to connect to Westernport Water assets. The conditions reiterate the requirement to

undertake plumbing in accordance with AS/NZ 3500:2003 – National Plumbing and Drainage Code and other PIC requirements. Also, it details Westernport Water's requirements for plumbing inspections and collects fees on behalf of the PIC who provide this service.

Westernport Water will visually check both the drinking water and recycled water meter assemblies, which will reduce the risk of connection to the incorrect service. All properties with meters installed prior to this date are visually checked by Westernport Water prior to connection. The meter will be purple in colour and have a non-standard thread so that it can't be interchanged with the drinking water meter.

Recycled water taps will be non-standard 5/8 inch threads and sold in kits at plumbing suppliers with the appropriate signage as shown in the below picture. Installation of the correct taps within the property will be confirmed during the final PIC inspection.

7.3.2 Plumping Inspections

Westernport Water has engaged the PIC to undertake three inspections for 100% of the houses on Phillip Island connected to the dual reticulation scheme during construction. The three inspection points are from the meter to house, rough-in stage and testing & commissioning stage as required in the Guidelines.

This rate and scope of inspections will occur for the first 2 years from the date of supply of recycled water by Westernport Water. After which time a review will be undertaken and discussed with the EPA and DH.

As detailed earlier, Westernport Water will collect the fees at the time the applicant, generally the plumber or builder, applies to connect to Westernport Water's services. It is the plumbers' responsibility to contact the PIC to book inspections. Westernport Water will be provided access to the PIC database and provided with reports from the PIC which will detail which properties have had the required inspections and most importantly when each property has successfully had the 3rd inspection.

7.3.3 Signage, Fittings and Markers

Signage, fittings and markers will be used that meet the requirements of the AS/NZ 3500:2003 – National Plumbing and Drainage Code and the Recycled Water Plumbing Guide.

This includes requiring all recycled water pipes and fittings both above and below ground to be coloured purple with the appropriate signage to identify the recycled water plumbing. Signage will meet the requirements of AS 1319 Safety Signs and be placed above all taps supplying recycled water. The requirement for the plumbing to remain this colour and that signage should be maintained will be communicated to residents as part of the communications strategy.

On an ongoing basis, the existence and conditions of signage will be audited by Westernport Water as part of the ongoing cross connection programme that is detailed in section 7.3.4.

7.3.4 Ongoing Cross Connection Checks

Westernport Water will provide a customer information kit to all home owners when they purchase a house within the mandated dual reticulation developments on Phillip island with recycled water and to all new customers (tenants and owner occupied) when they inform Westernport Water upon moving in. This kit is further detailed in Section 7, and will include a brochure on how owners/residents can undertake their own cross connection check. It will be suggested that for peace of mind they undertake this check when they move into a house with recycled water, when plumbing is altered through house or land alterations, or on installation of a new appliance that use water. Owners/residents will be reminded of this recommendation annually through their bill and to contact Westernport Water if they require any assistance or another copy of the cross connection test brochure. Information in the customer information kit will remind customers that a licenced plumber should always be used for plumbing works.

As an additional measure to address cross connections post construction, Westernport Water will conduct annual cross connection testing of 10 % of connected properties, with a minimum coverage of 25 properties. This will primarily be for houses at change of ownership, with the remainder of inspections being selected based on the following criteria:

- Even spread across stages;
- High recycled water usage compared to drinking water or vice versa;
- Time since and results of previous test.

Westernport Water's risk assessment identifies owners as a higher risk than tenants because of the higher probability of owners undertaking renovations and do-it yourself plumbing, therefore cross connection tests will not be undertaken by Westernport Water at change of tenant.

Both Sydney Water and South Australia Water undertake cross connection tests at change of occupancy for their respective dual reticulation projects, Rouse Hill and Mawson Lakes. Discussions have revealed that as long as the water authority is flexible in the time that they undertake the inspections, residents co-operate fully. Based on this information Westernport Water also expects a high level of co-operation. However in the unlikely case that residents refuse access, Westernport Water has the power under the Water Industry Act to restrict supply of services if it is believed there is a risk to the resident or to the quality of the water in

the Westernport Water drinking water supply and can issue a Notice of Contravention to the customer.

