Onsite Wastewater Management Plan

Operational Plan (2024-2029)

MORNINGTON PENINSULA
Shire

MORNINGTON PENINSULA Shire

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Disclaimer

The information contained in this document is based on independent research undertaken by Whitehead & Associates Environmental Consultants Pty Ltd (W&A). To our knowledge, it does not contain any false, misleading or incomplete information. Recommendations are based on an appraisal of site conditions subject to the limited scope and resources available for this project, and follow relevant industry standards.

The work performed by W&A included a limited soil investigation and desktop review, and the conclusions made in this report are based on the information gained and the assumptions as outlined. Under no circumstances can it be considered that these results represent the actual conditions throughout the entire Shire due to the regional scale of this study.

Copyright Note

Document Certification

This Onsite Wastewater Management Plan has been prepared following the standards and guidelines set out in the following documents, where applicable:

- Department of Environment, Land, Water and Planning (2022), *Risk Assessment Guidance Report* (DELWP, 2022);
- EPA Victoria (2024), *Guideline for Onsite Wastewater Management* (GOWM, 2024);
- EPA Victoria (2024), *Guideline for Onsite Wastewater Effluent Dispersal and Recycling Systems* (EDRS, 2024);
- Municipal Association of Victoria & Department of Sustainability and Environment (2014), *Victoria Land Capability Assessment Framework, 2nd Ed* (MAV & DSE, 2014);
- Standards Australia / Standards New Zealand (2012), *AS/NZS 1547:2012 On-site Domestic Wastewater Management (AS/NZS 1547:2012)*;
- Victoria Audit General's Office (2018), *Managing the Environmental Impacts of Domestic Wastewater* (VAGO, 2018); and
- Victorian State Government (2024), *Obligations of Managers of Land or Infrastructure (Urban Stormwater Management and Onsite Wastewater Management)* (OMLI, 2024).

To our knowledge, it does not contain any false, misleading or incomplete information. Recommendations are based on an honest appraisal of the sites' opportunities and constraints, subject to the limited scope and resources available for this project.

Acknowledgment of Country

Mornington Peninsula Shire acknowledges and pays respect to the elders, families and ancestors of the Bunurong / Boon Wurrung people, who have been the custodians of this land for many thousands of years.

We acknowledge that the land on which we meet is the place of age-old ceremonies, celebrations, initiation and renewal; and that the Bunurong / Boon Wurrung peoples' living culture continues to have a unique role in the life of this region.

Executive Summary

As the *Environment Protection Act 2017* (*EP Act 2017*) has replaced the *Environment Protection Act 1970*; therefore, a new framework has been established for environmental protection. Under the *EP Act 2017*, the 'Order for Obligations for Managers of Land or Infrastructure' (OMLI) has been implemented, requiring councils to develop a municipal Onsite Wastewater Management Plan (OWMP).

Mornington Peninsula Shire (MPS or the Shire) has developed an OWMP to assist with the efficient and effective management of onsite wastewater management (OWM) within the Shire in a way which will minimise the potential risk posed by effluent upon public health and the environment. MPSC is committed to the management of onsite wastewater management systems (OWMS) within the Shire.

The OWMP has been prepared to recognise, respond to, and link with Council policies and plans, current legislation, regulations, guidelines, and the relevant direction of State Regulatory Authorities.

The OWMP describes the current situation relating to OWM in the Shire and identifies a range of actions Council seeks to implement within an Action Plan. The OWMP contains legislative controls that Council will put in place for the management of OWM in the Shire as well as details of the derivation of methodology for the constraint mapping, risk analysis, locality reports, and cumulative risk assessment (CRA).

Current OWM issues in the Shire are as follows:

- OWMS located within sewered areas;
- Ageing and poorly managed OWMS;
- Stormwater and surface inundation of OWMS;
- Lack of reticulated sewer availability in some parts of the Shire; and
- Significant constraints (challenging soils, proximity to water bodies, existing small lots) limiting the effectiveness of OWMS in some parts of the Shire.

This OWMP provides solutions and management techniques for Council to mitigate OWM issues within the Shire, which has been centred on the Risk Assessment Framework (RAF). The RAF aims to quantitatively and qualitatively assess the consequences of unsewered development. The process for the RAF has been provided in Section 4.1 of this Operational Plan, and Sections 5 and 6 of the Technical Document.

2025

List of Acronyms

Term	Definition
AO	Authorised Officer (under *Environment Protection Act 2017*)
AOI	Areas of Interest
CMA	Catchment Management Authority
CRA	Cumulative Risk Assessment
DEECA	Department of Energy, Environment and Climate Action (formerly DELWP)
DELWP	Department of Environment, Land, Water and Planning (now DEECA)
DIR	Design Irrigation Rate
DLR	Design Loading Rate
DSE	Department of Sustainability and the Environment (former)
EDS	Effluent Dispersal System
EPA	Environment Protection Authority Victoria
EHO	Environmental Health Officer
GED	General Environmental Duty
GIS	Geographic Information System
IMS	Information Management System
IWMP	Integrated Water Management Plan
LCA	Land Capability Assessment
LGA	Local Government Area
MAV	Municipal Association of Victoria
MPS	Mornington Peninsula Shire
OMLI	Order for Obligations for Managers of Land or Infrastructure
OWDIG	Onsite Wastewater Design and Installation Guideline
OWM	Onsite Wastewater Management
OWMS	Onsite Wastewater Management System
OWMP	Onsite Wastewater Management Plan
RAF	Risk Assessment Framework
PIC	Plumbing Industry Commission
SEW	South East Water
SRW	Southern Rural Water
SWG	Stakeholder Working Group
VCAT	Victorian Civil and Administrative Tribunal
WC	Water Corporation
WMP	Wastewater Management Plan
WWO	Wastewater Officer
YRC	Yarra Valley Council
YVW	Yarra Valley Water

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1 Introduction

1.1 Overview and Objectives

Mornington Peninsula Shire (MPS or the Shire) has an area of approximately 723km^2 and a population of approximately 168,948 in 2021 (ABS, 2021). The Shire is characterised by townships, rural residential development, farming, national parks, state forests, and coastline.

There are approximately 22,000 onsite wastewater management systems (OWMS) that Council have record of within the Shire, with many of these OWMS identified within areas serviced by the South East Water (SEW) Peninsula Early Connection Option (ECO) (Portsea, Sorrento, Blairgowrie, Rye, and St Andrews Beach). In addition, there are unsewered commercial (non-domestic) lots, such as cafes, pubs, wineries, and golf courses in the Shire, which are regulated by the EPA and the Shire.

The OWMP addresses the various aspects of wastewater, including treatment, effluent dispersal, and the cumulative impacts of OWM. This plan also covers the regulation of OWMS, including; existing and future OWMS, monitoring of existing OWMS, and commercial OWMS.

This Operational Plan forms the major component of the OWMP and outlines how MPS will manage OWM to minimise risk to public health and the environment. This document is supported by a Technical Document that provides detail on the regulatory framework for OWM and the methodology used to generate constraint mapping and corresponding risk analysis of the Shire, as well as individual locality reports.

The key objectives of this OWMP are to:

- Identify the risk of harm to human health and the environment from unsewered allotments within the Shire;
- Identify and assess the risks of harm to human health and the environment associated with existing and future OWMS in the Shire;
- Identify actions with implementation timeframes to minimise the risk associated with OWMS and prevent discharge of wastewater beyond allotment boundaries (Action Plan);
- Meet the recommendations of the Victoria Auditor General's Office (VAGO) (2018), *Managing the Environmental Impacts of Domestic Wastewater* document (VAGO, 2018);
- Provide strategic direction for the development and management of wastewater throughout the Shire;
- Develop and implement a monitoring program of OWMS within the Shire;
- Provide guidance for the preparation of Land Capability Assessment (LCA) within the Shire;
- Develop a risk-based decision tool to provide guidance on the development potential of unsewered areas, with regards to public health and environmental risks from OWMS;
- Provide greater certainty for landowners about the development potential of their land;
- Provide guidance on appropriate maintenance, modifications, and upgrades for non-compliant OWMS throughout the Shire;
- Provide guidance on what types of wastewater treatment and effluent dispersal systems (EDS) are appropriate for the physical constraints;
- Provide guidance on appropriate education for OWMS owners and residents of unsewered properties; and
- Provide clear direction for the assessment of new and modified OWMS applications and their ongoing compliance with legislative requirements.

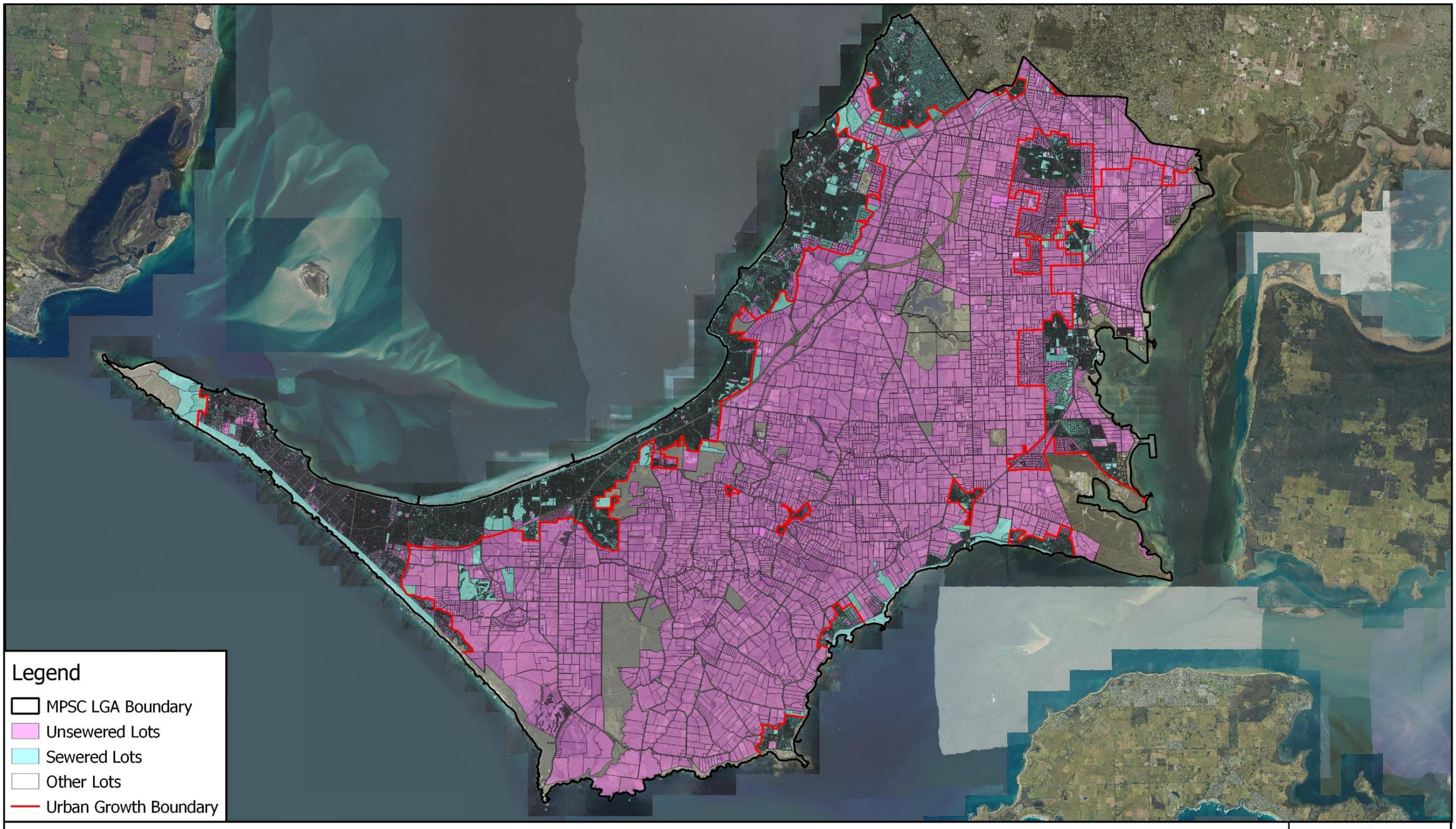

Figure 1: Sewered / Unsewered Lots

MPSC OWMP 2025 - 2030

Whitehead & Associates
Environmental Consultants

Revision	001
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Approved	MS

1.2 Development of the OWMP

An OWMP is a planning and management document that provides a mechanism for the development, implementation, and review of programs to protect public health, the local environment, and local amenity. Councils within Victoria are required to prepare a municipal OWMP under the *EP Act 2017* by the OMLI.

The OWMP establishes the Shire's policy on and commitment to sustainable wastewater management, processes to ensure early and comprehensive consideration of OWM in the planning cycle, and the Shire's responsibility for the monitoring and compliance of systems.

A Stakeholder Working Group (SWG) was established to oversee the project, comprising officers from Council, Environment Protection Authority Victoria (EPA), Southern Rural Water (SRW), and SEW. An inception meeting and a preliminary risk assessment meeting was held at the outset of the project to determine priority regions and OWM issues within MPS to be addressed within the OWMP. The meeting was also used to establish the methodology of the RAF.

1.3 Previous OWM Documents

This OWMP is an update of MPS's Adopted Wastewater Management Plan (WMP), published in September 2018. The plan was supported by a background paper. The plan outlined 10 overarching strategies for OWM, as follows:

1. Continue to educate community on the management of OWM;
2. Further development information management systems;
3. Develop and implement wastewater compliance guidelines;
4. Implement a comprehensive risk assessment and monitoring program;
5. Support SEW sewerage services;
6. Environmental monitoring;
7. Management of commercial properties;
8. Advocacy, collaboration and resourcing;
9. Reporting, audit, and review; and
10. Specific catchment actions.

