Onsite Wastewater Management Plan 2026-2030

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Review date: July 2030

Document control

Revision No.	Date	Description of change
1.1	22/4/26	Draft Plan developed by Environmental Health in line with updated legislation and guidance. Circulated for review with internal and external stakeholders.
1.2	15/5/26	Amended to incorporate feedback received internally through WCC City Growth (Statutory and Strategic Planning) and externally through Wannon Water (Water Authority).
1.3	6/7/26	Adopted by Council. Progressed from draft and published.

Acknowledgement of Country

Warrnambool City Council acknowledges the Peek Whurrong and Kirrae Whurrung Peoples of the Maar Nation, their land, waterways and skies within the Warrnambool municipality.

We pay our respects to their Elders past and present.

Contents

1. Introduction and context

The Warrnambool City Council (WCC) Onsite Wastewater Management Plan (OWMP) establishes Council's strategic framework for managing risks to human health and the environment associated with approximately 1,000 onsite wastewater management systems (OWMS) across the municipality. This OWMP applies to existing systems whilst also providing a framework to guide the assessment and installation of new OWMS, ensuring systems are appropriately designed and sited in areas where reticulated sewer services are unavailable. OWMS includes but is not limited to septic tank systems, Aerated Wastewater Treatment Systems (AWTS) and reed bed systems with various dispersal methods such as trenches, beds, mounds and subsurface irrigation. These systems are installed within unsewered residential, commercial, industrial, and recreational settings within the municipality.

WCC is the responsible authority for OWMS with a design capacity of 5,000 litres per day or less and is delegated to assess and issue permits to construct, install, alter, or decommission these systems. The Environment Protection Authority Victoria (EPA) is the responsible authority for approving systems larger than 5,000 litres per day which are outside the scope of this OWMP.

Through the OWMP, Council will apply a risk-based approach to ensure onsite wastewater is managed in a manner that protects human health and the environment, and addresses both site-specific and cumulative risks.

The OWMP outlines the measures Council will apply to ensure systems are planned, installed, operated, and maintained in accordance with the General Environmental Duty (GED) and the Obligations of Managers of Land or Infrastructure (OMLI), as described in Section 1.2 Legislative Framework of this OWMP.

This plan builds on the Domestic Wastewater Management Plan (2020–2025), incorporating existing data, mapping, and township characteristics. This OWMP adopts an evidence-based risk framework to meet new legislative obligations and to manage both individual system performance and the cumulative impacts of onsite wastewater systems across unsewered areas of the municipality.

1.1. Risks associated with wastewater

OWMS play a critical role in protecting public health and the environment in unsewered areas. When well-designed, correctly installed, and properly maintained, these systems can operate effectively for long periods. However, they also present inherent risks, particularly when they are ageing (legacy) systems, poorly managed, or located in constrained or sensitive environments. Identifying and understanding these risks underpins the risk-based management approach used throughout this OWMP.

Legacy systems are defined as OWMS that were installed before 1996 that either don't have a permit, operate without adequate maintenance, or were previously approved to discharge wastewater offsite.

Human health risk

OWMS treat and dispose of wastewater near where people live, work, and recreate. If a system fails or is not adequately maintained, untreated or partially treated effluent can surface above ground and potentially even migrate offsite. This can expose people to pathogens and increase the likelihood of illness.

These risks are particularly elevated in:

- periods of prolonged wet weather
- small or densely developed lots
- areas with high groundwater
- properties with older systems installed prior to contemporary design and performance standards

A risk-based assessment ensures these factors are considered when determining system suitability and ongoing management requirements.

Environmental risk

Wastewater contains nutrients, organic matter, pathogens and other pollutants that can harm sensitive environments if not properly treated. Poorly performing or unsuitable systems can impact groundwater, local drainage lines, and surface water bodies.

The most sensitive and controlled environments are Special Water Supply Catchment Areas (SWSCAs), which are formally declared areas that provide water resources for drinking water and domestic water supply purposes. There are no SWSCAs located within the boundaries of the WCC municipality. It is noted that the South Otway pipeline is supplemented by bore water obtained from Albert Park, although this is located within the declared sewer district in Warrnambool's township.

For WCC, environments such as the Merri River, Hopkins River, Russells Creek, Yarpturk Creek, Yangery Creek, and coastal areas are particularly vulnerable to even small increases in nutrient or pollutant loads. Soil conditions in these areas generally consist of highly permeable coastal sands or poorly draining clays. These soil categories are more likely to contribute to run-off or contamination of groundwater. These constraints are considered within the risk-based assessment to avoid environmental degradation.

Land use and development interface

OWMS must operate within the limits set by land capability, lot size and development intensity. Some settlements contain small lots or legacy systems that no longer meet current standards, increasing the potential for cumulative environmental and public health impacts.

As Warrnambool's population grows and land use patterns evolve, ensuring that wastewater risks are appropriately assessed is essential for responsible and sustainable development. This includes defining where reticulated sewerage may be a more appropriate long-term solution, particularly in areas where collaboration with Wannon Water can support the transition away from legacy onsite systems. This OWMP

supports investment in reticulated sewerage or suitable alternatives (such as cluster systems) in unsewered areas.

Why these risks matter

Understanding risks at a high level provides the foundation for:

- applying and complying with the GED
- establishing clear permitting, monitoring and compliance processes
- assessing cumulative impacts within and across catchments
- developing targeted strategies to minimise harm to human health and the environment

More detailed analysis, including township-specific risk profiles, soil capability, system density and environmental sensitivity is provided in the detailed Risk Assessment section of this OWMP.

1.2. Legislative framework

The management of onsite wastewater systems in Victoria is governed by a risk-based legislative framework designed to prevent harm to human health and the environment. This framework establishes clear duties for system owners, councils and land managers, and sets the minimum regulatory requirements for the installation, alteration and ongoing management of OWMS as described in Figure 1 below.

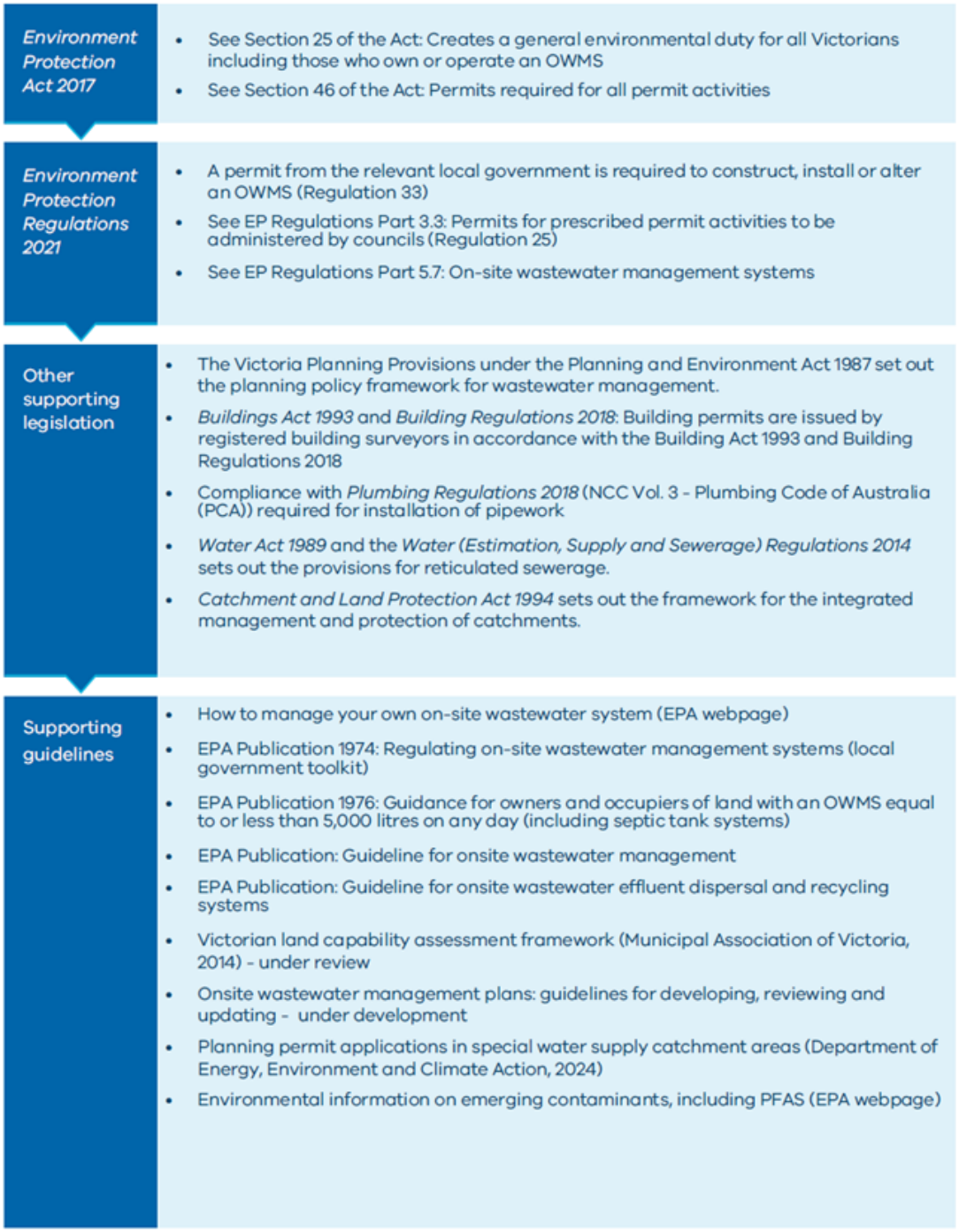


Figure 1: Regulatory framework for OWMS in Victoria, EPA May 2024 - Guidelines for Onsite Wastewater Management

1.3. Summary of Victorian state legislation

Environment Protection Act 2017

The Environment Protection Act 2017 provides the foundation for all onsite wastewater management in Victoria. It shifts the regulatory model from a prescriptive approach to one centred on preventing harm before it occurs.