8.

8. Communications Strategy, Community Awareness and Education

Westernport Water will be responsible for implementation of the overall communication strategy.

OBJECTIVES

- To ensure that all stakeholder communications that are identified in the HEMP as necessary health and environmental risk management controls are included in the communications strategy.
- Clearly detail the roles and responsibilities for delivery of the communication materials that includes the what, when, where and how.
- Inform developers and commercial operators of the future possibilities and availability of Recycled Water.
- Describe/define class A water and educate customers and the community of the high standard of treatment and its uses.
- Answer questions or concerns from concerned residents or future landholders in developing areas or the benefits to Phillip Island.
- To proactively inform Staff and Stakeholders of progress prior to acceptance of our application.

AUDIENCE

- This document serves to inform the EPA and DH regarding the communications strategy for Westernport Water.

- This strategy contains sufficient detail for Westernport Water, residential customers, municipal customers, DSE and other key stakeholders to use.

STAKEHOLDERS

External Stakeholders connected to Phillip Island Recycled Water Scheme are as follows.

- Residential developers;
- Residential customers and local community;
- Municipal irrigation customers;
- Commercial customers and high water users;
- Visitors to the Island for recreation;
- Contracted maintenance staff engaged by municipal and golf course customers (e.g. plumbing);
- Contractors, builders, plumbers engaged by Westernport Water;
- Local Schools;
- Medical Centres;
- Real Estate Agents;
- Utility contractors i.e. telecommunications, electricity, gas;
- Bass Coast Shire Council;
- DSE;
- EPA; and
- DH.

Internal Stakeholders

- Executive Management Team (EMT);
- Operations Management Team (OMT);
- Project task force;
- WPW employees;
- WPW Board; and
- Community Consultative Personnel (CCP).

KEY MESSAGES

1. Safety

Provide assurance that the water is safe to use as well as information on how to use it safely. Minimise potential negative community concern and possible reactions to the recycled water.

Message:
That the Class A recycled water is treated to a high standard according to strict guidelines developed by EPA and DH. It is derived from wastewater collected within the catchment and treated in a state of the art treatment facility. Despite its high quality, it is not suitable for personal uses including drinking, food preparation or bathing.

2. Cost

Create clear understanding of the costs of recycled water in comparison to potable water including the cost of installation and use.

Message:
Recycled water will not be more expensive than drinking water and is priced below the lowest of the three pricing tariffs of drinking water; and

Installation of recycled water is cheaper than a rainwater tank.

3. Environment

Educate the community, sales people, builders and developers about the environmental importance of this initiative to Victoria and their role in maintaining a sustainable environment.

Educate the community that the recycled water provided by the treatment plant is a safe, practical, substitute to potable water for toilet flushing, car washing and irrigation.

Provide understanding of environmental benefits.

Message:
Nine years of drought, climate change and population growth means that Australians learned not to waste a single drop of water. Consequently, the Phillip Island water recycling initiative is a showcase for Victoria.

- *The treatment of wastewater to Class A will also reduce the amount of discharge to ocean outfall, minimising any potential impacts into our aquatic environment*

- *This project will also ensure recreational facilities and sporting grounds are able to be maintained to optimum condition, which will ultimately have great flow on benefits to the whole community.*

4. Sustainability

Reinforce the message that recycled water is an important resource that should not be wasted. Increasing the overall urban water security, combined with an unrestricted supply of Class A recycled water for agricultural and garden watering will enhance the region's environmental and sustainable tourism reputation.

Message:
Although the water is derived from recycled wastewater it is still a precious commodity that should not be wasted.

Westernport Water has prepared various stakeholder awareness Fact Sheets and these are presented in Appendix D.

STRATEGY

The strategy needs to be approached in two stages. For the short term Westernport Water will need to engage existing home owners and prospective customers to ensure that they are fully informed about recycled water and appropriate uses. They will be provided with educational and marketing material. For the long term, Westernport Water will reinforce key messages, provide reminders to residents to conduct annual plumbing checks and conduct research.

In both stages a media campaign targeted to the region including local media will help raise awareness and consciousness of recycled water.

Note: This strategy does not deal with faults and crisis management as these issues are dealt with in the HEMP.