1.3.1 VAGO Recommendations & MPS Response

In 2018 VAGO conducted an audit to examine whether the environmental and public health impacts of domestic wastewater was being effectively managed. The audit examined SEW, Yarra Valley Water (YVW), Yarra Ranges Council (YRC), MPS, the Department of Environment, Land, Water and Planning (DELWP), and the EPA.

VAGO looked at the efficiency, economy, and effectiveness of water authorities' sewer backlog programs, the extent to which councils are managing the risks on onsite domestic wastewater and the regulatory system and whether its implementation supports water authorities and councils in protecting public health and the environment.

VAGO made four (4) recommendations for MPS and YRC, with one (1) additional recommendation for YRC. VAGO also made three (3) recommendations for both YVW and SEW, with two (2) additional recommendations for YVW. These recommendations and the MPS response are available at:

https://www.audit.vic.gov.au/report/managing-environmental-impacts-domestic-wastewater

The 2018 WMP includes actions for MPS to meet all four (4) VAGO recommendations. The 2025 OWMP will build on these actions, specifically as follows:

1. The 2025 OWMP will link to and support the current MPS Integrated Water Management Plan (IWMP) and the Council's participation in regional Integrated Water Management Frameworks;

2. To implement a rolling annual program of compliance inspections of OWMS in high risk areas and townships, the OWMP identifies the risks posed by each individual property from OWMS, based on:
    a. Soil type, slope, and area of property;
    b. System type and age;
    c. Distance to waterways and groundwater bores;

    The annual MPS OWMS inspection plan will prioritise higher risk properties and localities;
3. MPS is developing and implementing a data management plan to collect accurate information on the number, location, and performance of OWMS. Data collection is prioritised using a risk-based approach. Action Item 2 in the OWMP outlines Council's approach to enhanced OWMS information management as required under the framework provided in the *EP Act 2017*. MPS will continue to work with SEW on data exchange for sewer connections; and
4. The OWMP actions relating to OWMS owners and occupiers addresses the recommendation for Council to "develop an education plan to inform property owners of their responsibilities and requirements to maintain and upgrade their OWMS, which must include an evaluation framework to assess its effectiveness". Education and communication programs have been completed and evaluated over the past few years, through the Wastewater Officer (WWO) Action Plan and the 2015 and 2018 OWMPs. This is an over-arching strategy in the OWMP Action Plan.

1.3.2 MPS WMP (2018) Action Plan

The MPS WMP (2018) provided an Action Plan, with a number of recommended items to be undertaken for improved OWM within the Shire. The progress of the Action Plan has been recorded in the form of an internal 'report card'.

There were 22 action items identified as 'on track', and have made substantial progress or were considered complete. A total of 16 action items were identified as 'requiring attention', which have been partially implemented; however, ongoing implementation requires assessment. It is noted that 11 action items were identified as 'no activity', and approximately half of these items were not considered feasible at the time due to the impending release of updated legislation and guidelines. Action items which were recommended to be carried over into the 2025 OWMP are detailed in Table 1.

Table 1: 2018 Action Items to be Incorporated into the 2025 OWMP

Item	Action	OWMP (2025)
2.4	Ensure SEW sewerage connection data is updated regularly on geographical Information System (GIS) and property rating system is revised to allow wastewater status to be recorded. SEW data to include properties with sewer available and any future sewer areas.	Action Item 2b
2.8	Develop process for transferring OWMS permits when property subdivided.	Section 6.3.4
3.1	Develop wastewater compliance processes including procedures for managing non-compliance.	Section 8.2
4.1	Review of Shire Wastewater Installation Guidelines to be consistent with recently updated legislation and standards.	Action Item 1
4.2	Mail-out to all owners of properties with OWS requesting that OWS be serviced and pumped out (unless recent receipt provided). Will need to stagger letters to spread the load on contractors. Follow up in accordance with wastewater compliance policy.	Section 8.2

Item	Action	OWMP (2025)
4.6	Amend standard permit conditions to include requirement for access, e.g. “All access openings must be brought to ground level”.	Action Item 1
4.8	Improved training of EHO to assess land capability assessments (LCA), and establish review panel.	Action Item 8b
5.3	MPS support SEW on the education and promotion for connection of sewerage.	Action Item 10c
5.4	Identify MPS owned OWMS in sewered area that are at risk of causing environmental impact and develop a strategy to prioritise sewer connection.	Action Item 7c
6.3	Design and implement environmental monitoring strategy in collaboration with EPA, SEW, MW, including industrial areas, high risk localities and groundwater, for environmental and health contaminants (e.g. nutrients and pathogens).	Section 8.2
7.4	Establish a process for the exchange of information between MPS and EPA on commercial properties that exceed 5,000L/day	Action Item 3b
7.7	Audit existing commercial septic systems in Arthurs Seat, Red Hill, Main Ridge, Red Hill South, Merricks and Shoreham townships to assess compliance and identify any immediate public or environmental health risks.	Action Item 3c
7.6	Actively engage with MPS planning to ensure wastewater restrictions considered at planning stage.	Action Item 7b
9.2	Liaise with EPA regarding guidelines for audit reporting.	Section 8.2.4
9.3	Plan to be audited within 3 years of adoption, and report released to the public and stakeholders.	Updated to meet requirements of the OMLI (2024), Action Item 13a
9.4	Plan to be reviewed within 5 years of adoption.	Action Item 13b

1.4 Integrated Water Management

Integrated water management is a collaborate approach to planning and managing all elements of the water cycle, and has the potential of providing greater community and environment value by leveraging on opportunities to maximise the outcomes of water cycle management.

In 2021, MPS developed an IMWP to address the pressure of climate change, urbanisation, population growth, greater demands for food and changing land use and ensure a thriving, health, and resilient community. A core strategic outcome of the IWMP is ‘effective and affordable wastewater systems’.

There are approximately 22,000 OWMS within the Shire, with pollutant runoff and infiltration from these systems causing contamination of waterways, groundwater, and beaches, as well as posing risks to public health. Underperforming and poorly maintained OWMS also present potential for pollution events.

The main challenges presented by OWM within the Shire are ageing and poorly maintained systems, stormwater and surface inundation, and lack of reticulated sewer availability in some parts of the Shire.

MPS have invested in wastewater management to mitigate these challenges, with key strategies such as supporting SEW reticulated sewerage programs, use of new Information Management System (IMS) that will store servicing and maintenance records internally, and community engagement programs. These strategies will continue to be implemented under the 2025 OWMP to mitigate public health and environmental risks posed by OWMS.

- ✓ **Action Item 4a – Notify SEW of areas where alternative sewerage management solutions are required;**
- ✓ **Action Item 4b – Support SEW sewerage programs;**

- ✓ **Action Item 2f – Implement new IMS to allow internal storage of servicing and maintenance records; and**
- ✓ **Action Items 10a-c – Broader community education programs.**

1.5 Implementation and Review

The effectiveness of the OWMP will depend on the ability of Council to implement the Action Plan. Staff should be trained in OWM assessment and be familiar with plumbing requirements to ensure compliance with repair and / or upgrade orders that can be made for systems. Staff should also be trained in the assessment of LCAs, ensuring they are in-line with currently enforced guidelines and standards.

- ✓ **Action Item 8a-b – Staff education.**

Resource funding and time allocation must be made by Council to implement the OWMP.

- ✓ **Action Item 12 – Consider sustainable options for ensuring appropriate resources.**

The OWMP must be internally audited every year, and updated every five (5) years to ensure the OWMP is being implemented appropriately.

- ✓ **Action Item 13a – Internal annual progress review of 2025 OWMP; and**
- ✓ **Action Item 13b – Review of 2025 OWMP after five (5) years.**

2 Overview of Wastewater Management

2.1 The Historical Context

Historically, the management of OWMS throughout Victoria has been difficult. Local Councils are delegated regulatory authorities from the EPA for OWM and have generally been limited by time and financial support from implementing effective OWMPs. Many Councils throughout Victoria (and Australia) have previously provided very limited programs for OWM, focusing on an approval scheme for new OWMS and a basic system monitoring program as time permits.

2.2 What is Wastewater?

Wastewater is water-borne waste material and includes all normal wastes, as well as many forms of waste matter from other establishments. Domestic wastewater is derived from waste streams: kitchen; bathroom (basin, bath and shower); laundry; and toilet. Industrial and commercial wastewater varies widely in character and often requires specialised treatment processes as it may contain substances that are harmful to the biological processes utilised for treatment processes.

Wastewater is commonly described in the following three (3) forms:

- Blackwater – "water grossly contaminated with human excreta" e.g. toilet water, composting toilet leachate;
- Greywater – "water that is contaminated by but does not contain human excreta" e.g. kitchen, bath, and laundry water (also referred to as 'sullage'); and
- Combined – "a combination of both black and grey water".

Wastewater quality can vary greatly due to numerous factors. Effluent is defined as wastewater following treatment. Table 2 outlines typical values for domestic wastewater quality parameters.

Table 2: Typical Domestic and Non-domestic Wastewater[1]

Parameter	Domestic Wastewater	Non-domestic Wastewater
Biological Oxygen Demand (BOD_5)	150-300mg/L	300->5,000mg/L
Total Suspended Solids (TSS)	150-300mg/L	>350mg/L
Total Phosphorus (TP)	10-30mg/L	Source specific
Total Nitrogen (TN)	50-60mg/L	20-100mg/L
E. coli	10^5-10^7 cfu/100mL	10^3-10^{10} cfu/100mL
Oil and grease	<50mg/L	50-150mg/L

2.3 Wastewater Treatment

Wastewater is typically managed in urban environments in a community sewerage system, with treatment at a centralised wastewater treatment plant with effluent disposal via discharge to waterways or land application.

In areas where a centralised sewerage system cannot be provided, wastewater is managed onsite at each individual lot. Onsite wastewater is managed by a variety of treatment systems. The variety of treatment systems and their associated effluent quality are presented in Table 3.

[1] Information collated from a range of sources including *AS1546.1:2008*, *AS/NZS 1547:2012*, EPA Publication 760 (2002), NRMMC (2006), and NSW DLG (1998). Note all concentrations are highly variable.

Table 3: Effluent Quality and OWM Treatment Systems

Treatment System	Effluent Quality
Septic Tank **Aerobic Biological Filter System**	Primary: BOD_5: 150-250mg/L. TSS: 20-140mg/L. *E. coli*: 10^5-10^7cfu/100mL.
Aerated Wastewater Treatment Plant (AWTP) **Sand and Medium Filter** **Membrane Bioreactor**	Secondary: BOD_5: ≤20mg/L. TSS: ≤30mg/L. *E. coli*: ≤10cfu/100mL (with disinfection).
	Advanced Secondary: BOD_5: ≤10mg/L; TSS: ≤10mg/L; and *E. coli*: ≤10cfu/100mL (with disinfection).

Current best-practice is for effluent to be treated to a secondary standard or better. Any variations to this must be provided with detailed evidence and explanations to demonstrate its suitability.

Further detail about treatment systems can be found in Section 4.3 of EPA Victoria (2024), *Guideline for Onsite Wastewater Management* (GOWM, 2024), as well as Section 10.3 of the Technical Document.

2.4 Effluent Dispersal

Following treatment, the effluent is dispersed within the boundaries of the lot, referred to as the effluent dispersal system (EDS). The type of EDS depends on quality of effluent. The suitability of EDS based on treatment standard is provided in Table 4.

Table 4: Effluent Quality and EDS Suitability

EDS Type	Primary Treatment	Secondary Treatment	Secondary Treatment (with disinfection)	Advanced Secondary Treatment	Advanced Secondary Treatment (with disinfection)
Trenches / Beds	✓	✓	✓	✓	✓
ETA Trenches / Beds	✓	✓	✓	✓	✓
Surface Irrigation	X	X	✓	✓	✓
Subsurface Irrigation	X	✓	✓	✓	✓
Mounds	✓	✓	✓	✓	✓

Further detail about EDS can be found in Section 2 of EPA Victoria (2024), *Guideline for Effluent Dispersal and Recycling Systems* (EDRS, 2024), as well as Section 10.4 of the Technical Document.

2.5 Environmental & Health Risks of Wastewater Management

Wastewater can be highly variable in quantity and quality, which can impact on the performance of OWM treatment systems. Treatment systems rely on the anaerobic (primary) and aerobic (secondary) breakdown of organic matter by microbes and the settling of solids. Shock loads or harmful chemicals in the wastewater stream (i.e. biocides) can impact on the ability of these microbes to treat the wastewater, resulting in poor effluent quality.

OWMS failures are most often a result of poor system design, poor installation practices, inadequate maintenance, and insufficient land area, all of which contribute to potential environmental and public health impacts. The potential risk of OWMS, typical causes, and potential impacts are outlined in the Table 5.

