



MARCH 2023

Domestic Wastewater Management Plan

Final Report

Golden Plains Shire

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Executive Summary

Domestic wastewater planning is about the management of wastewater generated from toilets, kitchens and bathrooms in houses, workplaces, and public buildings. Where sewerage is available, house owners pay water corporations to manage their domestic wastewater for them. However, if sewerage is not available, domestic wastewater must be managed onsite (via an Onsite Wastewater Management System or OWMS), such that the waste does not cause environmental and health problems for the site, and surrounding areas.

The Golden Plains Domestic Wastewater Management Plan (DWMP) 2023 aims to clarify Council's responsibilities for overseeing the management and installation of OWMS and set out an approach to meet these responsibilities.

Domestic wastewater management risks are typically higher-density areas which can be exacerbated by development pressures, small lots, and poor soils. This DWMP applies a risk-based approach and considers the management of:

- Existing OWMS in unsewered areas (Chapter 4)
- Future OWMS in unsewered areas (Chapter 5)
- OWMS in sewerred areas (Chapter 6)
- Risk by township and locality (Chapter 7), and
- OWMS in potable supply catchments (Chapter 8).

The DWMP also sets a management framework (Chapter 3) and an Action Plan to guide implementation (Chapter 9).

This is the third DWMP for Golden Plains Shire. It has been developed with input from stakeholders following a review of the 2015 plan and considering important updates to key legislation as well as other changes within the Golden Plains Shire.

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Wadawurrung and Eastern Maar Peoples as the Traditional Owners of the Country on which this project was conducted. We recognise their continuing connection to land, waters and culture and pay our respects to their Elders past, present and emerging.

Moreover, we express gratitude for the knowledge and insight that Traditional Owner and other Aboriginal and Torres Strait Islander people contribute to our shared work.

Glossary of terms

TERM	DEFINITION
Alternative services	Wastewater systems and servicing approaches, that are different to traditional sewer and onsite solutions, but treat and manage wastewater in a way that provides equivalent environmental and public health outcomes.
Blackwater	Wastewater from toilets containing faeces and urine.
DWMP	Domestic Wastewater Management Plan
Domestic wastewater	Wastewater from toilets, kitchens and laundries. While the term suggests wastewater from domestic households only, it also covers commercial premises (e.g. offices/shops/public buildings) where wastewater is mainly from toilets and kitchens.
Drinking water	Water suitable for human consumption or for purposes connected with human consumption, such as preparation of food or making ice for consumption or for the preservation of unpackaged food.
Evapotranspiration	Transfer of water from the soil to the atmosphere through evaporation and plant transpiration.
Greywater	Domestic wastewater from sources other than the toilet, urinal or bidet. This includes wastewater from showers, baths, hand basins, washing machines, laundry troughs and kitchens.
Irrigation	The artificial supply of water to land and vegetation.
Nutrients	Organic and inorganic substances used in an organism's metabolism which must be taken in from the environment. Nutrients are molecules that include elements such as carbon, nitrogen, phosphorus, potassium, calcium, magnesium and a range of trace elements.
Onsite Wastewater Management Systems (OWMS)	Standalone systems designed to treat and contain waste within a property's boundaries. These are used for management of wastewater from residential, community and business premises in locations where a sewer network is not available. OWMS include a wastewater treatment plant and all connected drains, pipes, fittings, appliances and land used. OWMS are the responsibility of the property owner.
Organic matter	Solids and contaminants in wastewater including a combination of toilet excrement and paper as well as hair and skin particles from basins and showers, lint from the laundry, personal care and household cleaning products, and fats, oils and food particles from the kitchen.
Organic loading rate	The level/amount of organic matter in wastewater. The organic loading rate must be considered as well as the flow rate (or volume) when selecting the most suitable treatment system.
Pathogen	A disease-causing micro-organism.
Potable water	Water suitable for human consumption (see also Drinking water).
Primary treatment of wastewater	The physical processes of screening, filtration, sedimentation, flocculation and/or flotation to remove solid matter from wastewater. The first step in the wastewater treatment process.

TERM	DEFINITION
Pump-out	The removal of biological sludge and inert sediment from a wastewater treatment system, including the surface crust (scum) material. A pump-out should not drain tanks dry, because some residual sewage is needed to provide a seed source of digesting micro-organisms for ongoing treatment to function.
Reticulated water	Water that is delivered to a dwelling through a network of pipes.
Secondary treatment	Biological and/or physical treatment following primary treatment of wastewater. Disinfection to kill pathogens may also occur.
Septic tank	A common primary treatment method using filtration, sedimentation, flocculation and flotation to remove organic and inorganic matter from wastewater in combination with anaerobic microbiological digestion.
Sewer or sewerage	The network of pipes, pumps and equipment that transfers sewage (including domestic wastewater) from homes and businesses to a central treatment plant. Sewer systems are operated by water corporations.
Sewered (sewerable) land	Properties that have access to a sewer network.
Sustainable	Able to continue indefinitely without any significant negative impact on the environment or its inhabitants.
Unsewered land	Properties that do not have access to a sewer network and therefore rely on onsite wastewater management.

1 Introduction

In Golden Plains Shire there has historically been a dispersed rural settlement pattern with some compact, but relatively small, unsewered townships. There has been a strong recent surge in residential development, particularly in proximity to the nearby regional cities of Ballarat and Geelong. This has led to sewerage being provided in the central areas of Bannockburn and Smythesdale. However, development also continues in unsewered low-density residential zones surrounding these and other nearby towns.