Key obligations under the Act include:

- **General Environmental Duty (GED)**
  All owners and occupiers must minimise risks of harm to human health and the environment so far as reasonably practicable. This applies to the installation, use, maintenance and replacement of all OWMS, including older legacy systems.

- **Permissions framework**
  OWMS with a daily design capacity of ≤ 5,000 L/day require a council-issued permit (A20 Activity) to construct, install or alter a system.

- **Obligations of Managers of Land or Infrastructure (OMLI)**
  Councils must manage wastewater-related risks on land they control, assess environmental impacts, and ensure appropriate controls are in place.

Environment Protection Regulations 2021

The Regulations provide the detailed requirements that support the Act.

Key obligations under the Regulations include:

- detailing the permit requirements for OWMS (Regulations 41–43 and 57)
- setting performance expectations for operation and maintenance
- providing Council with regulatory tools including:
  - Regulation 163 - Maintenance Orders
  - Section 271 - Improvement Notices (under the Act)
- requiring appropriate commissioning, desludging, monitoring and repair of systems
- mandating that wastewater be managed without creating odours, overflows, surface ponding or the pollution of land or waterways

These Regulations directly support councils in evaluating system suitability, compliance, cumulative risk and long-term environmental impacts.

Planning and Environment Act 1987

- Governs the subdivision and development of unsewered land.
- Sets expectations for minimum lot sizes, overlays and development constraints.
- Integrates OWMS considerations into the planning permit process.

Water Act 1989

- Supports the transition from onsite wastewater systems to reticulated sewerage in serviced or serviceable areas under Section 147. Whereby the local water authority may require the owner of a property, via legal notice, to connect to the sewerage works of the authority.
- Provides consideration of cumulative impacts of unsewered development on surface water and groundwater at a catchment scale.
- Integrates onsite wastewater management within land use planning, drainage and waterway protection functions.
- Provides strategic justification for discouraging further OWMS reliance in areas identified for future sewer connection.

Building Act 1993 and the Building Regulations 2018

- Requires that a Permit to Install or Alter an OWMS is approved and provided to the relevant Building Surveyor prior to issuing of a Building Permit of a development in an unsewered area.
- Stipulates that a Certificate of Occupancy is not to be issued until essential services are operational. For developments in unsewered areas, a Certificate Approving the Use of an OWMS is required.

Plumbing Regulations 2018

- Identifies certain plumbing work associated with OWMS is classified as notifiable plumbing work.
- Stipulates that licensed plumbing practitioners must issue a Plumbing Compliance Certificate for notifiable work, including sanitary and drainage work connected to an OWMS.
- Stipulates that a copy of the compliance certificate must be lodged with the Victorian Building and Plumbing Commission, with a copy provided to both the owner and Council, verifying compliant installation prior to the issue of a Certificate Approving the Use of an OWMS.

1.4. Supporting guidelines and standards

EPA Guidelines for Onsite Wastewater Management (2024)

These guidelines provide councils with the current assessment framework, including:

- land capability assessment (LCA) requirements
- system selection based on soil constraints and site sensitivity
- performance standards
- appropriate setbacks from watercourses, bores, escarpments and drains
- environmental risk considerations, including cumulative impacts

EPA Guidelines for Effluent Dispersal (2024)

These guidelines set out:

- acceptable effluent loading rates (hydraulic and nutrient)
- design and sizing principles for land application areas
- infiltration testing requirements
- methods for designing sustainable irrigation, trench and other dispersal systems

Together, these guidelines provide the current technical foundation for all OWMS assessment and permitting decisions by councils. They replace the previous EPA Code of Practice – Onsite Wastewater Management (Publication 891.4 – July 2016).

AS/NZS 1547:2012 – On-site Domestic Wastewater Management

- Establishes the technical and performance standard governing the design, installation, operation, and ongoing management of onsite domestic wastewater systems.

Victorian Land Capability Assessment Framework 2014

- Provides the methodology for Land Capability Assessors to assess land suitability for onsite wastewater management.

1.5. Purpose and goals of OWMP

This OWMP sets out Council's strategic approach to managing the risks associated with onsite wastewater systems across the municipality. With around 1,000 systems operating in unsewered areas of Warrnambool, effective oversight is essential to protect public health, safeguard sensitive environments and support sustainable land use and development.

This OWMP responds to the modern, risk-based requirements introduced under the Environment Protection Act 2017, the Environment Protection Regulations 2021 and Council's OMLI. It provides a structured framework for identifying, assessing and minimising risks from onsite systems, including legacy systems on smaller or constrained allotments.

The purpose of this OWMP is to:

- establish a consistent, risk-based approach to onsite wastewater assessment, monitoring and compliance
- guide decision-making for both existing systems and new development in unsewered areas
- ensure Council meets its duties under the Act, including the GED and OMLI requirements
- protect human health, groundwater, surface waterways and environmentally sensitive landscapes
- reduce cumulative wastewater impacts, particularly in areas with higher system density or known soil constraints
- improve wastewater data, mapping and system visibility to support long-term planning
- support residents, developers and consultants by providing clear expectations and assessment pathways

Through this OWMP, Council aims to proactively identify wastewater risks, prioritise areas where intervention or additional controls are needed, and provide a transparent foundation for regulatory activity, community engagement and infrastructure planning.

This OWMP has four overarching goals that guide its strategy and implementation:

1. **Protect Human Health and the Environment**
   Ensure all OMWS (new and existing) operate in a way that prevents risks to people, waterways, groundwater and surrounding land.

2. **Support Sustainable Land Use and Development**
   Ensure land use planning, subdivision and development decisions are informed by a risk management framework, incorporating land capability, soil conditions, system density, and cumulative impacts. This is particularly important within special townships such as Bushfield, Woodford and coastal areas including Hopkins Point Road.

3. **Strengthen Compliance, Data and Risk Management**
   Improve system mapping, identify unpermitted or legacy systems, conduct audits and utilise findings to inform actions, utilising regulatory tools such as Maintenance Orders and Improvement Notices where required.

4. Enable Collaboration and Planning

Work with Wannon Water and other relevant agencies to identify where reticulated sewerage or alternative solutions may be appropriate, especially in high-risk or high-density areas, and support the long-term transition of legacy systems in sewered districts.

2. Risk assessment

2.1. Scope of risk assessment

The scope of the onsite wastewater risk assessment defines the geographic boundaries, environmental endpoints and risk types as well as site-specific and cumulative factors to be considered when evaluating risks associated with OWMS within the municipality.

The assessment framework is based on AS/NZS ISO 31000:2018 – Risk Management, ensuring a process that is integrated, structured, consistent, evidence-based, transparent and responsive to changing conditions. The framework is consistent with the Environment Protection Act 2017, the GED, and the OMLI.

In accordance with ISO 31000 principles, risk assessment under this OWMP is applied across all unsewered areas of the municipality to ensure risks are systematically identified, analysed, evaluated and managed in a manner proportionate to their potential impact on human health and the environment.

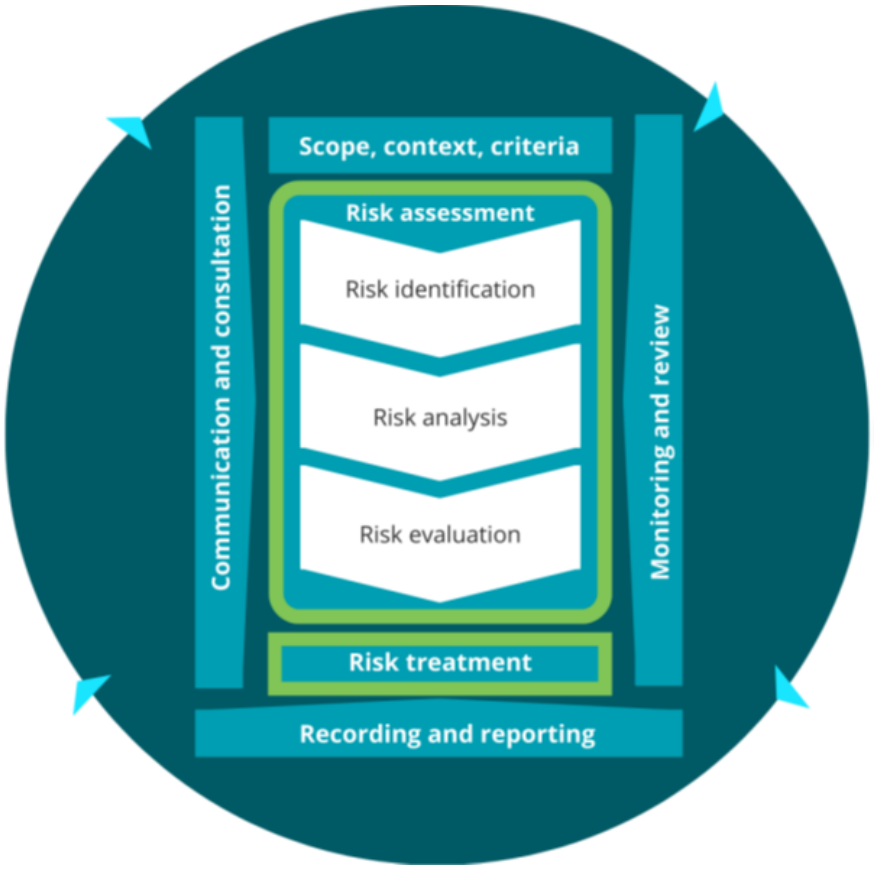


Figure 2: Risk management process (ISO 31000) – risk identification

Department of Environment Land Water and Planning June 2022 – OWMP Risk Assessment Guidance Final Report

Site-specific risk assessments (allotment scale)

Site-specific risk assessment evaluates risks associated with individual OWMS on a case-by-case basis in accordance with Figure 2 above. This assessment focuses on the performance of the system in relation to

site conditions, system design and proximity to sensitive receptors. Site-specific assessment informs and supports:

- OWMS selection and system design, including effluent dispersal methods
- the use of compliance and enforcement tools
- owner/occupier education and engagement

Optional or additional risk factors

Optional or additional risk factors may also be considered as part of OWMS assessment, potentially requiring officer discretion. These may include but are not limited to:

- unregistered bores
- perched or seasonal groundwater
- shading or vegetation that restricts evapotranspiration
- stormwater that cannot be diverted from disposal areas
- bushfire overlay constraints
- high-water-use households and/or uses
- historical evidence of failure
- limitations on access for servicing or desludging

It is anticipated that if such constraints exist, an LCA should support the design of the OWMS.

