

DOMESTIC WASTEWATER MANAGEMENT PLAN 2019-2024

**CITY OF
BALLARAT**



DRAFT

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Executive Summary

This plan articulates the strategic approach to be undertaken by Council in managing domestic wastewater within the Ballarat municipal district. Our municipality has 3,146 septic tank systems, with 390 of these septic tanks located within potable (drinking) water supply catchments. Therefore, there is a legislative requirement by Council to develop and implement a domestic wastewater management plan (DWMP), in accordance with the *State Environment Protection Policy (Waters of Victoria)* (2004) and the *Minister's Guidelines for Planning Permit Applications in Open, Potable Water Supply Catchment Areas* (2012).

This plan replaces Council's previous DWMP which spanned the period 2013-2018. The previous DWMP was endorsed by Central Highlands Water on 13 February 2017, largely because it included a funded inspection program of all septic tanks within the potable water supply catchments. This endorsement has had significant benefits to those land owners wishing to develop their properties within the potable water catchment.

This plan outlines the priorities and steps necessary to minimise the impact of domestic wastewater on human health and the environment. To date, 655 (21% of the total) of septic tanks have been inspected and mapped by Council, largely during the inspection program associated with the previous DWMP, over the period 2016-18.

The recommended strategies for Council to implement are summarised as follows:

1. Develop a funding model to resource the implementation of this plan
2. Maintain Central Highlands Water endorsement by implementing an inspection program of high-risk septic tanks within the potable catchments
3. Complete the inspection and mapping of septic tanks in the Declared Sewerage District
4. Establish an accurate and comprehensive data register for all septic systems in the municipality
5. Educate septic tank owners on responsible management of their systems
6. Review Ballarat's domestic wastewater management process with the aim of reducing the cost of installing and operating a septic tank system

Introduction

Ballarat is a large inland city with a population numbering 101,588. Ballarat sits within the Central Highlands of the Great Dividing Range and is at the head of several catchments which drain to reservoirs used for potable (drinking) water.

The population of Ballarat is distributed as follows:

Urban	69%
Rural residential	18%
Rural	13%

All Councils have a legislative responsibility to protect the health of residents, visitors and those working in the municipality; this is recognised in the Council Plan. The Department of Land Environment Water and Planning (DELWP) as well as the Environment Protection Authority (EPA) play a lead role in the strategic management of domestic wastewater in Victoria. On-site domestic wastewater needs to be managed to prevent impacts on beneficial uses of surface and groundwater. Some of the most recent statements by DELWP and EPA regarding domestic wastewater may be found in Appendix A and B of the recently released report: *Managing the Environmental Impacts of Domestic Wastewater (19 September 2018)*

<https://www.audit.vic.gov.au/sites/default/files/2018-09/20180919-Managing-the-Environmental-Impacts-of-Domestic-Wastewater.pdf>

Clause 32, 2(e) of the *State Environmental Protection Policy (Waters of Victoria) 2004* (SEPP) stipulates that Council needs to:

“Develop and implement a domestic waste water management plan, in conjunction with water authorities and communities that:

- i) Reviews land capability assessments and available domestic wastewater management options to prevent the discharge of wastewater beyond allotment boundaries and prevent impacts on beneficial uses of ground water;
- ii) Identifies the preferred options, together with costs, funding needs, timelines and priorities; and
- iii) Provides for the assessment of compliance of onsite domestic wastewater systems with permit conditions.”

In 2019 a new SEPP (Waters) will be introduced which includes a similar statutory requirement in Clause 29 (1):

“If onsite domestic wastewater management systems exist in a municipal district the relevant council must develop and implement a domestic wastewater management plan.”

In addition, municipalities such as Ballarat, which contain potable water catchments have specific restrictions on development as described in the *Minister's Guidelines for Planning Permit Applications in Open, Potable Water Supply Catchment Areas* (2012). In the absence of an endorsed DWMP, new dwellings within the catchment are restricted to a density of one dwelling per 40 hectares. Until 13 February 2017 when the City of Ballarat's DWMP was endorsed by Central Highlands Water, some land owners located in these catchment zones were unable to construct dwellings on their properties. This endorsement requires Council to commit to the ongoing protection of urban water supply catchments into the future – the main method being via an ongoing inspection program of these septics.

