11 DOMESTIC WASTEWATER MANAGEMENT PLAN 2020-2025

FILE REFERENCE INT2033811

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RECOMMENDATION

That Council adopt the Domestic Wastewater Management Plan 2020 - 2025.

Attachments

1	Cardinia Shire Council Domestic Wastewater Management Plan 2020-25	73 Pages
2	Key Actions Table	5 Pages

EXECUTIVE SUMMARY

The Domestic Wastewater Management Plan (DWMP) is the principle strategic document for the management of domestic wastewater and the potential risks it poses to the community of Cardinia Shire. It provides a policy position of Council and actions that Council may implement over the coming five years to improve domestic wastewater management outcomes within the municipality.

BACKGROUND

In 2003, the State Environment Protection Policy 2003 (Waters of Victoria) included a provision that Councils "should" prepare a DWMP. Due to limited take up of Councils to prepare a DWMP, in 2006 funding from the State Government was provided for Councils to develop a DWMP. Following this, the Auditor General's Report - Protecting our Environment and Community from Failing Septic Tanks was released to draw public attention to the current situation and to recent State Government announcements to reduce the number of failing septic tanks.

2007 saw Cardinia Shire Council adopt its first DWMP, with a second plan prepared in 2012. This current plan will extend to 2025, where as per the State requirement, it will be reviewed and updated.

POLICY IMPLICATIONS

Under the Environmental Protection Act 1970 (EP Act), Councils are the primary agency responsible for the management of onsite wastewater treatment systems and the disposal of domestic wastewater in un-sewered areas throughout their municipality.

RELEVANCE TO COUNCIL PLAN

3 Our environment

- 3.3 Enhanced natural environment
  - 3.3.6 Promote water catchment management practices that improve the quality of our waterways.

CONSULTATION/COMMUNICATION

The Draft DWMP has had internal and external stakeholder engagement, including South East Water, Yarra Valley Water, and Council's Health and Environment teams.

This plan outlines measures for Council to undertake that will support future advocacy to sewer authorities. The measures are internal systems and tools that will provide core data for our municipality moving forward, this data will then guide the future community engagement programs.

On the adoption of this plan, a communication package will be in place for Council to provide information on the plan and to highlight the commitment from Council to our community and the environment.

FINANCIAL AND RESOURCE IMPLICATIONS

The key actions in Attachment 2 have been recognised as part of the plan to be implemented over the next five years, as identified in the DWMP actions section. All but the listed actions are currently occurring, or can be absorbed within the existing workload/budget of Kernow and Cardinia.

The implementation of the actions listed in the plan that require extra resources have been categorised by a risk and benefits analysis and will form part of any future budget bid. Attachment 2 is a summary of activities that will require extra funding.

CONCLUSION

The Domestic Wastewater Management Plan demonstrates Cardinia's commitment to successfully managing domestic wastewater, and the potential risks it poses to the community of Cardinia Shire.

The plan shows a number of key actions over a five-year period, many of which has already commenced through our internal Kernow contractors. Actions that will require additional resources will form part of future budget bids.

It is respectfully requested that Councillors provides in principle support of the Domestic Wastewater Management Plan for the endorsement at a future Council meeting.

Cardinia Shire Council DWMP - 2020-2025

Domestic Wastewater Management Plan 2020-2025

Prepared by: Kernow Environmental Health

Authors: Peter Wright – Environmental Health and Partnerships Manager and Kelly Richards, Senior Environmental Health Officer (Cardinia Shire Council)

Version 6 – Council meeting 18/05/2020 report attachment

Cardinia Shire Council DWMP - 2020-2025

Contents

Executive Summary –

Cardinia Shire Council Domestic Wastewater Management Plan(DWMP) 2020-2025 provides an overview of the current situation, the legislative framework and drivers and sets out the strategies and actions required over the next 5 years to minimise the public health and environmental risks associated with the onsite domestic wastewater.

The Plan is developed to meet the requirements of the State Environment Protection Policy (Waters) 2018. It identifies the impacts of unmanaged domestic wastewater and the activities undertaken by Council to manage both legacy issues associated with currently installed systems and the assessment and installation of new systems.

There are approximately 7000 domestic wastewater systems with the Shire. Around 50% of all domestic wastewater systems are 20 years old. Over the last 10 years community (backlog) sewerage schemes funded by Yarra Valley Water and South East Water have provided main sewerage connection to around 1800 properties to replace domestic wastewater systems.

The key priorities for the Plan are focused around:

- collecting and analysing data and information about the location, condition and performance of existing on-site domestic wastewater systems.
- developing a way to assess risk consistent with contemporary methodologies.

The priorities set the foundation to prioritise the execution and timing of strategies and actions.

The key strategies identified for this plan are:

Strategy 1 –Review and update operational policies and procedures.

Strategy 2 – Make improvements to the Domestic Wastewater Information Management System.

Strategy 3 - Develop a comprehensive profile of domestic wastewater systems in the Shire.

Strategy 4 – Development of a wastewater community education program

Strategy 5 – Development of a compliance auditing scheme

Strategy 6 – Evaluation of the domestic wastewater management plan

Strategy 7 – Periodic review of the action plan

The success of this Plan is reliant upon building strong relationships, gaining support and commitment with key stakeholders, adequate resourcing and accountability throughout the period of the Plan.

Cardinia Shire Council DWMP - 2020-2025

Part 1 - Background

Why have a Domestic Wastewater Management Plan (DWMP)?

Domestic wastewater has the potential, depending on how it is managed, to cause a range of environmental and public health risks to the community. *State Environment Protection Policy (Waters) sets* the parameters for minimising the impacts of localised and cumulative effects of polluted water from 'septic tank systems' discharging into the environment.

To manage the public health and environmental effects associated with 'on-site wastewater systems', where reticulated sewerage is not available, each Council in Victoria is required to develop a DWMP.

What does the DWMP aim to achieve?

Clause29 of the State Environment Protection Policy (2018) describes what must be included in a Council DWMP

(1) A council in a municipal district with onsite domestic wastewater management systems must develop and implement a domestic wastewater management plan that –

(a) identifies the public health and environmental risks associated with the onsite domestic wastewater management systems; and

(b) sets out strategies to minimise those risks.

(2) The council must consult with the Authority, water corporations, the community and other stakeholders when developing, revising or implementing a domestic wastewater management plan and, in particular, must –

(a) identify, assess and manage the cumulative risks of onsite domestic wastewater management systems that are, or may in the future, be discharging sewage beyond allotment boundaries or impacting on groundwater; and

(b) engage with the Authority and relevant water corporations to identify existing unsewered allotments for inclusion in the domestic wastewater management plan, that –

(i) do not retain sewage on site; or

(ii) are not capable of preventing the discharge of sewage beyond allotment boundaries, or preventing risks to beneficial uses of groundwater or impacts on groundwater, as demonstrated by a land capability assessment in accordance with Victorian Land Capability Assessment Framework; and

(c) identify, cost, prioritise and evaluate options to provide –

(i) solutions to prevent discharge of sewage beyond allotment boundaries and minimise impacts on groundwater; and

(ii) for the compliance assessment and enforcement of onsite domestic wastewater management systems in accordance with the plan; and

(d) if applicable, have regard to the Guidelines for planning permit applications in open, potable water supply catchment areas and any relevant guidelines authorised by the Authority.

(3) The council must review and update its domestic wastewater management plan at intervals of no more than five years.

(4) The council must conduct an internal audit to assess progress and report on progress of the implementation of the domestic wastewater management plan every three years and publish the report on its website.

Part II -History– legislative context and political drivers

Looking back – Early drivers

The requirements for Local Government to develop a DWMP.

In 2003 – The State Environment Protection Policy 2003 (Waters of Victoria) included a provision that Councils "should" to prepare a DWMP.

In 2005/6 – Due to limited take up of Councils to prepare a DWMP, funding from the State Government under the Country Towns Sewerage Scheme and the Victorian Stormwater Action Plan provided grants of up to $40k for Councils to develop a DWMP.

In 2006 - the Victorian Auditor General's Report- -*Protecting our environment and community from failing septic tanks - 2006* was released to draw public attention to the current situation and to recent State government announcements to reduce the number of failing septic tanks.

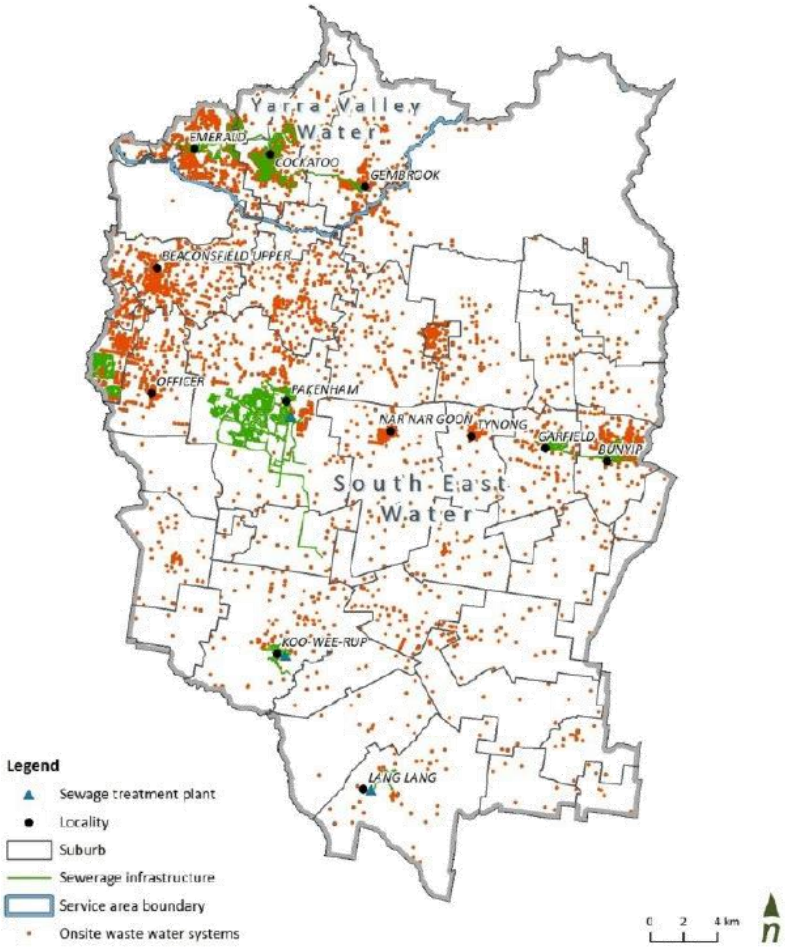
"In our 2006 audit report "Protecting our environment and community from failing septic tanks", we found that agencies were not effectively protecting the environment from poorly performing onsite systems."[1]

In 2006 - Cardinia prepared its first DWMP, which was adopted by Council in 2007.

Appendix B Summary of achievements from actions in the 2007 DWMP - provides a summary of actions undertaken proposed in the 2007 Plan.

[1] VAGO - Managing the Environmental Impacts of Domestic Wastewater September 2018. P.7

Cardinia Shire Council DWMP - 2020-2025



Map 1 – Sewerage Infrastructure and onsite wastewater systems across shire by suburb

Looking forward - Influencing Factors

Improvement in the management of domestic wastewater is influenced by the reform plan for the EPA. Since the inquiry into its role and function in 2015/16, the EPA launched its reform plan in 2017 and have begun implementing the plan.

The known changes to regulatory framework, policies, and the recommendations made in the recent Auditor General's report, as well as those to come, will inform and shape the management strategies and actions for domestic wastewater management in Cardinia Shire Council.

The following most recent policy, law reforms, and recommendations are import factors that will influence the management of domestic wastewater.

The State Environment Protection Policy (Waters).

This Policy was reviewed in 2017/18. The revised Policy updates and replaces two previous SEPPs to provide a single instrument to guide water quality management in Victoria and improve protection of our waterways, bays and coastal waters. It provides environmental quality objectives which better reflect conditions of our water environments and is based on extensive monitoring data, the latest scientific understanding and relevant national standards.

It also more clearly identifies rules for decision makers and obligations on industry to guide the protection and management of water quality in Victoria

Clauses 28 – 31 of the Policy *'managing on-site domestic wastewater'* are most relevant in the context of this DWMP. Refer to *Part III – Legislative, Council, State Government and Agency Roles and Responsibilities* in this document for more detail about specific responsibilities for Councils.

The New Environment Protection Act 2018

The Environment Protection Amendment Act 2018 was passed in Victorian State parliament in 2018 and will replace the Environment Protection Act 1970.

It includes a new approach to environmental issues, focusing on preventing waste and pollution impacts rather than managing those impacts after they have occurred. The Victorian Government intends this new legislation will take effect from 1 July 2020.

DELWP and the EPA have commenced stakeholder engagement with Local Government to provide input into subordinate legislative instruments. Councils are being represented by the Municipal Association of Victoria (MAV). Cardinia Shire Council's Environmental Health Team is engaged in the program and will attend workshop and information sessions.

The Auditor General's report and recommendations

In 2018, the Auditor General decided to check on the progress of the management of septic tanks and reported back to the community in September 2018 and released *Managing the Environmental Impacts of Domestic Wastewater* report. The report reached the following conclusion:

Since our 2006 audit, the responsible agencies have made some progress, but it is too little to sufficiently protect the environment and public health, and longstanding issues remain. The

agencies are still not adequately managing the individual and cumulative risks and impacts from poorly performing onsite systems despite their attempts. [2]

This most recent report provides feedback on the performance of Mornington Peninsula Shire and Yarra Ranges Council who have similar topographical features, land constraints and demographics to Cardinia. Therefore the Auditor General's findings are consistent with the performance of Cardinia Shire Council.