Cumulative risk assessment (township and locality scale)

Building on the extensive mapping undertaken within the previous 2020–2025 Domestic Wastewater Management Plan, this assessment identifies cumulative and strategic risks that may not be apparent when considering site specific assessments in isolation. This assessment is structured around township areas and localities with known OWMS constraints.

The township areas and locality profiles included within the scope of this assessment are:

- Woodford
- Bushfield
- Allansford
- Hopkins Point/Logans Beach
- Dennington/Illowa
- North of Wangoom Road
- Drylakes Road

These areas contain the majority of the municipality's onsite wastewater systems and represent landscapes where wastewater-related risks may accumulate over time or directly influence surface waters and groundwater, including the Merri and Hopkins River, and Russells Creek. These waterways are the most sensitive and significant receptors because they are environmentally sensitive, widely used for recreation, have strong community value, and receive inflows from drainage lines and tributaries.

Council acknowledges that some legacy systems exist outside the areas listed above. These systems are addressed through site-specific risk assessment, complaint response, audit programs and ongoing data improvement initiatives.

Relationship between assessment scales

Site-specific and cumulative risk assessments are applied in parallel and inform each other. A locality may be identified as medium or high cumulative risk even where individual systems appear to be functioning adequately, and conversely, a high-risk individual system may warrant intervention regardless of broader locality classification.

Integration with the classification of risk factors

This Scope of Risk Assessment sets the foundation for the structured evaluation of constraints identified in Table 1. The Classification of Risk Factors applies this scope by assigning each site constraint a Low, Medium, or High risk rating based on lot size, soil type, topography, setback compliance, groundwater depth and flood-proneness, the culmination of risk factors then uses Table 2 & 3 below to determine the final risk classification for the site. This final classification determines whether a proposed system is appropriate, whether an LCA is required, and how individual sites and township areas are prioritised for ongoing management throughout the life of the OWMP per Table 4.

2.2. Risk identification – site specific

This section applies to site-specific risk identification. Cumulative risks arising from broader sub-catchment scale impacts are addressed separately through the Township and Locality Profiles.

Risk identification is undertaken prior to risk analysis and risk evaluation to ensure subsequent assessments are based on a clear and evidence-based understanding of hazards, pathways and receptors.

Hazards

The following site-specific hazards represent mechanisms which result in onsite wastewater causing harm:

- **Hydraulic failure**, leading to surfacing or ponding of effluent, indicated by boggy ground or persistent odour.
- **Treatment failure**, where wastewater is inadequately treated prior to land application.
- **Containment failure**, resulting in wastewater migrating beyond the intended land application area.
- **Groundwater contamination**, through vertical or lateral leaching of nutrients or pathogens.
- **Surface water contamination**, via runoff or connection to drains, creeks, rivers or coastal receiving environments.
- **Flooding of OWMS**, where inundation redistributes effluent and contaminants.
- **Human exposure**, through direct contact with wastewater onsite or via contamination of environments.
- **System overload**, resulting from changes in use or increased occupancy.
- **Non-compliant or unpermitted systems,** where design, installation or maintenance history is unknown.

Site-specific risk factors

The factors listed below are the property site-specific characteristics that influence the likelihood and/or consequence of the previously identified hazards occurring. The factors are guided by the Onsite Wastewater Management Plans – Risk Assessment Guidance (ATOM Consulting 2022):

- Lot size/available land application area
- Soil type and permeability
- Topography/slope
- Setback distances to bores and watercourses
- Flood-prone area status
- Depth to groundwater considered in combination with soil permeability.

If the system is existing, the following factors also require consideration:

- System age/type and maintenance evidence (where known)
- Permit status/system history (where known)

Risk identification uses a combination of:

- council records (application documents such as site plans, inspection outcomes, LCAs (when available))
- aerial mapping and available datasets (soils type, depth to groundwater, flood information where relevant)
- site inspection observations (available dispersal area, site drainage behaviour, visible failure indicators)

Where evidence is incomplete, the assessment applies a precautionary approach and escalates information requirements (e.g. requesting maintenance records) consistent with a risk-based framework.

2.3. Risk analysis

2.3.1 Characterisation framework

The following framework has been developed as part of this OWMP to assist Environmental Health Officers assess the risk of new or existing OWMS:

Table 1: Risk categorisation based on site characteristics

Constraint	Low Risk	Medium Risk	High Risk
Lot Size	> 1 hectare	0.4 – 1 hectare	< 0.4 hectares
Soil Category[1]	3a, 3b, 3c, 4a, 4b, 4c	2b, 5a	1, 2a, 5b, 5c, 6a, 6b, 6c
Slope – Conventional Disposal Method[1]	< 5% slope	5 – 15% slope	> 15% slope
Slope – Irrigation Disposal Method[1]	< 10% slope	10 – 30% slope	> 30% slope
Bores – Setback Requirements[1]	Setback can be met	–	Setback cannot be met
Watercourses – Setback Requirements[1]	Setback can be met	–	Setback cannot be met
Distance to Groundwater[1]	Setback can be met	–	Setback cannot be met, or soil category = 1 or 2a regardless of depth
Flood-Prone Areas[2]	Above 1% AEP[3]	1–5% AEP	Below 5% AEP

[1]Note: Parameter determined by the methodology described in AS/NZS 1547:2012
[2]Note: Flood mapping and flood advice available at the time of assessment is based on the best available regional information, as directed by the relevant floodplain authority. Flood conditions may change over time due to climate variability, land use change, drainage modifications, and updated hydrological modelling.
[3]Note: AEP - Annual Exceedance Probability – the statistical likelihood of a flood event occurring in any given year

2.3.2 Likelihood and consequence

Risk analysis assesses the nature of identified risks by considering the **likelihood** that a hazard event will occur, and the **consequence** of harm if it occurs. Existing controls must be taken into account prior to reaching a determination.

Where the Risk Characterisation Framework may not provide an outcome, the matrix below determines the inherent risk level.

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rare	Low	Low	Low	Moderate	High
Unlikely	Low	Low	Moderate	High	High
Possible	Low	Moderate	Moderate	High	Very high
Likely	Low	Moderate	High	High	Very high
Almost Certain	Low	Moderate	High	Very high	Very high

Table 2: Risk assessment matrix

Likelihood describes how probable it is that an OWMS hazard event could occur at a site, taking into account site constraints, system condition and existing controls.	**Consequence** describes the severity of harm that could occur if an OWMS failure event takes place, considering the sensitivity of receptors and the strength of exposure pathways.
Rare: Failure would be highly unlikely. Site constraints are minimal, system design is well suited to conditions, and there is no evidence of underperformance.	**Insignificant:** No measurable impact on human health or the environment.
Unlikely: Failure could occur but is not expected under normal operating conditions. Minor constraints may exist but are readily managed through design and maintenance.	**Minor:** Localised impact contained onsite and short-term. Minor environmental disturbance with no lasting harm.
Possible: Failure may occur, particularly under adverse conditions such as prolonged wet weather or reduced maintenance. One or more constraints are present that may affect performance.	**Moderate:** Offsite impacts may occur and require management. Potential for localised environmental degradation or limited human exposure.
Likely: Failure is expected to occur in many circumstances. Multiple site constraints or system issues increase the probability of underperformance or failure.	**Major:** Significant environmental harm or public health risk. Offsite migration likely, affecting waterways, groundwater or neighbouring properties.
Almost certain: Failure is expected to occur or is already occurring. Evidence of system failure, non-compliance or severe site constraints indicates a very high probability of harm.	**Catastrophic:** Widespread or sustained harm to human health or the environment. High-value receptors affected, with long-term or irreversible impacts.

Table 3: Risk assessment matrix descriptors

2.3.3 Risk level outcomes and council response

Risk Level	Meaning	Council Response
Low	Risk manageable with standard controls	Standard OWMS assessment process; general conditions apply
Moderate	Requires additional controls or design considerations	Additional permit conditions or design requirements; general owner/occupier education; enhanced monitoring
High	Significant constraints; increased likelihood of offsite discharge	Detailed design required; requires controls identified in LCA and supported by Environmental Health; targeted owner/occupier education; audit priority
Very High	Unacceptable risk under current conditions	Development unsuitable; risk must be lowered to a tolerable risk level through controls identified in LCA and supported by Environmental Health; Upgrade or replacement required if existing system

Table 4: Final site assessment outcome and requirements

2.4. Township and locality profiles

The preceding risk assessment framework (Sections 2.2 to 2.4) establishes a site-specific approach for identifying and analysing risks associated with individual OWMS. While this allotment-scale assessment is essential for permit decision-making and compliance action, it does not fully capture the cumulative and interacting risks that may arise where multiple systems operate within shared environmental constraints.