Action	Role	Deliverables	Mechanism for delivery	Delivery time			Location
				Sales/construction	Occupancy	Ongoing	
1. POTENTIAL CUSTOMERS, RESIDENTS							
Provide customers with all relevant information about recycled water on an ongoing basis.	WPW	Introductory brochures: ▪ Use and Recycle .	Delivered to real estate agents offices for sale staff to provide to potential customers. These 3 sheets will also form part of the Welcome kit. We are also designing signs for new developments highlighting that this is a mandated dual pipe development	✓	✓	✓	Residential development land sales office display and builders sales offices.
	WPW	Regular updates and news stories for local media and other publications and website updates. These updates will reinforce key messages regarding recycled water.	Newsletter	✓	✓	✓	Development estates
	WPW	Information Statement contains information regarding recycled water as encumbrance clause.	This is supplied to conveyancers' and solicitors who can distribute on application.	✓			
	WPW	Letter informing prospective occupants that they are purchasing or tenanting a property with recycled water.	Triggered when a move-in request is sent and a special meter read is carried out.	✓			
	WPW	Welcome Home Kit – Includes production and delivery of: ▪ Introductory brochures plus inclusion of Cross Connection (Plumbing Check) fact sheet ▪ Welcome pack	Distribution by post is triggered when tenants apply to be connected at change of occupancy. For new owners the trigger is WPW receiving notice of sale.	✓		✓	Development estates

Action	Role	Deliverables	Mechanism for delivery	Delivery time			Location
				Sales/construction	Occupancy	Ongoing	
Provide customers with all relevant information about recycled water on an ongoing basis.	WPW Developer	Signage to alert visitors and remind residents of the presence of recycled water and that they should not drink it. Signage needs to be maintained on an ongoing basis as materials weather.	Produce signs for key entry points	✓		✓	Development estates
	WPW	Two letters sent annually to houses that will: 1. Capture any new residents that have not received information packs. 2. Remind residents to conduct a plumbing check.	Internal trigger possibly with quarterly billing (TBA)		✓	✓	Development estates
	WPW	WPW will capture all inquiries regarding recycled water. This information will also provide insight into customer concerns and attitudes on recycled water. WPW will give appropriate priority to customer calls emanating from an area being supplied with recycled water.	Research will determine: ▪ Uptake rates ▪ Customers initial impressions of use ▪ Appropriate use of recycled water This data will be used to inform reporting to EPA and DH.		✓	✓	Development estates

Action	Role	Deliverables	Mechanism for delivery	Delivery time			Location
				Sales/const-ruction	Occupancy	Ongoing	
2. DEVELOPERS, BUILDERS, SALES STAFF							
WPW aims to achieve 100% uptake of recycled water. These stakeholders need to be engaged with prior to property sales to encourage them to sell recycled water to clients.	WPW	Construction standards, including requirements of HEMP and regulators.	Notice of agreement	✓	✓		
Provide builders with information highlighting effectiveness of recycled water in delivering one of the 5 energy stars.	WPW	1. Brochures for developers, builders and sales staff to provide to prospective customers. Sets out benefits of providing recycled water infrastructure into new houses. 2. Fact sheet – Questions customers should ask their builders about recycled water.	Brochures kept at point of sale as well as at developer/builder company's head office.	✓		✓	Individual developers, building companies and their sales offices.
	WPW	Develop and maintain database of developers and builders.	Developed by WPW	✓		✓	WPW
		Displays	Display in foyer at Westernport water office and brochures about recycled water including fact sheets. Use models of recycled water plumbing and fact sheets.	✓	✓	✓	Developers and building companies sales offices set in display homes at individual estates.

Action	Role	Deliverables	Mechanism for delivery	Delivery time			Location
				Sales/const-ruction	Occupancy	Ongoing	
3. BUILDER'S PLUMBERS							
Provide plumbers working on houses on recycled water estates with information about plumbing and connection requirements.	WPW	Fact sheet "Getting Connected". Sets out all requirements for plumbers installing recycled water fittings. "Getting Connected" PDF placed on builder's websites. Stories about plumbing for recycled water in industry publications and newsletters, e.g. Registered Plumber. Plumbing and information displays for various expos.	Distribution fact sheets – • Point of sale in plumbing supply shops • Notice of Agreement	✓	✓	✓	Development estates. TAFE colleges, Plumbing companies, e.g. Reece, Tradelink, etc. Various venues for displays.