The findings in relation to Council performance in managing onsite domestic wastewater management systems were[3]:

Approving and installation of new onsite domestic wastewater systems	✓
Legacy system risks not adequately addressed	✗
Identification of risks posed by onsite systems - ongoing performance	✗
Compliance inspections and follow up inadequate	✗

The key recommendations made below as a result of the Auditor General's findings will form the key objectives for the management strategies and action plan.

Below are the key recommendations for State Government regulators, water authorities and Councils for the proper sustainable management of onsite wastewater management systems

Recommendation 4 for Councils
• improve its risk assessment process and the information supporting it
• improve compliance, inspection and education programs
Recommendation 8 for DELWP and EPA
• work collaboratively to provide better leadership and oversight of the regulatory framework and its implementation
• address issues with the regulatory framework and its tools
Recommendation 3 for water authorities
• improve collaboration and information sharing with councils
• better educate property owners around life-cycle costs for onsite systems and sewer

[2] 8 Managing the Environmental Impacts of Domestic Wastewater Victorian Auditor-General's Report p.8

[3] www.audit.vic.gov.au-Managing the Environmental Impacts of Domestic Wastewater.pdf

Part III – Legislative, Council, State Government and Agency Roles and Responsibilities

Agency Responsibilities

Environment Protection Authority (EPA)

Sets environmental standards and approves onsite wastewater system types for use in Victoria.

EPA approvals are based on assessments & testing results to ensure the systems can treat & manage wastewater in accordance with statutory policy, standards and guidance.

Provides guidance to councils, water authorities & the onsite wastewater industry on onsite wastewater management and our approvals processes.

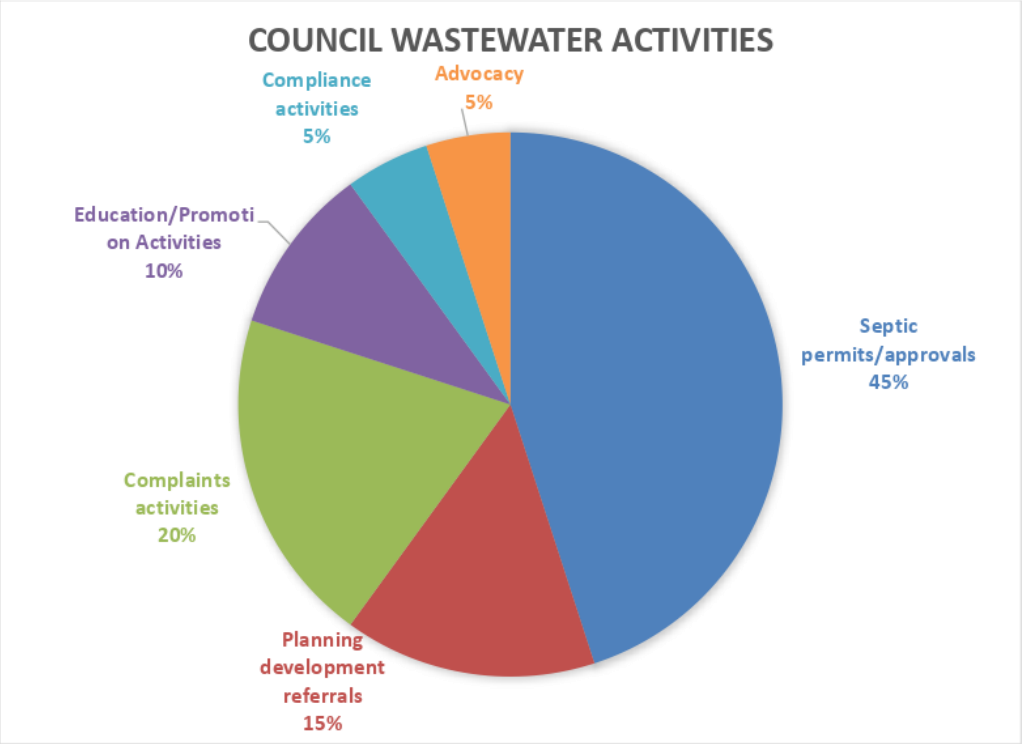
Regulates wastewater treatment systems that are greater than 5000 litres per day.

Cardinia Shire Council

The Council:

Consistent with the findings in the VAGO report 2018 Councils responsibilities are delegated to Environmental Health Officers of the Environmental Health Team.

The breakdown of activities associated with domestic wastewater are shown in **Chart 1** below.



Septic permits/approvals	Assessing permit applications Issuing of septic tank permits Inspecting the installation of septic systems
Planning development referrals	Providing advice and adding conditions to planning permits relating to development and subdivision applications
Complaints activities	Responding to and managing complaints from the community relating to odour, public health and environmental concerns related to discharge of wastewater into drains, neighbouring properties, poorly managed systems.
Education/Promotion Activities	Preparation and distribution of publications relating to the care and maintenance of septic systems. Mailouts and media promotions
Compliance activities	Requesting servicing and maintenance records. Issuing infringements under the EP Act for not complying with permit conditions. Undertaking inspections of septic systems to check performance
Advocacy	Working with the local sewerage authority to determine the most appropriate community solutions for failing systems.

More detail about these responsibilities are documented in **Appendix A.**

South East Water (SEW) and Yarra Valley Water (YVW)

• Provides sewerage services to the community.

• May provide traditional centralised reticulated sewerage or alternative systems.

• Works with councils to identify and target areas with significant public health &/or environmental impacts and risks from onsite systems.

• Provides for the future needs of the community relating to sewerage services.

• Designs and constructs 'backlog' or 'community 'sewerage solutions as per its 5-year Water Plan.

Department of Health and Human Services (DHHS)

The DHHS has oversight for the implementation of the Public Health and Wellbeing Act 2008.

Southern Rural Water

Southern Rural Water (SRW) is a water corporation owned by the State Government with responsibility for licencing of groundwater users and river diverters across the southern half of Victoria.

Port Phillip and Westernport Catchment Authority (PPWPCA)

The Port Phillip & Westernport CMA prepares the Regional Catchment Strategy and coordinates and monitors its implementation.

However, the region's environmental assets are managed by Government organisations, Councils or private landholders. The individual work of these organisations and individuals, and the collaboration between them, are key drivers of the environmental health and resilience in this region.

Legislation, Policy and Codes

Environment Protection Act 1970

Under the *Environmental Protection Act 1970* (EP Act) and its subordinate policies, Councils are the primary agency responsible for the management of onsite wastewater treatment systems (OWTS), and the disposal of domestic wastewater in un-sewered areas throughout the municipality.

Within Cardinia Shire this responsibility rests with the Shire's Environmental Health Team.

Under the EP Act, councils assess, and issue permits for the installation and use of on-site wastewater systems.

Environment Protection Amendment Bill 2018

The EP Act is under review, with the *Environment Protection Amendment Bill (*EPA bill*)* introduced into parliament in June 2018.

At the time of the development of this plan the EPA were in the middle of implementing the reforms. The reforms are due to be implemented by July 2020.

State Environment Protection Policy (Waters)

The SEPP (WoV) was replaced by the SEPP (Waters) in 2018. Clause 28 and 29 of the SEPP (Waters) are relevant to Councils for consideration of applications for subdivision and onsite domestic wastewater management systems as well as the development by councils of a domestic wastewater management plan and working with water authorities to provide sustainable solutions:

Clause 28. Consideration of applications for subdivision and onsite domestic wastewater management systems

(1) When considering planning applications for subdivisions, responsible authorities must ensure one of the following has been provided for at the time of subdivision if the use of an onsite domestic wastewater management system would result in the discharge of sewage beyond allotment boundaries or would pose a risk to groundwater beneficial uses

– (a) reticulated sewerage; or

(b) an alternative system as approved by –

(i) the Authority for the purposes of Part 1XB of the Act; or

(ii) the relevant water corporation.

(2) If a reticulated sewerage (or alternative system) is not reasonably practicable, the responsible authority must ensure that –

(a) sewage can be sustainably managed and dispersed within the property boundaries over the system's lifetime, in accordance with the Victorian Land Capability Assessment Framework and any other guidance published or approved by the Authority; and

(b) if the proposed subdivision is in a special water supply catchment area as specified in Schedule 5 of the Catchment and Land Protection Act 1994, that –

(i) developments will not present a risk to water quality; and

(ii) approval for developments are issued in accordance with the Guidelines for planning permit applications in open, potable water supply catchment areas.

(3) Responsible authorities must ensure that permits are consistent with guidance published or approved by the Authority including that provided in the Code of Practice – Onsite Wastewater Management.

Clause 29. Councils to develop a domestic wastewater management plan (refer to p4 – "what does a DWMP aim to achieve')

Code of Practice – On-Site Wastewater Management[4]

The EPA have published the Code of Practice – On-Site Wastewater Management ("the Code") to provides standards and guidance for the management of onsite wastewater (up to 5000 L/day).

The Code states that a DWMP should:

• articulate Council's policy on and commitment to sustainable ongoing wastewater management and their programs for compliance and enforcement.

• be developed in conjunction with Water Corporations and the local community.

• establish processes to ensure early and comprehensive consideration of wastewater management in the planning cycle and Council's responsibility for the monitoring and compliance of the systems.

Other legislative requirements

The Cardinia Shire Council and other statutory authorities also have responsibilities under other State Government legislation relevant to wastewater management, as identified below:

Public Health and Wellbeing Act[5]

Section 24 *Public Health and Wellbeing Act 2008* (PHW Act) describes Council's responsibilities in relation to the protection of public and environmental health within the municipality. Complimentary to this Section, the DWMP identifies public and environmental risks posed by domestic effluent and establishing programs to address these risks.

Councils have responsibilities for domestic wastewater under S.58 and S.60 of the PHW Act. In particular, the nuisance provisions of section 58 provide the Shire with powers to investigate complaints and take enforcement action manage defective septic tank systems which are posing a danger to public health.

Planning and Environment Act 1987

[4] https://www.epa.vic.gov.au/our-work/publications/publication/2016/july/891-4

[5] http://classic.austlii.edu.au/au/legis/vic/consol_act/phawa2008222/s24.html

The *Planning and Environment Act 1987* (P&E Act) requires councils to consider the environmental issues when assessing land development in unsewered areas. This includes:

• any significant effects the use or development may have on the environment or the environment may have on the use or development.

• any strategic plan, policy statement, code or guideline which has been adopted by a Minister, government department, public authority or municipal council.

• The P&E Act states the objectives for wastewater management for all land use applications is to provide a wastewater system that is adequate for the maintenance of public health and the management of domestic wastewater in an environmentally friendly manner.

It also states, wastewater systems must be:

• designed, constructed and managed in accordance with the requirements and to the satisfaction of the relevant water authority and the EPA

• consistent with any relevant approved DWMP.

Local Government Act 1989

The objectives of the domestic wastewater plan are consistent with the overall objectives of Councils under S.3C of the *Local Government Act*. The plan will include management strategies that will significantly improve the environmental viability and sustainability of the Shire.

Water Act 1989

The *Water Act 1989* allows for water authorities to provide and manage sewerage systems, and also provides water authorities with some powers in relation to onsite wastewater systems.

The Environment Protection Act 2018[6]

The new Environment Protection Act 2018 provides for a general duty for any person to abide by:

"A person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable."

The general duty is a new concept for Victoria's environment protection laws and transforms environment protection regulation.

General duty-based regulation sits at the heart of occupational health and safety laws throughout Australia. It is an approach that is widely supported by the business community.

Complying with the general duty is a conceptually simple three-step process:

1. The duty holder needs to understand the risks that pollution or waste from their activities might present to human health or the environment.
2. The ways those risks can be controlled need to be identified and understood.
3. Duty holders are required to put in place any reasonably practicable measures to reduce the likelihood of the possible harm arising.

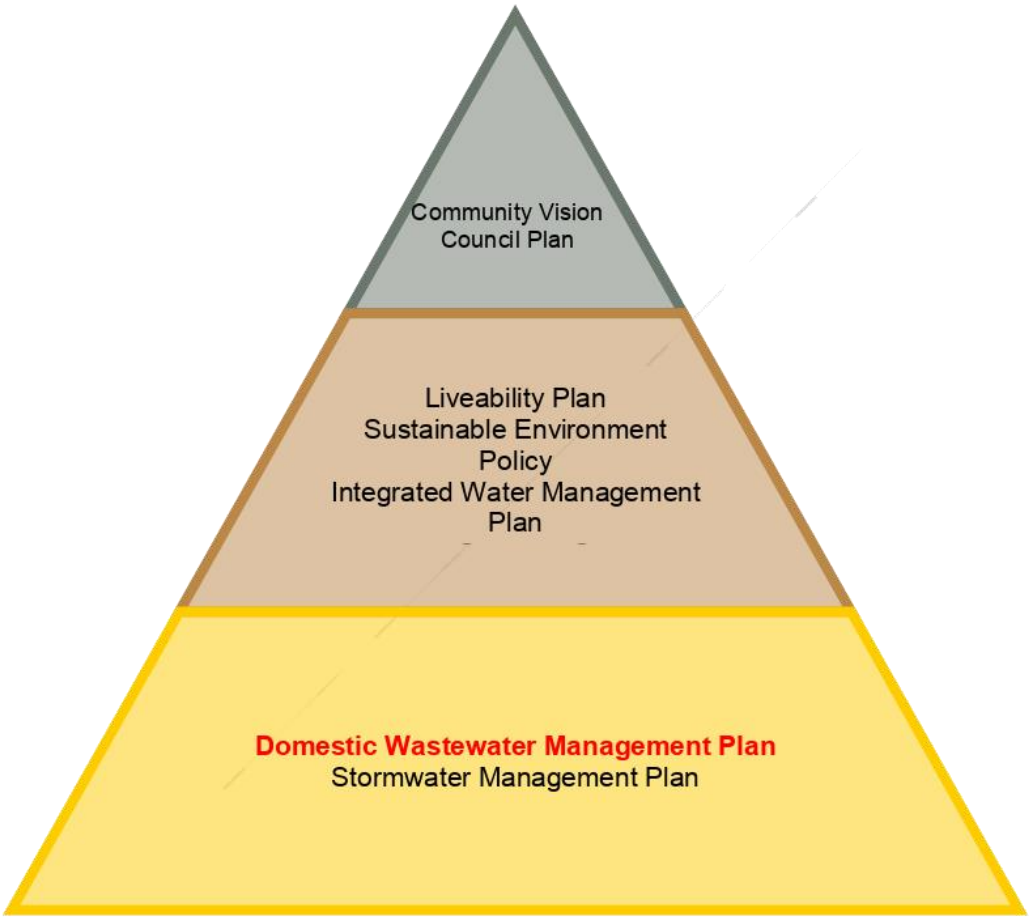
[6] https://www.environment.vic.gov.au/sustainability/environment-protection-reform/ep-bill-2018

Part IV – Relevant Council Plans and Strategies

Cardinia Shire Council has Plans, Policies and Strategies that are focused on achieving better outcomes for the community.