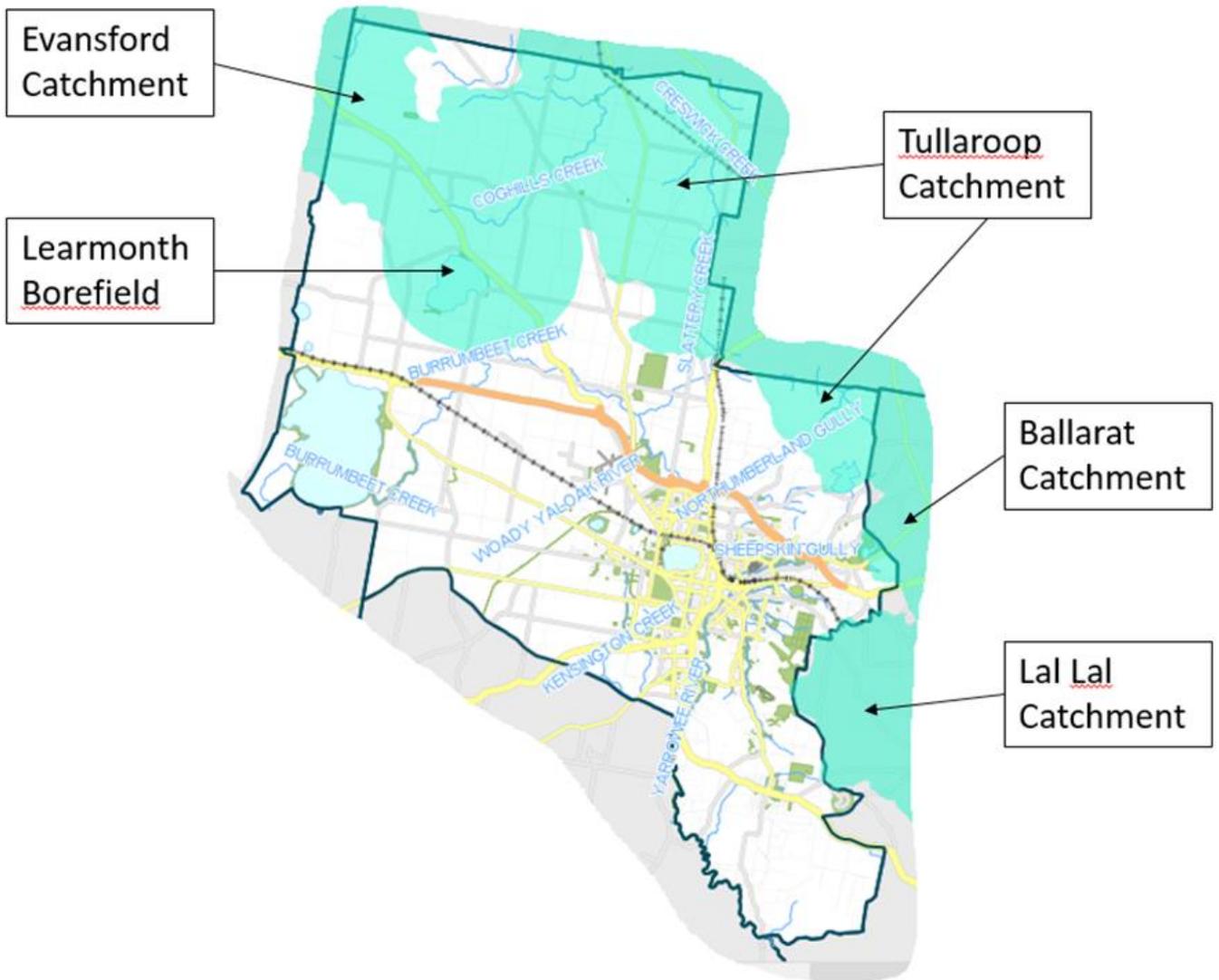
The SEPP (Waters) 2018 and the Minister's Guidelines 2012 require the DWMP to be independently audited. The City of Ballarat's DWMP was recently audited by Neil Dunbar of Waste Data Management Specialists (WDMS) and his report dated 8 October 2018 provided the following summary of recommendations:

1. Establish a comprehensive septic register
2. Complete the septic inspection program in the DSD and catchments
3. Resolve outstanding issues with owners of failed and high-risk septic systems
4. Work with Central Highlands Water and Goulburn Murray Water to establish an evidence base for measuring the impact of domestic wastewater
5. Introduce a notification system for septic owners at the time of property transfer

Table 1: Breakdown of the number of septic tanks within the different potable catchments in Ballarat

Catchment	Number of septic tanks
Tullaroop	236
Learmonth Borefield	82
Lal Lal	34
Evansford	32
Ballarat	6
Total	390

Figure 1: Map showing the location of the five potable water catchments which overlap on the City of Ballarat.



Risks associated with domestic wastewater

Domestic wastewater is typically high in nutrients and human pathogens. A summary of the risks that these pose is presented below:

Type of risk	Risk
Public health	Drinking water sources polluted with bacteria, nitrates and phosphorous, resulting in stomach upsets, diarrhoea and more serious illnesses Recreational waterways and other water bodies polluted, thus placing at risk people who come into contact with polluted water through recreational pursuits
Environmental	Prolific weed growth and destruction of indigenous vegetation Polluted surface waters (such as creeks, waterways and drains) Polluted groundwater Harm to aquatic fauna (such as fish and macroinvertebrates)
Amenity	Smell, unsightly discharges and seepage leading to reduced amenity and reduction in property values

Source: Victorian Auditor-General's Office.