In unsewered areas, poorly treated or managed domestic wastewater can cause environmental and health problems. The risks are typically higher density areas which can be exacerbated by development pressures, small lots and poor soils. The Golden Plains Shire Council plays an important role in managing the risks associated with domestic wastewater, outside of the sewerage areas of Bannockburn, Enfield, and Smythesdale.

Finding affordable and appropriate solutions to manage domestic wastewater is one of the major constraints to unsewered residential development in Golden Plains Shire. There is also a significant workload for Council's environmental health team in ensuring householders manage existing onsite wastewater management systems (OWMS) and install new OWMS according to the required standards.

1.1 DOMESTIC WASTEWATER MANAGEMENT PLANNING

Domestic wastewater planning is about the management of wastewater generated from toilets, kitchens and bathrooms in houses, workplaces, and public buildings. Where sewerage is available, house owners pay water corporations to manage their domestic wastewater for them. However, if sewerage is not available, OWMS are required.

OWMS typically include a septic tank with a dispersal or recycling component and are designed to treat and contain wastewater within a property boundary. If poorly maintained, incorrectly installed, or used inappropriately, these OWMS can create public health and environmental issues.

EPA Victoria recently introduced a General Environmental Duty (GED) under the Environmental Protection Act (EP Act) (2017). Under the General Environmental Duty, household owners, and occupiers of houses with OWMS are legally responsible for their own wastewater management. In an unsewered area this means they must ensure their OWMS is designed, installed, and maintained to the required standard. Household owners apply to local government to obtain permits for installation of OWMS.

Local government is responsible for overseeing the management and installation of domestic¹ OWMS. Council's legislated functions and powers include:

- Administering permits to construct, install, or alter OWMS
- Inspecting and approving newly installed or altered OWMS for use
- Taking enforcement action for breaches relating to permit conditions
- Ensuring OWMS are operated and maintained in a way that minimises risks to human health and the environment (e.g., through delegated powers to enforce the general environmental duty (GED))
- Assessing land development applications in unsewered areas to ensure lots are capable of adequately treating and retaining wastewater onsite.

¹ I.e., OWMS with a design or actual flow rate of sewage not exceeding 5,000 L on any day

Local government is also responsible for developing Domestic Wastewater Management Plans (DWMPs). This includes reviewing and updating the DWMP every five years.

1.2 ABOUT THIS PLAN

This plan aims to clarify Golden Plains Shire's responsibilities for overseeing the management and installation of OWMS and set out an approach for Council to meet these responsibilities. Houses already connected to sewerage, and buildings with OWMS capable of discharging more than 5,000 L/day of wastewater, are not the subject of this plan.

This plan is intentionally brief. It does not attempt to describe in detail the full legislative or technical background, nor does it repeat all of the responsibilities of property owners or other agencies. This document is simply the Golden Plains Shire strategic plan of action, and needs to be read in conjunction with various relevant legislation, regulations, codes, standards, planning policies, etc. A summary of the legislative context is provided in Chapter 2.3.

The current plan is the third DWMP for Golden Plains Shire. It has been developed following a review of the 2015 plan²³. As a result, some important sections of the 2015 plan have been retained, while other sections have been updated to reflect current circumstances.

1.3 CONCEPTUAL FRAMEWORK

When planning for domestic wastewater management, different strategies may be used to manage different risks. For example, existing OWMS require ongoing maintenance, and in some cases upgrades, to prevent public health and environmental issues, while future OWMS must be carefully designed and installed to avoid future problems. Domestic wastewater management planning must also consider issues associated with legacy OWMS on sewerage land, and the potential for future OWMS on sewerage, or sewerable, land.

The following matrix (Table 1-1) shows a conceptual framework for domestic wastewater management developed by RMCG for Golden Plains Shire. It considers the different strategies used to manage domestic wastewater for each of these categories. The chapters in this DWMP are structured in a way that deals with each of these four categories of houses and OWMS in turn. The DWMP also includes dedicated chapters dealing with the specific risks associated with townships or localities and the potable supply catchments.

² RMCG, 2015a, Golden Plains DWMP Volume 1. Report prepared for Golden Plains Shire Council, Bannockburn, Victoria. Accessed December 2022 at: <https://www.goldenplains.vic.gov.au/resident/building/septic-systems>

³ RMCG, 2015, Golden Plains DWMP Volume 2 Technical Reports 1 and 2. Report prepared for Golden Plains Shire Council, Bendigo, Victoria. Accessed December 2022 at: <https://www.goldenplains.vic.gov.au/resident/building/septic-systems>

Table 1-1: A conceptual framework for domestic wastewater management

	UNSEWERED LAND	SEWERED (SEWERABLE) LAND
Existing OWMS	<p>Help OWMS owners understand their responsibilities to manage risks associated with OWMS.</p> <p>Monitor and audit OWMS and encourage house owners to achieve compliance and take action to rectify non-compliances.</p> <p>Develop and maintain information management tools (such as an OWMS database) for the purposes of managing existing OWMS.</p> <p>Assess existing OWMS as part of planning processes (such as planning permits and building permits for house extensions and subdivisions) and request upgrades where necessary.</p> <p>Encourage water corporations to prepare sewerage management plans where the risk posed by a cluster of non-compliant OWMS may justify the investment.</p>	<p>Facilitate the abandonment of OWMS by encouraging owners to connect existing houses to sewer whenever possible.</p>
Future OWMS	<p>Ensure land subdivision creates allotments that can sustain OWMS.</p> <p>Ensure new houses and OWMS comply with best practice requirements from day one, then manage as existing unsewered houses.</p> <p>Encourage water corporations to prepare sewerage management plans where the desired urban development density is incompatible with onsite wastewater management.</p>	<p>Avoid the installation of any new OWMS in sewered areas.</p> <p>Ensure that new houses connect to sewer at the time of their construction.</p>

2 Domestic wastewater context

2.1 GOLDEN PLAINS SHIRE

Golden Plains Shire is located between the regional cities of Ballarat and Geelong. It has a population of 24,879 across a land area of more than 270,000 ha⁴. There are more than 9,000 dwellings in the Shire, over 90% of which are occupied with an average household size of 2.9 people⁵. Almost 90% of occupied dwellings are owner occupied rather than tenanted.