Some of these have specific actions for the management of domestic wastewater.

Diagram 1: Relationship to Council Vision, Strategies and Plans



2018-2022 Council Plan Actions

Key priority Area	Outcome	Activity	Actions 2018-19	Actions 2019-20	Actions 2020-21	Actions 2021-22
3 Our Environment	3.3 Enhanced natural environment	3.3.6 Promote water catchment management practices that improve the quality of our waterways.	Reduce off site septic discharges by advocating to water authorities to complete the backlog sewer program. Advocate to South East Water for the timely delivery of the Officer Township backlog program.	Reduce off site septic discharges by advocating to water authorities to complete the backlog sewer program. Advocate to South East Water for the timely delivery of the Officer Township backlog program.	Reduce off site septic discharges by advocating to water authorities to complete the backlog sewer program. Advocate to Yarra Valley Water for the timely delivery of Emerald South and Clematis backlog program	Reduce off site discharges by advocating to water authorities to complete the backlog sewer program. Advocate to Yarra Valley Water for the timely delivery of Emerald South and Clematis backlog program.

Relevance to the DWMP

These actions provide a direct link to actions included in the DWMP. The DWMP provides the context, data, policy and legislative framework to advocate for sewerage solutions to be planned for and provided by the Water Authorities to improve the quality of waterways.

Sustainable Environment Policy – 2018-2028

The *Sustainable Environment Policy 2018–28* is the roadmap for the future direction of Council's environmental and sustainability strategies, plans and activities. It identifies the challenges facing the municipality in these areas and outlines the plans and strategies already in place and those required to address them to ensure Cardinia Shire continues to be a place in which people want to live, work, and play. This Policy references the Integrated Water Management Plan (IWMP) 2015-2025 which provides the framework that guides Council towards a more sustainable approach to water management. It does this by establishing aspirations, targets and actions for each aspect of the water cycle.

Table1 *demonstrates the six elements that make up integrated water management.*

Elements of the IWMP

Stormwater	To quantify and minimise stormwater flows and pollutant loads to the shire's creeks, rivers and Westernport Bay
Potable water	To ensure efficient potable water use within our facilities and encourage the community to reduce potable water consumption
Alternative water	To reduce our reliance on potable water by identifying and using alternative water sources
Groundwater	To contribute to sustainable groundwater management, including exploring the option of alternative water sources for agriculture
Wastewater	To reduce the impact of wastewater on the environment
Catchments and natural waterway	To protect the shire's waterway values and open these assets up to the community

For further detailed information go to Cardinia Shire Council Integrated Water Management Plan (IWMP) 2015-2025

Relevance to the DWMP

The IWMP identifies Domestic Wastewater as a key element of the integrated water cycle. The DWMP provides detail about how the impact of wastewater in the environment will be reduced.

The Cardinia Shire Council's Liveability Plan 2019-2027

The Liveability Plan 2017—29 is taking a different approach to previous Cardinia municipal health and wellbeing plans. Previous plans have focused on the risk factors of illness, such as 'healthy eating' or physical activity', whereas this plan focuses on the social determinants of health, or the conditions in which people are born, learn, live, work and age. This is also known as a community's 'liveability'.

Relevance to the DWMP

The effective management of domestic wastewater now and into the future can improve public and environmental health. Improved public health and environmental outcomes has a positive effect on the community's liveability

Part V - Domestic Wastewater Defined

Domestic wastewater is water generated by domestic and commercial activities including toilet, bathroom, clothes washing and kitchen cleaning activities, which contains and carries waste matter, including solids, nutrients and micro-organisms (such as bacteria). Wastewater contains high levels of micro-organisms, chemicals and other contaminants capable of causing human illness and adversely impacting on the local environment if discharged untreated.

Domestic wastewater can be divided into two categories:

Sewage - which is all wastewater including greywater and toilet waste (also known as blackwater).

Greywater - which is wastewater from the shower, bath, basins, washing machine, laundry troughs, and kitchen — also referred to as sullage).

There are four principal ways to manage domestic wastewater:

1. Discharge sewage offsite into a reticulated or mains sewerage system.

2. Partially treat sewage onsite and then discharge the primary or secondary treated effluent offsite via a reticulated sewerage system for further treatment and/or recycling.

3. Treat and dispose of, or recycle, all sewage onsite (via a septic tank system).

4. Treat and recycle greywater onsite and discharge blackwater as well as any excess greywater offsite to a reticulated sewerage system (or, if in an unsewered area, to an onsite wastewater treatment system).

In some circumstances where systems were installed prior to 1983, the greywater component of wastewater is diverted offsite directly into the drainage network without any treatment. Permits issued by Council have no end date allowing off site discharges to continue until an upgrade is required triggered by a Planning or Building Permit application or a sewerage solution is provided to the property by the Sewerage Authority.

Domestic wastewater is generally considered to be wastewater generated from a site generating less than 5,000 litres of wastewater per day. Wastewater from sites that generate more than 5,000 litres of wastewater per day, or generate industrial wastewater, are not considered domestic wastewater and are regulated by the Environment Protection Authority (EPA).

For the purposes of this Domestic Wastewater Management Plan, domestic wastewater relates to both residential and small scale commercial sites (like cafes, restaurants etc) that generate a maximum of 5,000 litres or less of wastewater per day.

Part VI – Risks Associated with Domestic Wastewater

Public Health Risks

Untreated effluent may contain pathogens such as bacteria, viruses, protozoa, intestinal worms and fungi.

The pathogens listed above can cause gastroenteritis, cholera and hepatitis in humans through exposure to contaminated drinking water or food matter (for example, shellfish). Transmission to humans can also occur from swimming in contaminated water or contact with domesticated animals that have been exposed to the pathogens themselves.

Discharge from septic tank systems can generate organic rich wastewater, which may increase the breeding capacity of mosquitoes leading to pest control issues and the spread of vector-borne diseases.

Environmental Risks

Groundwater contamination by ammonia, nitrates and faecal pathogens.

Effluent may contain ammonia, organic matter or suspended solids, which can have a negative impact on aquatic life-forms.

Effluent may be transported to other natural bodies of water causing further contamination.

Economic Risks

Replacement of failing septic tank systems, delivery of community sewerage programs and connection to the sewer can be expensive for home owners. Increased levels of salt or soil nutrient concentration can lower land productivity.

Poor maintenance of septic tank systems can reduce land amenity and lower the economic value of the property.

Effluent discharging into stormwater drains can increase weed growth and scouring, which can lead to an increase maintenance levels to ensure an adequate flow of stormwater can occur.

Social Risks

Areas where wastewater is visible in open drainage systems can impact the amenity and liveability of a neighbourhood.

Highlighting or uncovering non-compliant systems through septic tank compliance monitoring, surveys and property inspections by Council as well as proposed sewerage schemes presented by water authorities can create angst and uncertainty in the community about the prospect of increased financial burden.

The following risks associated with domestic wastewater has been extracted from Domestic Wastewater Management: a planning guide for local government (2005), which was prepared by the Municipal Association of Victoria (MAV).

Part VII - Current Situation; Domestic Wastewater Profile

Cardinia Shire Council is to the east of Melbourne situated between the Dandenong Ranges and Westernport Bay and occupies and area of approximately 1,280km^2.

Cardinia has three distinct geographic regions:

The **northern area** of the municipality contains ridges and hills of the Yarra and Dandenong Ranges. Residential development has occurred in the area despite the high levels of vegetation.

To **the south** of the hills the land is mainly flat. The area includes the main township of Pakenham, which is part of Melbourne's eastern growth corridor. Pakenham is currently subject to large level residential developments. To the south of Pakenham is Koo Wee Rup, which is an agricultural area due to the fertile land. The area was originally swamp land that has been drained causing the loss of the original vegetation and waterways.

The **southern boundary** of the Council is a coastal area characterised by mangroves, mudflats and seagrass.

There are approximately **7000** septic tank systems located in the Shire
16% of rateable properties have a septic tank system
50% of septic tanks systems are ***>20 years old***
67% are primary conventional septic tank systems
Little is known about the condition, service and maintenance history or performance of septic tank systems in the Shire
Over the last 10 years Yarra Valley Water have provided reticulated sewerage to **1336** properties to replace septic systems. South East Water and have provided reticulated sewerage to **507** properties.
From 2006 -2018 an average of **90 permits** were issued annually for new septic systems and alterations to existing systems.
From 2006-2018 an average of **30 customer complaints** about septic tank systems were received annually

There are approximately 7000 septic tank systems in Cardinia Shire Council distributed across 41 localities.

Cardinia Shire Council DWMP - 2020-2025

Table 1 - provides details on areas that have been serviced by mains sewerage in the last 10 years and future areas planned or under investigation for a sewerage solution.

Yarra Valley Water		
Areas serviced	**Number of properties**	**Timeframes**
Cockatoo	899	2007-2011
Gembrook	113	2007
Avonsleigh	76	2012-13
Emerald	248	2008-2013
TOTAL	**1336**	2007-2018
Future plans		
CSA026 Emerald (South) / Clematis	404	2024-25
CSA025 Emerald (North)	499	2027-28
CSA024 East Gembrook	212	2031-32
TOTAL	**1115**	2024-2032

South East Water [7]	Number of properties	Timeframes
Areas serviced		
Upper Beaconsfield	207	2009
Nar Nar Goon	199	2008
Tynong	101	2008
TOTAL	**507**	2008-09
Future plans		
Officer	131	In progress
Guys Hill	14	TBD*
TOTAL	**145**	

*TBD -To be determined – current review underway

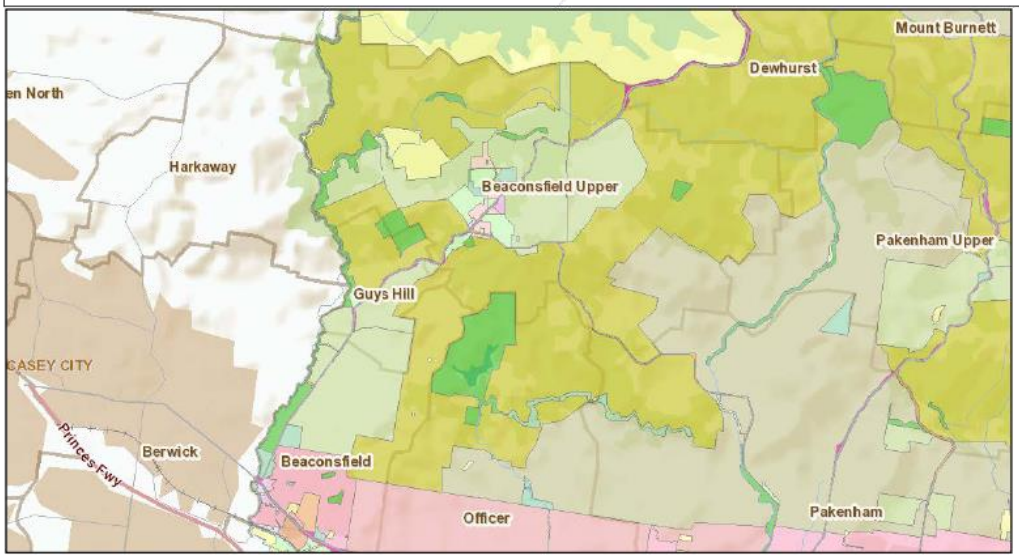
[7] South East Water have had a focus on delivering the ECO Peninsula project reticulated sewer to 16,500 properties on the Mornington Peninsula
https://southeastwater.com.au/CurrentProjects/Projects/Pages/PeninsulaECOproject.aspx

Cardinia Shire Council DWMP - 2020-2025

These localities have been linked and combined into 8 Regions and a domestic wastewater profile developed for each.