Figure 2: Summary of risks posed by domestic wastewater (from p.37 Victorian Auditor-General's Office report: "Protecting our environment and community from failing septic tanks" 2006)

Legislation and standards relevant to this DWMP

Environment Protection Act 1970

Describes the regulatory framework for managing septic tank systems

State Environment Protection Policy (Waters of Victoria) 2004

This policy directs Councils to develop a DWMP and work with other authorities in the management of domestic wastewater. This is achieved by reference to supporting documents such as the *Victorian Land Capability Assessment Framework January 2014* and the *EPA Code of Practice for Onsite Wastewater Management (EPA Publication 891.4 July 2016)*.

Public Health and Wellbeing Act 2008

The objective of the Public Health and Wellbeing Act 2008 is to impose a duty on Councils to achieve the highest attainable standard of public health and wellbeing by investigating and remedying conditions that are liable to be dangerous to health or offensive, by:

- Protecting public health and preventing disease, illness, injury, disability or premature death
- Promoting conditions in which persons can be healthy
- Reducing inequalities in the state of public health and wellbeing

Building Act 1993

The Building Act 1993 and Building Regulations 2006 require the report and consent of the relevant Council must be obtained to an application for a building permit that requires the installation or alteration of a septic tank system.

Planning and Environment Act 1987

The key legislation relating to land development in Victoria is the Planning and Environment Act 1987. The two objectives of the planning framework under the Act are:

- To enable land use development and planning policy to easily integrate with environmental conservation and resource management policies
- To ensure that the effects on the environment are considered when decisions are made about the use and development of land

The Planning and Environment Act requires that all land use and development take place in accordance with the planning scheme for the municipal district.

Minister's Guidelines for Planning Permit Applications in Open, Potable Water Supply Catchment Areas, November 2012

This Guideline directs responsible authorities in their assessment of planning permit applications for development of land within open, potable water supply catchments in Victoria.

Density provisions may be relaxed subject to a suitable DWMP being in place that manages the risk to the catchment posed by septic tank systems. The suitability of a DWMP includes:

- The effective monitoring of the condition and management of onsite systems
- Acting where non-compliances are identified
- The implementation of the DWMP is suitably resourced including monitoring and enforcement

The risk-based inspection program implemented in the previous plan achieved CHW endorsement on 13 February 2017.

Victorian Civil and Administrative Tribunal decisions and precedents

Relevant VCAT decisions with regards to development within open, potable catchments include:

- Rozen v Western Water (2009) VCAT 2746
- Tsourounakis v Ballarat CC (2013) VCAT 525
- McDonald v Hepburn SC (2013) VCAT 1538
- Stagliano v Hepburn SC (2013) VCAT 1651

Water Act 1989

The Water Act 1989 requires Council to refer any applications to Central Highlands Water for septic tank systems within a declared potable (drinking) water catchment and within a Declared Sewerage District.

Section 147 of the Water Act details the requirement to connect to sewer.

This process is particularly relevant where multiple properties within the sewer district have failing septic systems and site constraints mean that sewer is the most viable option. In such cases a contribution scheme should be managed by CHW.

Australian Standards

Australian Standards have relevance to the construction and design of septic tank systems. The EPA requires that systems meet these standards as part of its approval process. The primary standard with respect to septic tank system design is:

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

Further relevant standards include:

- AS/NZS 1546.1 – On-site Domestic Wastewater Treatment Units – Septic Tanks
- AS/NZS 1546.2 – On-site domestic wastewater treatment units - Waterless composting toilets
- AS/NZS 1546.3 – On-site Domestic Wastewater Treatment Units – Aerated wastewater treatment systems
- AS/NZS 1546.4 – On-site domestic wastewater treatment units – Domestic grey water systems
- AS/NZS 3500 – National Plumbing and Drainage – Domestic Installations

DWMP stakeholder engagement

Council will produce a draft DWMP (2019-2024) for dissemination amongst stakeholders who will be invited to provide feedback during an eight week consultation process.

The key stakeholder is Central Highlands Water who are responsible for the protection of the potable water catchments and management of sewer infrastructure.

Other stakeholders include:

1. Owners or users of septic
2. Corangamite Catchment Management Authority
3. North Central Catchment Management Authority
4. Glenelg Hopkins Catchment Management Authority
5. Environment Protection Authority
6. Goulburn Murray Water

DWMP implementation

Implementation will be undertaken by Council's Environmental Health Unit in accordance with the level of resourcing available. Without resourcing, the DWMP will be a strategic document outlining Council's intentions.