Bannockburn in the southeast of the Shire is the largest town with a population of 6,470 people, followed by Teesdale (2,308), Inverleigh (1,746), Smythesdale (1,189), Lethbridge (1,181), and Meredith (821)⁶. By area, most of the Shire is farmland and towns typically retain a rural character despite their proximity to growth areas of Ballarat and Geelong.

Only three towns in the Shire are sewered: Bannockburn (central and western areas), Smythesdale, and Enfield. These areas cover just <0.5% of the Shire.

Dwellings across the remaining unsewered areas are serviced by OWMS of which there are estimated to be more than 8,500 across the Shire. The risks to public and human health associated with these OWMS varies greatly depending on the density of development, age and type of OWMS, soils, and other factors such as topography and proximity to watercourses and drinking water sources.

There are typically few domestic wastewater issues in farmland areas because the density of existing houses is low and the planning rules limit the density of new houses. However, low density residential (LDRZ) and township (TZ) zones in unsewered areas are of greater concern, due to the relatively close proximity of existing OWMS in these areas and the potential for growth. Key towns in this category include Bannockburn (the LDRZ surrounding the sewered area), Teesdale, Inverleigh, Lethbridge, Meredith and Batesford, in the south and east and Smythes Creek, Haddon, Scarsdale and Linton in the north.

Two water corporations deliver water and sewerage services to customers in the Golden Plains Shire: Barwon Water in the south and east and Central Highlands Water in the north and west. A small but important part of the Shire in the Moorabool River catchment is contained within a designated open potable water supply catchment in Barwon Water's service area.

Figure 2-1 shows the Shire boundaries, surrounding local government areas, localities, town planning zones and potable water supply catchment.

⁴ Australian Bureau of Statistics (ABS), 2022, Region summary: Golden Plains. ABS website. Accessed December 2022 at: <https://dbr.abs.gov.au/region.html?lyr=lga&rgn=22490>

⁵ Australian Bureau of Statistics (ABS), 2022, Region summary: Golden Plains. ABS website. Accessed December 2022 at: <https://dbr.abs.gov.au/region.html?lyr=lga&rgn=22490>

⁶ Australian Bureau of Statistics (ABS), 2022, 2021 and 2016 Census – Employment, Income and Education, Datasets accessed December 2022 via TableBuilder, ABS