Table 5: Environmental and Health Risks of OWMS

Risk	Typical Cause	Potential Impacts
Ineffective regulation	Lack of staff / time / training / experience / limitations with Information Management systems / ability to track service records being manual and very time consuming	Environmental, Health, and Social
Off-site discharge	Failing / poorly managed / damaged / unapproved treatment and / or EDS / previous approved practices for off-site discharges.	Environmental, Health and Social
Disinfection failure	No disinfection / poor upstream treatment.	Health
Failure of treatment system	Lack of maintenance / poor installation / age of system.	Environmental, Health, and Social
Surcharge from EDS	Peak loads / overload of system / failure of EDS / undersized or poorly designed system.	Environmental, Health, and Social
Failure of EDS	Clogging layer in trenches or beds / broken pipes / inappropriate hydraulics.	Environmental, Health, and Social
Human contact with effluent	Poor OH&S in maintenance / inappropriate disposal methods.	Health and Social
Owner ignorance	Lack of knowledge of system.	Environmental, Health, and Social
Damage to EDS	Access by vehicles or stock / inappropriate boundaries.	Environmental, Health and Social
Odour	Inadequate treatment in systems / mechanical fault.	Social
Groundwater contamination	EDS overloaded (undersized and / or failing).	Environmental, Health, and Social
Surface water contamination	Surface runoff of effluent in area with reduced setback distance buffers / recharge from contaminated groundwater.	Environmental, Health, and Social
Human or animal disease outbreak	Direct or indirect pathogen exposure due to any of above causes.	Health and Social
Degradation of soils	Undersized or failing EDS / usually high strength effluent.	Environmental and Social
Increased algae growth	Excess nitrate and phosphate in surface waters.	Environmental, Health, and Social
Degradation of native vegetation	Excess nitrate and phosphate in soils and / or surface waters.	Environmental and Social

3 Legislation and Regulation

The following section lists the various legislation and policy documents which have been included in the OWMP review, which are discussed further within Section 3 of the Technical Document.

3.1 Council's Plans and Policies

The OWMP has been developed to fit with other Council Policies and Plans, as follows:

- Mornington Peninsula Planning Scheme;
- Mornington Peninsula Community Vision 2040;
- Mornington Peninsula Council Plan 2021 – 2025;
- Mornington Peninsula Health and Wellbeing Plan 2021 – 2025;
- Mornington Peninsula Climate Emergency Response 2020 – 2030;
- Mornington Peninsula Integrated Water Management 2021;
- Mornington Peninsula Housing and Settlement Strategy 2020 – 2036;
- Mornington Peninsula Council Budget;
- Mornington Peninsula Compliance and Enforcement Policy 2024; and
- Mornington Peninsula Onsite Wastewater Design and Installation Guideline 2024.

3.2 Legislation

A summary of the legislation and their stipulated requirements relevant to the regulation of OWM are detailed in the Technical Document. The relevant legislation is as follows:

- *Local Government Act 2020*;
- *Environment Protection Act 2017* and *Regulations 2021*;
- *Water Act 1989;*
- *Safe Drinking Water Act 2003* and *Regulations 2015*;
- *Planning and Environment Act 1987*;
- *Public Health and Wellbeing Act 2008*;
- *Catchment and Land Protection Act 1994;*
- *Plumbing Regulations 2018;*
- Victorian Building Regulations 2018; and
- Mornington Shire Community Amenity Local Law 2022

3.3 Regulatory and Legislated Authorities

OWM involves, to varying degrees, a number of regulatory agencies as follows:

- Council (Mornington Peninsula Shire);
- Environment Protection Authority Victoria (EPA);
- Victorian Building Authority (VBA);
- Plumbing Industry Commission (PIC);
- Municipal Association of Victoria (MAV);
- Water Corporations (South East Water, Southern Rural Water);

- Department of Energy, Environment and Climate Action (DEECA); and
- Catchment Management Authority (Melbourne Water Catchment Management Authority).

3.4 Administrative Authorities

Victorian Civil and Administrative Tribunal (VCAT) is a tribunal which deals with civil disputes, administrative decisions and appeals that are heard before a Judge or Tribunal member. It provides a dispute resolution service for both government and individuals within Victoria.

3.5 Standards and Guidelines

The design, operation, and management of OWMS are supported by a number of standards and guidelines, as follows:

- Department of Environment, Land, Water and Planning (2019), *Guidelines for Development in Flood Affected Areas*;
- Department of Environment, Land, Water and Planning (2022); *Risk Assessment Guidance Report*;
- EPA Victoria (2024), *Guideline for Onsite Wastewater Effluent Dispersal and Recycling Systems*;
- EPA Victoria (2024), *Guideline for Onsite Wastewater Management*;
- EPA Victoria (2021), *Regulating Onsite Wastewater Management Systems: Local Government Toolkit*;
- Standards Australia / New Zealand (2012), *AS/NZS 1547:2012 On-site Domestic Wastewater Management*;
- Standards Australia / New Zealand (2008), *AS/NZS 1546.1-2 On-site Domestic Wastewater Treatment Units (Septic Tanks and Waterless Composting Toilets)*;
- Standards Australia (2016-2017), *AS 1546.3-4 On-site Domestic Wastewater Treatment Units (Secondary Treatment Systems and Domestic Greywater Treatment Systems)*;
- Standards Australia / New Zealand (1994), *AS/NZS 1319:1994* REC:2018 Safety signs for the Occupational Environment;
- Standards Australia / New Zealand (2021), *AS/NZS 4130:2018* Polyethylene (PE) Pipes for Pressure Applications;
- Municipal Associate of Victoria & Department of Sustainability and Environment (2014), *Victorian Land Capability Assessment Framework*; and
- Victoria Audit General's Office (2018), *Managing the Environmental Impacts of Domestic Wastewater*.

Where a document has become superseded, the OWMP refers to the current guidance document.

4 Risk Assessment Framework

Formal risk assessment has proven to be an effective way of making decisions in situations involving considerable complexity and uncertainty. Formal recognition of the value, intent, and application of risk assessment is provided in the international standard for formal risk management and associated guidelines (Standards Australia, 2009; IEC/ISO 31010, 2009).

The fundamental purpose of any OWMP is the identification and management of risk from OWMS to public health and the environment. A means of addressing the OWM issues raised by unsewered townships is to develop a risk assessment methodology that systematically measures possible impacts of OWMS on public health and the environment. A comprehensive six (6) staged RAF has been developed for this OWMP to assist Council in analysing risk at variable scales. The methodological approach used can be summarised as follows:

- Stage 1: Background & Data Collection – Background information, legislation / regulatory / planning control, data collection and pre-processing;
- Stage 2: GIS Data Analysis – Development of individual constraint and informative mapping for identified parameters that may influence the degree of risk associated with unsewered development of any given lot;
- Stage 3: OWM Risk Analysis – Weighted analysis of individual constraints to determine the final consolidated risk of individual unsewered lots within the Shire, based on an algorithm that takes into account the inter-relationship between the individual constraints;
- Stages 4 & 5: Procedural – Review requirements for development assessment under Planning Scheme, administrative controls and the management of existing OWMS; and
- Stage 6: Cumulative Risk Analysis – Semi-quantitative assessment of risk (cumulative impact) in a delineated Area-of-Interest (AOI) (i.e. catchment) as per the DELWP (2022), *Risk Assessment Guidance Report*.

Stages 1 & 2 are technical steps required to identify, collate and pre-process the data required for the analysis. Stages 4 & 5 are procedural steps relating to the management of individual applications. The conceptual stages of the RAF methodology are outlined graphically in Figures 2a and 2b.

The RAF has substantial value as a development assessment tool and provides defensible identification and justification for prioritisation of existing management issues within the Shire. It incorporates tools that assess the bio-geophysical capability for OWM in existing unsewered areas; recently developed unsewered subdivisions and undeveloped unsewered land. It will be primarily used:

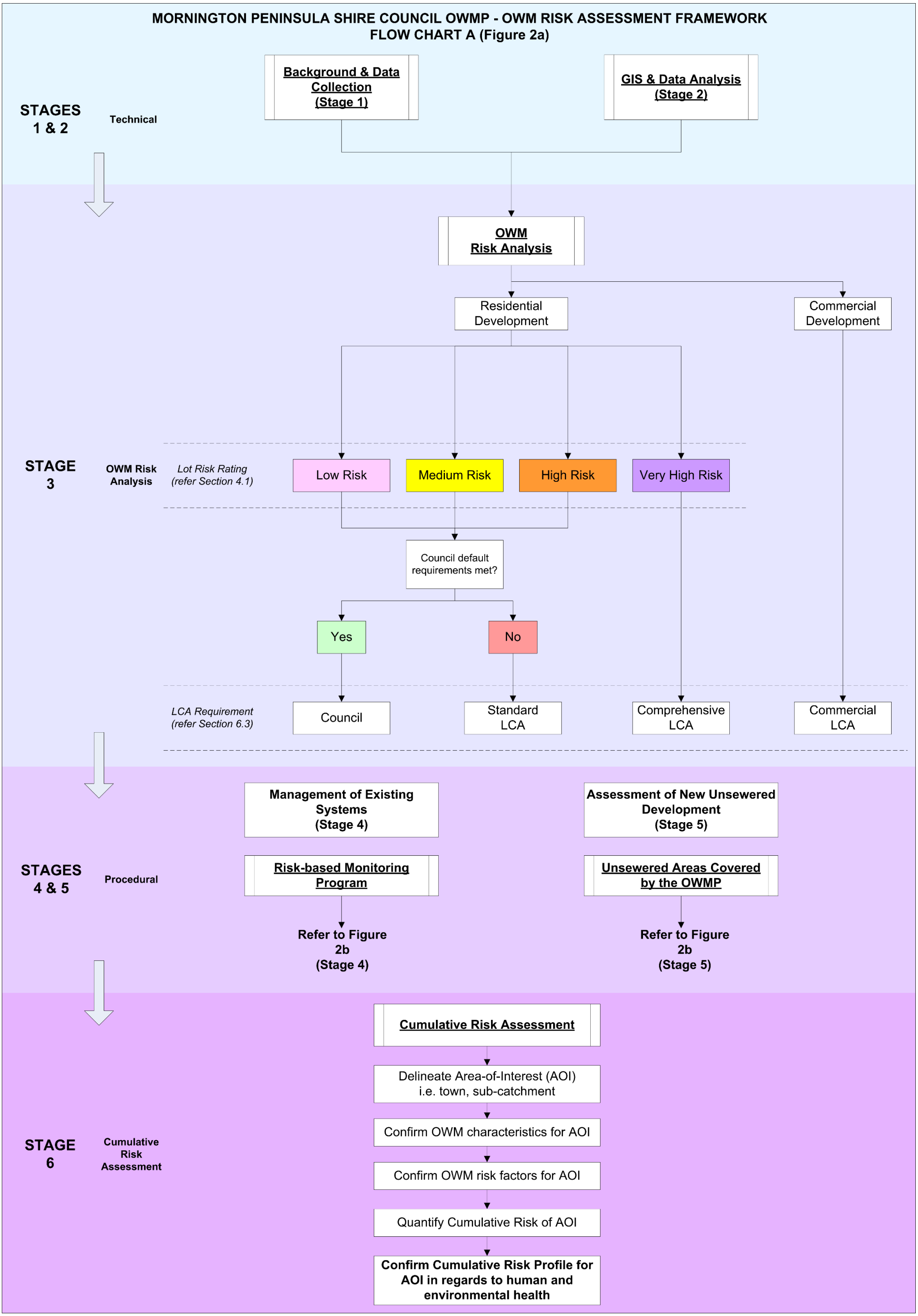
- To determine the level of technical investigation (LCA) required to support a development application in an unsewered area;
- To identify the priority of existing unsewered localities and townships that may require more detailed investigations to determine needs (i.e. improvement actions or plans);
- As a guide to develop a monitoring program for existing OWMS in the Shire; and
- As a guide to Council for strategic planning of future unsewered development.

The overall risk assessment aims to provide Council with a reasoned and justified tool to prioritise future development, and to implement monitoring and upgrading of OWMS within the Shire by highlighting regions with elevated OWM risk profiles (e.g. localities with large numbers of small lots and older OWMS). Consideration of both individual (lot) and cumulative (catchment) OWM risk provides a versatile tool for:

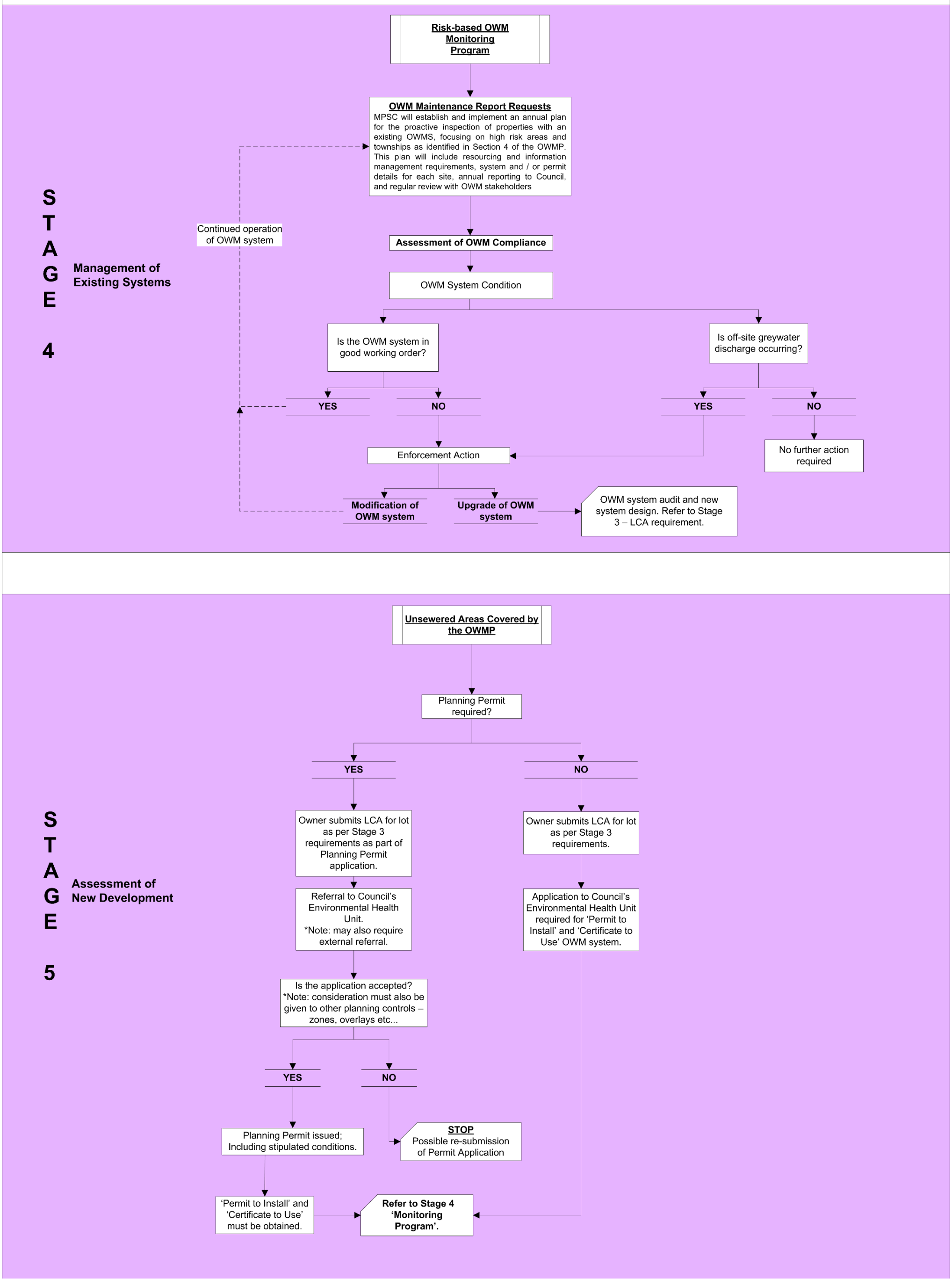
a) Examining changes from an accepted ‘baseline’ condition (i.e. water quality or environmental indicators);

b) Preparing cost / benefit analyses for upgrade / improvement options (i.e. OWM vs. sewerage); and

c) Comparing alternate land use / development scenarios (i.e. development density).


MORNINGTON PENINSULA SHIRE COUNCIL OWMP - OWM RISK ASSESSMENT FRAMEWORK
FLOW CHART A (Figure 2a)
STAGES 1 & 2
Technical
Background & Data Collection (Stage 1)
GIS & Data Analysis (Stage 2)
OWM Risk Analysis
Residential Development
Commercial Development
STAGE 3
OWM Risk Analysis
Lot Risk Rating (refer Section 4.1)
Low Risk
Medium Risk
High Risk
Very High Risk
Council default requirements met?
Yes
No
LCA Requirement (refer Section 6.3)
Council
Standard LCA
Comprehensive LCA
Commercial LCA
Management of Existing Systems (Stage 4)
Assessment of New Unsewered Development (Stage 5)
STAGES 4 & 5
Procedural
Risk-based Monitoring Program
Unsewered Areas Covered by the OWMP
Refer to Figure 2b (Stage 4)
Refer to Figure 2b (Stage 5)
Cumulative Risk Assessment
STAGE 6
Cumulative Risk Assessment
Delineate Area-of-Interest (AOI) i.e. town, sub-catchment
Confirm OWM characteristics for AOI
Confirm OWM risk factors for AOI
Quantify Cumulative Risk of AOI
Confirm Cumulative Risk Profile for AOI in regards to human and environmental health

MORNINGTON PENINSULA SHIRE OWMP - OWM RISK ASSESSMENT FRAMEWORK
FLOW CHART B (Figure 2b)



4.1 OWM Risk Analysis

4.1.1 Methodology and Rationale

The primary objective of the OWMP is to assess all unsewered and developable lots within the Shire to determine their suitability to sustainably manage wastewater onsite in compliance with legislative and regulatory requirements. The inter-relationship of a wide range of individual constraint parameters, and associated variables, affect the specific land capability for sustainable OWM.

The Risk Analysis used involves assessing the combined effect of the constraint parameters outlined in Section 6.2 of the OWMP Technical Document for all of unsewered developable lots within the Shire. The output analysis presents an assessment of OWM risk at the individual lot scale. Each lot was assigned a risk rating for each constraint parameter, which was then used to assign an overall risk value (number) via an algorithm. The constraint parameter 'risk' bandings have been informed from the ratings presented within the Risk Assessment Guidance report (DELWP, 2022). Further details on the individual constraints are outlined in Section 6.2 of the OWMP Technical Document. The algorithm used to determine the final risk value for each lot is shown here.

((Soil Suitability + Slope) x ((2 x Useable Lot Area) + Climate)) / 10

The final risk value derived from the algorithm for each assessable lot is then used to assign each lot to the appropriate Risk Rating class. The following outlines the respective ranges and associated final Risk Rating classes.

- Very High: > 5.5;
- High: 4 ≥ x ≤ 5.5;
- Medium: 2 ≥ x < 4; and
- Low: < 2.

The final Risk Ratings for individual lots give guidance towards the OWM requirements as stipulated by Council. For existing OWMS, the level of risk will commonly reflect the level of challenge that has been experienced in managing the system. This information will help guide system owners and Council in the ongoing management of existing OWMS.

Table 7 provides a rationale for the assumptions used to derive the final Risk Ratings.

Table 7: Risk Rating Descriptions

Risk Rating	Description
Very High	Constraints are present at a very high level and this significantly restricts opportunities for sustainable OWM. Traditional systems (i.e. septic tanks and trenches / beds) are not appropriate and a detailed site and soil evaluation would be required to determine if OWM is achievable at all. If achievable, specialised, advanced treatment and EDS may be required to overcome the constraints.
High	Constraints are present at a high level and this substantially restricts opportunities for sustainable OWM. Traditional systems are not appropriate and a detailed site and soil evaluation would be required to determine if they are supported. Otherwise, specialised, advanced treatment and EDS may be required to overcome the constraints.
Medium	Constraints are present at a medium level, limiting the range of OWM options that are appropriate for the lot. A detailed site and soil evaluation is required to identify the most appropriate OWMS and mitigation measures to be employed.
Low	Constraints are present at a low level and are unlikely to substantially limit opportunities for OWM. In most cases appropriately designed and managed traditional systems will be acceptable.

4.1.2 Evaluation of Risk Analysis

The final Risk Ratings relate to the underlying level of risk to OWM posed by the lot. These factors are used to direct management (planning) decisions and subsequently, the level or intensity of site-specific investigation (LCA) required. The final Risk Rating for each individual unsewered lot within the Shire is shown in Table 8 and Figure 3.

Targeted localities were highlighted as priority regions of investigation by Council. The localities considered in this OWMP are: Arthurs Seat, Red Hill, Red Hill South, Cape Schanck, Somerville, Tyabb, and Merricks, as well as localities within ECO areas (Blairgowrie, Portsea, Rye, Sorrento, and St Andrews Beach). These localities were selected due to existing development pressures, OWM issues, and controls in place to minimise OWM impacts. Council maintains a database of the calculated Risk Ratings for all the unsewered properties within the Shire. An owner can contact Council to obtain the data for the final Risk Rating of their land.

The final Risk Rating and final map for each of the targeted localities are detailed in the respective locality reports in Appendix B of the Technical Document.

Table 8: Final Risk Rating Summary

Locality	Total Unsewered Developable Lots	Total Number in Final Risk Rating			
		Very High	High	Medium	Low
Entire Shire	25,244	937	17,806	5,637	864
Arthurs Seat	308	63	175	69	1
Bittern	581	3	279	275	24
Cape Schanck	485	30	368	54	33
Merricks	158	0	37	93	28
Red Hill	654	20	369	265	0
Red Hill South	468	2	245	216	5
Rosebud	685	5	507	164	9
Somerville	1,396	0	539	807	50
Tyabb	733	1	191	511	30
ECO Localities					
Total	9,700	607	8,877	203	13
Blairgowrie	2,338	93	2,233	12	0
Portsea	972	87	877	8	0
Rye	3,753	343	3,253	147	10
Sorrento	2,029	53	1,960	16	0
St Andrews Beach	608	31	554	20	3

The Risk Analysis resulted in a majority of lots within the Shire being assigned a High Risk Rating. The final risk analysis map highlights the inherent relationship that results in one (1) or two (2) individual constraints (e.g. soil type and useable lot area, soil type and slope) generally affecting any given lot. This relationship is described further in the individual Locality Reports in Appendix B of the Technical Document.

The Risk Analysis identifies approximately:

- 3% of lots within the Shire with a Low Risk Rating;
- 22% of lots with a Medium Risk Rating;
- 71% of lots with a High Risk Rating; and
- 4% of lots with a Very High Risk Rating.

The areas of the Shire within the gently sloping land appears to pose a lower risk to sustainable OWM, whereas, the steeper higher elevations generally poses a higher risk to sustainable OWM. Areas of higher density development, such as Somerville, Hastings, and Tyabb, as well as ECO localities, also pose higher OWM risk due to usable lot area constraints. Prioritisation of management and compliance should be directed towards the areas that pose a higher general level of risk.

According to the individual constraint maps as detailed in Section 6.2 of the OWMP Technical Document, the parameters contributing the greatest limitation to OWM within the Shire is soil type, with slowly permeable clayey soils in the east and rapidly draining soils in the west. Slope poses the next biggest limitation from Arthurs Seat to Red Hill South, with useable lot area being the next biggest limitation for Somerville, Hastings, Tyabb, as well as ECO localities.

It is essential that the limitations of the data used to compile these maps are recognised when using the Risk Analysis map (refer Section 4.3). Whilst individual lots have been assigned a risk rating, it is not sufficiently detailed to allow determination of individual system performance or land capability for individual lots. This is why the term risk assessment is used to describe the methodology and resultant outputs. An allotment categorised as having a Very High Risk rating will not necessarily be totally unsuitable for OWM or currently be experiencing poor system performance or system failure; however, it is likely to contain a number of significant limitations to the safe operation of OWMS assessed at a very broad scale.

Overall Risk Ratings has been used to justify the requirement for more detailed individual lot LCA, more rigorous assessment of development proposals and to target investment in the inspection and management of existing OWMS, rather than to define system performance or land capability.

Furthermore, the degree of risk depends on the type of EDS and generated effluent quality (e.g. subsurface irrigation can be installed on slopes up to 15% – 20% in some cases, but this would be impractical for trenches). This relationship is detailed further in Section 6.2 of the OWMP Technical Document. Physical constraints can often be overcome or substantially mitigated by a range of measures (such as terracing, importing topsoil fill, installing stormwater diversions, removing vegetation or planting nutrient tolerant vegetation), thereby increasing the ‘suitability’ of the available area.

MPS will maintain a Risk Analysis mapping layer for the Shire, which is to be updated as required.