DWMP audit and review

The implementation of the DWMP will include progress reports. The key stakeholder, CHW, will receive a copy of these progress reports. In accordance with Clause 29 (6) of the SEPP Waters 2018, Council will conduct an audit to assess progress of the DWMP at least every three years and publish the report on its website. Council will review this DWMP at least every five years per the requirements of Clause 29 (5) of the SEPP Waters 2018.

Findings and outcomes from the 2013-18 DWMP

For a detailed profile of the domestic wastewater situation in Ballarat, readers are referred to the *City of Ballarat DWMP Final Report June 2018*. The current situation with domestic wastewater in Ballarat is summarised below.

Table 2: Inspections outcomes associated with the DWMP 2013-2018

3,146 total septic records in the City of Ballarat	→ 655 (21% of total) Those septic systems inspected and mapped	→ 2,491 (79% of total) Septic systems not inspected and mapped
→ 390 (12% of total) Septic systems in the potable catchments 100% of septic systems in the potable catchment have been inspected and mapped Failure rate of septic systems was 11%, reduced to 6% following intervention. The highest risk systems were preferentially targeted. High risk factors include proximity to waterways or off-site discharge.		
→ 550 (17% of total) Septic records in the Declared Sewer District 28% of septic systems in the DSD have been inspected and mapped Failure rate of septic systems was 24%		

As of June 2018, there are 3,146 operational septic systems in the municipality and 655 (21%) have been inspected and mapped by Council. 2,491 septic systems (79%) have not been inspected or mapped. The number of new septic tank systems being installed is expected to remain constant at an average rate of 55 applications per year.

There are 390 inspected and mapped septic systems located in the potable water catchments. Of the 550 septic systems in the Declared Sewerage District (DSD), 153 (28%) have been inspected and mapped. The failure rate for systems was approximately 10% in the catchment and on average between 10-20% in the DSD. Septic failure is defined as a system that discharges effluent above ground causing saturation of the soil surface. Interventions taken by Council during the previous DWMP, such as working with property owners to upgrade their systems, have resulted in the failure rate being reduced in the catchment. As of June 2018, the septic failure rate in the catchment is 6%. The highest risk systems were preferentially targeted, where risk factors included proximity to waterways and whether the discharge was flowing off-site. Remedying these failing septic systems is active and ongoing with the Environmental Health team.

Within the DSD, it was noted that many of the failed septic systems occurred in geographically discrete clusters. The largest cluster contains 8 failing septic systems within the same street. There were nine clusters identified, the details of which can be found in the report titled *DWMP Identified Sewer Projects to Resolve Failing Septic Tank Clusters in the City of Ballarat September 2017*. As the title of the report suggests, the only viable solution to resolve these clusters is provision of reticulated sewerage to the relevant properties.

Sewerage planning must take into account the existing stock of septic systems, particularly within and on the boundary of towns and regional cities. These zones often contain higher population densities and small block sizes which amplify health risks from the septic systems. With foresight and adequate information, the development of reticulated sewer can take into account both the resolution of failing or aged septic systems and connection for new dwellings. It would appear that the most effective approach is the development of shared data systems between Council and Central Highlands Water which communicates the locations and status of septic systems and the existing reticulated sewer network. This requires an effective inspection and mapping program within the DSD by Council, which currently does not have a feasible funding model.

Anecdotal evidence suggests that a key barrier to building sewer infrastructure is distributing the capital cost obligations in an equitable manner. It is usually impossible to broker voluntary agreements between the mix of existing households with septic systems of varying levels of performance and the property developer who typically is seeking to minimise construction costs. What has been observed in practice is that each party acts in their own economic interest and often will seek to avoid making payment if legally able to do so, even when they gain benefit from the group provision of sewer. The other parties then understandably do not wish or are simply not able to pay for entire sewer scheme and the proposal does not progress any further.

What is required is leadership from Central Highlands Water to develop funded solutions for reticulated sewerage and to act as a broker between the various parties. The most equitable approach is requiring all parties who benefit from the scheme being required to contribute to it. Given that contributory costs can easily exceed \$20,000 per property for many schemes, paying the cost up-front is financially prohibitive for many households and not feasible. The most sensible and equitable approach is having a payment-over-time approach. This is catered for under the Water Industry Act 1994 which specifically references a 20 year payment period for the provision of reticulated sewerage services. This brings the cost of the service down to a feasible amount. Central Highlands Water has historically been unwilling to utilise this provision and their powers more generally as described in the Water Act 1989. The provision of new sewerage infrastructure has therefore been impaired, to the detriment of the public health and amenity of the community.