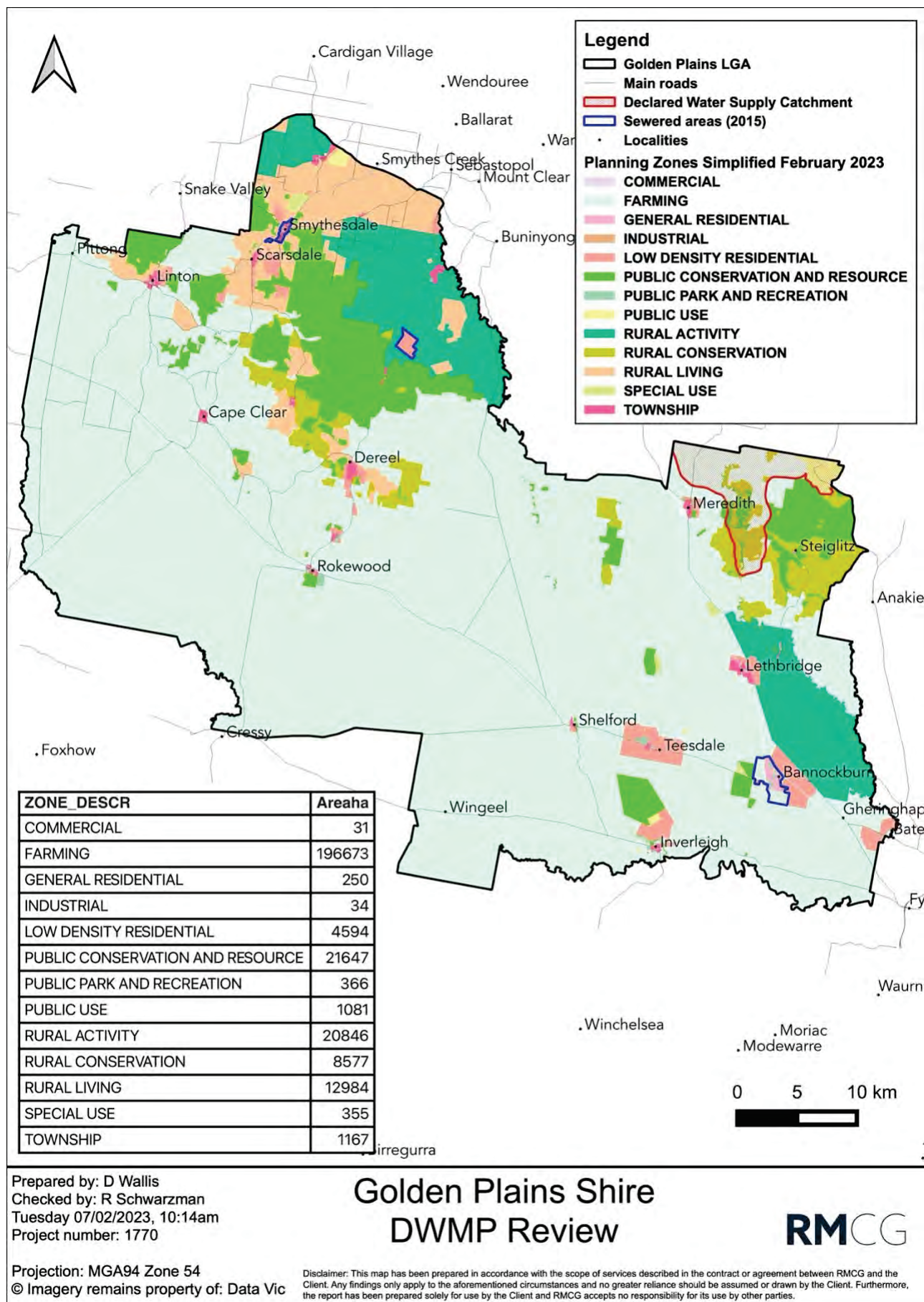


Figure 2-1: Golden Plains Shire

2.2 POPULATION GROWTH

Annual growth rates in Golden Plains Shire have remained higher than neighbouring local government of Ballarat and Geelong as well as the Victorian average (around 1.5%) since 2006. The population of the Shire has grown by more than 6,000 people at a rate of between 2.5-3% per year since 2011⁷ and an additional 2,000 dwellings were built over this period, increasing the number of houses by almost 3% per year⁸.

This growth has been accompanied by a growth in permit applications for OWMS of more than 70% per annum. Annual growth is forecast to continue at between 2-3% per year over the next 30 years resulting in between 7,300 and 14,700 new dwellings and population increase of between 21,000 to 42,800 people by 2051⁹.

Council is currently developing a Growing Places Strategy to provide clear direction for accommodating this projected growth. The strategy will identify the location, supply, and type of preferred development across the municipality to 2050.

Whether future residential development occurs as sewerage allotments or unsewered lots is a subject which requires input from across Council, including strategic planning and the environmental health team.

2.3 LEGISLATIVE FRAMEWORK AND GUIDANCE

Environmental protection and planning legislation and associated guidelines establish the framework for the management of domestic wastewater in the Golden Plains Shire. The framework deals with the core responsibilities of individuals and organisations and includes useful guidance to assist councils, owners, and occupiers of properties with OWMS, and practitioners with their OWMS duties.

2.3.1 ENVIRONMENTAL PROTECTION

The *Environmental Protection Act 2017 (EP Act 2017)* and *Environmental Protection Regulations 2021 (EP Regulations 2021)* set out the regulatory framework governing the installation and operation of OWMS. Guidelines have also been developed to support best practice management of OWMS in accordance with the regulatory framework. Table 2-1 provides a summary of the key environmental protection legislation and guidelines.

Under the regulatory framework:

- The **general environmental duty (GED)** requires all Victorians conducting activities that pose a risk to human health and the environment (like the management, installation, or maintenance of OWMS) to understand, and take steps to eliminate or reduce, those risks
- A **permit** is required from local council to construct, install, or alter an OWMS with sewage flow rates of less than 5,000 litres on any day
- **Owners or occupiers** of land where an OWMS is located are required to:
 - Operate and maintain the OWMS so it does not pose a risk to human health or the environment
 - Check for signs of failure and respond to OWMS failures
 - Provide information to occupiers on correct operation and maintenance
 - Keep maintenance records and, on request, provide them to council

⁷ RMCG, 2015a, Golden Plains DWMP Volume 1. Report prepared for Golden Plains Shire Council, Bannockburn, Victoria. Accessed December 2022 at: <https://www.goldenplains.vic.gov.au/resident/building/septic-systems>

⁸ Idcommunity, 2022, Golden Plains Shire community profile. Accessed December 2022 at: <http://profile.id.com.au/golden-plains/population?DataType=UR>

⁹ Department of Environment, Land, Water and Planning (DELWP), 2019, Victoria in Future: Population projections 2016 to 2056. DELWP, Melbourne, Victoria

- **Councils** are responsible for and/or have powers to:
 - Issue and administer permits to construct, install, or alter OWMS
 - Refuse a permit if an OWMS does not meet EPA's requirements
 - Oversee OWMS installation
 - Issue certificates of use
 - Order OWMS maintenance
 - Enforce breaches of duties including breaches to permit conditions and the GED
 - Refer high-risk unsewered areas to water corporations for investigation into sewer provision
 - Develop DWMPs
- **Council authorised officers** have powers of entry to inspect OWMS with consent of the occupier, or if they believe a provision of the EP Act or Regulations has been (or will be) contravened, or if there is immediate risk of harm to human health or the environment.