WCC is a comparatively small local government area (LGA) with a limited number of unsewered townships and localities. This scale enables Council to assess onsite wastewater risks at a finer, sub-catchment level, providing a more detailed understanding of local conditions and cumulative impacts.

The majority of baseline information used to inform the Township and Locality Profiles has been drawn from recent plans, assessments and frameworks, including the:

- 2020–2025 Domestic Wastewater Management Plan
- North Wangoom Land Capability Assessment
- Bushfield-Woodford Strategic Framework Plan (Draft 2025)

These documents provide established assessments of land capability, settlement patterns, wastewater constraints and cumulative risk, and remain relevant in identifying areas of known or emerging concern. This OWMP does not seek to replicate that work, but rather to consolidate, refine, and re-interpret it through the lens of the risk-based framework.

Note: This OWMP is based on currently available information and will be updated as new information and data becomes available.

By treating individual townships and localities as sub-catchments, Council is able to:

- build on existing evidence to identify localised wastewater risks
- recognise cumulative impacts that may not be apparent at a municipal scale
- apply proportionate, targeted management responses consistent with the GED

The following Township and Locality Profiles therefore represent an evolution of previous work, integrating historic assessments with current regulatory expectations, available spatial data, and contemporary risk management principles to guide future compliance, planning, and infrastructure decisions.

2.4.1 Bushfield

Settlement context

Bushfield is a rural-residential township located north of Warrnambool and east of Woodford. It has a long history of small-lot development, with many dwellings established prior to 1996 and a high proportion of onsite wastewater systems that are either unrecorded or pre-date contemporary design standards. Bushfield and Woodford are increasingly functioning as a single settlement and share similar onsite wastewater constraints. The township drains to the Merri River and its tributaries, which represent sensitive environmental receptors.

Bushfield is predominantly residential in character and has experienced recent growth as an alternative housing option to Warrnambool, valued for its semi-rural setting.

Zoning and development pattern

Bushfield contains a mix of Farming Zone (FZ), Rural Living Zone (RLZ), and Low-Density Residential Zone (LDRZ) land. The earliest subdivisions, adjacent to the Hopkins Highway, comprise historic small lots (often <0.5 ha) that are highly constrained for sustainable wastewater treatment. Another dense area of small lots (<0.5 ha) is located along both Bellmans Road and Quinns Road. Larger lots occur to the west along Bridge Road toward Woodford. Surrounding FZ land presents potential future pressure for subdivision and rezoning.

Within the LDRZ, a minimum lot size of 0.4 ha currently applies, which further compounds wastewater constraints in areas with poor soils and high system density.

Environmental and site constraints

Bushfield is characterised by highly weathered volcanic soils with a high clay fraction, reflecting historic intensive dairy farming and long-term soil compaction. Medium to heavy clay soils (Category 5–6) dominate, resulting in poor permeability and limited effluent absorption, particularly during winter months.

Topography varies across the township, with ridgelines along Bridge Road and north-sloping land toward the Merri River. Soil depth is often limited on ridgelines, while steeper slopes and riverine areas increase the risk of off-site effluent migration. Portions of the township lie within the Merri River floodplain and are subject to an Environmental Significance Overlay (ESO).

Onsite wastewater risk profile

Bushfield has a very high density of OWMS, exceeding 40–80 systems per square kilometre in central areas. The township contains a high proportion of ageing and legacy systems, many without permits or formal records. Combined with constrained lot sizes, impermeable soils, proximity to the Merri River, and limited capacity for further septic loading, Bushfield has been assessed as having a high cumulative wastewater risk rating. Central residential areas and land proximal to waterways represent the highest risk locations.

Strategic planning considerations

The Bushfield–Woodford Strategic Framework Plan Draft (2025) identifies onsite wastewater management as a critical constraint to the sustainable development of the combined settlement. The Plan recognises

that the current reliance on onsite wastewater systems, given high system density, constrained lot sizes, impermeable clay soils, proximity to the Merri River, and a prevalence of ageing and unpermitted systems presents an unacceptable risk to human health and the environment if unmanaged.

Consistent with this assessment, the Strategic Framework Plan confirms Council's policy position to defer further growth and subdivision in Bushfield until sustainable wastewater management solutions are resolved, noting that continuation of current practices is not a viable long-term response. The Plan supports the introduction of stronger planning controls to manage wastewater risk, including a minimum lot size of 1 hectare within the LDRZ where onsite wastewater systems are proposed, and prioritisation of improved or alternative wastewater servicing before facilitating infill or additional development.

The Strategic Framework Plan also emphasises the need to balance protection of Bushfield's rural village character and environmental values with the long-term sustainability of the Bushfield–Woodford settlement. Investigation of sewerage or alternative wastewater infrastructure, in partnership with relevant servicing authorities, is identified as a key enabler for reducing cumulative risk, improving environmental outcomes, and supporting any future growth.

Management implications and recommended actions

Given the identified constraints and risk profile, the following management responses are recommended for Bushfield:

- Implement risk-based wastewater performance monitoring and targeted audits, particularly in high-density areas and locations proximal to waterways.
- Prioritise identification and assessment of legacy and unpermitted systems, particularly within 30 m and 60 m watercourse setback areas.
- Require an LCA for all new or replacement OWMS.
- Prioritise secondary treatment systems for new or upgraded installations.
- Apply a minimum 1 hectare lot size for future LDRZ development where onsite wastewater treatment is proposed, consistent with the proposal in the Bushfield–Woodford Strategic Framework Plan Draft (2025).
- Monitor stormwater quality in conjunction with relevant authorities to assess potential impacts on the Merri River and its tributaries.
- Where evidence of significant or increasing risk is identified, or where community demand for development increases, investigate the feasibility of reticulated sewerage or alternative wastewater solutions in collaboration with Wannon Water. As part of the consultation involved through the Bushfield Woodford Strategic Framework Plan Draft (2025), providing reticulated sewer to this area was deemed unviable due to cost and lack of community support.

Key wastewater constraints

- Very high OWMS density (40–80 systems/km²)
- Medium to heavy clay soils (Category 5–6)
- Proximity to the Merri River and mapped floodplain

- Steep slopes and shallow soil depths in parts of the township
- High proportion of legacy and unpermitted systems
- High cumulative risk rating

2.4.2 Woodford

Settlement context

Woodford is an unsewered rural-residential township located approximately 5 kilometres north of Warrnambool. It shares a common catchment, development history and wastewater risk context with Bushfield, with settlement extending along the Merri River valley and Yarpturk Ck. Development consists of a mix of rural lifestyle and residential lots containing dwellings of varied age, resulting in a corresponding range of OWMS of varying age, design, and performance.

The township includes Jubilee Park, a defined recreational precinct around the primary school. Development patterns are strongly influenced by the Merri River and its tributaries. Woodford and Bushfield increasingly function as a combined settlement and experience similar cumulative wastewater constraints.

Zoning and development pattern

Woodford comprises a mix of RLZ and LDRZ land, with additional heritage, design and development, and environmental overlays influencing development. Minimum lot sizes vary across the township, including RLZ areas generally accommodating larger parcels and LDRZ areas subject to a minimum lot size of 0.4ha.

Historic subdivision patterns have resulted in clusters of small lots, particularly the area adjacent to Jubilee Park and the primary school. These historic titles, often less than 0.5 hectares, are highly constrained for sustainable onsite wastewater treatment, particularly when combined with floodplain and watercourse setback limitations. Conversely, some larger RLZ areas, such as the Cilmery Crescent precinct, provide improved wastewater outcomes due to larger lot sizes and more recent development.

Environmental and site constraints

Woodford is characterised by ex-volcanic, highly weathered clay-based soils with light to medium clay textures that exhibit poor permeability and seasonal saturation. These soil conditions significantly limit effluent absorption and increase the likelihood of lateral subsurface flow, particularly during winter months.

Riverine and floodplain landscapes dominate areas of Woodford proximal to the Merri River and its tributaries. Sloping land toward the river, shallow soil depths in parts of the township, and extensive 30 m and 60 m watercourse setbacks further constrain wastewater system siting and performance.

Onsite wastewater risk profile

Woodford contains a mix of OWMS ages and system types. A 2019 audit identified several systems located within watercourse setback areas that rely on pumping effluent away from waterways. While this approach can be managed through ongoing monitoring and maintenance, it is not considered an optimal long-term solution, particularly where systems are ageing or located on constrained lots.

Historic small lots near the village precinct include properties that are simultaneously affected by constrained lot size, watercourse setback requirements, and flood inundation risk. Many of these

properties have no recorded OWMS permit and rely on ageing primary treatment systems that now require upgrade. These overlapping constraints elevate both site-specific and cumulative wastewater risk.

While larger RLZ parcels provide greater long-term wastewater resilience, the township overall is assessed as having a high wastewater risk rating, warranting targeted monitoring, audits, and system upgrades.

Strategic planning context

The Bushfield–Woodford Strategic Framework Plan Draft (2025) identifies wastewater management as a fundamental constraint to the sustainable development of Woodford. The Plan recognises that impermeable clay soils, riverine and floodplain constraints, constrained historic lot sizes, and reliance on onsite wastewater systems limit the township's capacity to accommodate further growth without unacceptable risk to human health and the environment.