Strategy 1: Develop a funding model to resource the implementation of this plan

The income derived from statutory fees and charges for septic system management will not adequately resource a DWMP inspection program. The approximate cost for a full-time authorised officer is in the order of \$80-90,000 per annum. This equates to an ongoing cost per septic tank of less than \$30 per annum for the 3,146 operational septic tanks. Based on work already commenced it is anticipated that 400-600 inspections would be undertaken annually by a full-time officer.

The case for DWMP implementation may be more achievable if the DWMP project officer was employed part time as a 0.4 EFT. Subject to more detailed work analysis, the project officer would target higher-risk septic tanks. The preferred implementation period may need to be extended and strategies focused on improved data recording and sewer planning in the Declared Sewerage District.

Potential options for resourcing DWMP implementation include:

Option 1: Septic tank fee for service

The frequency of inspection will be dependent on failure rate and risk rating. An estimated inspection frequency could range from annually for high risk systems to seven years for low risk systems.

The septic charge is in keeping with other service charges imposed by Council such as charges provided for green waste disposal and animal registration. A septic tank fee for service model has been successfully used by Wodonga City Council since 2004. It is instructive to compare the proposed fee for DWMP management to current sewage disposal fees charged by Central Highlands Water for properties connected to the reticulated system. By way of comparison, the sewage disposal fee (in the current 2017/18 financial year) for a residential dwelling in the City of Ballarat is \$756.40 per annum. This is 2500% more than the proposed septic tank fee of \$30 per annum. This fee could be even lower if the position were part time.

Whilst most of this revenue goes towards the cost of treating the sewage a portion is also used for administration and compliance purposes. These are analogous to those activities carried out under a DWMP in that we seek to provide accurate mapping, record-keeping, education and compliance program. This funding option is sustainable and independent of external bodies with the advantage of ensuring business continuity. It represents a “user pays” structure and is the most equitable option.

Option 2: Joint funding from key stakeholders

As discussed in the *DWMP Final Report – June 2018*, there is considerable overlap between the interests of Central Highlands Water and Ballarat Council with regards to the impacts of septic tanks. The potable catchment areas and Declared Sewer District (DSD) contain a total of 940 septic systems, representing 30% of the total septic stock. The risks in both zones differ. In the potable catchments it is the potential of septic contamination of the potable water supply that has a potential impact on the wider Victorian community. In the DSD, the risks are localised public health and amenity issues where there is a high risk of disruption to orderly economic development by way of effective sewer planning. Council has a legislative obligation to refer planning application in either zone to the relevant water authority.

Mornington Peninsula Shire Council have received funding from Melbourne Water and South East Water to implement their DWMP while Yarra Ranges and Manningham Councils have been supported by Yarra Valley Water. The Blackwood septic replacement project in Moorabool Shire received State Government funding of \$2.7 million and recently a further \$500,000 from Central Highlands Water. It is clear that water authorities are in the business of supporting local government in funding improvement to sewage infrastructure. It is unclear as to what criteria CHW uses to allocate that funding. Currently CHW have no sewer management plan for Ballarat.

Given the shared regulatory oversight for these zones, it is considered reasonable that CHW and Goulburn Murray Water contribute to an ongoing inspection program for those septic tanks located in potable catchments and/or the DSD. The Water Act 1989 makes provision for water authorities to introduce user pay schemes to pay for sewerage infrastructure.

Option 3: Pump out levy model

Another user pays model is that which was introduced by South East Water and Mornington Peninsula Shire Council (MPSC) in 2015.

This model involves the introduction of a septage levy of \$10/kilolitre at their Boneo sewage treatment plant on all deliveries of septage from the pump out of septic tank systems. This money is collected by the water authority and goes towards the implementation of the MPSC DWMP. The Shire employs a DWMP project officer with the levy raised and provides a vehicle and kind support. With 25,000 septic tanks there are approximately 6000 pump outs per year generating \$150,000 annually.

With the cooperation of CHW the likely income from such a levy in Ballarat can only be expected to generate in the order of \$25,000/year. Significantly less, but it would go some way towards resourcing a part time DWMP project officer.

Option 4: Funding through the general rate base

The collective impact of managing septic tanks has community wide cost benefit that results in minimising the risk across the municipality. On an ongoing basis, it is necessary that there is discussion regarding the benefits and equity considerations of a fee for service approach versus funding from general revenue.

For example, it could be reasonably expected that ratepayers who are connected to reticulated sewerage and consequently pay \$756.40 per annum may not feel it equitable to subsidise the DWMP.

Option 5: Government licencing programs

Historically around the state there have been successful instances of grants being obtained by local government to fund elements of their DWMPs. These have generally been directed towards high density and high risk unsewered populated environments. This was discussed in some detail in Option 2.

The preferred funding model recommended to the EPA and catchment authorities has been one in which a new licencing regime is introduced under an amended legislative framework. This may include a combination of mandatory inspections and licencing renewal program. This model is used in New South Wales. It is apparent that some political will is needed to progress this change the details of which are not expected to be realised until 1 July 2020. In effect septic tank owners will be required to demonstrate compliance.