✓ **Action Item 2a – Maintain a GIS layer for OWMS in the Shire.**

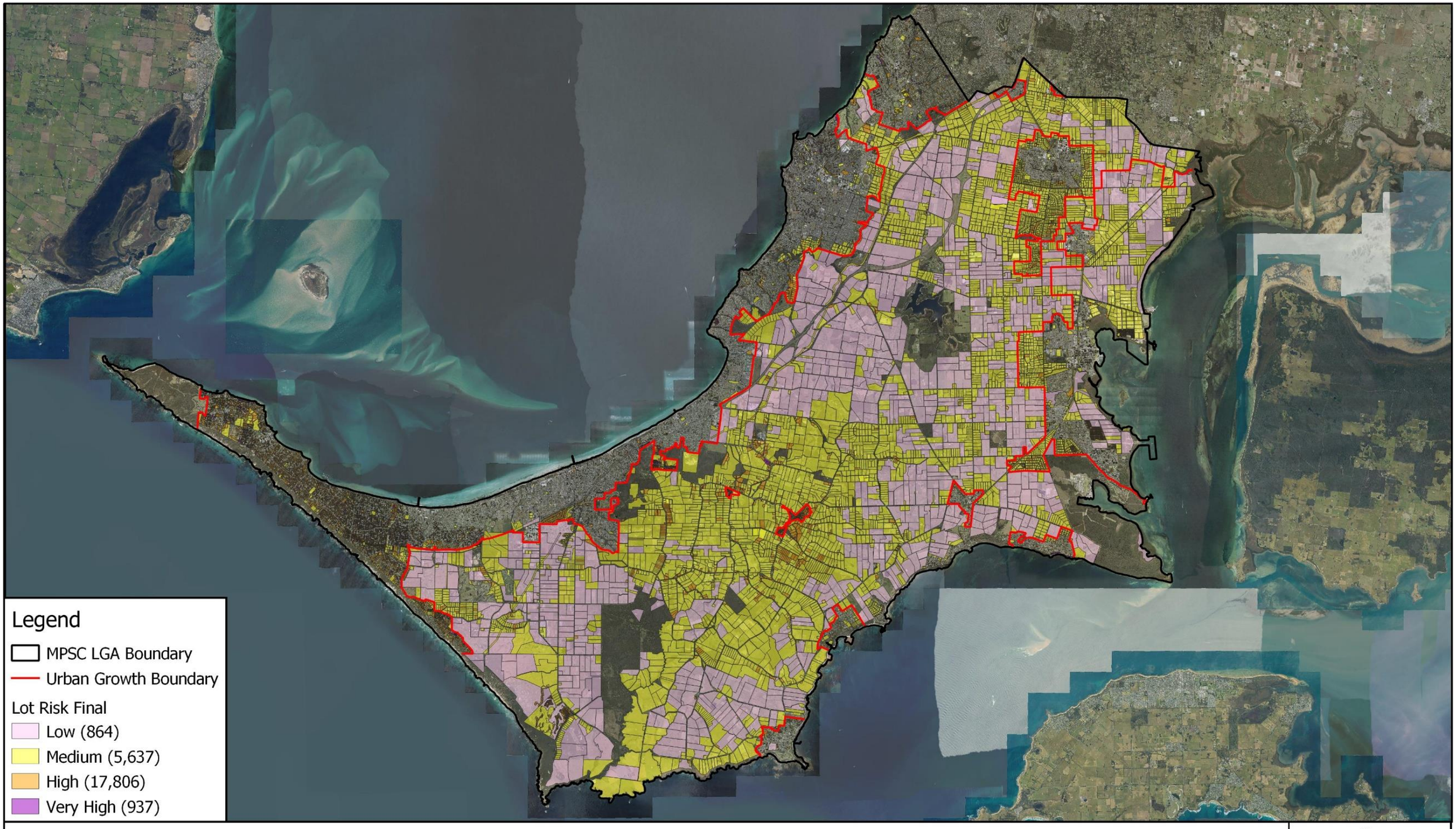


Figure 3: Lot Risk

MPSC OWMP 2025 - 2030

Whitehead & Associates
Environmental Consultants

Revision	001
Drawn	CM
Approved	MS

4.1.3 Current Risk Analysis and Conclusion

MPS has concluded from OMWS audits, environmental monitoring, risk analysis, and in previous plans that OWM is difficult in very high risk areas and may be difficult to be achieved over the long-term on high-risk sites. However, lots indicated as High or Very High Risk in the Risk Analysis are not completely unsuitable for OWM, and it is still the responsibility of the OWMS owner or operator to manage and maintain the system. The lot-based and cumulative risks of existing OWMS discharging wastewater beyond locality and lot boundaries is significant, and has been demonstrated through system auditing and environmental monitoring of existing residential and commercial developments on small sites in the townships of Arthurs Seat, Red Hill, Red Hill South, and Merricks.

Consideration of sewage management solutions to address the risks of OWM have been recommended by MPS in the 2015 and 2018 WMP's and in the MPS submission to the SEW Backlog Sewer Program Submission June 2021.

The 2018 WMP concluded that the townships of Arthurs Seat, Red Hill, Red Hill South, and Merricks are high risk areas for OWM. Given the soil profile and lot sizes in these townships, smaller residential lots and existing commercial were deemed as unlikely to be able to retain effluent on-site in the long-term. This is evidenced by ongoing OWM issues and failure within these areas.

Action Item 5.2 of the 2018 WMP is for the Shire and SEW to "Establish agreed criteria with SEW to assess risk and drive feasibility assessment of alternatives to Onsite Wastewater Systems, including whole of community costs".

The 2021 backlog sewer review concluded that reticulated sewerage is required to address the significant public health and environmental risks posed by OWMS in the townships of Arthurs Seat, Red Hill, Red Hill South and Merricks. This review included an assessment of wastewater impacts from existing commercial and residential OWMS. It recommended that the consideration of a staged approach to sewer provision and the investigation of possible developer-led sewer projects to service existing commercial developments in those townships.

4.1.4 Potential Reticulated Sewer Connection

As mentioned in Section 4.1.2, OWM in the townships or Arthurs Seat, Red Hill, Red Hill South, and Merricks present significant public health and environmental risk. It is recommended that consideration is given to the exploring the option of alternate sewerage management solutions. Although the township of Merricks was not in the AOI for further analysis using the CRA, it is still an area that has previously been identified as high risk. Therefore, it is recommended that consideration is also given to exploring the option of alternative sewerage management solutions for the township Merricks.

Connection of lots to the existing reticulated sewerage network in Blairgowrie, Portsea, Rye, Sorrento, and St Andrews Beach should be promoted to properties owners due to the elevated risk profile and existing OWM issues in the area. This process should be carried out with the support of SEW. Where required, SEW has the ability to enforce the connection to network under Section 147 of the *Water Act 1989*.

✓ **Action Item 10c – Support SEW on the education and promotion for connection to sewerage.**

4.2 Cumulative Risk Assessment

A Cumulative Risk Assessment (CRA) is an indicative risk assessment tool used to identify potential risks associated with existing development in unsewered areas, and provides a means of quantifying risks within a specific Area-of-Interest (AOI).

A CRA looks at existing OWMS within an AOI, such as a sub-catchment or township area, determining the risk posed from OWM to public health and environmental contamination endpoints. It also has potential to be used to assess the impact of increased development and number of OWMS within a particular AOI. This differs from the Risk Analysis presented in Section 4.1 of the Operational Plan as it provides an assessment of the cumulative risk at the larger catchment scale rather than the individual lot scale.

The CRA provided within the OWMP has been carried out in line with the DELWP (2022), *Risk Assessment Guidance Report* (DELWP Report, 2022), with OWM details and catchment characteristics input into the

DELWP (2022), *Risk Calculation Spreadsheet Tool* (DELWP Tool, 2022). The CRA is based on the 'likelihood' and 'consequence' of OWM failure. Likelihood is defined as the possibility of wastewater transfer off-site towards a defined endpoint. Consequence is defined as the contaminant load once wastewater has reached the endpoint.

The areas of Arthurs Seat, Red Hill, Red Hill South, Cape Schanck, Somerville, and Tyabb were defined as AOIs and have been evaluated in the CRA. These areas were selected by Council due to current development pressures, OWM issues / complaints, and site constraints in place to minimise OWM impacts. Study catchments are presented as Figures 5 – 9 of the Technical Document. Section 6.4 of the OWMP Technical Document outlines the methodology, process, and results of the CRA.

4.2.1 Evaluation of Cumulative Risk Assessment

The CRA indicates that a majority of the AOIs exhibit a Low to Medium Risk in regards to public health and the environment, with Red Hill presenting a High Risk. Wastewater within a majority of the study catchments are managed within primary treatment systems (septic tanks) and absorption systems (trenches / beds). Even though these systems are considered a High Risk, it is noted that the risk factors associated with the systems (i.e. proximity to sensitive features) trend towards Low Risk.

Soil type was the most common constraint across all catchments, with a majority containing Category 6 soils presenting a High Risk to surface water features. A majority of the study catchments had a relatively low OWMS density, with most below one (1) OWMS per hectare. Red Hill experiences a higher overall OWMS density (1.1 system / ha), resulting in an elevated risk.

The outcomes of the CRA will be used by MPS as a 'baseline' assessment for the selected study catchments within the Shire, and can be used as a basis for the assessment of risk for future development.

4.3 Limitations of the Risk Assessment Framework

There are several limitations inherent in the methodology adopted to assess the variation in OWM related risk throughout the Shire. Briefly, these are due to:

- The use of broad-scale mapping, desktop analysis and localised investigation (ground-truthing);
- A lack of digital data in some areas;
- The present level of scientific understanding and uncertainties relating to the physical and chemical processes and their implications for sustainable OWM;
    - Current best practice derived from wide experience in Australia, New Zealand and the United States was used in this assessment;
- The limited availability, quality, and accuracy of attribute data;
- Limitations in the method of assessing the inter-relationship and cumulative effect of individual attributes and constraints; and
- Inability to assess off-site discharge of wastewater within the DEECA Tool (2022).

The recognised limitations emphasise that the Risk Analysis should only be used as a preliminary attempt to distinguish regions within the Shire with relatively higher levels of risk to public health and the environment with the objective of determining preliminary priority for future wastewater servicing.

5 Existing OWMS

5.1 Management of OWMS

Stage 4 of the RAF (Figure 2b) outlines the procedural framework under which MPS will prioritise monitoring, and, if necessary, enforce management of OWMS in the Shire. Existing OWMS in the Shire will be managed through the risk-based monitoring program as described in Section 8.2 of this OWMP.

Under the *EP Act 2017*, the General Environmental Duty (GED) was introduced, requiring any owners or occupiers of the land managing or controlling an OWMS to take reasonable steps to maintain the OWMS in good working order, keep maintenance records (service reports / pump-out reports), respond to any problems that arise, and notify Council of a failure and rectification steps.

The *EP Act 2017* and *Regulations 2021* also provide Councils with the power to enforce compliance. Council can issue infringement penalties (*EP Regulation 2021*, Schedule 10), improvement notices (*EP Regulation* 2021, Section 271), order maintenance *(EP Regulation 2021*, Regulation 163), and prohibition notices (*EP Regulation* 2021, Section 272), if they have reasonable belief that any of the grounds listed in the relevant sections of the *EP Act 2017 or EP Regulation 2021* are satisfied. Compliance action will be in line with Shire Policies.

To ensure compliance with the *EP Act 2017*, owners or occupiers of the land are to maintain their OWMS in good working order. Supporting information for the OWMS maintenance and rectification of issues can found in the following sections, as well as Section 8 of the Technical Document.

5.2 Maintenance of Existing OWMS

Maintenance actions should be undertaken by the owner or occupier of the land, or a qualified service agent in order to minimise the risk of system failure and contravening the *EP Act 2017*. Potential actions are outlined in the following:

- Regular desludging of septic tank (or primary tank in secondary system);
- Checking of all system chambers and other checks as required by system manufacturers;
- Addition of chlorine for disinfection where chlorination is used;
- Ensuring occupants do not discharge chemicals used within the dwelling to the system (i.e. bleaches, antibacterial cleaning products, paints, dyes etc.);
- Ensuring that the system is not turned off at any time;
- Responding to system alarms as this usually indicates a system failure or problem;
- Monitoring of secondary treatment system effluent for commercial systems, as required; and
- Ensuring EDS, sprinklers, or irrigation area is maintained.

5.3 Non-compliant OWMS

It is recognised that there are many older OWMS located on lots with unsuitable characteristics for OWM. These systems may be undersized or have direct wastewater discharge off-lot, resulting in OWMS that do not comply with relevant standards and guidance.

Sections 5.4 and 5.5 of the Operational Plan outline the range of options available to improve OWM performance of non-compliant OWMS. Section 8.4 outlines the procedure for identifying and managing existing OWMS in the Shire through a risk-based monitoring program.

5.4 Modifications for Existing OWMS

In some cases, it is not necessary to replace all OWMS components to rectify issues. Risks from non-compliant systems may be appropriately managed by modifying a system. Potential modifications include, but are not limited to:

- Minor repairs (crack repair, replace components, etc.); and
- Access risers for septic tanks.

Required modifications should be determined on a case-by-case basis, and discussed with Council prior to implementation. Septic tanks that are to be modified or repaired must be structurally sound and adequately sized, and by an appropriately qualified and experienced person. Further information on the modification of existing systems can be found in Section 8.1 of the Technical Document.

5.5 Replacement / Upgrade of Existing OWMS

Where an existing system is shown to be operating effectively but does not comply with the current Standards or EPA Guidelines, the system is not required to be upgraded but should be monitored. In the event that failure occurs, effluent is discharging off-site due to OWMS failure, or development alterations increasing wastewater generation are proposed (i.e. addition of bedrooms), the OWMS must be replaced or upgraded. Where a new system or upgrade works are required, the system must comply with the current Standards and EPA Guidelines. Potential upgrade and replacement options include, but are not limited to:

- Septic tank upgrade to secondary treatment system;
- Absorption trench / bed replacement, replication, or expansion;
- Soil amelioration; and
- Alternative absorption trench / bed design.

Replacement of systems and components should be carried out according to the site-specific conditions and requirements of the lot, and by an appropriately qualified and experienced person. Further information on the replacement of existing systems can be found in Section 8.2 of the Technical Document.

A permit will be required to alter or replace an OWMS system. Permit applications can be found online:

Septic Tank Permits - Mornington Peninsula Shire (mornpen.vic.gov.au)

A permit will not be issued when reticulated sewerage is available to the property.

5.6 Subdivision of Developed Land

During the process of subdivision of land that is currently developed, it is common that the OWMS servicing the existing development will be impacted, resulting in the OWMS becoming non-compliant (i.e. OWMS located in newly created lot). In the case that this occurs, the OWMS must be upgraded to be in line with the current Standards and EPA Guidelines.

6 Future OWMS

Stage 5 of the RAF (Figure 2b) outlines Council's 'procedural' steps for determining the management requirements for future unsewered development.

6.1 Development Potential in Unsewered Localities

The Department of Transport and Planning (2023), *Victoria in Future 2023 Report* has projected the population of the Shire to increase to 187,540 (11% increase) by 2036. The number of OWMS within the Shire is anticipated to increase with the population.

The Mornington Peninsula Housing and Settlement Strategy (2020-2036) outlines existing and future development potential of settlements areas, where it is identified that there will be no linear development between towns along the coast or expansion into rural areas between townships.

This is supported by the Mornington Peninsula Green Wedge Management Plan (2018). Rural areas including farmland, public land, national parks, and reserves, are identified as 'Green Wedge' areas. These areas to remain as a rural land resource in recognition of its value for current and future generations. Urban Growth Boundary/s (UGB/s) have been developed around established settlement areas, with future development focused within the UGBs.

6.2 Assessment of Future OWMS

Proposals for development exempt from planning permit requirements (e.g. dwelling in Township Zone that is not covered by any overlays) will proceed directly to the preparation of a LCA as per the requirements set out in Section 6.3 of this document.