Consistent with this assessment, the Bushfield–Woodford Strategic Framework Plan Draft (2025) supports a deferred growth approach for Woodford until sustainable wastewater solutions are resolved. It emphasises the need to prioritise investigation of sewerage or alternative wastewater treatment options, in partnership with servicing authorities, before facilitating significant infill or additional development. The Plan also supports the application of stronger planning controls, including minimum lot size provisions, to manage wastewater risk and protect the Merri River and its environs.

Management implications and recommended actions

Given the identified constraints and risk profile, the following management responses are recommended for Woodford:

- Implement risk-based wastewater performance monitoring and targeted audits, with priority given to properties within watercourse setbacks and flood-prone areas.
- Prioritise identification and assessment of legacy and unpermitted systems, particularly those relying on primary treatment.
- Require LCAs for all new or replacement OWMS.
- Prioritise secondary treatment systems for system upgrades and replacements.
- Monitor stormwater quality to assess cumulative impacts on the Merri River and its tributaries.
- Assess existing block density and investigate planning and policy mechanisms to manage wastewater risk to sustainable levels.
- Where evidence of significant or increasing risk is identified, or where community support emerges, investigate the feasibility of reticulated sewerage or alternative wastewater treatment solutions in collaboration with Wannon Water.

Key wastewater constraints

- Clay-based soils with poor permeability and seasonal saturation

- Proximity to the Merri River and tributaries
- Parcels within 30 m and 60 m watercourse setbacks
- Floodplain exposure within the 1-in-20-year inundation extent
- Historic small lot titles (<0.5 ha) near the village precinct
- High proportion of ageing and unpermitted systems
- Reliance on pumped effluent disposal in constrained locations
- High cumulative wastewater risk rating

2.4.3 Allansford

Settlement context

Allansford is a partially sewered township located approximately 10 kilometres east of Warrnambool on the Princes Highway. Established in the 1860s, the settlement comprises the historic township, surrounding RLZ subdivisions and FZ land. The township is situated along the Hopkins River and includes floodplain and river-proximal areas with sensitive riparian environments. Allansford is identified as having moderate growth capacity, with development constrained by flooding, environmental sensitivity and servicing limitations.

Zoning and development pattern

Land within the Allansford township is zoned Township, LDRZ, RLZ and FZ. Sewer reticulation services the central, established township, while unsewered development persists on the township fringe and within RLZ and FZ land. Historical development patterns include small residential and industrial allotments, particularly within older parts of the township and an industrial precinct to the east, some of which continue to manage wastewater onsite. More recent RLZ development generally consists of larger allotments with greater capacity to accommodate onsite wastewater systems.

Environmental and site constraints

The Hopkins River traverses the western edge of the study area and represents a key environmental receptor. Flooding of the river, combined with flat topography and limited drainage infrastructure, constrains development and onsite wastewater management in low-lying areas. Parts of the study area include limestone geology, karst topography and sinkholes, particularly to the south and east of the township, which can limit effective effluent disposal despite appearing suitable for development. In their report Coffey Geotechnics (2008) identified 21 sinkholes west of the Warrnambool Cheese and Butter factory. Sandstone-based subsoils in the Tooram area further constrain onsite wastewater performance. Soils across much of the study area consist of ex-volcanic medium clay textures that have been compacted through historical agricultural use, resulting in poorly draining, winter-ponded conditions.

Onsite wastewater risk profile

Onsite wastewater risk in Allansford is influenced by proximity to the Hopkins River, flood-prone land, poorly draining clay soils and geological constraints. Smaller historical allotments and older onsite wastewater systems, particularly within sewered areas, increase the likelihood of system failure and off-site impacts during wet conditions. RLZ areas generally present lower risk where larger lot sizes allow for compliant effluent management, although soil and drainage constraints remain relevant.

Strategic planning considerations

Strategic planning for Allansford must balance moderate growth expectations with flood risk, environmental sensitivity and servicing constraints. The presence of unsewered development within and adjacent to the township, including legacy sites within sewered areas, requires careful consideration in land use planning, subdivision design and future servicing strategies. Ongoing coordination with Wannon Water is important to manage sewer availability and transition opportunities.

Management implications and recommended actions

Given the identified constraints and risk profile, the following management responses are recommended for Allansford:

- Prioritise identification, audit and transition of legacy onsite wastewater systems within sewered areas.
- Enforce sewer connection requirements where reticulation is available.
- Apply higher assessment standards for systems in flood-prone and river-proximal areas.
- Closely assess new or altered systems on clay, limestone and sandstone soils.
- Maintain coordination with Wannon Water to manage cumulative risk and servicing opportunities.
- Target compliance and education activities in older residential and industrial precincts.

Key wastewater constraints

- Proximity to the Hopkins River and sensitive riparian environments
- Flood-prone land and limited drainage infrastructure
- Poorly draining ex-volcanic clay soils with winter ponding
- Limestone and sandstone geology limiting effluent disposal
- Small historical allotments in township and industrial areas
- Legacy onsite wastewater systems within sewered districts

2.4.4 Hopkins Point/Logans Beach

Settlement context

Hopkins Point / Logans Beach is a low-density coastal township located south of the Hopkins River, extending along the coastline toward Allansford and adjacent to the Logans Beach whale nursery. Development is predominantly residential in character, taking advantage of coastal and estuarine outlooks, with a mix of rural and lifestyle properties. The area includes land overlooking the Hopkins estuary and the Southern Ocean and is highly valued for its landscape and environmental attributes.

Zoning and development pattern

The study area includes a mix of FZ, RLZ and General Residential Zone land. While FZ provisions support large minimum lot sizes, many existing farming allotments are below 40 hectares, with the largest approximately 23 hectares and average sizes generally less than 15 hectares. The Warrnambool Planning Scheme permits lot sizes of 15 hectares in the FZ, and there is ongoing pressure for house-lot excisions and boundary realignments to facilitate additional dwellings. The Banksia Drive area includes smaller residential lots with minimum sizes of approximately 0.4 hectares, which can constrain onsite wastewater disposal options, particularly where watercourse setbacks apply. Parts of the area have been recently sewered.

Environmental and site constraints

Soils across the Hopkins Point / Logans Beach area are primarily derived from ancient coastal dune systems adjoining fertile lava flow landscapes associated with more recent volcanism. Sandy loam soil textures dominate, with an increasing clay fraction toward the eastern extent of the study area. Significant Landscape Overlay (SLO) and ESO apply across much of the area, requiring retention of vegetation and protection of landscape and environmental values. Coastal acid sulphate soils are present in the eastern part of the study area adjacent to the Hopkins River and represent a constraint to onsite wastewater management.

Onsite wastewater risk profile

Onsite wastewater risk is influenced by highly permeable sandy soils that allow rapid infiltration of effluent, increasing the potential for nutrient movement. This risk is typically mitigated through the use of secondary treatment systems, water-efficient fixtures, subsurface irrigation and evapotranspiration-based disposal areas. Groundwater depth is generally not a limiting factor across most of the area, reducing the need for more restrictive design measures. Smaller lot sizes, particularly in residential areas and where future subdivision occurs, increase wastewater management risk. It is likely that limestone geology is a similar constraint in this area as identified in the Coffey Geotechnics (2008) report, considering the cliff survey incorporated the mouth of the Hopkins River.

Strategic planning considerations

Strategic planning for the Hopkins Point/Logans Beach area must balance strong demand for coastal living with protection of sensitive coastal, estuarine and landscape values. While larger existing lot sizes and incremental sewer provision have historically supported sustainable wastewater outcomes, future subdivision pressure within the FZ and residential areas has the potential to erode these outcomes if not carefully managed.

Management implications and recommended actions

Given the identified constraints and risk profile, the following management responses are recommended for Hopkins Point/Logans Beach:

- Maintain minimum lot sizes that support sustainable onsite wastewater outcomes in unsewered areas.
- Apply heightened scrutiny to subdivision, house-lot excisions and boundary realignments.
- Require secondary treatment and advanced disposal methods in highly permeable soils.
- Protect vegetated disposal areas to meet wastewater and overlay objectives.
- Monitor cumulative impacts near the Hopkins River and coastal environments.

Key wastewater constraints

- Highly permeable sandy soils with rapid effluent infiltration
- SLO & ESO across the area
- Coastal acid sulphate soils in eastern areas
- Watercourse setbacks to the Hopkins River
- Small residential lot sizes in some precincts
- Ongoing pressure for further subdivision

2.4.5 Dennington/Illowa

Settlement context

Dennington is a largely sewered urban area located to the west of Warrnambool, with only small pockets of older development remaining unsewered. Illowa comprises rural living and coastal allotments west of the city, adjacent to sensitive dune and estuarine systems. The Dennington/Illowa study area includes a mix of urban, rural, and coastal land parcels (predominantly west of the Merri River) with development influenced by historical agricultural use and proximity to key wetlands and the Merri River.

Zoning and development pattern

Land within the study area includes Township, Residential, RLZ and FZ allotments. Sewer reticulation services most of Dennington, with unsewered development concentrated in older pockets and rural areas where sewer extension has not reached. A cluster of FZ lots south of the Princes Highway and west of the Merri River presents particular wastewater management challenges due to soil and site constraints. Parcel sizes vary across the study area depending on zoning, with some allotments located within watercourse setbacks and flood-affected areas.

Environmental and site constraints

Environmental and site constraints across the Dennington/Illowa area include proximity to the Merri River, watercourse setbacks of 30–60 metres, and exposure to both 1-in-100-year and 1-in-20-year flood events. Parts of the western study area are characterised by shallow, fast-draining sandstone-based soils, while larger areas consist of volcanic-derived medium to light-clay soils with reduced permeability during winter. More favourable light-clay soil textures occur in areas of historic deposition within watercourse and floodplain environments east of the Merri River.