1. Beaconsfield and surrounds

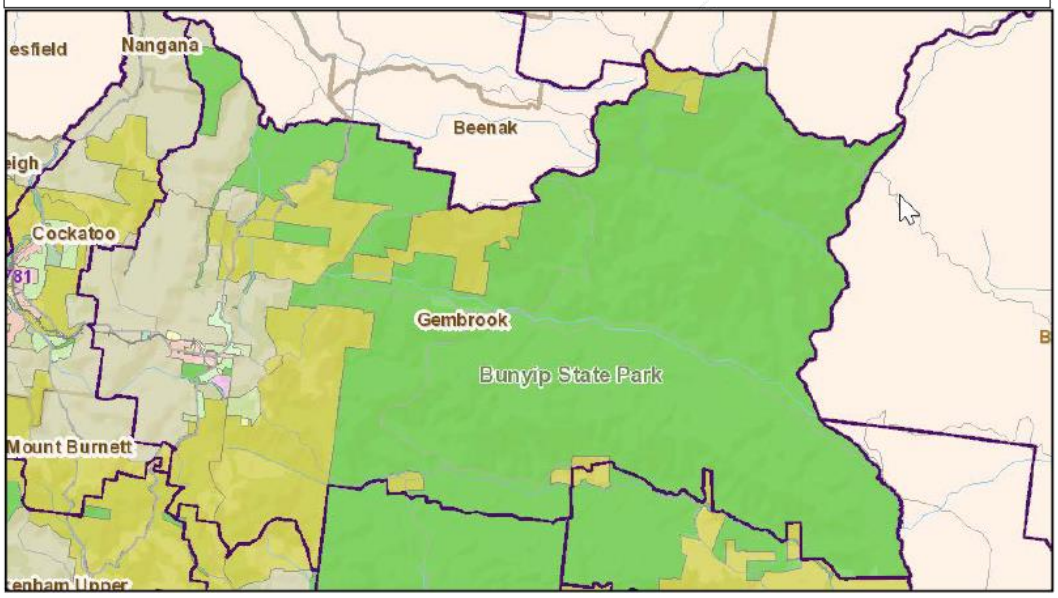
Region/township(s): Beaconsfield, Beaconsfield Upper, & Guys Hill.		**Postcode(s):** 3807 & 3808.	
Registered septic systems			
Total: 976	**Primary:** 574	**Secondary:** 402	**20+ years old:** 572
Key planning zones/land use: Commercial, Commonwealth Land, Comprehensive Development, Farming, General Residential, Green Wedge.			
Catchment: Port Phillip & Westernport Catchment			
Total properties: 3,717	**Average lot size:** 11,254 m2	**Lots <1,000 m2:** 1,637	
Topography/landscape features: Dandenong Ranges; conservation reserves; dairy, orchids, potato farming; urban and rural residential areas.			
Reticulated sewerage		**Water Authority: South East Water**	
Connected: TBC	Available: 2318 (Beaconsfield, Beaconsfield Upper)		
Key threats: Human health, surface waters, agriculture, native vegetation, small allotments.			
Risk classification: High			

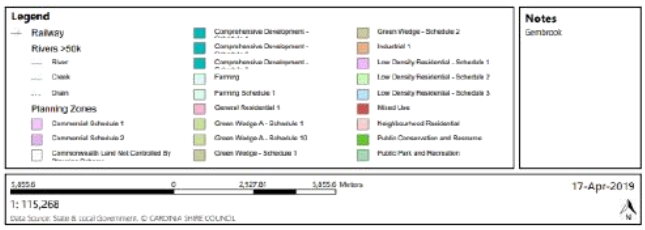


Cardinia Shire Council DWMP - 2020-2025

2. Gembrook

Region/township(s): Gembrook		**Postcode(s):** 3783	
Registered septic systems			
Total: 618	**Primary:** 499	**Secondary:** 119	**20+ years old:** 309
Key planning zones/land use: Commercial, Commonwealth Land, Comprehensive Development, Farming, General Residential, Green Wedge.			
Catchment: Port Phillip & Westernport Catchment			
Total properties: 1,070	**Average lot size:** 84,000 m2	**Lots <1,000 m2:** 603	
Topography/landscape features: Foothills of the Dandenong Ranges, gateway to Central Highlands to the East, overlooks Yarra Valley to the North. Includes bushland and agriculture.			
Reticulated sewerage		**Water Authority: Yarra Valley Water**	
Connected: TBC	Available: 113 Gembrook		
Key threats: Human health, surface waters, agriculture, native vegetation, small allotments.			
Risk classification: Medium/High			

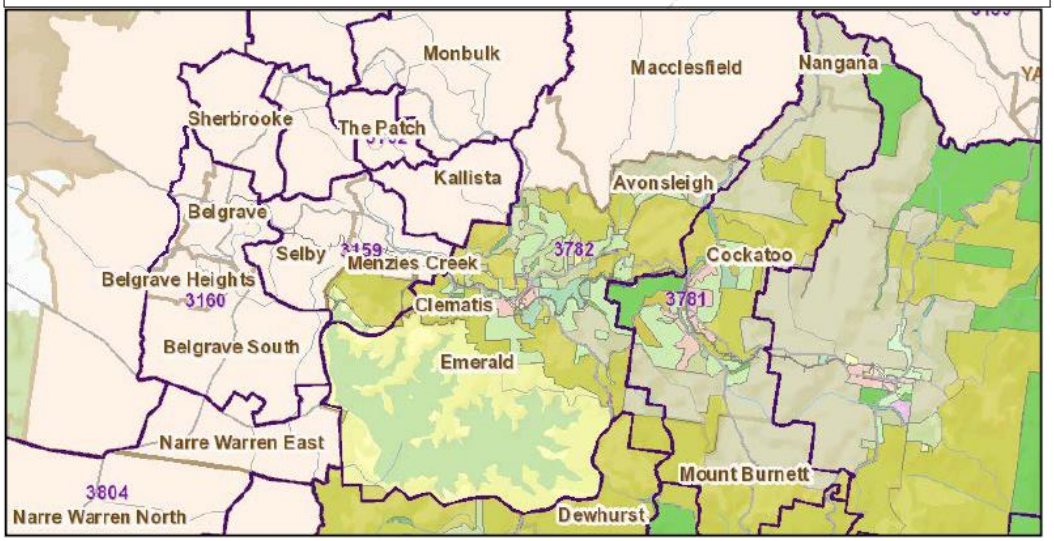


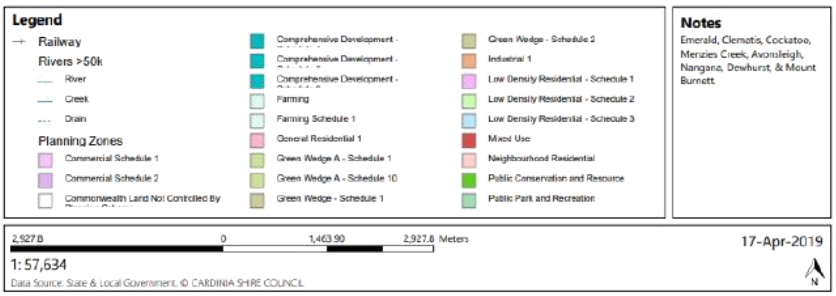


Cardinia Shire Council DWMP - 2020-2025

3. Emerald and surrounds

Region/township(s): Emerald, Clematis, Cockatoo, Menzies Creek, Avonsleigh, Nangana, Dewhurst, & Mount Burnett.		**Postcode(s):** 3782, 3781, 3159, 3782, 3808, 3781.	
Registered septic systems			
Total: 1,548	**Primary:** 987	**Secondary:** 561	**20+ years old:** 919
Key planning zones/land use: Commercial, Commonwealth Land, Comprehensive Development, Farming, Residential, Green Wedge, Mixed Use, Industrial, & Public Conservation.			
Catchment: Port Phillip & Westernport Catchment			
Total properties: 4,707	**Average lot size:** 16,128 m2	**Lots <1,000m2:** 560	
Topography/landscape features: Foothills of the Dandenong Ranges, gateway to Central Highlands to the East, overlooks Yarra Valley to the North. Includes bushland and agriculture.			
Reticulated sewerage		**Water Authority: Yarra Valley Water**	
Available: 1223	Connected: TBC		
Key threats: Human health, surface water, agriculture, native vegetation, old systems, small lots.			
Risk classification: Medium/High			

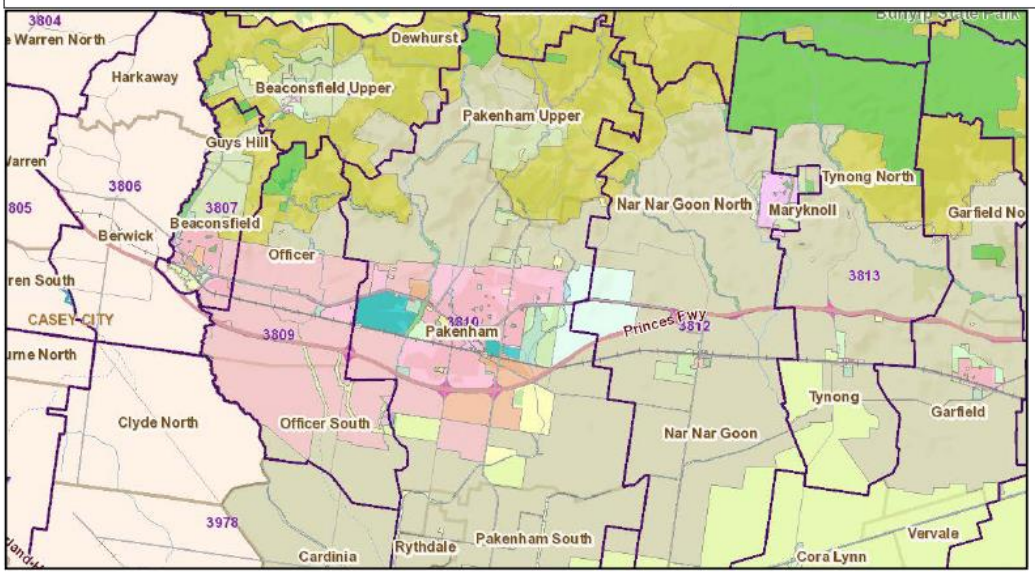


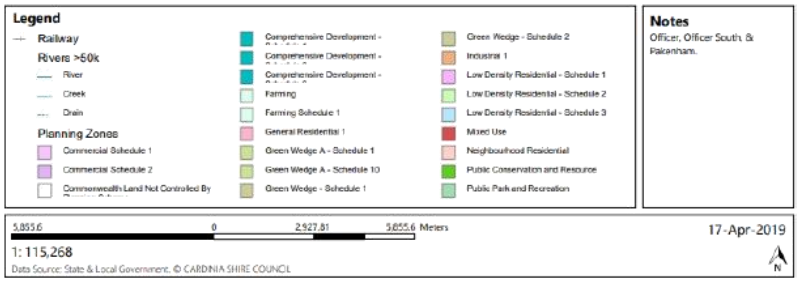


4. Growth region

Cardinia Shire Council DWMP - 2020-2025

Region/township(s): Officer, Officer South, Pakenham, & Pakenham Upper.		**Postcode(s):** 3809, 3810.	
Registered septic systems			
Total: 971	**Primary:** 692	**Secondary:** 279	**20+ years old:** 583
Key planning zones/land use: Commercial, Commonwealth Land, Comprehensive Development, Farming, General Residential, Green Wedge.			
Catchment: Port Phillip & Westernport Catchment			
Total properties: 28,195	**Average lot size:** 6,387m2	**Lots <1,000 m2:** 24,628	
Topography/landscape features: High density housing, commercial & industrial development, rural living, agriculture, public conservation, and wetlands.			
Reticulated sewerage		**Water Authority: South East Water**	
Connected: 24,264	Available: TBC		
Key threats: Human health, surface waters, agriculture, native vegetation, small allotments.			
Risk classification: Medium			