Action	Role	Deliverables	Mechanism for delivery	Delivery time			Location
				Sales/const-ruction	Occupancy	Ongoing	
4. OTHER STAKHOLDERS							
Maintenance plumbers, landscape gardeners, irrigators, swimming pool builders and maintenance workers, air conditioner installers and maintenance workers.	WPW	Stories and information in publications of key industry bodies, e.g. irrigator and horticultural orgs.	Signage as per "Section 1. Potential customers, residents." Onsite meetings with Contractors. Update at our annual plumbers forum.	✓	✓	✓	Sites of various organisations
External stakeholders Visitors, general community, real estate agents, solicitors, financial institutions, nurseries, hardware and landscape suppliers, environment groups, fire brigade.	WPW	Signage Brochures and Fact sheets Personal visits from WPW officers.	Signage as per '"Section 1. Potential customers, residents." Call or visit real estate agents and nurseries individually to provide information and Brochures to give to customers. Letters and fact sheets sent to the various companies.	✓	✓	✓	Site visits
Medical doctors, pharmacists	WPW	Fact sheets and brochures.	Provide information on recycled water for industry publications. Provide local chemists with recycled water Brochures to place on counters.			✓	Local member organisations, e.g. pharmacy guild, AMA branch, Vic Minister of Health.
Municipal councils	WPW	High level WPW officers meet and greet councillors, mayors, government officials to inform and update about recycled water.	Functions to be organised by WPW.	✓		✓	TBA
Local schools	WPW	Recycled water included in the curriculum of local schools. WPW make presentations in schools about recycled water and how it directly affects their residential environment.	Provide educational material. School visits to CWWTP and Class A plant to increase awareness and provide information and brochures	✓		✓	At school sites
Print Media and local papers and magazines	WPW	Rolling campaign to alert public about the uses of recycled water in their region.	Press releases and website update	✓	✓	✓	Local papers

9. Employee Awareness & Training

Training for Westernport Water staff who will directly and indirectly work with the recycled water system on Phillip Island will be incorporated into the current training program for the drinking water and sewerage systems.

Examples of this include all Westernport Water employees and contractors that will be involved in operating, maintaining and responding to incidents for the Phillip Island Recycled Water Scheme will be provided training at the regular 'Toolbox' meetings at Westernport Water. Staff will be informed of how to identify recycled water systems, appropriate uses and the relevant documents such as the standard operating procedures for managing incidents. Attendance of staff will be recorded at the 'Toolbox' training sessions to help establish future training requirements.

Staff operating the system have access to, and are supported by, technical expertise within the broader organisation in a range of areas, including plumbing, health and environmental risk management and treatment processes. There is an on-going program to maintain this capacity in these core business areas.

In preparation for the supply of recycled water for the first time, Westernport Water has been undertaking an assessment ensure that, amongst other things, Westernport Water has the capabilities and processes to deliver on our risk management documents such as HACCP and the HEMP. This includes an internal communications strategy to ensure that the whole company is aware of recycled water and most importantly how it affects their individual roles. This includes providing scripts and an internal contact list to the call centre so that frontline staff of the company know how to deal with recycled water inquiries efficiently and effectively.

Westernport Water will provide contractors with an OH&S advice sheet which can be provided to various sub-contractors. Copies of the fact sheets are provided in Appendix D.

As part of site inductions to the recycled water facilities, Westernport Water will ensure that information is supplied to contractors and other site visitors in relation to recycled water usage at the sites.

Westernport Water has undertaken a risk review of the recycled water treatment plant. The outcome of the assessment was that operators are required to have Certificate Level 2,as a minimum, to run Westernport Water's RWTP, with the Westernport Water focus to get operators to level 3 qualifications.