Onsite wastewater risk profile

Onsite wastewater risk varies across the study area and is influenced by soil type, lot size, flood exposure and proximity to waterways. Sandstone-based soils exhibit high infiltration rates, which can increase the risk of effluent movement and require specific system design considerations and ongoing surveillance. Clay-based soils across much of the area have reduced permeability during wet periods, increasing the potential for seasonal performance issues. A recent audit of high-risk sites within watercourse setbacks indicates that most systems have been designed to avoid critical setback areas and that property owners are generally aware of system risks.

Strategic planning considerations

Strategic planning for Dennington/Illowa must account for the largely sewered nature of Dennington, the presence of unsewered rural and farming areas, and the sensitivity of waterways and floodplains associated with the Merri River and tributaries. Future planning intentions, including potential changes to lot size or development patterns, may alter the current balance between land availability and onsite wastewater sustainability.

Management implications and recommended actions

Given the identified constraints and risk profile, the following management responses are recommended for Dennington/Illowa:

- Continue prioritisation of legacy systems for sewer connection.
- Maintain oversight of unsewered properties west of the Merri River.
- Apply site-specific design requirements on sandstone and flood-affected land.
- Monitor and review systems within watercourse setbacks.
- Integrate wastewater considerations into future planning and zoning decisions.

Key wastewater constraints

- Proximity to the Merri River and tributaries
- Flood risk (1-in-20 and 1-in-100-year events)
- Watercourse setbacks (30–60 metres)
- Shallow sandstone soils with high infiltration rates
- Seasonal permeability limits in clay-based soils
- Residual legacy systems within sewered areas

2.4.6 North of Wangoom Road

Settlement context

The North of Wangoom Road locality comprises a semi-rural area located immediately north of Wangoom Road, characterised by dispersed rural-residential development and agricultural land uses. The area is unsewered and development has historically relied on individual OWMS. Settlement patterns reflect incremental subdivision and dwelling establishment that largely pre-date contemporary environmental risk and land capability frameworks.

While population growth has been limited, the locality remains attractive for rural living due to its proximity to Warrnambool. This has generated periodic pressure for rezoning, infill development and increased residential densities, which must be carefully managed considering the area's documented environmental constraints.

Zoning and development pattern

The North of Wangoom Road study area comprises approximately 51 hectares of FZ and RLZ land, with varying lot sizes. A small portion of the area is serviced by a sewerage pump station discharging to the reticulated system south of Wangoom Road. While onsite wastewater management systems presently service most properties in the study area, future land use planning and subdivision proposals should be informed by both environmental risk and community expectations. Where there is demonstrated community demand and an environmental or public health benefit, connection to, or extension of, the existing reticulated sewerage network should be actively considered in collaboration with Wannon Water. In the absence of sewerage, minimum lot sizes must be sufficient to support sustainable long-term onsite wastewater management.

Environmental and site constraints

The North of Wangoom Road locality is subject to significant environmental and site constraints that directly limit the sustainable management of onsite wastewater.

A Land Capability Assessment commissioned by WCC in 2018 identified that soils across the locality are predominantly medium to heavy clays with shallow profiles and poor permeability, particularly during winter months. These conditions substantially reduce the capacity for effective effluent treatment and dispersal and increase the likelihood of surface ponding and lateral movement of effluent (North Wangoom Land Capability Assessment Report, February 2018).

The locality drains to Russells Creek and the wider Merri River catchment. Portions of the area are affected by watercourse setback requirements and land subject to periodic flooding. These factors heighten the risk that failing or poorly performing onsite wastewater systems may result in offsite impacts to surface water quality and downstream environments.

Onsite wastewater risk profile

North of Wangoom Road is identified as predominantly high-risk locality due to constrained soil conditions, proximity to waterways, seasonal waterlogging and cumulative septic system density.

The LCA identified that many allotments provide limited effective area for effluent dispersal, system upgrades or future replacement. Winter soil saturation further reduces system performance and increases

the likelihood of system failure during prolonged wet periods (North Wangoom Land Capability Assessment Report, February 2018).

Existing septic densities in parts of the locality approach or exceed levels where cumulative impacts to surface water and groundwater quality become increasingly likely. Further subdivision or residential intensification would materially increase environmental and public health risk.

Strategic planning considerations

Strategic planning for the North of Wangoom Road locality must adopt a precautionary and risk-based approach consistent with the findings of the LCA. The assessment provides clear evidence that unconstrained residential intensification is not compatible with sustainable onsite wastewater management in this locality.

Planning controls should continue to limit further subdivision, maintain larger minimum lot sizes, and require robust demonstration of long-term wastewater sustainability for any new development. Any consideration of future growth should be closely linked to investigations into reticulated sewerage servicing in collaboration with Wannon Water.

Management implications and recommended actions

Given the identified constraints and risk profile, the following management responses are recommended for North of Wangoom Road:

- Identify North of Wangoom Road as a priority risk locality within the OWMP for compliance, education and system auditing.
- Require a detailed LCA for all new or altered onsite wastewater systems, particularly on small lots or within watercourse setback areas.
- Discourage further subdivision or residential intensification where wastewater sustainability cannot be demonstrated in accordance with contemporary standards.
- Undertake targeted inspections of older and unpermitted systems, with a focus on lots affected by poor drainage, flooding or proximity to waterways.
- Provide targeted education to landowners regarding system maintenance obligations, warning signs of failure and the GED.
- Continue engagement with Wannon Water regarding long term sewerage servicing options or staged transition pathways.

Key wastewater constraints

- Predominantly medium to heavy clay soils with poor winter drainage.
- Shallow effective soil depth limiting effluent treatment and dispersal.
- Seasonal waterlogging and flood affected land.
- Proximity to waterways and downstream sensitive environments.

- High cumulative density of onsite wastewater systems.
- Limited capacity for system upgrades or replacement on small allotments.
- Absence of reticulated sewerage infrastructure.
- Small lots where there is not enough available space to contain all wastewater without advanced system design.

2.4.7 Drylakes Road

Settlement context

Drylakes Road is a rural-residential precinct located to the East and Northeast of Warrnambool, characterised by mixed lot sizes and land historically used for sheep grazing on the basalt plain. The area is low-lying and forms part of a broader wetland and basin landscape, with development constrained by soil, drainage and hydrological factors. The area represents an established unsewered settlement where onsite wastewater systems remain the primary means of onsite wastewater management.

Zoning and development pattern

All land parcels within the Drylakes Road study area are zoned RLZ, comprising approximately 50 allotments. Lot sizes typically range between 1 and 3 hectares, with an overall range from approximately 0.8 hectares to 19.6 hectares. While current lot sizes generally support onsite wastewater management, future subdivision intentions have the potential to reduce lot sizes and increase cumulative wastewater risk. Planning for any further subdivision must therefore address site-specific wastewater constraints and system density considerations.

Environmental and site constraints

The Drylakes Road area is typified by low elevation landscapes with medium to heavy clay soils and limited topsoil depth. Winter waterlogging is a defining feature of the area and significantly constrains land capability for effluent disposal.

The area forms part of a fragile wetland system, with evidence of underlying sandstone and limestone formations, including subterranean cave and spring systems linked to the Maam Reserve. These hydrological features increase environmental sensitivity and limit the suitability of conventional onsite wastewater disposal methods.

Onsite wastewater risk profile

Onsite wastewater risk in the Drylakes Road area is influenced by poor soil drainage, shallow soil profiles and widespread winter waterlogging. Effective wastewater treatment in these conditions often requires raised or mounded effluent disposal areas to achieve adequate separation and evapotranspiration. A relatively high number of onsite wastewater systems without permits have been identified, many of which coincide with winter waterlogged zones, elevating environmental and compliance risk. The current septic system density is at the accepted threshold of approximately 15 to 25 systems per square kilometre, indicating limited capacity for additional systems without increasing cumulative risk.

Strategic planning considerations

Strategic planning for Drylakes Road must account for the combined constraints of soil drainage, seasonal waterlogging and system density. Mapping of winter waterlogged areas would assist in informing future land use and subdivision decisions. The environmental sensitivity of the area, including its connection to broader wetland and groundwater systems, reinforces the need for cautious planning and long-term servicing considerations.

Management implications and recommended actions

Given the identified constraints and risk profile, the following management responses are recommended for Drylakes Road:

- Prioritise compliance and follow-up of unpermitted onsite wastewater systems.
- Require raised or mounded disposal areas in waterlogged zones.

- Map winter waterlogging to inform planning and subdivision decisions.
- Limit further subdivision where cumulative wastewater risk is elevated.
- Investigate sewer extension or centralised wastewater servicing options.

Key wastewater constraints

- Low-lying terrain and wetland basin landscape
- Medium to heavy clay soils with poor drainage
- Limited topsoil depth
- Widespread winter waterlogging
- Fragile groundwater and wetland systems
- High onsite system density at accepted thresholds
- Presence of unpermitted systems
- Environmental sensitivity due to the proximity to wetlands

3. Risk evaluation and treatment

The preceding risk assessment has identified the key hazards associated with onsite wastewater management in WCC unsewered areas. The purpose of this assessment is not only to describe risk, but to determine whether identified risks are being managed so far as reasonably practicable. This requires Council, as a manager of land and infrastructure, to systematically evaluate the likelihood and consequence of harm occurring and to prioritise interventions where risks are unacceptable or insufficiently controlled.