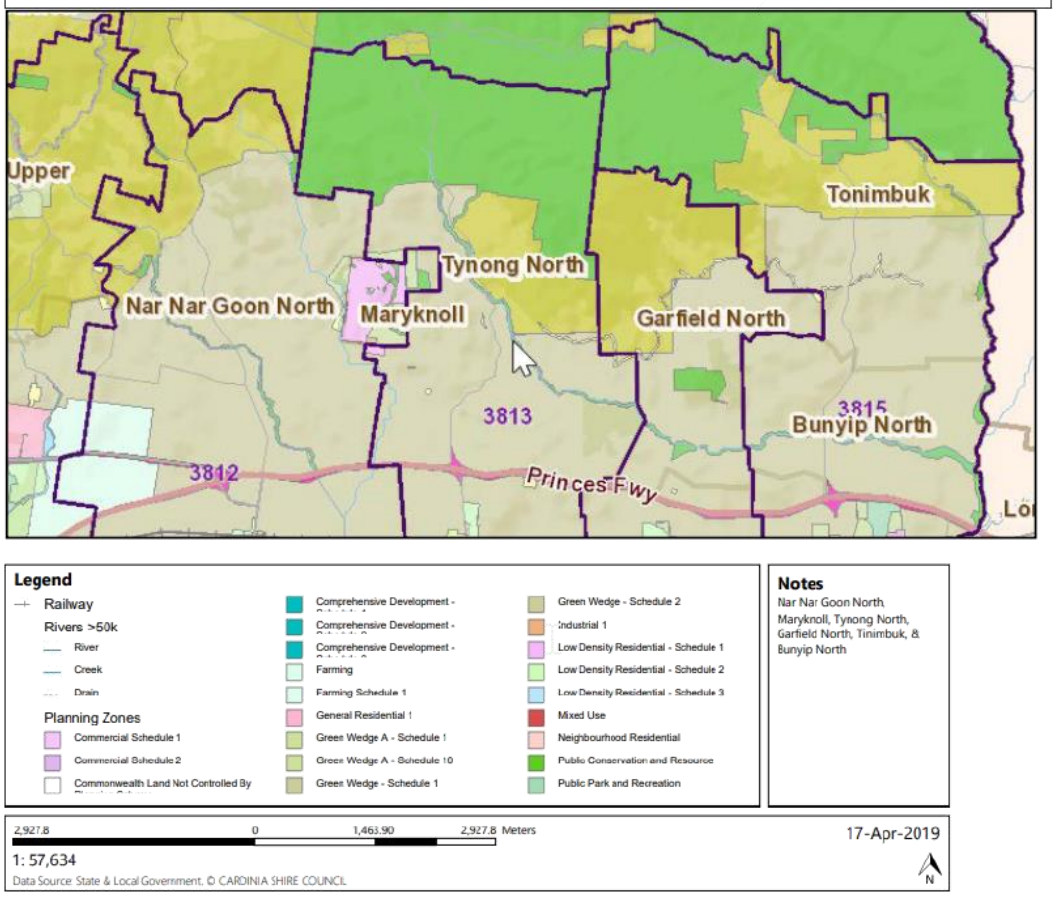




5. Lower Hills

Cardinia Shire Council DWMP - 2020-2025

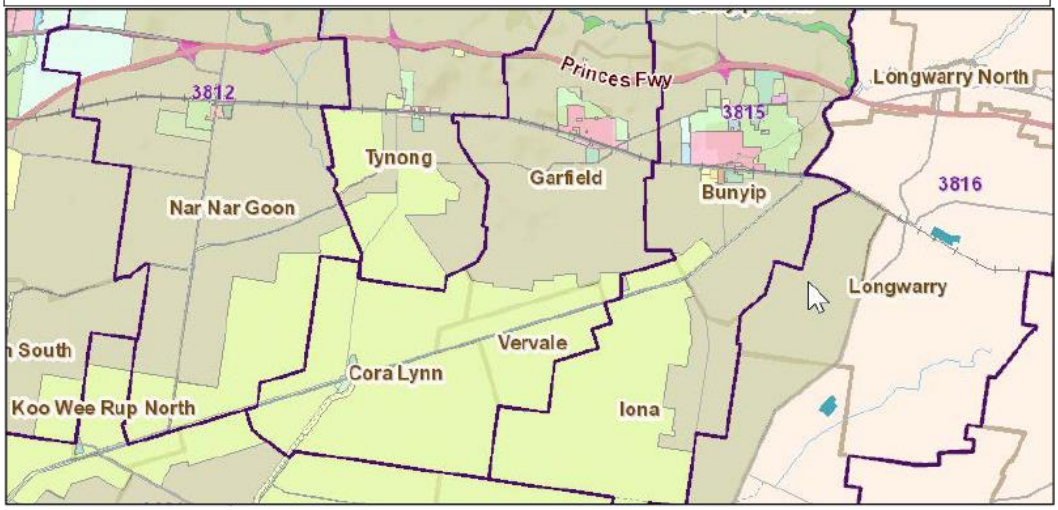
Region/township(s): Nar Nar Goon North, Maryknoll, Tynong North, Garfield North, Tonimbuk, & Bunyip North.		**Postcode(s):** 3812, 3813, 3814, 3815.	
Registered septic systems			
Total: 689	**Primary:** 510	**Secondary:** 179	**20+ years old:** 291
Key planning zones/land use: Commercial, Commonwealth Land, Comprehensive Development, Farming, General Residential, Mixed Use, Industrial, Public Conservation, & Green Wedge.			
Catchment: Port Phillip & Westernport Catchment			
Total properties: 932	**Average lot size:** 151,285 m2	**Lots <1,000 m2:** 221	
Topography/landscape features: Agriculture, green wedge, public conservation, Princes Hwy corridor, Gumbuya World amusement park.			
Reticulated sewerage		**Water Authority: South East Water**	
Connected: 2	Available: TBC		
Key threats: Human health, aquatic facilities, agriculture, native vegetation, & surface waters.			
Risk classification: Medium			

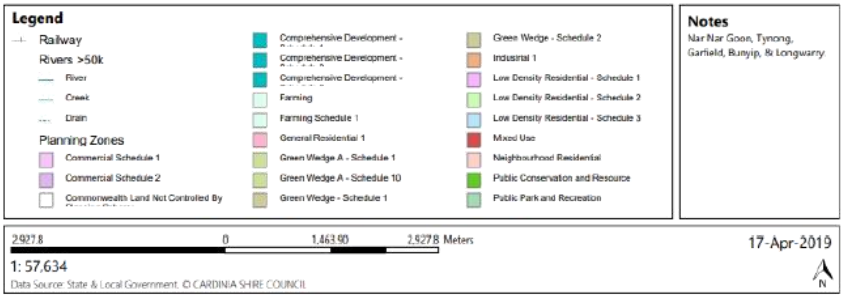


6. Upper Southern Rural District

Cardinia Shire Council DWMP - 2020-2025

Region/township(s): Nar Nar Goon, Tynong, Garfield, Bunyip, & Longwarry.		**Postcode(s):** 3812, 3813, 3814, 3815, 3816.	
Registered septic systems			
Total: 1,053	**Primary:** 664	**Secondary:** 389	**20+ years old:** 579
Key planning zones/land use: Commercial, Commonwealth Land, Comprehensive Development, Farming, Low Density Residential, & Industrial, & Public Conservation.			
Catchment: Port Phillip & Westernport Catchment			
Total properties: 2,810	**Average lot size:** 45,472 m2	**Lots <1,000 m2:** 815	
Topography/landscape features: Areas of dense native vegetation in the north moving to low-lying farmland in the south, industrial areas, public conservation, & Princes Hwy corridor.			
Reticulated sewerage		**Water Authority: South East Water**	
Connected: 1,473	**Available:** TBC		
Key threats: Human health, surface waters, agriculture, native vegetation, small lots, groundwater.			
Risk classification: Medium/high			

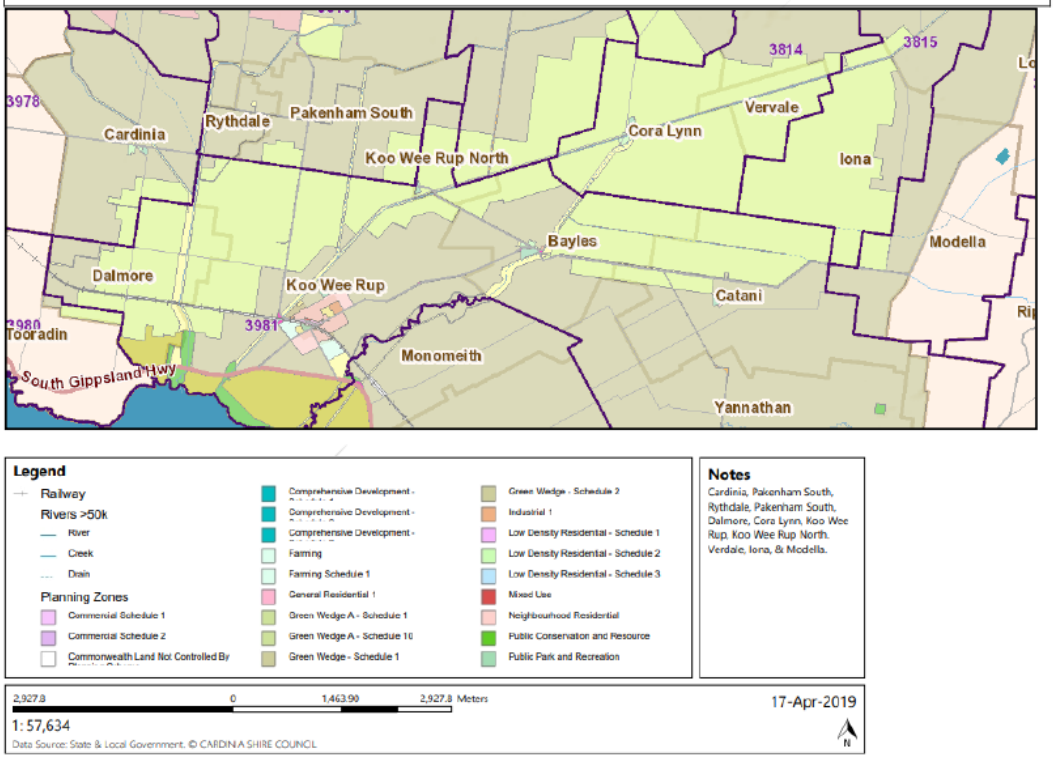




7. Central Southern Rural District

Cardinia Shire Council DWMP - 2020-2025

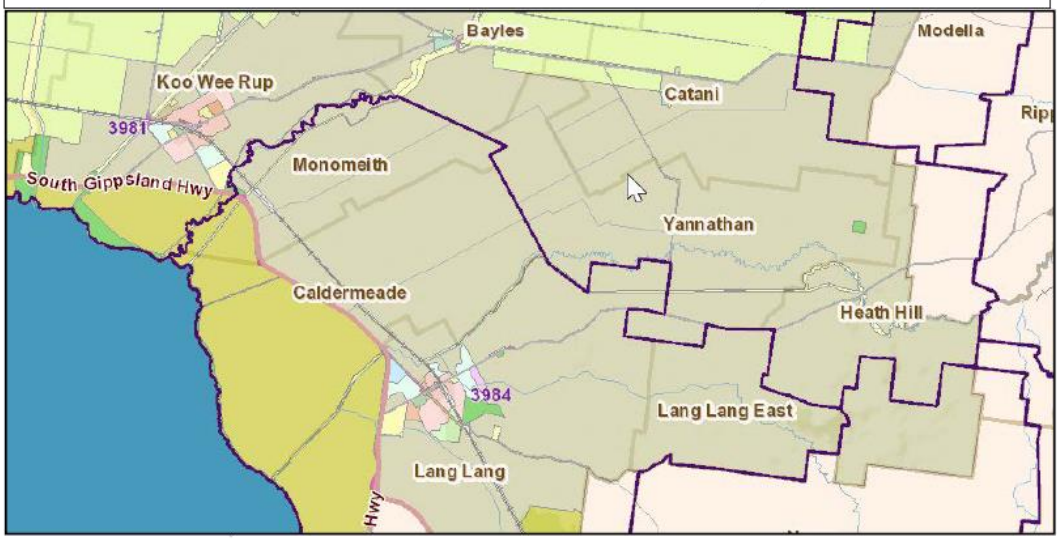
Region/township(s): Cardinia, Pakenham South, Rythdale, Dalmore, Cora Lynn, Koo Wee Rup, Koo Wee Rup North. Vervale, Iona, & Modella.		**Postcode(s):** 3978, 3810, 3981, 3814, 3815, 3816.	
Registered septic systems			
Total: 691	**Primary:** 516	**Secondary:** 175	**20+ years old:** 237
Key planning zones/land use: Commercial, Comprehensive Development, Farming, Green Wedge, Industrial, Public Conservation, & Low Density Residential.			
Catchment: Port Phillip & Westernport Catchment			
Total properties: 2,463	**Average lot size:** 78,202 m2	**Lots <1,000 m2:** 1,087	
Topography/landscape features: Low-lying farmland, urban residential growth, industrial areas.			
Reticulated sewerage		**Water Authority: South East Water**	
Connected: 1,294	**Available:** TBC		
Key threats: Human health, floods, farming, groundwater, low soil permeability.			
Risk classification: Medium			



8. Lower Southern Rural District

Cardinia Shire Council DWMP - 2020-2025

Region/township(s): Monomeith, Bayles, Catani, Yannathan, Caldermeade, Lang Lang, Lang Lang East, & Heath Hill.		**Postcode(s):** 3984, 3981, 3984.	
Registered septic systems			
Total: 340	**Primary:** 244	**Secondary:** 96	**20+ years old:** 66
Key planning zones/land use: Commonwealth Land, Comprehensive Development, Farming, Green Wedge, Industrial, & Low Density Residential.			
Catchment: Port Phillip & Westernport Catchment			
Average lot size:			
Topography/landscape features: Low-lying farming with low density residential areas. Small area of Port Philip Bay Coastline to the south-west.			
Reticulated sewerage		**Water Authority: Yarra Valley Water**	
Connected: 628	**Available:** TBC		
Key threats: Human health, floods, farming, groundwater, low soil permeability, marine ecosystems.			
Risk classification: Medium			



The greatest proportion of septic tank systems are in Cockatoo (8.3%), Beaconsfield Upper (8.0%), Emerald (7.9%) and Gembrook (7.0%). It is estimated that there are at least a further 20%

of active septic tank systems that currently have insufficient information including; a property address, the age of the septic tank system, type of system installed and the location of the receiving environment for effluent disposal.

Septic Tank Permits Issued between 2006-2018

A total of 1184 permits were issued between 2006 and 2018, of which 1099 were for new installations and 85 for alterations to existing systems. The statistics indicate that the number of permits issued has remain fairly constant from year to year.

The table above identified the northern area of the municipality as the area where the most septic permits were approved with Emerald, Beaconsfield Upper and Gembrook accounting for 29.8% of the total number of permits issued.

A breakdown of the types of systems installed or altered between 2006 and 2018 is as follows:

Types of septic tanks installed 2006-2018

Primary septic tank systems account for the majority of permit approval (67%). Secondary treatment systems account for 29% of permits over the period and worm farms just 4%.