Table 2-1: Key environmental protection legislation and guidelines

ITEM	DESCRIPTION
EP Act 2017	<ul style="list-style-type: none"> ▪ Creates a general environmental duty (GED) for all Victorians ▪ Specifies permit requirement for permit activities.
EP Regulations 2021	<ul style="list-style-type: none"> ▪ A permit is required to construct, install, or alter OWMS ▪ Councils are to administer permits for OWMS with flow rates of <5,000 L on any day.
SEPP (WoV) saved clauses	<ul style="list-style-type: none"> ▪ The State environment Protection Policy – Waters of Victoria (SEPP (WoV)) has been replaced through the new environmental protection legislative framework ▪ However, the requirement for council to develop, review and update DWMPs has been retained as 'Saved clauses' until June 2023 or otherwise replaced.
EPA publication 891.4: Code of Practice: OWM	<ul style="list-style-type: none"> ▪ Supports environment protection regulatory framework via a risk-based approach ▪ Augments and compliments AS/NZS 1547: On-site domestic-wastewater management
Guidelines	Councils <ul style="list-style-type: none"> ▪ EPA publication 1974: Regulating on-site wastewater management systems (local government toolkit) (EPA, 2021) ▪ Model onsite wastewater management plan (DELWP/EPA, to be reviewed) ▪ Onsite wastewater management plans: Risk assessment guidance ▪ Ministerial guidelines for planning permit applications in open, potable water supply catchments (DSE, 2012).
	Owners and occupiers <ul style="list-style-type: none"> ▪ EPA publication 1976: Guidance for owners and occupiers of land with an OWMS equal to or greater than 5,000 L on any day (including septic tanks) (EPA, 2021).
	Practitioners <ul style="list-style-type: none"> ▪ Victorian land capability assessment framework (Municipal Association of Victoria, 2014, due for review).
Standards	<p>For design and management of OWMS:</p> <ul style="list-style-type: none"> ▪ AS/NZS 1547: On-site domestic-wastewater management <p>For certification of wastewater treatment plant:</p> <ul style="list-style-type: none"> ▪ AS/NZS 1546 Part 1: Septic tanks, Part 2: Waterless composting, Part 3: Secondary treatment, Part 4: Domestic greywater treatment systems.

2.3.2 PLANNING LEGISLATION

The planning process and Council's Planning Scheme play an important role in domestic wastewater management. The Planning and Environment Act 1987 (P&E Act) requires councils, when making a planning decision under the Act to consider environmental issues (such as wastewater management), and formally adopted documents by Council (such as the DWMP).

The Victorian Planning Provisions require that reticulated sewerage or an approved alternative is provided for at the time of subdivision of land. If reticulated sewerage is not available, all wastewater from each dwelling must be treated and retained within the lot in accordance with the requirements of the EP Regulations 2021 for an OWMS. If it cannot be demonstrated that this is possible, and a reticulated sewer is not available, then a lot must not be subdivided. The wastewater management objective and standard under the Victorian Planning Provisions also requires OWMS to be consistent with a domestic wastewater management plan adopted by the relevant council.

In the Golden Plains Shire, growth areas within Township Zones (TZ) and Low-Density Residential Zones (LDRZ) typically present a greater risk of subdivision or construction of dwellings on lots that cannot retain wastewater onsite in residential areas. The following requirements for subdivisions and use of dwellings apply within these zones. The Golden Plains Planning Scheme includes the following requirements for subdivisions and dwellings within these zones.

Even where minimum lot sizes do not apply to subdivisions, there are requirements to provide for wastewater that satisfies the relevant water authority, the EPA and is consistent with Council's DWMP (this document). Minimum lot size is discussed further in Chapter 5.1.

Table 2-2: Golden Plains Planning Scheme requirements for domestic wastewater management

MATTER	DESCRIPTION	TOWNSHIP ZONE (TZ)	LOW-DENSITY RESIDENTIAL ZONE (LDRZ)	RURAL LIVING ZONE (RLZ)
Use for a dwelling or dependent person's unit	If reticulated sewerage is not available, all wastewater from each dwelling must be treated and retained within the lot in accordance with the requirements of the EP Regulations 2021.	32.05-3	32.03-2	35.03-2
Subdivision permit requirements	An application to subdivide land, without existing dwellings or car parking on each lot, must meet the wastewater management objective and standard. That is, to provide for a wastewater system that satisfies the relevant water authority and the EPA and is consistent with the council's domestic wastewater management plan.	32.05-5 56.07-3	N/A	N/A

MATTER	DESCRIPTION	TOWNSHIP ZONE (TZ)	LOW-DENSITY RESIDENTIAL ZONE (LDRZ)	RURAL LIVING ZONE (RLZ)
Subdivision minimum lot size	Each lot must be the area specified where reticulated sewerage is not connected.	N/A	32.03-3 4,000 m ²	35.03-3 Between 20,000 - 80,000 m ² (depending on the Schedule)
Land Capability Assessment	Subdivision applications in unsewered areas must be accompanied by a Land Capability Assessment and a plan which shows a building envelope and effluent disposal area.	32.05-5	32.03-5	N/A

2.3.3 POTABLE WATER SUPPLY CATCHMENTS

Ministerial guidelines (2012) are in force in Victoria to guide the assessment of planning permit applications within open water supply protection areas. The guidelines specify that where a planning permit is required to use land for a dwelling or subdivide land within a water supply protection area, the density of dwellings should be no greater than one dwelling per 40 hectares, unless exemptions apply.

Exemptions apply where:

- Catchment or water quality protection is not an objective in the Environmental Significance Overlay
- A planning permit is not required
- The proposed development will be connected to reticulated sewerage
- A Catchment Policy has been prepared for the catchment and endorsed by the water corporation in consultation with key stakeholders and the proposed development is consistent with the Policy
- Certain conditions are met, including the preparation, adoption, and implementation of a DWMP meeting requirements specified in the guidelines.

This DWMP has been prepared in accordance with the conditions and requirements of the last exemption (see Chapter 5.1 for more details).