The following section applies an ISO 31000-aligned risk evaluation framework to assess the relative significance of identified onsite wastewater risks, considering existing controls, regulatory mechanisms, known data gaps and targeted treatment of high risks previously identified. The Risk Evaluation and Treatment Plan translates this assessment into a structured program of actions, responsibilities, and timeframes focused on risk reduction through improved planning controls, compliance and enforcement, system audits, data improvement, education, and strategic infrastructure collaboration, establishing Council's transparent and defensible approach to managing onsite wastewater risks in accordance with the OMLI over the life of the OWMP 2026–2030.

3.1. Risk Evaluation and Treatment Plan

3.1.1. Risk Identification and Assessment

Action	Description	Priority Areas	Responsibility	Timeframe	Measure of Success
OWMS Data Audit	Identify, verify and map all known properties with OWMS, prioritising unpermitted and legacy systems.	LGA-wide	Environmental Health	Year 1–3	Geographic Information System (GIS) layer updated; data gaps reduced
High-Risk Area Mapping	Implement low-medium-high risk mapping across unsewered allotments in GIS.	LGA-wide	Environmental Health	Year 1–2	Risk maps completed
Cumulative Impact Assessment	Assess system density (>40 systems/km²) and proximity to waterways (30 m and 60 m setbacks) in GIS.	High-risk allotments	Environmental Health/GIS	Year 2–3	Priority risk areas formally identified

3.1.2 Land Use Planning and Growth Management

Action	Description	Priority Areas	Responsibility	Timeframe	Measure of Success
Minimum Lot Size Controls	Support minimum 1 ha lot size in LDRZ where sewer is unavailable	Woodford & Bushfield	Planning	Ongoing	Reduced approval of undersized unsewered lots
Deferred Growth Policy	Maintain deferred growth approach in LDRZ until sustainable wastewater solutions are confirmed	Woodford & Bushfield	Planning	Ongoing	Growth sequencing aligns with wastewater capacity
Cumulative Impact	Provide education to mapping overlay on cumulative risk consideration where densities approach 40-50 systems/km²	LGA-wide	Environmental Health	Year 2-3 (post-completion of 3.1.3)	Education provided to Strategic and Statutory Planning

3.1.3 Compliance, Monitoring and Enforcement

Action	Description	Priority Areas	Responsibility	Timeframe	Measure of Success
Digitalisation	Collate data from multiple databases, including physical information on legacy systems, into one central system.	LGA-wide	Environmental Health	Year 1-2	All known data is assembled in one database to facilitate further actions
Targeted Audit Program	Implement a risk-based audit program focusing on older systems and high-risk areas.	Woodford & Bushfield; legacy systems	Environmental Health	Ongoing (3-year cycle)	Completion of audits for all suspected non-compliant systems, focusing on high-risk area
Enforcement Escalation	Apply enforcement proportionate to risk, including maintenance orders and improvement notices where necessary	Audited OWMS; legacy systems	Environmental Health	Ongoing	No high-risk systems left unmanaged

3.1.4 Education, Partnerships and Continuous Improvement

Action	Description	Responsibility	Timeframe	Measure of Success
Owner Education Program	Deliver digital resources on installation, approval and maintenance	Environmental Health	Year 1–5	Increased owner awareness
Targeted Communication	Focus education in high-risk areas and for new property owners	Environmental Health	Ongoing	Reduced complaints and failures
Collaboration	Participate in the Integrated Water Management Forum and partner with Wannon Water to identify sewer extension priorities	Environmental Health / Wannon Water	Ongoing	Shared priority areas identified
Progress Audit	Conduct a progress audit at least every 3 years, at the direction of the annual Council Plan.	Environmental Health	Year 3 (2028)	Progress report confirming action plan on-track
Plan Review	Complete a full review of this OWMP	Environmental Health	Year 5 (2030)	Complete review

4. Consultation and engagement

In accordance with the OMLI, this OWMP has been developed through consultation with relevant internal and external stakeholders to identify wastewater-related risks from unsewered land, understand cumulative impacts, and determine proportionate and practical management responses.

4.1. Internal stakeholders

4.1.1. Environmental Health

- Lead unit responsible for the development, implementation, review, and ongoing administration of the Onsite Wastewater Management Plan 2026–2030.
- Statutory regulation of OWMS under the Environment Protection Act 2017, including administration of permits to construct, install or alter systems (A20 activity).
- Identification and assessment of public health and environmental risks associated with onsite wastewater systems, including cumulative impacts.
- Delivery of audits, inspections, compliance and enforcement activities, and coordination of education and engagement initiatives to support compliance with the GED.
- Lead coordination of consultation with internal Council units and external stakeholders relevant to onsite wastewater management.

4.1.2. Statutory and Strategic Planning

- Integration of onsite wastewater constraints into land use planning and decision-making.
- Application of minimum lot size requirements, growth policies, and planning controls in unsewered areas.
- Alignment with structure plans and strategic framework plans, including the Bushfield–Woodford Strategic Framework Plan Draft (2025).

4.1.3. Records Management

- Management and retention of records associated with onsite wastewater management in accordance with statutory record-keeping requirements.
- Support for the compilation of information, including accessibility of historical records relevant to legacy systems, unpermitted installations, and cumulative risk assessment.

4.1.4. Strategic Assets Management (GIS)

- Management and use of Council’s spatial data systems to support identification, mapping and analysis of OWMS risks.
- Ongoing spatial analysis to support risk-based prioritisation and targeting of audits and compliance programs under the OWMP.

4.2. External stakeholders

4.2.1. Wannon Water

- Provision of strategic input regarding unsewered areas with elevated public health or environmental risk, in accordance with the Water Act 1989.
- Collaboration on long-term planning for reticulated sewerage expansion and servicing constraints in growth and established areas.
- Collaborator to assist with opportunities to transition legacy onsite wastewater systems in declared sewered districts.
- Information sharing to support risk-based prioritisation and alignment between the OWMP and future sewerage planning.

4.2.2. Glenelg Hopkins Catchment Management Authority (GHCMA)

- Operate in accordance with functions set out under the Water Act 1989, including the Statement of Obligations for Catchment Management Authorities, by providing advice to local government on matters relating to waterway health, water quality and catchment protection relevant to onsite wastewater management.
- Support for alignment between onsite wastewater management and broader catchment protection, and water quality objectives.
- Input into identification of sensitive receiving environments and cumulative risk considerations, particularly within the Merri and Hopkins River catchments.

4.2.3. Community Consultation

- Community feedback was sought through Council's online YourSay Community Consultation platform, which provided an opportunity for residents to review and comment on the OWMP.
- An in-person consultation session was held on 10th June 2026 at the Warrnambool Library, enabling residents to discuss the OWMP directly with Council officers.
- No material concerns were raised by community members in relation to the OWMP.
- Ongoing opportunities for community input and engagement will be provided during implementation, in accordance with Action 3.1.4.

Consultation with external stakeholders has focused on identifying shared risks, cumulative impacts, and coordinated management responses, consistent with the OMLI.

5. Monitoring and review

WCC will monitor and review the implementation of this Onsite Wastewater Management Plan 2026–2030 to ensure actions remain effective, proportionate to risk, and aligned with Council's obligations under the Environment Protection Act 2017.

Monitoring will focus on Council's progress in delivering the actions identified in this OWMP. A risk-based approach will be applied to prioritise effort toward high-risk locations, system types and land capability constraints, including areas with cumulative system density, poor soil drainage, proximity to waterways, or known compliance issues.

Council's monitoring activities will include:

- tracking progress against this OWMP action plan, including timeframes, responsibilities and outcomes.
- ongoing improvement of Council's wastewater system data to support evidence-based decision-making.
- use of inspections, audits and investigations where required to inform whether actions are reducing risk to human health and the environment.
- periodic review of compliance and enforcement data to identify trends, emerging risks and priority areas.

Review of the OWMP will occur at two levels:

- **Implementation review**, undertaken at least every three years, to assess whether actions are being delivered as intended and remain appropriate to the identified risks.

- **Plan review**, undertaken at least every five years, or earlier where there are significant changes to legislation, environmental risk, land use, or servicing arrangements.

Findings from monitoring and review will be used to:

- refine and reprioritise actions over the life of the Plan.
- inform education, compliance and enforcement activities.
- support integration with land use planning and collaboration with relevant authorities.
- demonstrate compliance with the OMLI through continuous improvement.

This approach ensures the OWMP remains adaptive, transparent and focused on reducing risk so far as reasonably practicable.

6. Appendices

6.1. Glossary of acronyms

Acronym	Meaning
A20	Prescribed activity under the *Environment Protection Regulations 2021* requiring a permit to construct, install or alter an onsite wastewater management system with a design capacity of ≤ 5,000 litres per day
AEP	Annual Exceedance Probability – the statistical likelihood of a flood event occurring in any given year
AS/NZS	Australian Standard / New Zealand Standard
AWTS	Aerated Wastewater Treatment System – a secondary treatment onsite wastewater system
DWMP	Domestic Wastewater Management Plan – the predecessor planning framework to the OWMP (2020–2025)
EPA	Environment Protection Authority Victoria
ESO	Environmental Significate Overlay
FZ	Farming Zone (Planning Scheme zoning)
GED	General Environmental Duty – the duty under the *Environment Protection Act 2017* requiring risks of harm to human health and the environment to be minimised so far as reasonably practicable
GHCMA	Glenelg Hopkins Catchment Management Authority
GIS	Geographic Information System – spatial data systems used for mapping, analysis and risk assessment
IWM	Integrated Water Management – a collaborative approach to water cycle planning across agencies and sectors
ISO	International Organisation for Standardisation
LCA	Land Capability Assessment – an assessment of land suitability for onsite wastewater management
LDRZ	Low Density Residential Zone (Planning Scheme zoning)
LGA	Local Government Area
OMLI	Obligations of Managers of Land or Infrastructure – duties under the *Environment Protection Act 2017* applying to councils and other land or infrastructure managers
OWMP	Onsite Wastewater Management Plan (2026–2030)
OWMS	Onsite Wastewater Management System/s
RLZ	Rural Living Zone (Planning Scheme zoning)
SLO	Significant Landscape Overlay
SWSCAs	Special Water Supply Catchment Areas
WCC	Warrnambool City Council

6.2. Effluent dispersal area sizing methodology

This Appendix provides pre-determined minimum effluent dispersal area sizes for the two most encountered soil categories and effluent dispersal methods within WCC (Soil Category 2b – Sandy loam and Soil Category 5a – Light Clay).