Position	Certification Level	Additional Specific Training	Desirable Training
RWTP Operators	Certificate 2	Follow defined OHS procedures Regulatory requirements Apply environmental and licensing procedures Plan and organise personal work activities Sampling Training	Certificate 3
RWTP Operators (Westernport Water desirable training requirements)	Certificate 2	Membrane Filtration Chlorine Disinfection Confined Space Entry Coagulation Flocculation Sampling Training	Certificate 3 Membrane filtration optimisation IT Training
Distribution System Operators	Certificate 2	Maths 1 Conducted formal training (As per Section 8) Water Quality Awareness Training Confined Space Sampling Training	Certificate 3
Customer Service		Site Induction Training/ procedures Water Quality information /uses /restrictions/health issues Fact sheets uses and prohibitions Tariffs and Charges Recycled water Agreements Plumber information Customer Service Code Residential house equipment requirements Specialist help availability from WPW	

10. Research and Development

Westernport Water's policy of continual improvement will be adopted to ensure best practice for operation and maintenance of the Phillip Island Recycled Water Scheme. Regular assessment will be undertaken to validate the system operation and risk management controls documented in this HEMP. This includes annual revision of Westernport Water's Recycled Water HACCP Plan, and Westernport Water's Drinking Water HACCP Plan. These reviews will be underpinned by ensuring access to the latest Research and Development (R&D) areas, through Westernport Water's consultants and auditors.

Westernport Water has committed to continuing its R&D program to include long term performance assessment of UF membrane systems, to ascertain the performance of membranes with regards to virus rejection over time.

Also, as part of Westernport Water's R&D program, key staff and consultants will continue to attend, and be involved in writing and delivering papers, at key conferences and workshops on water recycling.

11. Emergency Response

Westernport Water has an established system for dealing with emergency situations requiring quick response. This system is documented as The Incident and Emergency Management Plan (IEMP) which covers high level procedures for different types of crisis situations, requirements for notifications and documentation of a situation. Westernport Water's Plan has a classification of emergency response relevant to an Incident Management System according to the following categories:

- Minor Incident – Characterised by being able to resolve through the use of local or initial Westernport Water resources only.
- Moderate Incident – More complex emergency response, either in size, resources or risk. An incident of this nature is characterised by the need for deployment of resources beyond initial response, sectorisation of the emergency and the establishment of functional sections due to the levels of complexity.
- Major Incident – Is characterised by degrees of complexity that may require more substantial establishment for management of the situation. These emergencies will involve delegation of all incident management functions.
- Crisis – A crisis situation is any business continuity, reputation or liability issue that threatens the operations commercial position or substantially of Westernport Water or is an incident out of Westernport Water's control. A crisis can be triggered by an event or by an issue that falls outside normal business contingency and Emergency Response arrangements.

Management of potential dual reticulation events and incidents are managed at an operational level and the management process is detailed in various standard operating procedures (SOPs) and incident management procedures. These documents detail when the incident should be escalated to a crisis and referred to the IEMP.

Management of crises in the recycled water system will be integrated into Westernport Water's existing IEMP for the sewer and drinking water systems. The Plan will be audited bi-annually by an external auditor.

Westernport Water staff will undergo regular training in the implementation of the IEMP.

Potential situation and a summary of the response are detailed below: (Unless specified otherwise, Westernport Water is the responsible party for the response).

11.1 OPERATIONAL RESPONSE

Health Emergency:

- **Complaints of illness possibly due to recycled water**
    - Details of the customer complaint will be recorded on a Westernport Water maintained database for recycled water customer complaints and the customer will be referred to their doctor who will investigate/treat the illness and contact DH if needed.
- **Inappropriate Use**
    - Identified during Westernport Water audits or from customer notifications.
    - Risk Assessment and rectification by Westernport Water, with powers to restrict supply if required.
    - DH notified if there is any suspected potential human health risk, as assessed by Westernport Water or at customer request.
- **Cross Connection**
    - Identified during Westernport Water annual test or customer complaint and Westernport Water notification by the Customer.
    - Westernport Water confirmation through Westernport Water inspection. DH, PIC and Customer(s) to be notified immediately of a confirmed cross connection. In the case of a suspected risk to human health from water supplied for drinking purposes, there is a legislative obligation to formally notify DH immediately under Section 22 of the Safe Drinking Water Act.
    - Westernport Water has powers under the Water Industry Act to cease supply immediately and instruct the resident to rectify the cross connection if within the resident's plumbing.
    - Risk Assessment undertaken and discussed with DH/PIC to establish likelihood of others and need for immediate follow up testing within the development.
    - DH and EPA provided with incident report.
- **Off Specification water quality in Plumbing**
    - Identified during routine Westernport Water monitoring
    - Westernport Water will undertake risk assessment with the Developer(s)/Customer(s) to determine the required actions. Responses may involve disposal of affected water and initiation of potable backup. Responses will be consistent with the Westernport Water's Emergency Management Plan.