3 Management framework

This chapter sets out the framework guiding Golden Plains Shire Council's approach to domestic wastewater management. It includes the legislative framework and Council's approach to data management, risk, and implementation.

3.1 RISK MANAGEMENT APPROACH

Risk management assists in making informed decisions and setting strategy in the face of uncertainty. Wastewater is a source of risk as it contains contaminants that have potential to impact on:

- Public health – Through contamination of drinking water and recreational water bodies
- Environment – Via pollution of surface waters, groundwater and soils, with nutrients, pathogens and other pollutants, which can cause harm to plants and animals
- Amenity – including offensive odours and unsightly discharges leading to reduced amenity and potential impact on property values.

These impacts can occur due to runoff or leaching of poorly treated or excess wastewater, which is more likely when OWMS have deteriorated, are poorly maintained, are not fit-for-purpose, or are not properly located. Under environmental protection legislation, all wastewater (including treated wastewater) must be contained within property boundaries to minimise the potential for these impacts.

3.1.1 SPATIAL RISK ASSESSMENT

A comprehensive spatial risk assessment was undertaken as part of the Golden Plains DWMP in 2015 (Technical Report 1 Volume 2)¹⁰. The risk assessment used Council records (parcels with dwellings, OWMS, recorded failures, lot sizes, planning zones, house age) and relevant spatial layers (sewer boundaries, potable water supply catchments, soils, topography, waterways, rainfall) to classify the risk associated with existing OWMS and potential future dwelling sites.

The spatial risk assessment undertaken as part of the 2015 DWMP¹¹ has been retained and is available on the Council website (<https://www.goldenplains.vic.gov.au/hi/node/171>). It is used to guide activities within the current plan including:

- Inspection program (Action 5) including best practice domestic wastewater management in the potable water supply catchment (see Chapter 0), and
- Building the evidence base for a case for sewerage (Action 21).

¹⁰ RMCg, 2015, Technical Report 2, Volume 2 of DWMP 2015: Spatial Risk Assessment. Prepared for Golden Plains Shire Council, Bendigo, Victoria

¹¹ RMCg, 2015, Technical Report 2, Volume 2 of DWMP 2015: Spatial Risk Assessment. Prepared for Golden Plains Shire Council, Bendigo, Victoria

3.1.2 RISK PROFILE

In 2015, the spatial risk assessment identified 6,700 existing OWMS in the Shire. Today this is estimated to be closer to 8,500. The treatment type is unknown for about half of these due to requirements at the time of installation, but of the half that is known, septic tanks dominate in the north and sand filters in the south.

It was estimated that almost 75% of the OWMS were on parcels greater than 1.0 ha and are considered low risk in this climate irrespective of most other risk factors (an exception is the designated water supply catchment area). At the time of the risk assessment the housing stock was a mix of new and old. (38% were older than 30 years, 38% were 10–30 years old, 17% were less than 10 years old and for 7% the age was unknown.

Around 820 OWMS (12%) were located on parcels smaller than 0.4 ha in area and by comparing the parcel area and house age maps, there was a high correlation between these small lots and older houses located in the central parts of Inverleigh, Teesdale, Lethbridge, Maude, Meredith, Rokewood, Linton, and Scarsdale.

It was estimated there are 57 existing houses in the Moorabool River (Sheoaks) and Stony Creek (Geelong WTP) designated water catchment within 15 km upstream of the Moorabool River diversion point. Twenty to thirty of these are within 3 km upstream of the diversion point.

The topography of the developed parts of Golden Plains Shire is relatively flat. Very few houses (about 140 or 2%) are on land where the centroid of the parcel has a slope >20%. Typically, these are located away from the built-up urban areas and on large parcels of land. Slope is not considered a critical strategic issue for the Shire but will need to be addressed at an individual allotment scale when new installations occur.

Broad scale soil risk assessment using ASRIS (Australian Soil Resource Information System) indicated that 17% of OWMS are on parcels where the property centroid overlies soil types with a high-risk factor (31% are medium and 52% are low). As noted, the soil mapping is not at sufficient detail to be used for determining LCA requirements or setting minimum land application areas.

The densities of OWMS indicated that there are several areas (particularly Bannockburn, Batesford, Inverleigh, Teesdale, Lethbridge, Meredith, Linton, and Scarsdale) where density is greater than 40 No./km², and thereby considered high risk. High density when combined with small allotments (<0.4 ha) further increases this risk and the inspection programs (2015 and 2023) are targeted to these areas.

Rainfall increases gradually across the shire from south to north. However, from a statewide perspective Golden Plains' rainfall is towards the lower band of rainfall so the risks to OWMS management have been assessed as low or medium. Impact of average rainfall on the land application area required has been addressed within this DWMP.

While multiple areas in the Shire have shallow groundwater (according to modelling results available from Visualising Victoria's Groundwater), there are only a few small patches where this shallow groundwater coincides with low salinity, good quality groundwater. These areas are considered high risk.

Since 2015, growth in Bannockburn, Teesdale, Inverleigh, Lethbridge, Batesford, and Smythesdale has increased the density of existing OWMS in these towns. Most development has occurred as greenfield development in the LDRZ where strict minimum lot sizes apply (>4,000 m²). However there have been some examples of in-fill development in the unsewered towns of Meredith, Inverleigh, and Teesdale that has increased the density of OWMS on small lots in the Township Zone.

The concentration of small vacant lots in residential type planning zones (i.e. TZ, LDRZ) correlates with the areas where there is already a high density of existing OWMS on small lots. Figure 2-1 in Chapter 2.3.1 shows the location of these planning zones across the Shire.