Age of Septic Tank Systems Profile

50% of the recognised septic tank systems within the Shire are at least 20 years old. This number may be higher where there are properties that have no record of a septic system being installed.

The State Environment Protection Policy (Waters of Victoria) came into force in 1988. Prior to the introduction of the SEPP, proposed septic tank systems with offsite discharge for untreated 'grey-water' from kitchen, laundry and bathroom activities (excluding the toilet) were a permitted approval for use.

There are an unknown number of septic tank systems within the municipality where off-site discharge occurs. Given that 50% registered septic tank systems are at least 20 years old it is likely that the number of active systems with off-site discharge is reasonably high. This is further highlighted by primary treatment systems accounting for 67% of septic tank systems.

Currently there is no legal requirement for an approved septic tank system that has offsite discharge to be altered to meet the current EPA standards, unless the system is failing, causing a 'nuisance, as defined by the Public Health and Wellbeing Act 2008 or the property where the septic system is located has lodged a building or planning permit application to increase wastewater loading

Septic Tank Systems and Complaints

As previously stated, Cardinia Shire Council is divided into three distinct geographic regions, namely:

The northern area of the municipality consisting of hills and ridges includes:

Avonsleigh, Beaconsfield, Beaconsfield Upper, Clematis, Cockatoo, Dewhurst, Emerald, Gembrook, Guys Hill, Macclesfield, Menzies Creek, Mt Burnett, Nangana, Nyora, Pakenham Upper, Selby.

The southern area of the municipality (inclusive of Pakenham and Koo Wee Rup) where the land is mainly flat and includes:

Bayles, Bunyip, Cardinia, Catani, Cora Lynn, Dalmore, Garfield / Garfield North, Heath Hill, Iona, Koo Wee Rup, Longwarry, Maryknoll, Modella, Nar Nar Goon / NNG North, Officer, Pakenham / North / South, Rythdale, Tonimbuk, Tynong / Tynong North, Vervale, Yannathan.

The southern boundary of the municipality is considered a coastal area

Caldermeade, Lang Lang, Monomeith, Tooradin.

Northern Area - Analysis

30% of the septic tank complaints within the northern region occurred in Cockatoo. The reason for the high number of complaints may possibly be attributed to Cockatoo having the largest number of recognised septic tank systems over 20 years old and the most that have been classified as having off-site discharge according to municipal records.

Gembrook and Pakenham Upper have a high number of conventional (primary treatment) septic tank systems and many systems that are over 20 years old only a small number of complaints were registered with the Council.

The area of Guys Hill accounted for 22% of complaints during the time period despite only having 116 active septic tank systems (3.6% of the total number of systems in the northern area). . Council is working with South East Water (SEW) to review options for sustainable wastewater management.

The Southern Area - Analysis

The area of Officer accounted for 31.0% of complaints during the time period despite only having 310 active septic tank systems (12% of the total number of systems in the southern area).

Bunyip accounted for only 7% of complaints despite having a high number of recognised septic tank systems categorised as conventional (primary treatment) systems, the most systems with off-site discharge in the southern area as well as many systems that are more than 20 years old.

The Southern boundary - Analysis

The southern boundary area of the municipality contains mainly conventional (primary treatment) systems). Council record indicate that only 3 recognised septic tank systems are more than 20 years old, which may account for only one septic tank complaint recorded with Council.

Stormwater Management Threats

The Cardinia Shire Council Stormwater Management Plan 2002 identified six key stormwater catchments within the municipality that constitute the receiving environment for domestic wastewater. Four key waterways flow into Westernport Bay and the remaining two flow into the Yarra River system.

The four key waterways that flow into Westernport Bay are:

Cardinia Creek – starts beneath the Dandenong Ranges until it reaches Koo Wee Rup where it is diverted into the Cardinia Drain / Dalmore Drain system
Threats – rural activities (faming and agriculture), runoff from unsealed roads and the impact of contaminants from septic tank systems
Toomuc, Pakenham and Ararat Creeks – origin is the foothills of the Yarra Ranges and flows through the urban township of Pakenham prior to being diverted into the Cardinia Drain / Dalmore Drain system and the Bunyip Drain system
Threats – existing and developing urban area (urban stormwater)
Bunyip River – begins in the Bunyip State forest and flows along the eastern boundary of the municipality. The river deteriorates and becomes a drain through the swamp land
Threats – rural activities (farming and agriculture), runoff from unsealed roads and the impact of contaminants from septic tank systems
Lang Lang River – flows from the Strzelecki ranges to the swamp land and out to Westernport Bay
Threats – rural activities (farming and agriculture), runoff from unsealed roads and contaminants from septic tank systems

The key waterways that flow into the Yarra River system, which flows into Port Phillip Bay are:

Cockatoo Creek – flows through the Cockatoo and Gembrook areas
Threats – runoff from unsealed roads and contaminants from septic tank systems
Shepherd Creek – flows through the Cockatoo and Gembrook areas
Threats – runoff from unsealed road and contaminants from septic tank systems

Building a domestic wastewater profile

There are a combination of 41 townships and localities across Cardinia Shire Council. A profile for each of these areas has commenced as evidence to inform strategies and actions that can be applied across the entire Council or adapted to target and address localised issues.

Each locality profile is being built using readily available data. As identified in the action plan further work is required to gather more detailed data.

A summary of townships and localities according to priority by level of risk is provided below:

Localities	Septic Systems installed (@2018)	Primary	Secondary	Systems >20yrs old	Risk rating
Beaconsfield, Beaconsfield Upper, & Guys Hill.	976	574	402	572	High
Gembrook	618	499	119	309	Medium/ High
Emerald, Clematis, Cockatoo, Menzies Creek, Avonsleigh, Nangana, Dewhurst, & Mount Burnett.	1,548	987	561	919	Medium
Officer, Officer South, Pakenham, & Pakenham Upper.	971	692	279	583	Medium
Nar Nar Goon North, Maryknoll, Tynong North, Garfield North, Tonimbuk, & Bunyip North.	689	510	179	291	Medium/ High
Nar Nar Goon, Tynong, Garfield, Bunyip, & Longwarry.	1,053	664	389	579	Medium/ High
Cardinia, Pakenham South, Rythdale, Dalmore, Cora Lynn, Koo Wee Rup, Koo Wee Rup North. Vervale, Iona, & Modella.	691	516	175	237	Medium
Region/township(s): Monomeith, Bayles, Catani, Yannathan, Caldermeade, Lang Lang, Lang Lang East, & Heath Hill.	340	244	96	66	Medium
Totals	**6886**	**4686**	**2200**	**3556**	

Evidence and Risk based approach

To better understand what needs to be done to manage Council responsibilities with respect to domestic wastewater, an evidence and risk-based approach is applied to identify and prioritise management strategies and actions. This approach is encouraged as highlighted in the 2018 VAGO report '*Managing the Environmental Impacts of Domestic Wastewater* report where it is was recommended that Councils 'improve its risk assessment process and the information supporting it'.

Some, but not all the data required in preparing this plan has been collected to reliably apply a risk rating to each township and locality. More work will need to be done to collect data that can be used to more accurately understand the risks and to be able to apply risk ratings with greater certainty. This will entail:

- verifying existing data sets and ensuring reliability of the data source,
- cross matching data from other sources including third parties, such as; South East Water and Yarra Valley Water, and
- "ground truthing" by collecting data by conducting site inspections of properties that have septic tank systems.

Once the data is collated the following parameters and weightings can be applied to the risk assessment to attribute a risk rating:

- Septic tank permits issued by location
- Lot size
- Proximity to water ways
- Proximity to biological or environmental significant areas
- Age and type of system
- Discharge on or off site
- Servicing and maintenance history
- Land use/Planning zone
- Soil/land capability

Both South East Water and Yarra Valley Water have their own methodology to determine risk when assessing the justification for providing a servicing solution to an area and the timing of works. Each methodology includes additional measures to those proposed above. Cardinia Shire risk ratings will be combined with Water Authorities own methodology and risk determination when assessing the case for servicing an area with a sewerage solution. Ideally, an agreed methodology and risk determination process between Cardinia Shire Council and the Water Authorities would to provide a consistent approach to inform strategies for managing the impacts of on-site wastewater treatment systems..

Risk Rating

The risk rating is used as an **initial indicator**, taking into account what is known, at this point in time, about properties that rely on septic tank systems in Cardinia Shire.

Should any one of the criteria be true, the appropriate rating is applied.

These risk ratings will be combined with Water Authorities own methodology and risk determination when assessing the case for servicing an area with a sewerage solution.

The risk rating will be used to help determine the location, priority and strategies for the responsible management of septic tank systems that are **outside** planned, or future areas considered for a sewerage solution.

The following criteria is used to determine the appropriate risk rating:

High risk – discharge off-site, > 25 years old, no record of septic, No record or record >5yrs of clean-out servicing or maintenance, system cannot be located, properties<1000m2, cannot contain on site. Do not meet buffer distance requirements as per EPA code of practice 891.4. Commercial and Residential land use

Medium risk – effluent retained on site, 10- 25 years old, record of septic, record <5yrs of clean-out servicing or maintenance, system can be located, properties >1000 and <4000m2, can partially contain on site. Marginally meets buffer distance requirements as per EPA code of practice -891.4. Mix of residential and lower density residential zones.

Low Risk - effluent retained on site, <10 years old, record of septic, record <1yr of clean-out servicing or maintenance, system can be located, properties>1000m2, can contain on site. Meets buffer distance requirements as per EPA code of practice -891.4. Predominantly rural zones.

Community Sewerage 'backlog' schemes – replacement of septic tanks

Yarra Valley Water (YVW)

During 2009-2013 the Yarra Valley Water (YVW) backlog program determined that areas of Avonsleigh, Emerald and Cockatoo were of high priority for connection to the sewer system.

The Avonsleigh / Emerald sewer backlog project has serviced areas of North and South Avonsleigh and provided a sewerage connection to Emerald Secondary College. North Avonsleigh is a reticulation area south of Wattle Creek.

The backlog program also provided a hybrid sewer system (provision of gravity sewer connections or pressure sewer connections) to properties in Upper, Middle and Lower Cockatoo.

South East Water (SEW)

Within Cardinia Shire Council, South East Water has completed backlog sewerage projects in 2008 and 2009 in the areas of Beaconsfield Upper, Nar Nar Goon and Tynong. SEW is currently providing main sewerage services to Officer.

Recently Council has had discussions with SEW with regard to giving priority to the sewer backlog program in areas of Guys Hill . Delivering the actions in this Plan will inform any future community sewerage servicing priorities and timeframes for delivery.

Sewerage provision to growth areas, new estates etc. are delivered separately to 'backlog' or community sewerage programs.

Part XII – Key Findings

Several issues have been identified regarding domestic wastewater management in Cardinia Shire Council:

There is incomplete data regarding the number, location and type of septic tank systems that have been installed within Cardinia Shire Council. The incomplete information about the septic tank systems prevents an accurate assessment by Council of risks to public health, the economy and the natural environment. The strategies and actions in this plan address the gaps in the data and information.

The maintenance and use of existing septic tank systems by owners or operators is unknown. Cardinia Shire Council currently has no systematic method to monitor compliance with permit requirements for approved septic tank systems.

The receiving environment for domestic wastewater both in localised open road drainage and stormwater systems, gullies and channels and well as constructed sealed drainage provides a means to carry wastewater. Overland and underground flows impact the soil and vegetation surrounding water courses. A potential cause of this issue could be that the majority of septic systems that have been installed are conventional (primary treatment) septic tank systems, which transfer untreated effluent to the receiving environment. Compounding the problem is the ageing systems that are generally not well maintained or have been illegally altered to divert wastewater off site.

The current and proposed community sewerage 'backlog' programs will be beneficial in providing a sustainable solution to the disposal of domestic wastewater that will reduce the cumulative impact of polluted water entering the environment. Advocating for septic systems to be replaced by a sewerage solution sooner than planned requires commitment and support from the water authority, the Council and the community.

There is ongoing development in unsewered areas within the municipality. Regular assessment by management will be required to ensure that municipal policies and procedures require regular assessment to ensure domestic wastewater treatment meets current requirements and is sustainable. There is lack of consideration of wastewater management in the development of community township and structure plans and strategic planning restructure and zoning changes.

Part XIII –Domestic Wastewater Management Priorities

The issues outlined in the key findings have identified several actions that should be implemented to improve the management of septic tank systems. These actions are:

Information Management

Council needs to obtain a complete and accurate profile of the active septic tank systems within the municipality, which can be integrated with the Council GIS to outline the current economic, environmental and public health risks. A robust methodology is required to develop risk ratings that will help determine appropriate actions and priorities for sustainable on site wastewater management or other solutions.

Monitoring and Compliance of Septic Tank Systems

Council needs to develop procedures that ensure owner or operator compliance with conditions outlined on septic tank permits issued. A risk-based approach may need to be adopted to best use available Council resources. Compliance and enforcement approaches should be developed to respond to and manage systems that have permits with conditions and those where there is no record.

Education Program for Septic Tank Owners or Operators

Owners and operators of septic tank systems are provided with permit conditions outlining their legal responsibility with regard to the operation and maintenance of systems. However, given the number of complaints received by Council regarding failing septic tank systems there is a need to provide continued education to owners and operators. A more comprehensive and ongoing communication is required that directly addresses septic systems owners, but also the broader community to bring greater awareness, ownership and compliance.