Council's procedures for assessing OWM proposals are detailed in Section 7 of this Operational Plan. All OWM proposals must be submitted to Council with a Permit to Install application form for the proposed treatment system and EDS. The requirements for LCAs based on the Risk Analysis in Section 4 of this Operational Plan are to be followed when applying for a Permit to Install.

Action Item 1 of the Action Plan includes a review and finalisation of Council procedures for the assessment of OWM proposals.

✓ **Action Item 1 – Prepare and document MPS policies / procedures to ensure they are in line with this Operational Plan and current legislation, standards, and guidelines.**

Records of development and rezoning applications in unsewered localities provide useful data about development pressures across the Shire and can be used to inform strategic land use and development planning decisions in the unsewered townships and their surrounds. It is important to ensure that the broader planning processes and decisions take into consideration the OWMP and ongoing inspections; therefore, all the Planning Officers and EHO should be briefed on the requirements.

✓ **Action Item 7a – Brief all Planning staff on the OWMP by providing a summary document or meeting briefing.**

6.3 Land Capability Assessment

The OWMP is an overarching document with clear directions for management of onsite wastewater by property owners, developers and MPS over the next five (5) years. The lot-based and cumulative risk analyses in the OWMP will guide the development of lot-specific OMWS design and LCA requirements by MPS in Council's Onsite Wastewater Design and Installation Guidelines (OWDIG).

Details regarding specific processes, checklists and minimum LCA standards (Council, Standard and Comprehensive) for residential development will sit within the OWDIG, which is being developed in line with the Operational Plan and recently released EPA Guidelines (GOWM and EDRS, 2024). Once adopted, applicants and wastewater practitioners can reference the guidelines during the development and completion of an LCA report.

Subdivision and Commercial applications and LCA requirements are dealt with separately in this OWMP.

The level of detail required by the LCA is linked to the Risk Analysis provided in Section 4.1 of this Operational Plan. Council will maintain a database of the calculated Risk Ratings for all the unsewered lots within the Shire and an owner (or LCA assessor) may contact the Shire to obtain the final Risk Rating classification of their land.

The specific LCA requirements are based on guidance recently released by the EPA[2], and will be outlined in the updated MPS OWDIG. The LCA must be conducted in accordance with the EPA Guidelines and *AS/NZS 1547:2012*, and must be consistent with the Victorian LCA Framework (MAV & DSE, 2014).

With regards to OWMS selection and sizing, the permeability and corresponding 'design' loading rate for the most limiting soil horizon within 600mm from the base of the EDS must be used to ensure the loading of wastewater on the soil can be supported for the entire soil profile.

6.3.1 Low Risk Lots

It is envisaged that a LCA may not be unnecessary for Low Risk lots unless deemed so by Council staff as outlined in the MPS OWDIG. Council may request for a Soil Classification and Permeability Assessment to be provided in addition to a Site Plan on a case-by-case basis.

Applications for Low Risk lots can be assessed using Council's Assessment Checklist, as per the example in Appendix A, and / or the 'Site Information Sheet' template in Appendix D of *AS/NZS 1547:2012*. The proposed treatment and EDS combination may be selected from the System Compatibility (Table 5 of this Operational Plan) and Sizing Tables (Appendix B and D of the Technical Document).

Council will always conduct a site visit to confirm that site and soil details are consistent with Council's Assessment Checklist as per the Pro-forma sheet and that the proposed OWM treatment and EDS is appropriate. If a Low Risk Rating lot is located within a site or area of increased risk and /or OWM constraint, Council staff may require a Standard LCA Assessment and Report to be completed.

6.3.2 LCA for Medium and High Risk Lots

It is envisaged that a Standard LCA by a suitably qualified consultant or Site and Soil Assessment by the system designer may be required for Medium and High Risk lots. This would include a Site Inspection and Field Investigations, with (at a minimum) a water balance model as specified in EPA Guidelines and Council's OWDIG.

If deemed appropriate by Council, system design for Medium and High Risk lots can be determined using the System Compatibility (Table 5 of this Operational Plan) and Sizing Tables (Appendix B and D of the Technical Document).

6.3.3 LCA for Very High Risk Lots

It is envisaged that a Comprehensive LCA by a suitably qualified consultant will be required for Very High Risk lots. This would include a Site Inspection and Field Investigations, comprehensive soil testing, risk analysis, water and nutrient balancing and site-specific hydraulic design as specified in EPA guidance and Council's Wastewater Design and Installation Guidelines.

6.3.4 Subdivision LCA Requirements

LCAs must be performed early in the planning phase of land development before rezoning or subdivision as it achieves a more sustainable result, because areas with higher degrees of limitation can be appropriately zoned and subdivision layouts can make best use of the constraints and opportunities of the land.

Under the MPS Planning Scheme, it is required to demonstrate that the land is suitable for the development of a dwelling prior to subdivision approval. Chapter 5 of MAV & DSE (2014) broadly discusses LCAs for subdivisions.

[2] Refer Section 3.4 of the GOWM (2024).

Regardless of the scale of an LCA, the objective is the same, that is, the determination of a sustainable OWM strategy for all proposed lots. Different management strategies may be required within the same subdivision due to varying constraints identified through the LCA across the site.

Only concept OWMS designs are necessary at this stage to determine the minimum size of the EDS, options may be left as broad technology types suitable for the lots, with detailed system design required at the individual lot development stage.

The subdivision LCA must provide an assessment based on a minimum dwelling size of five (5) bedrooms for residential subdivisions to ensure no issues arise at the individual lot stage. Each proposed lot must meet the minimum lot size requirements specified in the relevant Planning Scheme. If no minimum lot size is provided for the Planning Scheme (i.e. TZ), a minimum lot size of 0.4ha (4,000m^2) is to be followed as per Section 6.4 of the Operational Plan.

The LCA requirements detailed within Section 6.3 are applicable to all scales of development planning and assessment. The Risk Rating of the existing lot will direct the level of detail required for an LCA for a subdivision or rezoning of a lot.

6.3.5 Commercial LCA Requirements

Commercial developments (i.e. cafes, pubs, wineries and restaurants, dog kennels, catteries etc.) present a higher risk to OWM when compared to residential developments as they are complex due to variability in wastewater generation and wastewater composition. Therefore, a high degree of assessment should be carried out.

A Commercial LCA is required for all commercial developments, which requires a higher level of assessment and reporting due to the inherent constraints and risks associated with generated wastewater. The LCA requires in-situ permeability testing, soil chemical analysis, conservative monthly or daily water balance, an annual nutrient balance, and a detailed site-specific hydraulic design in addition to the standard LCA requirements.

As per Section 4.2.2.1 of the GOWM (2024), all commercial developments should have a flow meter fitted to aid in monitoring water usage and flow rates from the development. As per *AS/NZS 1547:2012*, flow meter data may be used in place of standard flow rates for existing developments as this is representative of the development, and can avoid under / over design of an OWMS.

If the development contains a commercial kitchen, it is required that an adequately sized grease trap be installed on the greywater waste stream to ensure excess fats, oils, and greases are not discharged to the treatment system. Grease traps are to be a minimum of 600L, and must be sized by both the seating capacity and fixture allowance method (whichever value is larger). Information on grease trap sizing can be found on SEWs website.

Food and Oil Interceptor | South East Water

6.3.6 Generic LCA Requirements

As detailed in each LCA procedure, confirmation of any relevant risk overlays (e.g. landslip, flooding) with Council is required. If any risk is identified, this needs to be specifically addressed within the LCA. Discussion with Council is required to determine the necessary requirements to be met.

If the site is located within an identified landslide region (ESO4 – Landslip Susceptibility Area A), then a geotechnical report (OWM relevant) will likely need to be completed. If the site is located within a known shallow groundwater region, the depth to (permanent and shallow) groundwater will need to be determined and discussed within the LCA report.

6.4 Minimum Lot Size for New Developments

The results of the Risk Analysis will assist MPS in planning for future development and determining lot sizes for future subdivision. The assessment of a property for OWM potential is important as it can assist in understanding its potential for development.

Historically, wastewater management was overlooked in early planning stages with standards changing over time, resulting in a number of subdivided parcels within towns and low-density residential areas (i.e. settlements) being significantly undersized. Due to small lot size, these lots have resulted in a higher risk rating in the Risk Analysis, and OWM on these lots is generally constrained and potentially unsustainable.

Where OWM is not supported on small lots, consolidation with adjacent undeveloped lots may be the most likely pathway to allowing development proposals. Such approval will also consider other planning controls relating to the land. Where rezoning of land is being considered, or Structure Plans are being developed, Council may use the Risk Analysis to determine suitable development potential and density.

The results of the Risk Analysis carried out in this OWMP support a general minimum lot size of 0.4ha (4,000m^2), assuming there is adequate useable land for OWM, including a sustainable EDS contained entirely within the property boundary. This value is a broad guideline only.

Constrained properties, such as those with steep slopes, very shallow soils or in close proximity to surface waters or groundwater bores, will need to demonstrate that they have adequate available land for the sustainable application of treated effluent. The minimum lot size of 0.4ha may be too small in such instances; however, innovative building design and lot layout can mitigate constraints on previously undeveloped or redevelopment sites.

6.5 OWMS Design

6.5.1 Wastewater Generation

Wastewater generation rates for residential dwellings are to be based on the occupancy rate of the number of bedrooms plus one (1), as outlined in Section 4.2.1 of GOWM (2024). Additional rooms that could potentially serve as a bedroom (i.e. study, office) are to be considered in the assessment, unless there is evidence that the room is unlikely to be used as a bedroom. Commercial accommodation units are to be based on an occupancy rate of two (2) persons per bedroom.

Wastewater flow rates are to be based on the values outlined in Table 4-1 of the GOWM (2024) for residential development, with the rates outlined in Table 4-4 of the GOWM (2024) used for commercial developments. Further information can be found in Section 7 of the Technical Document.

6.5.2 Wastewater Treatment Systems

For the installation of new proprietary systems, the selected system must have a current Certificate of Conformity from a conformity assessment body, conforming to the relevant Australian Standard. The appropriate standards for the different types of treatment systems are as follows:

- Septic tanks (and vermiculture systems) – *AS/NZS 1546.1:2008*, On-site domestic wastewater treatment units, Part 1: Septic tanks;
- Waterless composting toilets – *AS/NZS 1546.2:2008*, On-site domestic wastewater treatment units, Part 2: Waterless composting toilets;
- Secondary treatment systems – *AS 1546.3:2017*, On-site domestic wastewater treatment units, Part 3: Secondary treatment systems; and
- Domestic greywater system – *AS 1546.4:2016*, On-site domestic wastewater treatment units, Part 4: Domestic greywater treatment systems.

The EPA holds a register of the OWMS with valid Certificates of Conformance within Victoria, which can be found at the following:

https://www.epa.vic.gov.au/for-community/environmental-information/water/about-wastewater/onsite-wastewater-systems

Section 4.6 of the GOWM (2024) provides useful guidance on factors to consider when selecting an EPA approved OWMS. Site constraints (including for effluent dispersal or reuse) are a major factor when deciding on a treatment system.

6.5.3 Effluent Dispersal Systems

The key issues that influence the selection and design of EDS are:

- Effluent quality (primary, secondary, or advanced secondary);
- Soil characteristics (texture, structure, depth, dispersibility, and phosphorus adsorption capacity);
- Site characteristics (slope, aspect, and exposure); and
- Proximity to sensitive receiving environments (surface waters and groundwater).

The degree of constraint for sustainable effluent dispersal can be a major factor in selecting a treatment system. Section 4.6 of the GOWM (2024) and Section 3.4 of the EDRS (2024) provides useful guidance on factors to consider when selecting an EPA approved OWMS

The design of the EDS must be carried out consistently with the guidelines cited in this document, as well as the *AS/NZS 1547:2012*. Table 4 of this Operational Plan details the compatibility of treatment systems and EDS options.

6.5.4 Installation

Often system failures will occur as a result of poor installation practices. The installation of OWMS must be undertaken by a licensed plumber or system installer who is familiar with the requirements of Council, the Guidelines and Standards, and has experience in installing OWMS. Details for the installation of treatment systems can be found in Section 5 of the GOWM (2024), with details for EDS installation found as Section 6 of the EDRS (2024).

For a system to operate and perform as it was designed, the system must be installed in accordance with the manufacturer's requirements.

Issues such as poor drainage around tanks and uneven distribution of effluent throughout absorption trenches / beds or irrigation systems can all result in effluent ponding, runoff, or impacts on public health and the environment which can easily be avoided.

6.5.5 Maintenance

For a system to operate and perform as it was designed, the system must also be maintained in accordance with the manufacturer's requirements and regular maintenance must be undertaken in accordance with the maintenance procedures outlined in Section 5.2 of this Operational Plan. Details for the operation and maintenance of treatment systems can be found in Section 8 of the GOWM (2024), with details for EDS maintenance found as Section 7 of the EDRS (2024).

By undertaking these regular maintenance tasks, a system can operate effectively without major problems; however, a lack of care for any one, or all, of these items can result in system failures.

7 OWMS Design, Approval, Installation, and Operation

This section broadly describes the responsibilities across planning, installation, and operation of OWMS in unsewered localities of the Shire. The level of detail required to support a proposal for OWM on an unsewered lot is outlined Section 6.3.

7.1 Council's Responsibilities

Council is responsible for assessing permit applications; issuing permits for new and altered OWMS; monitoring of existing systems; and ensuring compliance with Council, EPA, and policy / legislative requirements (as outlined in Section 3 of this Operational Plan).