Recorded OWMS failures are relatively few. However, council has reported a major increase in complaints reported since the last DWMP – from an average of 7 complaints per year between 2016 and 2020, to 40 complaints per year since 2020. More than half of the complaints received in 2022 related to OWMS in Meredith (many on small lots <2,000 m²) or Teesdale, and a portion of complaints include recent developments.

3.1.3 ADDRESSING KEY RISKS

Under this DWMP the level of proactive identification of OWMS which are at risk of failure will increase by re-instating the inspection program (see Chapter 4.1). Data (e.g. from routine maintenance certificates or complaints) will also continue to be maintained within the centralised OWMS database (see Chapter 3.2.1) and monitored for patterns in high-risk OWMS.

The DWMP also clarifies the Council's approach to reducing risks associated with future OWMS in unsewered areas including the issue of small lots (Chapter 5.1) and the role of Land Capability Assessments (Chapter 5.2). Meanwhile, township risk is discussed in Chapter 7 and Chapter 8 deals with specific risks within the potable water supply catchment.

Action 1 – Draw on the 2015 DWMP spatial risk assessment to guide implementation of the DWMP

3.2 IMPLEMENTATION

3.2.1 DATA MANAGEMENT SYSTEMS

Data management systems are critical to best practice domestic wastewater management planning. At a minimum council should maintain:

- A database of the location, size, type, and age of existing OWMS, updated regularly to incorporate new systems
- Location of sewer boundaries and potable water supply catchment boundaries
- Permits, permit applications (including LCAs), maintenance, servicing, and decommissioning records
- Records of failures, complaints and inspections relating to OWMS
- Records of any compliance and enforcement action taken including orders and notices issued.

In addition, it is recommended that environmental health staff have access to the following:

- Risk profiles of existing OWMS and lots (aligned with the spatial risk assessment¹²)
- Interactive mapping platform suitable for browsing:
 - The location and size of lots, planning overlays
 - The location and type of existing OWMS
 - Sewer boundaries, potable water supply catchments, soil types, watercourses, slope
 - Spatially linked information about existing OWMS including permits and other records
- Records of contact and communication with owners of existing OWMS.

¹² RMCg, 2015, Technical Report 2, Volume 2 of DWMP 2015: Spatial Risk Assessment. Prepared for Golden Plains Shire Council, Bendigo, Victoria

Golden Plains Shire use Open Office (Customer Relationship Management (CRM) software) for the centralised management of OWMS records. The software enables the environmental health team to track complaints, communications, resolutions, licence information, location of OWMS and other information. Limited records are available for a small number of older OWMS. The inspection program (Chapter 4.1) offers an opportunity to progressively fill gaps in the database in high-risk areas, including existing OWMS within the potable water supply catchment.

The council's property mapping system is also used by the environmental health team to view existing and proposed lots and planning overlays, and has been updated to include sewer boundaries, potable water supply catchments. The records and information stored in the Open Office database can also be readily cross checked against the council's property mapping system.

The risk profiles of existing OWMS (as per the 2015 DWMP spatial risk assessment (Volume 2)) could be integrated into the council's database to assist environmental health team in planning for the inspection program.

When maintaining records in the data management systems, Council will ensure data collected during inspections, contact with customers, and other relevant reports (including this DWMP) is recorded and updated within the database.

Action 2 – Maintain up to date records in the OWMS database and relevant spatial layers within the council's property mapping system.

3.2.2 RESOURCES

Golden Plains Shire has many existing OWMS. While most of these are low risk, there is a substantial workload in monitoring the higher risk existing OWMS and dealing with complaints and enquiries.

Since the previous DWMP, there has been significant growth in the shire and noticeable increases in the number of applications per year and complaints received by council's environmental health team. It is expected that Golden Plains will continue to have a high number of applications for new OWMS over the next decade due to its proximity to Geelong and Ballarat and the popularity of low-density residential style development.

Ensuring there is trained and experienced staff and the necessary administrative systems to deal with the existing and new OWMS is an ongoing challenge for Golden Plains Shire, as it is for all local governments.

Some actions from the previous DWMP are now complete and others have been reshaped in this current DWMP to reduce the administrative burden on the environmental health team. However, this DWMP also emphasises the importance of re-instating an inspection (audit) program and some communication and engagement activities that were not able to be completed during the previous DWMP due to limited resourcing.

It is recommended that Golden Plains Shire consider the need for additional resources to support implementation of key actions within the DWMP, including the inspection program (see Chapter 4.1).

Action 3 – Consider additional resources to implement DWMP actions.

3.2.3 COORDINATION

Council is not responsible for everything to do with OWMS management. Occupiers of premises, municipal councils, water corporations, plumbers, land developers and land capability assessors each have obligations under environmental protection and planning legislation (e.g. see Chapter 2.3).

Many of the issues related to managing OWMS can be avoided or resolved if there are adequate communications between the relevant parties and an understanding of responsibilities. Rather than taking on all responsibilities, the environmental health team can play a coordination role by which it facilitates communication between the relevant players.

The environmental health team may use Table 3-1 as a guide for maintaining regular up to date communication with key stakeholders.