Policy and Procedure Development

There is a requirement to develop and implement policies and procedures to improve domestic wastewater management in order to:

- Remain consistent with legislative requirements and other municipal policies.
- Maintain working agreements with relevant Council departments (planning and building) in relation to planning permits and approval for septic tank systems and the referral and consideration of septic tank management in rezoning and structure planning
- Maintain and build working relationships with external agencies (EPA and water authorities) regarding development in rural areas the sewer backlog program, sewer connection and decommissioning of septic tank systems

Advocate for the replacement of septic tanks with a sewerage solution

The areas that are best suited for replacement are identified by understanding the data, undertaking a risk assessment and applying a risk ranking. Those localities identified as high risk are the first areas to be explored for septic tank replacement with a sewerage solution.

Review of the Domestic Wastewater Management Plan (DWMP)

A review and update of the DWMP will be undertaken every five (5) years to ensure compliance with the requirements of the SEPP, stakeholders' expectations and legislative changes.

An audit of the DWMP will be undertaken every three (3) years and a report published on Cardinia Shire Council's website.

Part XIV – Management Strategies and Actions

The Domestic Wastewater Management Plan reflects the Cardinia Shire Council risk management framework for domestic wastewater. The management strategies and actions are designed to cover all areas within the Council that are currently unsewered.

The main goals of the management strategies and actions *are:*

- To assist Council in the provision of sustainable domestic wastewater management
- To minimise the health, economic and environmental risks associated with domestic wastewater
- The identification of actions, stakeholders and timelines to effectively manage domestic wastewater

The key strategies are:

- To develop a Domestic Wastewater Management Plan
- The identification of wastewater management issues and the development of policies for the effective management of these issues
- Outline a systematic method for determining the costs, barriers and impacts that are associated with domestic wastewater management
- Ensure a consolidated approach to wastewater planning and services by Council and relevant stakeholders

Required outcomes:

- Prevent public health and environmental impacts(including waterways) generated by domestic wastewater in unsewered areas
- Protection of ground and surface waters from domestic wastewater
- Increased education and knowledge for septic tank system owners
- Improved wastewater planning and services by council and stakeholders

The goals and objectives listed above are consistent with provisions outlined in the State Environment Protection Policy (Waters of Victoria), namely:

- The role of Council to assess the capability of land and sustainable treatment options (in reference to new developments) whereby wastewater can be treated and contained within allotment boundaries
- Council requires all septic tanks to have a permit and that assessments are made to determine compliance with the permit conditions.
- The identification of methods to manage domestic wastewater, whereby consideration is given to cost, priority, funding, a timeframe for implementation and a period for review
- Management of saline, animal waste and chemical discharge

Cardinia Shire Council DWMP - 2020-2025

Communication – a public communication strategy will be incorporated prior to Council acceptance

Strategy 1 –Review and update operational policies and procedures

Objectives:

Have up to date policies and procedures for the assessment and approval of domestic wastewater management systems.

Work with other departments and teams to develop systems, processes and procedures that focus on improved outcomes .

Share the knowledge and information with other Councils in addition to water authorities.

Action Steps	*Team / Partners*	*Responsible Team*	*Risks and Constraints*	*Performance Indicators*	*Estimated costs*	*2020*	*2021*	*2022*	*2023*	*2024*
1.1 Review and update existing permit policies and procedures contained within the Regulatory Information Management System (RIAMS)		Environmental Health	Low – procedures regularly reviewed and updated	Procedures reviewed and updated						
1.2 Identify any policy or procedure gaps and develop		Environmental Health	Low – most procedures have been developed and only require	Procedures reviewed and updated						

relevant policy and procedures, particularly localised policies and procedures.			review and updating. Expertise exists to keep up to date with any law reforms, or change of practice							
1.3 Negotiate a service agreement that operates between Environmental Health and Building and/or Planning Teams to ensure efficient and effective management of referrals	Planning Team	Environmental Health	Low – a referral process exists between planning and health teams that could have some more rigour applied to it.	Agreement in place						
1.4 Develop and communicate draft	Communications	Environmental Health	Low – Expectations of customers and our	Publications and information						

policies and procedures to the community, installers, manufacturers and septic tank system service providers to ensure Council s expectations are understood.			process and procedures could be more readily accessible to the public.	published on the web						
1.5 Develop a shirewide Land Capability Assessment to determine standard system designs for each locality within the Shire		Environmental Health	High – This approach has been successful in other Councils and provides a robust set of data inform system suitability across the Shire. Possibility for Council to work with	Land Capability assessment conducted with recommendations of system suitability						

			Water Authorities and DELWP to develop a standardised approach.							
1.6 Represent Council as a member of the South East Local Government Wastewater Initiative	SE LG WW group	Environmental Health	Low – This group is made up of wastewater experts and those interested in improving knowledge and practice. It was formed in early 2018 and has 13 member Councils from the South East region.	Actively participate and lead initiatives when required						

Strategy 2 – Make improvements to the Domestic Wastewater Information Management System

Operational Objectives:

Develop a system that matches the requirements of current and future requirements for domestic wastewater management.

Develop the ability to collect and extract data sets to be used for analysis and mapping.

Identify trends in wastewater technology that can provide improvements in data capture, recording and administration

Action Steps	*Team / Partners*	*Responsible Team*	*Risks and Constraints*	*Performance Indicators*	*Estimated costs*	*2020*	*2021*	*2022*	*2023*	*2024*
2.1 Review and upgrade existing information management systems to store additional data requirements	Digital team. Software provider	Environmental Health	Low – The review and any improvements are likely to be minor	Data fields added						
2.2 Modify the existing information management systems to provide required	Digital team. Software provider	Environmental Health	Low – The review and any improvements are likely to be minor	Reports developed and produced						

reporting needs										
2.3 Review existing database to ensure the capture of location and type of septic tank systems within the municipality	Digital team. Software provider	Environmental Health	Low – The review and any improvements are likely to be minor	Fields populated						
2.4 Implement a system to collect and report permit compliance and inspection information	Digital team. Software provider	Environmental Health	Medium- Preparing specification, developer capacity, integration with existing systems timing and cost.	Field mobile software developed and implemented						
2.5 Explore the opportunities to work with wastewater/ septic tank	Digital team. Software provider	Environmental Health	Low -There are other Councils in our region progressing options that	Self-service type system in place						

servicing agents to develop web/online receipt of reports and reporting.			could be adopted							
2.6 Explore opportunities to mark and GPS locate existing and new septic tanks systems on the GIS/google mapping system.	GIS mapping team	Environmental Health	Low-Technology is available. Consideration required for suitability of system functionality, useability and integration	Annotation and marking on GIS/google maps linked to health manager						

Strategy 3 – Develop a comprehensive profile of domestic wastewater systems in the Shire

Objectives:

Ensure there are accurate data sets that provide detailed information about septic systems at individual property level.

Use a risk-based approach to target and prioritise actions at both a Shire wide, township, locality and property level

Articulate and understand threats, challenges and opportunities that deal with public health, environmental, economic and social risks

Action Steps	*Team / Partners*	*Responsible Team*	*Risks and Constraints*	*Performance Indicators*	*Estimated cost*	*2020*	*2021*	*2022*	*2023*	*2024*
3.1 Review the data required to be captured to inform management strategies and actions	IT and software provider	Environmental Health	Low- Data sets should be able to be retrieved extracted from existing databases.	Required data sets identified that can be captured						
3.2 Explore opportunities to develop the Health Manager Wastewater database to capture and produce	IT and software provider	Environmental Health	Low Some reports are available on the existing system, and more could be built	Ideal data sets are added to the database and reports can be generated						

comprehensive reports.										
3.3 Explore the use of GIS mapping to represent the data for analysis at a macro level.	GIS team, IT	Environmental Health	Low – There is limited use of GIS mapping for 'macro' analysis of septic systems	Spatial mapping and layering have been added to the GIS system to improve analytical capabilities						
3.4 Combine data sets from other Council teams, Water authorities, Melbourne Water, Port Phillip and Westernport Catchment Authority, community and environmental groups	Water Authorities, Melbourne water Catchment authority	Environmental Health	Low – There is other data that can be sourced readily to assist in understanding	Data sets combined into locality profiles. Develop ongoing collation and analysis of data sets to measure impacts of actions and strategies						

to assist in understanding wastewater threats and proposing solutions.											
3.5 Develop and implement a septic tank inspection program (prioritised by risk) to gather system details at property level.	Communications	Environmental Health	Low-This is a common practice for most Councils and will help develop case studies, measure septic owners knowledge and gather crucial data	Inspection program completed where details of 'unknown septics are identified and recorded							
3.6 Establish an internal working group to gain a shared understanding of		Environmental Health	Low – Valuable to have a broader perspective on the application of standards,	Internal working group established							

domestic wastewater and to work together to develop a wastewater profile.			procedures, risks impact, engagement and communication							
3.7 Develop a risk assessment tool to be used apply risk ratings to localities within the Shire			Low – essential and needed to meet requirements of VAGO recommendations	Risk tool developed and applied for managing permitting and advocacy to improve wastewater management.						
3.8 Use data from shirewide Land Capability Assessment to inform development of risk assessment			Low - essential and needed to meet requirements of VAGO recommendations	Risk tool and rankings being applied						

and risk ranking.										
3.9 Work with Water Authorities to develop an agreed framework for septic system suitability and community sewerage prioritisation			Low – essential and needed to ensure consistency. sewerage prioritisation.	Agreed framework developed and applied.						

Strategy 4 – Development of a wastewater community education program

Operational Objectives:

Improve owner awareness of the economic, environmental and public health benefits of proper wastewater management

To reduce the wastewater load on septic tank systems

To determine the impact of wastewater on the receiving environment

To inform owners of their responsibilities and Councils role for the management of septic tank systems

Action Steps	*Team / Partners*	*Responsible Team*	*Risks and Constraints*	*Performance Indicators*	*Estimated costs*	*2020*	*2021*	*2022*	*2023*	*2024*
4.1 Determine educational needs of septic tank owners	Communications Environment	Environmental Health	*Low*	Needs ascertained and analysed						
4.2 Develop a communication strategy that contains general and targeted approaches and includes the	Communications, Environment, Customer Service	Environmental Health	*Low*	Complete communication strategy, develop materials and distribute to systems owners and the community						

development of content that can be used for various media platforms.										
4.3 Develop a method to evaluate the communication strategy implemented	Communications, Customer Service	Environmental Health	*Low*	Community or system owner feedback to determine effectiveness of strategy						
4.4 Participate in local environmental forums with the primary focus on domestic wastewater management		Environmental Health	*Low*	Active participation						
4.5 Use feedback to update and refine the strategy and		Environmental Health	*Low*	Refresh and update communications to ensure effective and						

continue the implementation.				well targeted messages						

Strategy 5 – Development of a compliance auditing scheme

Operational objectives:

To manage council's statutory duty in relation to enforcement activities

To minimise the impact from domestic wastewater on the environment

Protect public health and environment

To comply with legislation expectations of government

Improve compliance with permit conditions

Action Steps	*Team / Partners*	*Responsible Person*	*Risks and Constraints*	*Performance Indicators*	*Estimated Cost*	*2020*	*2021*	*2022*	*2023*	*2024*
5.1 Develop compliance policies and procedures including protocols for managing non-compliance		Environmental Health	Risk level dependent upon Council approach to compliance and enforcement	Police and procedures developed and approved						
5.2 Implement an auditing program based on	Governance	Environmental Health	Low – An information gathering exercise used to	Auditing program developed						

risk and against existing permit conditions and septic tank performance.			inform compliance policy	and implemented						
5.3 Implement a system of periodic reporting of monitoring and auditing results to stakeholders		Environmental Health	Low – Provides opportunity to evaluate progress and to make any changes.	Reporting and evaluation implemented						

Strategy 6 – Evaluation of the domestic wastewater management plan

Operational objectives

To assess strategy implementation and progress towards objectives

Identify successes and constraints to strategy implementation

Report progress to stakeholders, management and the community

Revision of the domestic wastewater management plan

Action Steps	*Team / Partners*	*Responsible Person*	*Risks and Constraints*	*Performance Indicators*	*Estimated Cost*	*2020*	*2021*	*2022*	*2023*	*2024*
6.1 Determine evaluation objectives and develop the evaluation process in conjunction with stakeholders		Environmental Health	Nil	Process and engagement approaches reviewed and changed in agreement with stakeholders						

6.2 Evaluate and analyse results		Environmental Health	Nil	Develop ongoing collation and analysis of data sets to measure impacts of actions and strategies						

Strategy 7 – Periodic review of action plan
Operational Objectives:

To outline progress to stakeholders, management and the community

Changes to policy or community expectations are assessed and implemented into the action plan

Update the actions

Action Steps	*Team / Partners*	*Responsible Person*	*Risks and Constraints*	*Performance Indicators*	*Estimated Cost*	*2020*	*2021*	*2022*	*2023*	*2024*
7.1 Identify policy changes via discussions with stakeholders		Environmental Health	Nil	Stakeholders effectively engaged, feedback considered and outcomes recorded						
7.2 Assess feedback		Environmental Health	Nil							
7.3 Review operational policies where appropriate		Environmental Health	Low – provided changes are made based on feedback	Procedures updated and implemented.						

			and evidence							
7.4 Review and update domestic wastewater management plan		Environmental Health	Nil					Commence review process	Develop and implement revised Plan	
7.5 Audit plan and report to, stakeholders and the community		Environmental Health	Nil	Draft report produced and published			Report produced and published			

Appendix A - Council's statutory responsibilities in relation to the planning and management of domestic wastewater

Key responsibilities include:

 Assessing **land development proposals** to ensure that:

 Consideration is given to any significant effects which a development may have on the environment or the environment may have on a development.