This is a model that may be best suited to funding an ongoing DWMP compliance program and reflects what is currently in place to manage licenced activities that deliver food safety and public health compliance programs.

Strategy 2: Maintain Central Highlands Water endorsement by implementing a restricted inspection program of septics within the potable catchments

The previous DWMP included the inspection of all 390 septics located within the potable catchments and the rectification of the highest risk failures, such as those which discharged effluent near waterways. There remain approximately 25 septics, of lower risk, which require further work or upgrades to bring them to acceptable modern standards. These will continue to be worked upon for the duration of the DWMP. In addition, a base level of inspections will be conducted on those systems which are of elevated risk – these are generally those systems which are in closer proximity to watercourses which drain to the catchment reservoirs. It is estimated that there approximately 50 such systems.

Strategy 3: Complete the inspection and mapping of septics in the Declared Sewerage District

As residential development in Ballarat continues to expand in geographic size and population, property development on the outskirts of the city has been problematic, especially when the existence and condition of septics is unknown. The Environmental Health team has experienced numerous instances where development has led to unsewered properties being isolated from the newly installed sewer. There are instances of septic systems being damaged by new housing construction that has led to both economic and health impacts caused by the discharge of effluent into densely populated community (see Figure 3 below).

The public health and amenity impacts caused by septic effluent in these areas are often greater than those experienced rural communities. There are numerous examples of effluent being discharged onto public land or waterways within the City of Ballarat with the options for resolution typically being provision of reticulated sewer. The economic development implications in completing a comprehensive assessment of septics in the DSD will establish the basis for a coherent, efficient and cost-effective approach to planning for the provision of sewer infrastructure for a 21st century growing city.

For these reasons, the risk assessment has been adjusted and those septics located within the DSD have been allocated a higher priority. There are 550 active septic records in the sewer district. 153 (28%) have been inspected and mapped, leaving 397 (72%) remaining to be done.



Figure 3: Example of septic effluent emerging in the backyard of a newly constructed house in Bonshaw, July 2016. Both houses were in the Declared Sewer District. The effluent originated from the septic of a house located 70m away which had not been inspected or mapped. Emergency sewer works had to be completed at considerable time and expense for City of Ballarat and Central Highlands Water.

Strategy 4: Establish a comprehensive data register for all septic systems in the municipality

Major improvements have been realised in the creation and utilisation of septic data that were refined during the previous DWMP. This data has enabled detailed mapping of septic tanks and improved data interrogation options which assist management and planning decisions. A comprehensive septic dataset will create local expertise which has the potential to reduce the cost and complexity for septic installations. The focus for this DWMP is to maintain the database and progressively update the approximate 2,491 septic records which have not been inspected or mapped. The ultimate aim is to have all 3,146 septic systems accurately mapped with a known status logged in the database.

Strategy 5: Educate septic tank owners on responsible management of their systems

During the inspection process of the previous DWMP it was found that many septic owners were not regularly carrying out basic maintenance of their systems, often due to ignorance. Meeting the owners and explaining the current regulations and expectations for maintenance was identified to be a powerful way of educating the community. As the database of septic systems becomes more accurate and refined, relevant messaging will become easier and more effective to deliver to septic owners. Prior to 2013, the database was so compromised and the data so incomplete that it was not practicable for mass mail-outs to be done.

Septic system owners must have access to suitable information to fulfil their responsibilities. Community education initiatives underpin this DWMP and have been developed from a range of sources.

This DWMP will continue the following:

1. Owners of newly installed septic systems will receive a copy of the Ballarat-specific booklet: "Your Septic Tank Operation & Maintenance Manual" (see Figure 4 below)
2. Opportunistic education, including the provision of septic tank information during council interactions
3. Building community knowledge through access to information on operations and responsibilities through the City of Ballarat website

4. Mass communication via post or email, such as when seeking feedback on the draft DWMP. This communication can also include messaging on maintenance and why Council has a DWMP in the first place.