Council will utilise the EPA '*Regulating onsite wastewater management systems: local government toolkit'* (Publication 1974:2021) to assist regulating OWMS within the Shire and adhering to the *EP Act 2017*. The flowchart for investigating OWM is detailed in Appendix 3 of the toolkit gives an overview of Council's responsibilities in OWM.

Criteria to be considered when assessing a permit application is found in Regulation 26 of the *EP Regulations 2021*, with circumstances for refusal provided. Permits will be issued for a maximum five (5) years. Under Regulation 33 of the *EP Regulations 2021* Council staff may inspect the site of a proposed OWMS during the assessment and installation process prior to issuing a permit to use, as determined on a case-by-case basis.

7.2 Land Owner and Occupier Responsibilities

Persons that own or occupy land with an OWMS are to take all reasonably practicable steps to eliminate or reduce risks of harm to public health and the environment, so far as reasonably practicable by: taking reasonable steps to maintain the OWMS in good working order; providing information to a person in management of an OWMS (i.e. tenant) regarding correct operation and maintenance of the system; keeping maintenance records; responding to problems that arise; and notifying Council of a failure and rectification steps. Further detail can be found in Part 5.7 of the *EP Regulations 2021*.

This requires a proactive approach from owners and occupants, with Table 2 of the EPA Publication 1974:2021 outlining the requirements for the operation and maintenance of an OWMS for both the owner and occupier of the land. Objectives to achieve better OWMS management in the Action Plan include:

- ✓ **Action Item 9 – System owner education program;**
- ✓ **Action Item 10 – Broader community education program; and**
- ✓ **Action Item 11 – Implement a risk based monitoring program of OWMS, and when required, enforcing maintenance on existing OWMS.**

7.3 LCA Assessor / System Designer Responsibilities

Section 3 of the Victorian LCA Framework (MAV & DSE, 2014) outline minimum requirements for land capability assessors with regards to qualifications, experience, association, insurances and independence.

The professional engaged to undertake the LCA and the OWMS design has a responsibility to prepare a site-specific OWM design and supporting documentation that demonstrates that the requirements of the *EP Act 2017* will be achieved. The LCA must include sufficient information regarding treatment performance (effluent standard) and effluent dispersal (sizing and layout) to allow for an appropriate OWMS design to be provided with an application.

The assessor / designer is required to undertake the level of investigation and reporting (LCA) appropriate to the Risk Rating applied to the lot, as outlined in Sections 6.2. Section 6.5 provides general advice on design, installation, and maintenance of OWMS.

8 Compliance and Education Programs

8.1 Record Management

The availability to legacy permits is required to support education and compliance programs. Electronic database records of applications and permits for OWMS in the Shire date back to the early 2000s, with hardcopies to the 1970s. The current record system for OWMS applications and permits is as follows:

- Applications and permits are electronically registered in the Shire's database. Details of the type of system, the permit conditions, the issue dates and the inspection results are kept on the database;
- Hard copy records of plans, permits, and inspection notes are kept on the relevant lot files. It is thought that information should be available for most of the OWMS that have been installed since 1970 (and all since 2000); and
- Hard copies of active files are managed by the Shires 'Information and Records Management' team.

The Shire receives service reports from the majority of contractors that service secondary treatment systems. The ability to receive and manage these records is fundamental to facilitating monitoring programs that assess the compliance of maintenance of secondary treatment systems.

8.2 Monitoring Program

8.2.1 Overview

The effective management of OWMS requires a robust and well-resourced education and monitoring program. The implementation of an educational program meets recommendation four (4) listed in the VAGO Audit (2018). Pro-active wastewater education and compliance programs are a core function of the Shire to manage public health and environmental risks associated with OWMS. Council takes an educative approach to assist OWMS owners meet their obligations under the relevant legislation. Where there is serious or repeated non-compliance, a non-compliance process will commence in line with legislation and Shire Policies.

8.2.2 Education

Educational letters will be sent to properties providing information on OWMS maintenance and sewer availability. Letters will be sent to property owners in high risk townships and when there is a transfer of ownership.

Social media and print media advertising will be performed biannually to promote OWMS maintenance.

The MPS website has a section dedicated to OWM in the Shire, which explains how owners and occupants of unsewered properties can best manage their systems in order to protect public health and the environment.

Septic Tank Maintenance and Care - Mornington Peninsula Shire (mornpen.vic.gov.au)

✓ **Action Item 10a-b – Broader community education program.**

8.2.3 Compliance Program

MPS implements two (2) monitoring programs to increase the level of compliance regarding the maintenance of OWMS.

The first program involves regular monitoring of service records for secondary treatment systems to ensure that they are in good operating order.

The second program is a targeted program to identify high risk OWMS and request information on the maintenance to determine performance of these OWMS. The implementation of a compliance program that obtains data on the performance and brings systems in line with legislative requirements contributes to meeting recommendation two (2) and three (3) of the VAGO audit.

Council can request to inspect maintenance records using Regulation 162 of the *EP Regulations 2021*. The inspection of maintenance records is a way to obtain evidence the property owner is taking reasonable steps to ensure the system is maintained in good working order. If required, the Council can utilise powers of entry and inspection under Part 9.3 of the *EP Act 2017* to inspect the OWMS. The use of this legislation is subject to a risk assessment and Shire Policy. The Council will notify the property owner of the date of the inspection and provide the opportunity to contact the Authorised Officer for further details or reschedule.

8.2.4 Inspection Protocol

Shire staff have small laptops that can be used in the field to enter inspection results. A hard copy inspection checklist may be used in areas with poor internet access or if preferred by the Officer. Inspection reports by Officers will meet the requirements outline in Section 254 of the *EP Act 2017*.

The primary aim of the inspection will be to provide information on maintenance requirements and perform a risk assessment of the OWMS. The Officers Inspection will consider the 'criteria' in the assessment checklist in Appendix 3.2 of the EDRS.

8.3 Community Education Program

The MPS website has a section dedicated to OWM in the Shire, which explains how owners and occupants of unsewered properties can best manage their systems in order to protect public health and the environment.

Septic Tank Maintenance and Care - Mornington Peninsula Shire (mornpen.vic.gov.au)

✓ **Action Item 10a-b – Broader community education program.**

Details on the permit application process for OWMS installation or alteration can also be found on the MPS website.

Septic Tank Permits - Mornington Peninsula Shire (mornpen.vic.gov.au)

9 Commercial OWMS

9.1 Overview

Schedule 1 of the *EP Regulations 2021* defines which activities require EPA prescribed permission under the *EP Act 2017*. Wastewater treatment systems with a design or actual flow rate of >5,000L/day of sewage on any day require an A03 development and operating licence from the EPA.

An A03 development and operating licence are statutory documents which allow scheduled works to be constructed and operated, subject to conditions set by the EPA during the assessment process. As part of the approval process, the EPA assesses any potential environmental impacts from the proposal, mitigation for any impacts, compliance with policy requirements (including protection of beneficial uses), and comments from referral agencies and the general public.

The EPA licences set acceptable waste discharge and management criteria. They are publicly available documents that can be viewed at the following:

https://www.epa.vic.gov.au/about-epa/public-registers/permissions

In some cases, the EPA may approve an exemption from the need to obtain licences.

The EPA periodically inspects all licenced sites, with the frequency informed by a range of factors related to the degree of public health and environmental risk posed by the site. Targeted inspections can also be made based on intelligence and pollution report information.

Licenced sites are required to submit an Annual Performance Statement detailing their performance against the licence conditions. These are also public documents that can be searched on the above link. The EPA conducts a combination of targeted and random assessments of Annual Performance Statements.

There are other types of industrial activity (not wastewater treatment) that are not directly regulated under the *EP Regulations 2021* that still have potential to impact on water quality. Examples include dairy farm effluent management and stormwater from commercial and light industrial operations, particularly in unsewered areas. The EPA has a role in pollution prevention and response in these activities. The EPA's approach to these issues is outlined in the Compliance and Enforcement Policy, Publication 1388. The Compliance and Enforcement Policy articulates the EPA's approach, method and priorities for ensuring compliance with the relevant Acts and statutory documents and carrying out the EPA's compliance and enforcement powers.

Council is responsible for the regulation of all OWMS <5,000L/day, which includes some commercial systems. It is important to note that commercial enterprises, such as small factories and cafes operating in unsewered areas, often generate <2,000L/day and therefore are regarded from an operational perspective as domestic systems. The characteristics of the wastewater will differ from a typical residential dwelling, but the wastewater is expected to contain the same broad ranges of contaminants. This is unless the commercial enterprise is producing high strength or unusual wastes, such as small-scale food, alcohol, or chemical processing, in which case it should be regarded as a commercial development. Commercial enterprises generating up to 5,000L/day in the Shire include restaurants, pubs, and tourist accommodation.

Without proactive enforcement from the regulator, system maintenance, monitoring, and record-keeping can become lax over time, with system performance suffering as a result. Generally speaking, older commercial systems are often non-compliant with current expectations and standards. However, they continue operating until improvements are triggered, typically by the identification of problems, the redevelopment of the premises, or proactive intervention by regulators (local government or other agencies).

9.2 Risks Associated with Commercial Systems

The most common causes of failure or underperformance of commercial treatment systems include the following:

- Surge loads (e.g. peak holiday seasons or production cycles in factories);

- Irregular and / or ineffective maintenance and upgrades;
- Inadequate desludging; and
- AWTP and other aerobic systems being switched off for long periods of time, leading to die-off of aerobic microorganisms and delayed start-up and poor performance when switched back on.

The most common causes of failure or underperformance of commercial effluent dispersal or reuse systems include the following:

- Inappropriate design, including undersized EDS for peak loads without appropriate load buffering;
- Inadequate setback distances from sensitive receptors, such as waterways, which no longer meet the minimum setbacks in Table 4-10 of the GOWM (2024);
- Poor or inappropriate installation;
- Inadequate maintenance, including regular back-flushing of irrigation systems with clean water to prevent solids build-up and delays to repairs (e.g. broken sections of pipe); and
- 'Creeping failure' of trench and bed systems as soils and media become blocked with suspended solids from poorly designed and/or poorly maintained treatment systems.

9.3 Management Strategies for Commercial Systems

9.3.1 Wastewater Treatment Systems

All commercial wastewater treatment systems should have an up-to-date Operation and Maintenance (O&M) Plan or Manual which includes a diagram of the system and provides instructions for all maintenance schedules required for the system, and details of who is responsible for the management and maintenance of the system.

Commercial systems <5,000L/day should be serviced and maintained in accordance with the system manufacturer's requirements. Secondary treatment systems will require servicing quarterly; however, some commercial systems will require daily monitoring by an onsite system operator. Results of system servicing should be submitted to Council on a quarterly basis. Where system maintenance records are not supplied to Council as required, follow up action should be taken by Council to ensure the system is serviced appropriately.

Council is responsible for monitoring commercial systems <5,000L/day. These systems should be included in a Council monitoring program and, where problems or complaints are received, Council should assess and regulate the system in a similar fashion to a domestic system and also inform the EPA of the investigation, where relevant. The EPA is responsible for carrying out additional investigations at its own discretion, including in response to complaints about a system from Council or members of the public. Food and Health businesses are required to have a registration with the Shire. The Shires database contains information on if these businesses are connected to sewer.

✓ **Action Item 3 – Maintain a database of unsewered commercial premises and request maintenance reports.**

The issues surrounding selection, design, installation, and maintenance of commercial-scale EDS are largely the same as for domestic systems. However, potential problems associated with scale and flow-balancing are introduced with large and / or irregular effluent flows. For seasonal developments, part of the EDS may need to be switched off, or alternatively the off-season (reduced) effluent load can be distributed throughout the entire area over longer time periods using a flow sequencing control system.

EDS' require regular maintenance and should be closely monitored to ensure effective operation and even distribution of effluent. An O&M Plan or Manual should be developed, as for the treatment system. EDS that are turfed will require regular mowing, with lawn clippings removed from the area. Other vegetation types should be pruned and maintained as necessary to ensure nutrients are being removed by plant uptake.

10 Risk Management in OWM Design and Installation

The OWM risks identified across unsewered areas in the OWMP are based on the predominance of standard (primary) septic tanks with conventional absorption trenches / beds throughout the Shire. Table 9 outlines possible ways these risks can be mitigated.

Table 9: Risk Management for Various Constraints

Risk Category	Issue	Possible solutions	Methods	Benefits
Soils	Poor soils make it difficult for the site to effectively disperse effluent.	Enhanced treatment of effluent.	Secondary treatment.	Higher standard of treatment suitable for subsurface EDS in poorer soils.
			Advanced secondary treatment.	Disinfection stage decreases public health risk. Higher standard of treatment suitable for subsurface EDS in poorer soils.
		Remediate soils.	Addition of gypsum / lime as per LCA recommendation.	Can assist in improving effluent adsorption capabilities of dispersive soil.
		Import better quality soils.	Sandy loams, loams, and clay loams with <10% gravel content.	Soils can be selected for suitable characteristics (e.g. permeability) and also increase profile depth.
Slope	Steep slopes can be destabilised by effluent, and it is difficult to contain effluent onsite.	Terracing.	Reduce slopes by creating flatter areas, ensure soil depth is adequate if using cut and fill.	Ease of access and maintenance (e.g. mowing) and other controls (e.g. erosion).
		Pressure dosing	Apply effluent evenly across the EDS via pressure doing.	Reduces the risk of effluent breakout / surface surcharge as effluent doesn't accumulate at a single point in the EDS.
Lot size	The smaller the lot the less area is available for effluent management .	Reduce dwelling size (number of bedrooms).	To be done at the planning and design stage.	If a dwelling is smaller with fewer occupants, it will generate less wastewater
		Reduce footprint of dwelling and other improvements.		To ensure there is enough area to use for effluent dispersal, reduce the space occupied by the dwelling, shed, driveway etc.
		Consider mound system as an EDS option.		Permits higher effluent loading rate per square metre.
		Consider secondary treatment to absorption trenches / beds.		