- DH and EPA will be notified of any out of spec microbiological parameters or perceived health risk.

11.2 COMMUNICATION RESPONSE

Effective communication is vital in managing incidents and emergencies. The IEMP includes the following:

- A list of key stakeholders and contacts, including; EPA, DH, DSE, PIC, Local Council.
- Westernport Water Emergency Communications Plan that details roles and responsibilities, key messages to stakeholders and the general public and pre-prepared holding statements that can be issued to the media.

The Westernport Water Emergency Communication Plan in relation to recycled water will focus on the management of microbiological contamination and cross connections.

12. Monitoring and Reporting

12.1. Monitoring

Monitoring requirements relating to end use are provided in Table 11-1.

Table 11-1 Monitoring Recycled Water Use

Monitoring Item	Purpose	Details	Frequency	Responsibility	Trigger	Corrective Action
Recycled water quality	Ensure recycled water is fit for purpose.	The monitoring programs for water quality are detailed in the Recycled Water Quality Management Plan.				
Blue green algae in Storage Dams and water features/ ornamental ponds	Ensure recycled water is fit for purpose.	Refer to Blue Green Algae Management Plan (included as an Appendix C).				
Volume of recycled water used.	To calculate Annual water balance and in future invoice customers for usage.	Flow meter installed on supply to customers.				
Customer monitoring checklist completed and provided to Westernport Water.	Ensure Customer awareness of site condition and management.	Refer to CSMPs.	Annually	Customer	Customer Checklist not submitted to Westernport Water	Westernport Water to contact Customers to request completed checklist.
Representatives oil testing (refer to LCA for more detail).	**Assessment of soil health over time for existing sites and any future development.**	Parameters to include pH, salinity (EC), nitrogen, phosphorus, exchangeable cations. Locations are determined during baseline testing- refer to LCA.	Initial baseline testing then Annually	Westernport Water	Determined following baseline testing.	Determine following baseline testing.

12.2. Complaints and Faults Procedure

Westernport Water has an existing call centre, which handles all incoming queries, complaints and fault reports (i.e. leaks, burst mains, sewer overflows, supply outages and water quality issues etc).

Westernport Water officers will be educated about recycled water issues, and the software prompt for call response will be updated to include recycled water issues.

When a complaint or fault report is received regarding the recycled water it will be logged and issued to the Westernport Water scheme manager. For each complaint or fault report the following is documented:

- All calls coming into the call centre are logged.
- The callers details, name, contact number are recorded where possible.
- Along with this information the details of complaint or fault report, address or location, and the specific nature of the problem are recorded.
- Some complaints and fault reports are received via mail, fax and email.

Fault reports are prioritised according to the severity of the impact of the fault report. A fault report will result in an operational response to rectify the issue within a prescribed time frame.

Complaints (any expression of dissatisfaction by a customer, whether verbal or written) will be formally responded to by Westernport Water within 5 working days of receipt of the complaint. Complaints (which by their very nature may also constitute a fault report) may also result in an immediate operational response to rectify the issue.

If a customer is not satisfied with Westernport Water's response to a complaint, they may have the complaint referred to an appropriate manager for review.

If the customer is still not satisfied with the response, a senior manager of Westernport Water will review the complaint. That manager will ensure that the complaint has been properly investigated and that the final decision has taken into account the customer's rights and obligations.

Customers who remain dissatisfied with the Westernport Water's resolution of a complaint may lodge a complaint with the office of the Energy & Water Ombudsman (Vic) by calling 1800 500 509. Customers can also contact EPA Victoria on 1800 444 004 regarding any concerns to do with the environmental or quality aspects of the recycled water.