 New residential subdivisions are provided with reticulated sewerage at the time of subdivision or that the allotments created are capable of treating and retaining wastewater within their boundaries.

 Any amendments to its planning scheme to allow rural residential development in an unsewered area comply with *Guidelines for Rural Residential Development*, including undertaking an assessment of the locality's health and hazard-related features that could affect or be affected by the development. This assessment must include a soil absorption testing program for which 'the results must show compliance with *State Environment Protection Policy (Waters).* A land capability assessment addressing onsite wastewater management should be carried out as early as possible in the planning phase, to ensure council has addressed its duty of care obligations. Council must be aware of the potential risks arising from the cumulative detrimental effects of incremental development.

 Assessing **onsite wastewater management permit applications**, including:

 Assessing applications for permits to (a) install and (b) operate onsite wastewater systems under the *Environment Protection Act 1970* (s53).

 Ensuring that any proposed onsite wastewater treatment system and associated disposal/recycling system is suitable for a particular site. This decision is generally based on a land capability assessment (LCA) of the site that has been prepared for the property owner.

Council needs to satisfy itself that persons undertaking land capability assessments are suitably qualified. Ensuring that the investigation and conclusions made by land capability assessors is adequate.

 Issuing permits for both the installation and operation of onsite wastewater systems.

Permits may be issued with conditions.

 Refusing to issue a permit if:

 the proposed onsite wastewater treatment system and associated disposal/recycling system is contrary to any *State Environment Protection Policy*, or

 the onsite wastewater treatment system does not hold a valid certificate of conformance issued by an accredited conformity assessment body (CAB) as conforming to the relevant Australian Standard, referred to below:

AZ/NZS 1546.1: 2012 – On-site domestic wastewater treatment units – Septic tanks

AS/NZS 1546.2: 2012 – On-site domestic wastewater treatment units – Waterless composting toilets

AZ 1546.3: 2017 – On-site domestic wastewater treatment units – Secondary treatment systems

AZ 1546.4: 2016 – On-site domestic wastewater treatment units – Domestic greywater treatment systems

 Once systems are installed and operating, assessing the annual reports submitted by system owners, to ensure that inspections, maintenance and effluent quality testing results (if applicable) of each installed system is in accordance with the systems manufacturers specifications and the relevant Australian Standards.

 Monitoring compliance of septic tank system performance with Council permit conditions.

 Developing **council management programs** that ensure that:

 Onsite wastewater is managed so that there is no danger to human health.

 Developments using onsite systems only proceed after they can demonstrate to be environmentally sustainable.

 Domestic wastewater treatment occurs via on-site systems that have a valid Certificate of Conformance provided by an accredited conformity assessment body (CAB) .

 The disposal/recycling of treated wastewater occurs in accordance with EPA guidance.

 Wastewater is confined within the allotment boundaries.

 Programs for ongoing management of onsite systems are feasible and achievable.

 Inspection, monitoring, and reporting programs are carried out, with the results being assessed and, if applicable, acted upon.

 Developing a municipal **Domestic Wastewater Management Plan** (DWMP) to meet their responsibility of regulating onsite wastewater management. A DWMP is a planning and management document that provides a mechanism for the development, implementation and review of programs to protect public health, the environment and local amenity.

The DWMP should be seen as one of a number of local planning strategies integrated and consistent with other council and local initiatives such as corporate plans, waste management programs, municipal strategic statements, environment management strategies, conservation strategies, stormwater management plans and public health plans. The DWMP should articulate the council's policy on and commitment to sustainable wastewater management.

Appendix B: Summary of achievements from actions in the 2007 DWMP

Cardinia Shire Council adopted a 3-year DWMP in 2007.

The DWMP was developed using the Municipal Association of Victoria (MAV) *Model Municipal Domestic Wastewater Management Plan*.

At the time there were 8,000 to 10,000 active septic tank systems within Cardinia Shire Council. The exact numbers were not able to be provided as most records were on individual hard copy files or no records existed.

The plan did not describe its aims and objectives, but included the following elements:

- Councils responsibilities for managing domestic wastewater;
- Identifying some of the legal risks associated with poor management of domestic wastewater systems.
- Identifying townships and areas with septic tanks and assessing the threats and risks at a catchment level.
- A collection of management strategies and actions for each township area with a focus on education, process and practice improvements and advocacy to have South East Water replace septic tanks with reticulated sewerage.

2006-2015 actions	achievements	response
Record, data management and mapping		
Improve data management and recording system for septics which stores desludging and maintenance records	Septic tank permitting and record management has moved from paper-based system to a purpose-built wastewater management system. All archived hard copy septic records have been scanned and added to the Health Manager system	The use of electronic databases to capture septic tank records has improved the ability to data to be retrieved for quantification and analysis.
Map septic systems by type on latitude	Septic tanks have been mapped on the GIS system	An action identified in this plan is to build the ma[ping system to assist with spatial analysis.

Map septics to a GIS layer which includes soil types.	No record of this work being undertaken	Added as an item in the action plan.
Liaise with desludging contractors and arrange collection of statistics on tanks de-sludged.	No record of this work being undertaken	Added as an item in the action plan.
Provide for recording of desludging and inspection information on all septic systems by modifying or replacing the existing computer software	Open Office wastewater module has been implemented, which records Environmental Health Officer inspections and stores servicing records	Added as an item in the action plan.
Project funding/incentive schemes		
Offer incentives for owners who carry out correct maintenance on systems	No action has been progressed on this item	This is an idea that could be developed as part of an overall strategy for system compliance and monitoring.
Consider introducing a septic maintenance fee	No records of this action being investigated	Legal advice would be required to determine what legal mechanisms, if any, are available to Council to apply such a fee.
Education programs		
Where complaints of failing systems or off-site discharge are received in unsewered areas, encourage owners to upgrade systems to achieve on-site disposal.	No records of a dedicated or targeted campaign to encourage systems owners to upgrade failing systems. No record of a dedicated compliance and system performance monitoring program being instigated.	Authorised Environmental Health Officers can issue Notice to property owners if the current system is creating a 'nuisance' (a condition that is offence or dangerous to health). Records could be retrieved to determine how Notices have been issued that required system repair, maintenance or upgrade.

Conduct an education campaign to advise owners of their responsibility to maintain systems and to provide council with details. Connect Cardinia and also write to each owner	No record of this work being undertaken	To be considered as part of a community education program
Provide all owners with a "Care and Maintenance of your Septic System" brochure.	This is attached to each new Permit to Use issued. Unsure of whether this was ever done retrospectively	This approach will continue
Provide owners with a copy of the septic permit and permit conditions (sent with above)	No records of this action being investigated	Septic owners can request their plans via an online request
Place brochures in Post Offices, plumbing and hardware stores	No record of this work being undertaken	
Make plumbers/drainers aware that permits are required for alterations or repairs as well as for new installations.	No record of this work being undertaken	
Provide brochure in existing New Residents kits and on change of ownership of properties.	No record of this work being undertaken	
Policy, Procedure and Process improvements		
Prepare for council consideration a policy on re-use of greywater that recognizes the potential public health and environmental risks while acknowledging the need to conserve drinking water.	No record of this work being undertaken	
Require detailed LCA's on all subdivisions where the lot size is less than the minimum indicated. Larger lots may still require LCA where soil type,	No guidance material has been produced.	An action item in relation to Council's policy in relation to the requirements for LCA's

rainfall, or water table ratings are high.		has been included in the Action Plan.
Specify minimum lot sizes for each town based on risk assessment	No record of this work being undertaken	
Existing lots less than 1ha must have a LCA	No record of this work being undertaken	Could be considered once the data has been analysed and risk assessment undertaken
All new subdivision applications must be supported by LCA's	No record of this work being undertaken	Could be considered once the data has been analysed and risk assessment undertaken
Review standard conditions in planning scheme.	The standard conditions have been reviewed and updated several times over the past 10-15years	
Advocacy		
Lobby for changes to the EP Act to allow upgrading of systems	No record of any advocacy work being done in the space	Council Officers have provided input into the recent review of the EPA and legislative reform currently being rolled out.
Community sewerage schemes		
Lobby Yarra Valley water and South East Water to plan for and implement reticulated sewerage schemes in areas where septic tanks are ageing and are performing to a standard that presents a risk to public health and the environment.	From 2007-2015, a number of properties with septic tanks decommissioned and replaced with reticulated sewerage provided by South East Water and Yarra Valley Water.	Details of the staged works by YVW and SEW are not included in this plan.

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Council meeting – 18 May 2020

Cardinia

Action Steps	Team / Partners	Risks and Constraints	Performance Indicators	Estimated costs	2020	2021	2022	2023	2024
2.3 Review existing database to ensure the capture of location and type of septic tank systems within the municipality. Merge archived legacy files with Health Manager System.	Digital team. Software provider	Low - Preparing specification, developer capacity, integration with existing systems timing and cost.	Field mobile software developed and implemented	Additional cost to Kernow		$15k	$15k		
1.2 Identify any policy or procedure gaps and develop relevant policy and procedures, particularly localised policies and procedures.	Environmental Health	Low – most procedures have been developed and only require review and updating. Expertise exists to keep up to date with any law reforms, or change of practice	Procedures reviewed and updated	Absorbed in current contract. No variation		$0	$0		
4.1 Determine educational needs of septic tank owners	Communications Environment	Low	Needs ascertained and analysed	Absorbed in current contract. No variation		$0	$0		
4.2 Develop a communication strategy that contains general and targeted approaches and includes the development of content that can be used for various media platforms.	Communications, Environment, Customer Service	Low	Complete communication strategy, develop materials and distribute to systems owners	Additional cost to Kernow Costs in 2022 include possible expenses to CSC communications team to create digital media design and print		$5k	$5k		

			and the community						
4.3 Develop a method to evaluate the communication strategy implemented	Communications, Customer Service	Low	Community or system owner feedback to determine effectiveness of strategy	Absorbed in current contract. No variation		$0	$0		
2.6 Explore opportunities to mark and GPS locate existing and new septic tanks systems on the GIS/google mapping system.	GIS mapping team, Open Office	Low- Technology is available. Consideration required for suitability of system functionality, useability and integration	Annotation and marking on GIS/google maps linked to health manager	Additional cost to Kernow				$7.5k	$7.5k
1.5 Develop a shirewide Land Capability Assessment to determine standard system designs for each locality within the Shire	Land Capability Assessors, water authorities, catchment and state government departments	Low – This approach has been successful in other Councils and provides a robust set of data inform system suitability across the Shire. Possibility for Council to work with Water Authorities and DELWP to develop a	Land Capability assessment conducted with recommendations of system suitability	Opt 1 -High level of detail, outsourced to another provider. Est $50k over 2 years Opt 2 Medium level of detail, Additional cost to Kernow $40k over 2 years				$25k(1) $20k (2)	$25k(1) $20k(2)

		standardised approach.							
Outcome: User-friendly written report and guide for Council Officers and wastewater installers, that's includes illustrations and maps. Approach: Using data we already have Sourcing data from other agencies Limiting individual site assessments and ground truthing, but could sub contract to LCA company to fill knowledge gaps and peer review methodology, data analysis and recommendations. Activities: Desktop research on like Councils methodology from determining shire wide LCA Collating and using data from LCA's attached to existing septic tank permits in Health Manger Use the Soils of Victoria soil profile overlays				Likely cost of comprehensive contractor LCA with ground truthing to be extrapolated from recent DCW Guys Hill quote					

Apply BOM rainfall data from weather stations with Cardinia Shire Council Seek data and feedback from DEWLP, CMA, Water Authorities, EPBC, CCC Planning scheme overlays and local policies and Southern Rural Groundwater. Conduct interviews from local wastewater specialist contractors									
2.5 Explore the opportunities to work with wastewater/septic tank servicing agents to develop web/online receipt of reports and reporting.	Digital team. Software provider	Low/Med -There are other Councils in our region progressing options that could be adopted	Self-service type system in place	Additional cost to Kernow			$7.5k	7.5k	
3.4 Combine data sets from other Council teams, Water authorities, Melbourne Water, Port Phillip and Westernport Catchment Authority, community and environmental groups to assist in understanding wastewater threats and proposing solutions.	Water Authorities, Melbourne water Catchment authority	Low – There is other data that can be sourced readily to assist in understanding	Data sets combined into locality profiles. Develop ongoing collation and analysis of data sets to measure impacts of actions and strategies	Additional cost to Kernow		$5k			
3.8 Use data from shirewide Land Capability Assessment to inform development of risk assessment and risk ranking.		Low - essential and needed to meet requirements of VAGO recommendations	Risk tool and rankings being applied	Could be developed with Yarra Valley and South East Water. Costing could be shared, but unknown. Additional cost to Kernow			$5k		

1.4 Develop and communicate draft policies and procedures to the community, installers, manufacturers and septic tank system service providers to ensure Council s expectations are understood.	Communications	Low – Expectations of customers and our process and procedures could be more readily accessible to the public.	Publications and information published on the web	Additional cost to Kernow					$10k
3.7 Develop a risk assessment tool to be used apply risk ratings to localities within the Shire		Low – essential and needed to meet requirements of VAGO recommendations	Risk tool developed and applied for managing permitting and advocacy to improve wastewater management.	Could be developed with Yarra Valley and South East Water. Costing could be shared, but unknown. Additional cost to Kernow					$5k
TOTALs						$25k	$32.5k	$40k(1) $35k(2)	$52.5(1) $47.5(2)
TOTAL over 4years					$150k (1) – Outsourced LCA to provider other than Kernow $140k (2) – LCA outsourced to Kernow				