Absorption Trenches

Soil Category 2b – Sandy Loam		*Length (m) of trench at 1m wide*	
Number of Habitable Rooms	**Daily Flow (L/day)**	**Primary effluent**	**Secondary effluent**
3	600	40	12
4	750	50	15
5	900	60	18
6	1050	70	21
7	1200	80	24

Soil Category 5a – Light Clay		*Length (m) of trench at 1m wide*	
Number of Habitable Rooms	**Daily Flow (L/day)**	**Primary effluent**	**Secondary effluent**
3	600	120	50
4	750	150	62.5
5	900	180	75
6	1050	210	87.5
7	1200	240	100

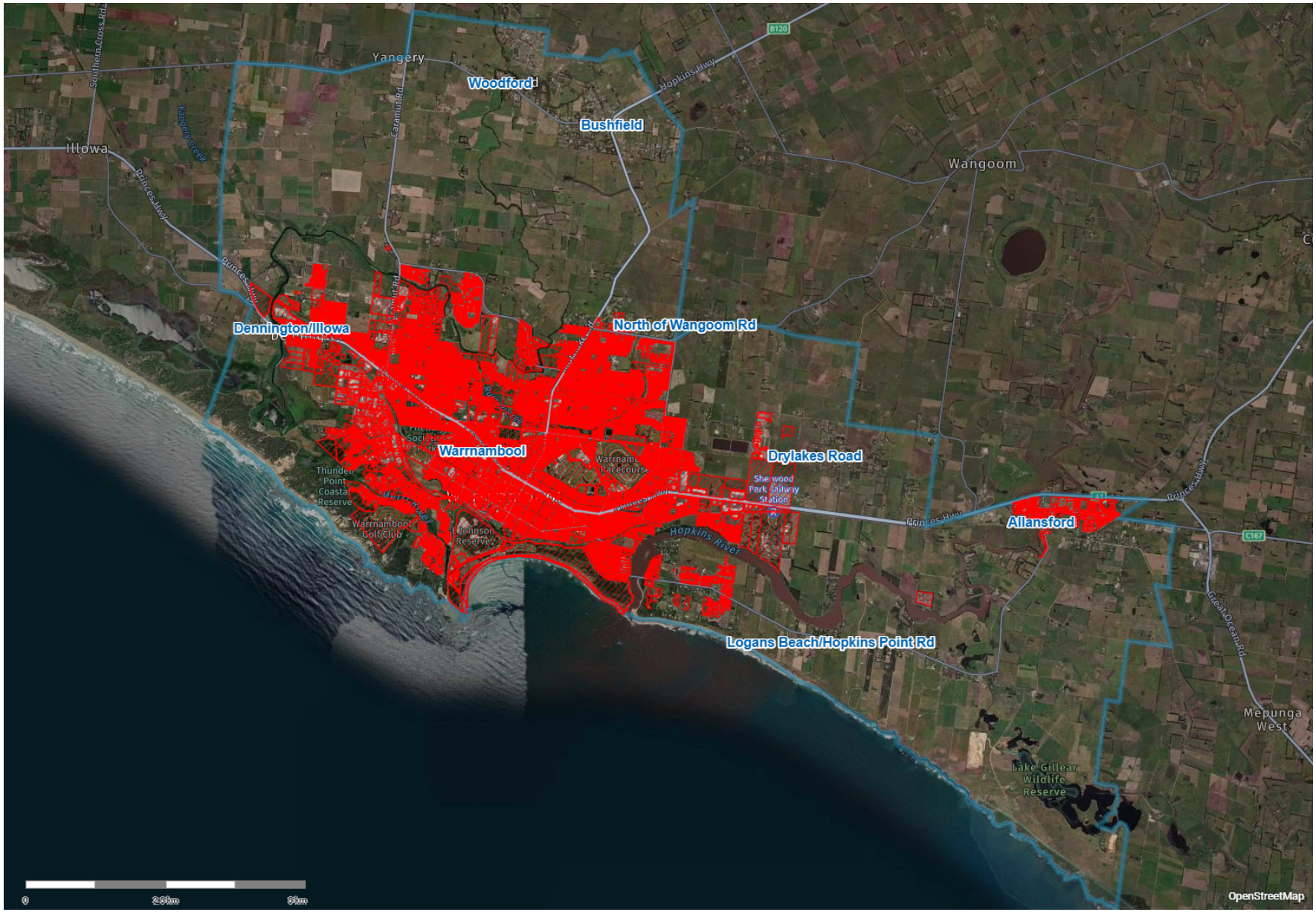
Subsurface Drip Irrigation

Soil Category 2b – Sandy Loam		*Subsurface Drip Irrigation Area (m²)*		
Number of Habitable Rooms	**Daily Flow (L/day)**	**Slope <10%**	**Slope 10% to 20%**	**Slope 21% to 30%**
3	600	120	150	240
4	750	150	187.5	300
5	900	180	225	360
6	1050	210	262.5	420
7	1200	240	300	480

Soil Category 5a – Light Clay	*Subsurface Drip Irrigation Area (m²)*

Number of Habitable Rooms	Daily Flow (L/day)	Slope <10%	Slope 10% to 20%	Slope 21% to 30%
3	600	200	250	400
4	750	250	312.5	500
5	900	300	375	600
6	1050	350	437.5	700
7	1200	400	500	800

6.3. Map of sewer serviced land parcels - 2026



Map 1. Sewered service areas shown in red, above.

References

Austin, P (Landtech Consulting), *North Wangoom Land Capability Assessment Report*, report prepared for Warrnambool City Council, February 2018.

Building Act 1993 (Vic) (No. 126 of 1993). Authorised Version No. 146, incorporating amendments as at 1 April 2026. Victorian Government.

Building Regulations 2018 (Vic) (S.R. No. 38/2018). Authorised Version No. 028, incorporating amendments as at 26 November 2025. Victorian Government.

Coffey Geotechnics Pty Ltd. (2008). *Stage 2 geotechnical investigation: Proposed Allansford Business Park, Allansford, Victoria* (Report No. GEOTABTF07231AB-AG). Prepared for Connell Wagner Pty Ltd and Warrnambool City Council.

Department of Environment, Land, Water and Planning. (2022). *Onsite wastewater management plans: Risk assessment guidance – Final report* (Version 4.0). Victorian Government. (Prepared by Atom Consulting.)

Environment Protection Authority Victoria. (2022). *Regulating onsite wastewater management systems: Local government toolkit* (EPA Publication No. 1974). https://www.epa.vic.gov.au

Environment Protection Authority Victoria. (2024). *Guideline for onsite wastewater effluent dispersal and recycling systems*. Victorian Government. https://www.epa.vic.gov.au

Environment Protection Authority Victoria. (2024). *Guideline for onsite wastewater management*. Victorian Government. https://www.epa.vic.gov.au

Municipal Association of Victoria, Department of Environment and Primary Industries, & Environment Protection Authority Victoria. (2014). *Victorian land capability assessment framework* (2nd ed.). Municipal Association of Victoria.

Parliament of Victoria. (1987). *Planning and Environment Act 1987* (Vic) (Authorised Version No. 164, incorporating amendments up to 18 February 2026). Victorian Government.

Parliament of Victoria. (1989). *Water Act 1989* (Vic) (Authorised Version No. 146, incorporating amendments up to 22 October 2025). Victorian Government.

Plumbing Regulations 2018 (Vic) (S.R. No. 149/2018). Authorised Version No. 009, incorporating amendments as at 13 August 2025. Victorian Government.

RM Consulting Group. (2024). *Bushfield–Woodford domestic wastewater investigation: Final report*. Prepared for Warrnambool City Council.

Standards Australia & Standards New Zealand. (2012). *AS/NZS 1547:2012: On-site domestic wastewater management*. Standards Australia.
Standards Australia & Standards New Zealand. (2018). *AS/NZS ISO 31000:2018: Risk management—Guidelines*. Standards Australia.

State of Victoria. (2024). *Obligations of managers of land or infrastructure (Urban stormwater management and on-site wastewater management)* (Victoria Government Gazette No. S 226, 7 May 2024). Victorian Government Printer. https://www.gazette.vic.gov.au

Victorian Government. (2017). *Environment Protection Act 2017* (No. 51 of 2017, authorised version incorporating amendments as at 15 April 2026). Chief Parliamentary Counsel, Victoria. https://www.legislation.vic.gov.au/in-force/acts/environment-protection-act-2017

Victorian Government. (2021). *Environment Protection Regulations 2021* (S.R. No. 47/2021). Chief Parliamentary Counsel, Victoria.
https://www.legislation.vic.gov.au/in-force/statutory-rules/environment-protection-regulations-2021

Warrnambool City Council. (2020). *Domestic wastewater management plan 2020–2025*. Warrnambool City Council.
(Prepared by Landtech Consulting.)

Warrnambool City Council. (2025). *Bushfield–Woodford strategic framework plan*.