A summary of the complaints received will be collated and recorded on an annual basis and provided to EPA and DH if required.

12.3. Incidents

Incidents occurring at end use sites that could affect the environment or human health are listed below, along with a summary of the operational response to each:

- Complaints of illness possibly due to recycled water;
    - Details of customer complaint to be recorded on Westernport Water's complaints database.
    - Westernport Water will advise customers that the recycled water has been treated to very high standards and the risk of becoming ill from drinking small amounts of it is extremely low. Customers will be advised to contact their doctor should they feel concerned or experience signs of illness. Contact details for the Environmental Health Unit (1300 761 874) will be provided to customers should their doctor like to speak with someone in the Department of Health (DH).
- Unauthorised use of recycled water;
    - Identified during Westernport Water site inspections or from customer notifications;
    - Risk assessment and rectification undertaken by Westernport Water;
    - Westernport Water has the power to cease supply until unauthorised use issues are resolved;
    - DH to be notified if there is any suspected potential human health risk (as assessed by Westernport Water or at request of customer).
- Cross connection of recycled water supply to drinking water supply;
    - Identified during customer self-check (part of annual customer checklist), Westernport Water site inspection, plumber working at site, or customer complaint;
    - Confirmation through Westernport Water inspection and if within Westernport Water supply then immediate rectification to take place (if required);
    - DH and customer to be notified immediately of a confirmed cross connection;
    - If within the customer's plumbing, Westernport Water to cease supply immediately and instruct the customer to rectify the cross connection;
    - Risk assessment undertaken and discussed with DH to establish likelihood of other cross connections and need for immediate follow up testing within the recycled water system;
    - DH and EPA provided with incident report by Westernport Water.
- Leakage, spillage or runoff of recycled water beyond site boundaries.
    - Can occur due to burst in Westernport Water's main. Unlikely to be due to customer behaviour;

- Customer to contact Westernport Water if significant runoff is noticed beyond site boundaries (so that Westernport Water can assist in managing impacts);
- Westernport Water will attend site;
- Westernport Water to contact EPA if confirmed to be a major spill;
- Westernport Water to contact others as necessary;
- Incident report provided to EPA by Westernport Water.

- Off-specification recycled water supply to Customers.
  - Westernport Water will advise Customers immediately in the event of off-specification recycled water being supplied and contingency measures will be adopted.
  - Westernport Water will also report to DH any supply of off-specification recycled water.

- Incidents and emergencies occurring as part of recycled water usage operations should be reported immediately to Westernport Water by phoning (03) 5956 4100(24 hours per day). Westernport Water will assist the customer to respond appropriately. The objective of the response is to:
- Bring the process back under control as soon as possible;
- Generate improvement plans to avoid recurrence of incident.
- Westernport Water maintains an Emergency Management and Response Plan, which covers the actions, roles and responsibilities of Westernport Water Staff and others in the case of a real or potential incident which could threaten the health and safety of persons, damage to property or the environment and service to customers.

Customers can also contact EPA Victoria on 1800 444 004.

12.4. Annual Report

Following an internal review of the recycled water scheme as a whole, an annual report will be prepared by Westernport Water and submitted to the EPA and DH.

In relation to recycled water end uses, the annual report will include:

- A statement as to whether this HEMP has been complied with, a summary of priority areas for improvement including actions to address non-compliance;
- An analysis of monitoring data, collected as outlined in section 11.1;

- A summary of incidents and emergencies, including corrective actions;
- A listing of customers supplied, type of use, quantity and quality of recycled water supplied;
- A summary of audit outcomes.

12.5. Audits

Periodic auditing of this HEMP (including the RWQMP) is an essential component for effective management of the Phillip Island Recycled Water Scheme (PIRWS), by picking up emerging issues identified within the scheme or changes to the way controls or processes are operated that could impact on performance. This process involves internal auditing components and the appointment of an external auditor within the first 12 months of commissioning of the scheme.

Internal Audits

Internal auditing will be undertaken based on Westernport Water's environmental management system.