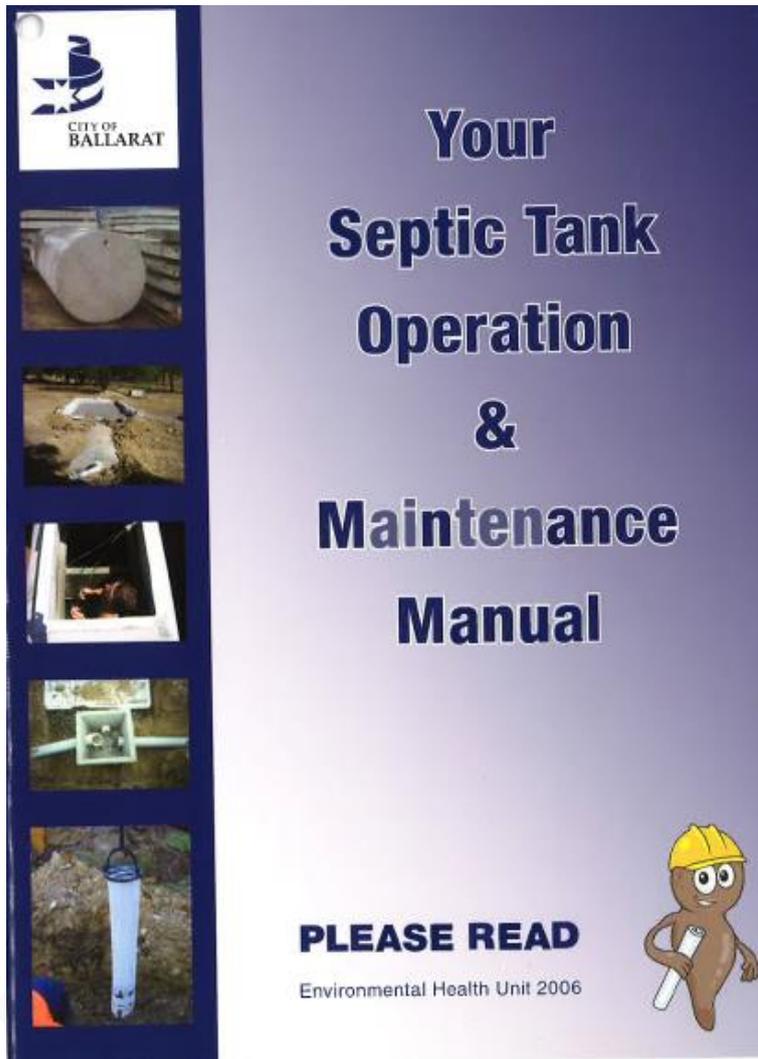


Figure 4: The City of Ballarat septic tank instruction booklet

Strategy 6: Review Ballarat's domestic wastewater management process with the aim of reducing the cost of installing and operating a septic tank system

According to the EPA Code of Practice – Onsite Wastewater Management 891.4 (2016), land owners wishing to install a septic are required to have a Land Capability Assessment (LCA), the cost of which is typically in the region \$1,500-\$3,000. This adds a significant impost to the cost of developing a property. Council's Environmental Health team has over the years developed a body of knowledge on what is necessary for the successful operation of septic systems in the municipality, taking into consideration factors such as local soil, groundwater and climatic conditions. Some of these findings are included in Appendix B. In many instances, the depth of knowledge within Council is sufficient to provide an appropriate recommendation for a septic without resorting to an independent LCA. Other councils, such as Golden Plains Shire, have developed information packs with internal guidelines that circumvent the need to obtain independent LCAs. This speeds up processing times and significantly reduces the cost of obtaining a septic permit. In instances where the proposed site has identified constraints or other complexities, Council reserves the right to require an independent LCA.

It is proposed that Ballarat Council develops such an information pack with guidelines to reduce the cost of installing and operating a septic tank system.

Implementation plan

1	Develop a DWMP in consultation with key stakeholders and the community for endorsement by Council; minimum 8 week consultation period
2	Examine funding models for obtaining the appropriate level of resourcing for DWMP implementation
3	Select and implement a funding model that supplies the necessary resources to sustain the DWMP whilst balancing this with community expectations and organisational constraints
4	Continue the inspection and mapping program, in particular those septic systems in the Declared Sewerage District
5	Apply interventions to those systems that pose a risk to public and environmental health
6	Engage in public education and capacity building on septic tank use and maintenance, with a view to encouraging voluntary compliance
7	Establish ongoing risk-based monitoring and compliance program inclusive of periodic inspections of septic systems, particularly within the potable catchments
8	Independent audit of DWMP after a period of not more than three years
9	Review DWMP in conjunction with key stakeholders after a period of not more than five years
10	Develop new DWMP

Conclusion

The City of Ballarat has greatly improved its management and oversight of domestic wastewater via the implementation of its 2013-18 DWMP. All 390 septics within the potable catchments were inspected and mapped, leading to the endorsement of the DWMP by Central Highlands Water on 13 February 2017. This endorsement lifted certain restrictions on development within the potable catchment areas, enabling some property owners to build homes on their land after many years of being held in limbo. 153 septics within the Declared Sewerage District were also inspected and mapped, leading to the identification of nine clusters of failing septics which are currently being assessed for feasibility by Central Highlands Water. There are numerous documented instances of costly delays and planning conflicts at the interplay between new development and existing septics, especially at the urban fringe of Ballarat. Council and Central Highlands Water must work closely together to have a transparent, equitable and efficient process to minimise such conflict and plan effectively for the future growth of Ballarat.