Risk Category	Issue	Possible solutions	Methods	Benefits
Waterways / Groundwater Bores	Setback distances from waterways and groundwater bores.	Ensure entire system is located outside of setbacks and consider treatment options.	Increase wastewater treatment standard.	Setbacks can be reduced when higher treatment standards (e.g. advanced secondary with disinfection) are used.
Flood Prone Land	Flood prone land.	Ensure entire system is located outside of flood prone land.	To be done at the planning and design stage.	Waters are protected from contamination, and the system is protected from inundation of water which eliminates the potential need for costly system replacement or repair.

Further details on risk management can be found in Section 4.6 of the GOWM (2024) and Section 4.7 of the EDRS (2024).

11 Action Plan

This Action Plan outlines the management strategies and action items to address priorities. The Health Protection Unit will have the primary responsibility for the coordination and implementation of the recommendations. Council's Planning, Environment, Infrastructure, Building and GIS staff will assist them.

Table 10: Action Plan Timeline

Item Number	Action	Description	Term	Due Date	Responsibility	Resourcing
1	**Preparation of policies and procedures**	Prepare (or revise / finalise) and document the following to ensure they are in line with this Operational Plan and current legislation, standards, and guidelines: • Onsite Wastewater Design and Installation Guidelines; • Rectification / upgrade works procedure; • 'Permit to Install' and Certificate to Use procedure; and • Compliance and Enforcement Policy.	Ongoing	Ongoing	WWO	MPS
2a	**Continuation of improvement of data collection and management (VAGO recommendation #3)**	Maintain a GIS layer for OWMS in the Shire.	Ongoing	Ongoing	GIS Specialist	MPS
2b		Ensure SEW sewerage connection data is updated quarterly on GIS and property rating system status is altered to show the property is connected to sewer.	Quarterly	Ongoing	GIS Specialist	MPS
2c		Legacy OWMS do not have a permit entry in the Shires database. Investigate creating septic tank folders/database entries for legacy systems to facilitate tracking maintenance and sewer status.	Ongoing	Ongoing	Implementation Stream Lead	MPS
2d		Continue to work with IT/Implementation Stream Lead to ensure septic tank information and procedures are carried over to the new system. Explore improvements with septic tank permit and maintenance record keeping.	Ongoing	Ongoing	WWO / IT / Implementation Stream Lead	MPS
2e		Continue to work with the Information and Records Management team to digitise legacy permits to facilitate education and compliance programs.	Ongoing	Ongoing	Information and records management / WWO	MPS
2f		Implementation of a new IMS, allowing internal storage of service and maintenance records	Medium	Late 2025	Information and records management / WWO	MPS
3a	**Commercial Systems**	Continue to maintain a database of unsewered commercial premises and request maintenance reports of commercial systems.	Ongoing	Ongoing	WWO	MPS
3b		Establish a process for the exchange of information between MPS and EPA on commercial properties that exceed 5,000L/day	Medium	Late 2025	WWO	MPS

Item Number	Action	Description	Term	Due Date	Responsibility	Resource Funding
3c	**Commercial Systems**	Audit existing commercial septic systems in Arthurs Seat, Red Hill, Main Ridge, Red Hill South, Merricks and Shoreham townships to assess compliance and identify any immediate public or environmental health risks.	Medium	Late 2025	WWO	MPS
4a	**Sewer advocacy**	Notify the water authority of areas where alternative sewerage management solutions are required in line with Section 7 of the OMLI (2024).	As soon as practicable after publishing the OWMP	2025	Shire Staff / SEW	MPS
4b	**Sewer advocacy**	Support SEW reticulated sewerage programs.	Ongoing	Ongoing	WWO / SEW	MPS
5a	**OWMS Permits and Compliance**	Undertake compliance audits of new installations.	Ongoing	Ongoing	EHO	MPS
5b		Enforce maintenance of failing systems, as required (case-by-case).	Ongoing	Ongoing	EHO/WWO	MPS
6	**Investigations and Planning**	Review Locality Reports in OWMP and system data to inform planning decisions regarding unsewered townships.	Short	2025	WWO	MPS
7a	**Investigations and Planning**	Brief all Planning staff on the OWMP by providing a summary document or meeting briefing.	Short	2025	WWO	MPS
7b		Actively engage with Planning staff to ensure wastewater restrictions are considered at the planning stage.	Ongoing	Ongoing	EHO	MPS
7c		Identify all MPS owned OWMS in sewered areas that are at risk of causing public health and environmental risk and develop a strategy to prioritise sewer connection.	Medium and Ongoing	Ongoing	WWO	MPS
8a	**Staff Education**	Staff trained to be familiar with OWM and plumbing requirements.	Ongoing	Ongoing	EH Team Leader	MPS
8b		Improved training of EHO / WWO to assess LCA, and establish review panel.	Ongoing	Ongoing	EH Team Leader	MPS
9	**System Owner Education Program (VAGO recommendation #4)**	• Discuss individual systems with owners during the application process and in response to enquiries from owners. • Develop mechanisms to prompt pro-active education upon purchase of lot.	Short and Ongoing	Ongoing	WWO	MPS
10a	**Broader Community Education Program**	• Promote policies and educational materials to the community and service providers. • Educate future / potential owners of dwellings with OWMS.	Short and Ongoing	Ongoing	WWO	MPS

Item Number	Action	Description	Term	Due Date	Responsibility	Resource Funding
10b	**Broader Community Education Program**	• Revise existing educational material for distribution to residents and on website. • Develop new educational material for distribution to residents and on website.	Ongoing	Ongoing	WWO	MPS
10c		• Support SEW on the education and promotion for connection to sewerage.	Ongoing	Ongoing	WWO	MPS

Item Number	Action	Description	Term	Due Date	Responsibility	Resource Funding
11	**Monitoring (VAGO recommendation #2)**	Continue to implement a risk based monitoring program of OWMS. This monitoring program should involve the following: • Request pump-out / desludge reports from properties serviced by primary treatment systems; • Request maintenance reports from properties serviced by secondary treatment systems; and • Enforce action (maintenance / modification) if reports indicate issues with OWMS	Ongoing	Ongoing	WWO	MPS
12	**Resource Allocation**	Investigate budget requirements for the implementation of the OWMP including system monitoring, compliance and enforcement of OWMP (& this Action Plan). • Implementation phase. • Ongoing administration of OWMP.	Immediate	2025	WWO	MPS
13a	**Reviews**	Internal annual progress review of 2025 OWMP.	Ongoing	Annual	WWO	MPS
13b		Review of 2025 OWMP after five (5) years.	Long	July 2030	External	MPS

12 Glossary of Terms

Term	Definition
Aerobic treatment	Biological treatment processes that occur in the presence of oxygen (i.e. aerobic bacteria digest wastewater contaminants). Aerobic bacteria are organisms that require oxygen to survive and grow.
Anaerobic treatment	Biological treatment processes that occur in the absence of oxygen.
Blackwater	Wastewater grossly contaminated with faeces (i.e. from a toilet).
Desludging	Removal of the semi solid waste from a tank.
Effluent	Water discharged from a treatment plant.
Evapotranspiration	Transfer of water from the soil to the atmosphere through evaporation and plant transpiration. Calculated using the FAO Penman-Monteith method to derive (ET_0).
GED	General Environmental Duty associated with the amended *EP Act 2017*
Greywater	Wastewater from showers, baths, sinks, washing machines, dish washers.
Hardpan	A hardened, compacted and/or cemented horizon in the soil profile.
Locality	The broader locality surrounding a town (place name within mapped boundaries).
Non-Potable	Water not suitable for human consumption.
Organic Matter	Material that comes from the tissues of organisms (plants, animals, or microorganisms) that are currently or were once living.
Parcel	The smallest unit of land able to be transferred within Victoria's cadastral system, usually having one proprietor or owner (land.vic.gov.au). For the purposes of this OWMP, parcel and lot are given to have the same meaning.
Peds	An aggregate of soil particles.
Permeability	The ability of the soil to allow water to pass through.
P-sorb	Phosphorus adsorption capacity of a soil.
Property	Land under common occupation (land.vic.gov.au). May include multiple parcels.
Risk	The 'likely' consequence of off-site (OWM) impacts based on the cumulative effect of individual lot constraints (soil suitability, slope, useable lot area, climate and location) and variables affecting the specific land capability and associated limitations of the lot to sustainably manage wastewater in compliance with *EP Act 2017* objectives.
Settlement	An area of residential development within the Rural Living Zone or Rural Conservation Zone.
Sewage	Solid and liquid wastewater conveyed through sewers.
Sewerage	A system of sewers.
Town	The town servicing a locality, which is predominantly, zoned Township Zone. It contains both residential and commercial development.

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Appendix A

Risk Checklist

Parameter	Site specific input
PFI Identification Number	
Lot Address	
Locality	
Zoning	
Area (ha)	
Soil Texture	
Soil Depth (m)	
Soil Structure	
Soil Limitations	
Permeability (Ksat) (m/day)	
Slope (%)	
Presence of Surface Waters	
Useable Lot Area (ha)	

Appendix B

Example System Inspection Pro-forma

Date & Time of Inspection		**GPS Coordinates of Effluent Dispersal System**				
Property Address:		**South**		**East**		**Aspect:**
Property Owners/Contact:		**Owner Present:**				
Inspected By:		Yes		No		
Inspection Protocol						
Risk Rating		**Low (1)**	**Medium (2)**	**High (3)**	**N/A**	**Comments**
Treatment System						
Grease Trap						
Is grease trap adequately sized, maintained and functioning (if applicable)?		Yes	No			
Greywater						
Is greywater directed to street / drain?		No		Yes		
Is greywater diversion device operating correctly (if applicable)?		Yes		No		
Septic Tank						
Is tank(s) accessible for inspection and maintenance?		Yes		No		
Is tank(s) and lid(s) appear structurally sound?		Yes		No		
Is tank(s) adequately sealed?		Yes		No		
Is tank area subject to stormwater or groundwater inundation?		No		Yes		
Is tank(s) require urgent repair or replacement?		No		Yes		
Tank dimensions:						
Type	Plastic Concrete Other:					
Volume (L):						
Baffle?	Yes No Damaged	Yes		No / Damaged		
Outlet height (mm):						
Liquid height (mm):						
Scum Depth (mm):						
Sludge Depth (mm):						
Operation:	Are T-juctions attached and working?	Yes		No		
	Is desludging required?	No		Yes		
	Is adequate anaerobic treatment provided?	Yes		No		
Pump / pump wells / controls						
Is the pumpwell(s) of adequate capacity (e.g. emergency storage)?		Yes		No		
Is the system fitted with a high level alarm?		Yes		No		
Are there any electrical hazards / issues with the system?		No		Yes		
Is there a suitable control system for the pump?		Yes		No		
Is the pump operational and in a satisfactory condition?		Yes		No		
Is pump well in satisfactory condition? (Yes - Low, No - Medium or High)		Yes		No		
AWTS						
Is the AWTS operating satisfactorily? (Yes - Low, No - Medium or High)		Yes		No		
Are the blowers working?		Yes		No		
Is there sludge or scum accumulation in aeration chamber, clarification chamber or irrigation chamber?		No		Yes		
Is the chlorine dispenser filled and functioning?		Yes		No		
Resdiual Chlorine (mg/L)						
Is system regularly serviced by a contractor?		Yes		No		
Effluent Dispersal System						
Absorption System						
Dimensions (m)	Slope (%) approx.	<6%	6-10%	>10%		
Is the effluent dispersal system of adequate size?		Yes		No		
Is there a suitable vegetation cover over the effluent dispersal system		Yes	Partial	No		
Is there adequate exposure of the effluent dispersal system?		Yes	Partial	No		
Is the effluent dispersal system wet or boggy?		No		Yes		
Is there evidence of surface ponding or runoff from the effluent dispersal system?		No		Yes		
Is the effluent dispersal system prone to poor drainage, flooding or high groundwater?		No		Yes		
Are there any damaged or collapsed sections of the effluent dispersal system?		No		Yes		
Is there evidence of, or access for vehicle and animal traffic?		No				
Does the effluent dispersal system appear to be level and in line with contours?		Yes		No		
Are buffer distances to effluent dispersal system adequate?		Yes		No		
Surface / Subsurface Irrigation						
Dimensions (m^2):	Approximate slope (%):					
Is the effluent dispersal system wet or boggy?		No	Yes	Yes		
Is there evidence of surface ponding or runoff from the effluent dispersal system?		No	Yes	Yes		
Are buffer distances to effluent dispersal system adequate?		Yes	No	No		
Are all sprinklers working?		Yes	No	No		
Overall Assessment						
Was the whole system located and accessed?		Yes		No		
Was the system discharging effluent to the ground surface in an unsatisfactory manner?		No		Yes		
General Condition of system	Good (Low) Satisfactory (Medium) Unsatisfactory (High)	Good	Satisfactory	Unsatisfactory		
Overall Highest Risk Rating						
Are works required on the system?		**Minor**	**Moderate**	**Major**	**Nil**	
Details of Required Works:						