Prior to use of the recycled water:

- Westernport Water will conduct a site inspection to check that the appropriate warning signs and other physical site controls are in place. Site inspections will also be carried out on an ongoing basis during meter reads.
- For future use as part of dual pipe supply to a new development, a plumbing installation audit is to be carried out by a licensed plumber for each public open space site in conjunction with site inspections by a representative of Westernport Water's Property Service Group (or the Plumbing Industry Commission). A copy of all Certificates of Compliance is to be maintained in Westernport Water's records.

Once the recycled water scheme is up and running cross connection checks will be carried out for 10 % of household customers annually, as detailed in Section 7.3.4.

Westernport Water will annually review the monitoring data to identify potential problems and improvement areas. The monitoring data and audit outcomes will be used by Westernport Water to annually review the HEMP. Significant changes to the HEMP, for example changes to the risk management controls such as CCP's/QCP's, changes to corrective actions or changes to the monitoring programme, will be discussed and approved by the EPA and DH. All changes will be detailed in the annual report.

Westernport Water will undertake a review and update of the HEMP when there is a change to the Guidelines by the EPA. For clarity, EPA is the regulatory authority for the Guidelines.

Westernport Water will use the auditing and monitoring detailed in this section to confirm that various stakeholders are meeting their responsibilities.

External Audits

Westernport Water commits to engage an auditor appointed pursuant to Part IXD of the *Environment Protection Act* 1970, within the first 12 months of commissioning the scheme, to undertake a statutory audit of the scheme and submit an audit report pursuant to section 53V of the Environment Protection Act 1970 to EPA. The audit will be undertaken in accordance with *AS/NZS 19011:2003 Guidelines for Quality and/or Environmental Management Systems Auditing.*

The frequency and scope of on-going statutory auditing will be reviewed and discussed with EPA, but as a minimum will be carried out at least every five years.

12.6. HEMP Review

This HEMP will be reviewed on an annual basis or when a major change or addition to the recycled water system is implemented. The review will take into consideration changes to:

- Customers;
- Water quality;
- EPA guidelines;
- Regulatory requirements; and
- Westernport Water policies.

Customer Site Management Plans will also be reviewed annually for the first three years, and thereafter at least every 3 years to ensure they remain up to date.

Any revisions to the HEMP that involves altering public health protection measures (e.g. CCPs, relevant monitoring and inspection programs) are to be endorsed by DH and approved by the EPA. In addition to this, any other major changes to the HEMP will also be approved by the EPA.

12.7. Documentation

Westernport Water will keep the following documentation in order to analyse trends and demonstrate ongoing compliance with the objectives of this HEMP, the Guidelines (EPA, 2005) and in accordance with Westernport Water's documentation procedures and records management policy. These records will be made available to the EPA or scheme auditor upon request.

- Assessment of monitoring data collected by Westernport Water and supplied by the open space customer(s).
- Breaches of critical limits and trigger levels for water quality or environmental parameters and the corrective action taken.
- Details of incidents and emergencies. This will include corrective actions taken.

- Inspection and maintenance reports, including for pipe bursts.
- The inspection reports from the PIC detailing when properties have received the mandatory three inspections.
- Construction and maintenance reports detailing the inspections of the drinking water and recycled water reticulation and services for cross connections.
- Annual reports, as discussed in section 12.4.
- Assessment of customer behaviours in using recycled water.
- Record of customer complaints, this will include if corrective actions were taken.

13. References

ANZECC & ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Volume 3, Primary Industries. Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand.

EPA Victoria (2005) *Dual Pipe Water Recycling Schemes* – Health and Environmental Risk Management. Publication 1015. Guidelines for Environmental Management. EPA Victoria.

EPA Victoria (2003) *Use of Reclaimed Water*. Publication 464.2. Guidelines for Environmental Management. EPA Victoria.

EPA Victoria (1991) *Guidelines for Wastewater Irrigation*. Publication 168. EPA Victoria.

Natural Resource Management Ministerial Council, Environment Protection and Heritage Council, and Australian Health Ministers' Conference (November 2006) *National Guidelinesfor Water Recycling: Managing Health and Environmental Risks (Phase 1).* National Water Quality Management Strategy.

Appendix A – Land Capability Assessment

Appendix B – Fit for Purpose Risk Assessment

Appendix C – Blue Green Algae Management

Appendix D – Community Awareness Fact Sheets