This plan builds upon the work achieved by the previous DWMP and has six strategies designed to address these issues. These strategies seek to sustainably fund the implementation of the plan over the next five years and focus on inspecting all septics in the Declared Sewerage District. This DWMP is intended to deliver a coherent approach, in conjunction with Central Highlands Water, for the provision of sewerage infrastructure and onsite septic systems for Ballarat. This DWMP also proposes to maintain its endorsement in relation to the potable catchments via a restricted inspection program of those elevated risk septics. Finally, this DWMP recommends improving the septic database, educating septic owners and improving the process by which septic permits are issued.

Appendix A: Communications Plan

- The process of communicating the DWMP is referenced in the section on Stakeholder Engagement on page 9.
- The audit report for the 2013-2018 DWMP will be published on Council's website.
- Feedback will be sought from all 3,146 septic owners via post or email. Such extensive consultation was not done with previous DWMPs and it is hoped that it will deliver a better response from the community than was achieved in the past.
- Once the DWMP has been finalised and is endorsed by Council, then it will be published on Council's website, in the same location as the 2018 audit report.
- If an Information Pack is developed in accordance with Strategy 6, this will be published on Council's website.
- If an inspection program commences in the DSD, then the outcomes will be communicated to the key stakeholder, Central Highlands Water, in separate reports produced at least annually.

Appendix B: Considerations specific to Ballarat

<p>Reserve land application area</p>	<p>The City of Ballarat supports the principle that all unsewered allotments should have a reserve effluent disposal/land application area set aside for future use. The purpose of having a reserve area is to allow a factor of safety against unforeseen malfunction or failure, perhaps following increased household occupancy or inadvertent misuse of the system. It also makes it possible to increase the size of the house in the future.</p> <p>On newly created allotments a reserve land application area should be nominated at the subdivision stage for all allotments under 1 ha (10,000m²) in size.</p> <p>The requirement for a reserve land application area is supported in AS/NZS 1547:2012.</p>
<p>Irrigation Systems</p>	<p>AS/NZS 1547:2012 requires irrigation systems to be constructed to avoid the likelihood of blockage.</p> <p>For this reason, the following components should be included in an irrigation system.</p> <ul style="list-style-type: none"> • In-line filters to minimise the discharge of suspended solids to the land application system • Vacuum breakers to prevent the ingress of soil • Flush valves to allow periodic cleaning/flushing of the system. <p>The installation of an in-line filter however, creates a responsibility for the home owner to ensure that the filter is cleaned regularly. Failure to clean an in-line filter may have a detrimental effect on any pumps installed within the septic tank system.</p> <p>Irrigation systems should be constructed using pressure compensating sub-surface irrigation pipe work which evenly distributes effluent throughout the irrigation area.</p>

	<p>It is important to ensure that any pump used in the distribution of wastewater is designed to suit the irrigation network. For this reason, it may be necessary to increase the size of an irrigation field when proposing to split the irrigation system for alternate dosing.</p>
Water Rotors	<p>Water rotor valves have been found to be unreliable to the extent that many property owners have been found to have undertaken unauthorised alteration to their irrigation systems by removing the water rotor. For this reason, the City of Ballarat does not support the installation of water rotor valves on irrigation systems due to the high likelihood of failure, and the subsequent overloading of sections of an irrigation system.</p>
Absorption trench system	<ul style="list-style-type: none"> • Minimum capacity 3000L concrete Septic Tank • 100mm sewer pipe from dwelling to Septic tank • 90mm PVC pipe from Septic Tank to Distribution Boxes • Distribution Boxes made from concrete or HDPE • Aggregate in absorption trenches – blue metal or clean Scoria, 20-40mm • Paper, Geotextile Cloth or Woven Weedmat over aggregate • Trench capping – loam or site top soil
Sandfilter system	<ul style="list-style-type: none"> • Minimum capacity 3000L concrete Septic Tank • Welded Canvacon Q liner • Approved filter sand • Distribution pipes – 90mm slotted PVC • Collection pipe – 100mm slotted sewer pipe • Geotextile cloth or Woven Weedmat • Pumpwell – 750mm diameter concrete • Visual / Audible Alarm • HDPE fittings
Mound system	<ul style="list-style-type: none"> • Imported soil • Design as per technical drawing/LCA
	<ul style="list-style-type: none"> • Current EPA Certificate of Approval

Aerated Wastewater Treatment System (AWTS)	<ul style="list-style-type: none">• Visual / Audible Alarm
Subsurface Irrigation (for Secondary Treated Wastewater Only)	<ul style="list-style-type: none">• Pressure Compensating pipework – Toro, Wasteflow, or similar• Inline filter• Vacuum Breaker with a Surface Box• Flush out valve with a Surface Box

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