Table 3-1: Guide for maintaining regular up to date communication with key stakeholders

STAKEHOLDERS	MATTERS	MINIMUM ENGAGEMENT
Environmental health team	Lead DWMP implementation	Engage with stakeholders below and others (e.g. public, industry) as needed Keep website up to date Provide training if required
Council planners and building inspectors	Subdivisions Development of small lots Land Capability Assessments Permits and Certificates of Use Urban development strategies	Weekly team leader meetings with environmental health team Contact during subdivision referral and permit processes
Water corporations: ▪ Barwon Water ▪ Central Highlands Water	Sewerage systems Potable water supply catchments Water quality issues	Bi-annual meetings to check-in and share most recent data Contact during referral processes Contact during review of DWMP
Practitioners: ▪ Land capability assessors ▪ Plumbers ▪ Installers ▪ Waste removal contractors ▪ Service technicians	Land Capability Assessments Permits and Certificates of Use Inspections and records Compliance and enforcement Best practice	Contact during permit processes Contact during compliance action processes Provide up-to-date resources on Council website
Real estate agents, developers	Subdivisions Development of small lots	Provide up-to-date resources on Council website
EPA	Compliance and enforcement OWMS guidance	Contact during compliance action processes Contact for guidance on adherence to legislation and standards
Other Councils	Sharing DWMP knowledge and resources	Contact during review of DWMP
Catchment Management Authorities	Water quality issues	Contact during review of DWMP

Action 4 – Maintain regular up to date communication with key internal and external stakeholders according to the guide in Table 3 1.

4 Existing OWMS in unsewered areas

This chapter discusses existing OWMS in unsewered areas.

The majority of dwellings within the Golden Plains Shire are unsewered, resulting in approximately 8,500 existing OWMS. The density of OWMS increases with proximity to the regional cities of Geelong and Ballarat, particularly in and surrounding Bannockburn, Teesdale, Inverleigh, Lethbridge and Batesford in the south and Smythes Creek, Haddon, Scarsdale and Linton in the north. Meredith also has a high density of OWMS.

A detailed spatial risk assessment was undertaken as part of the preparation of the 2015 DWMP, the findings of which are presented in Technical Report 1 Volume 2¹³. In addition, the recent review of the 2015 DWMP has identified changes to risks associated with existing OWMS through discussions with the environmental health team.

The investigations identified high-risk areas (or sites) enabling targeted monitoring of existing OWMS and communication with OWMS owners.

4.1 INSPECTION PROGRAM

Council proposes to undertake an ongoing inspection program of existing high-risk OWMS. The inspection program should select from up to 1,000 high-risk sites, identified using the following criteria:

- Existing OWMS within the designated potable water supply catchment
- Existing OWMS on small lots (<4,000 m²) in densely developed areas (>40 houses/km²)
- Existing OWMS on small and medium sized lots (<10,000 m²) where the ASRIS soil type is rated as high risk
- Existing OWMS within areas where depth to groundwater is <5 m and groundwater salinity is <1000 mg/L TDS.

The spatial risk assessment undertaken in 2015 identified high-risk sites according to these criteria and should be used as the starting point to select existing OWMS for inspection.

Properties selected for inspection will include all OWMS in the designated catchment area and the remainder selected at random from the other three groups. The number of OWMS inspected per annum will depend on the availability of resources, however a reasonable target would be to inspect 20% of high-risk sites (200 sites) each year to ensure at least 500 high-risk sites are inspected over the life of the plan.

Inspections will consist of a search of Council databases to find existing permits or records on any OWMS at the property in question. If records are located a desktop review will be conducted using Council's GIS software. These records will be assessed against requirements in this DWMP and current EPA requirements.

Under the new EP Act (2017) Council authorised officers are required to gain consent of the occupier to enter a residential premises to inspect an OWMS¹⁴. As such officers carrying out onsite inspections will provide notice to occupiers ahead of a proposed OWMS inspection at their address and will not enter the property without consent.

¹³ RMCg, 2015, Technical Report 2, Volume 2 of DWMP 2015: Spatial Risk Assessment. Prepared for Golden Plains Shire Council, Bendigo, Victoria

¹⁴ There is an exception if authorised officer reasonably believes a person has contravened, is contravening, or is about to contravene the EP Act or Regulations, or there is an immediate risk of harm to health or the environment.

Following the desktop review and where the occupier provides consent to enter the property, the onsite inspection will be conducted using a form like the one presented in Appendix 1: Inspection Checklist.

Action 5 – Reinstate an inspection program of existing high-risk OWMS with a target of more than 500 sites inspected over the life of the plan.

Communication and education with owners during inspections about their OWMS has proven to be an effective way to encourage proactive maintenance of OWMS in other local government areas. Therefore, where owners or occupiers are present during the inspection, council staff will also use the inspection as an opportunity to communicate with and educate owners about their OWMS. This may include:

- Explaining the Council's role in managing domestic wastewater in the Golden Plains Shire
- Explaining the risks associated with OWMS and the factors which increase these risks (e.g., lot size, age of OWMS, soil type, proximity to waterways)
- Asking about the history of the OWMS (e.g., when installed, upgrades, and servicing), and whether the owner or occupier has experienced any issues
- Updating the owner on the current condition of the OWMS or other observations made during the inspection
- Informing the owner of their responsibilities under the EP Act (2017) and EP Regulations (2021)
- Directing the owner to further information (e.g., Council webpage, EPA guidance) as required.

Action 6 – Use onsite inspections as an opportunity to engage constructively with OWMS owners, and to communicate with and educate owners about their OWMS

If an OWMS is found to be failing and discharging offsite or causing/likely to cause a risk to public health enforcement action will be initiated to ensure the OWMS owner carries out works/upgrades. This process will be in line with the flowchart shown in Figure 4-1. OWMS within the potable water supply catchment area that Council direct to upgrade as part of this inspection program will be required to meet current day standards in accordance with EPA guidance and relevant standards.

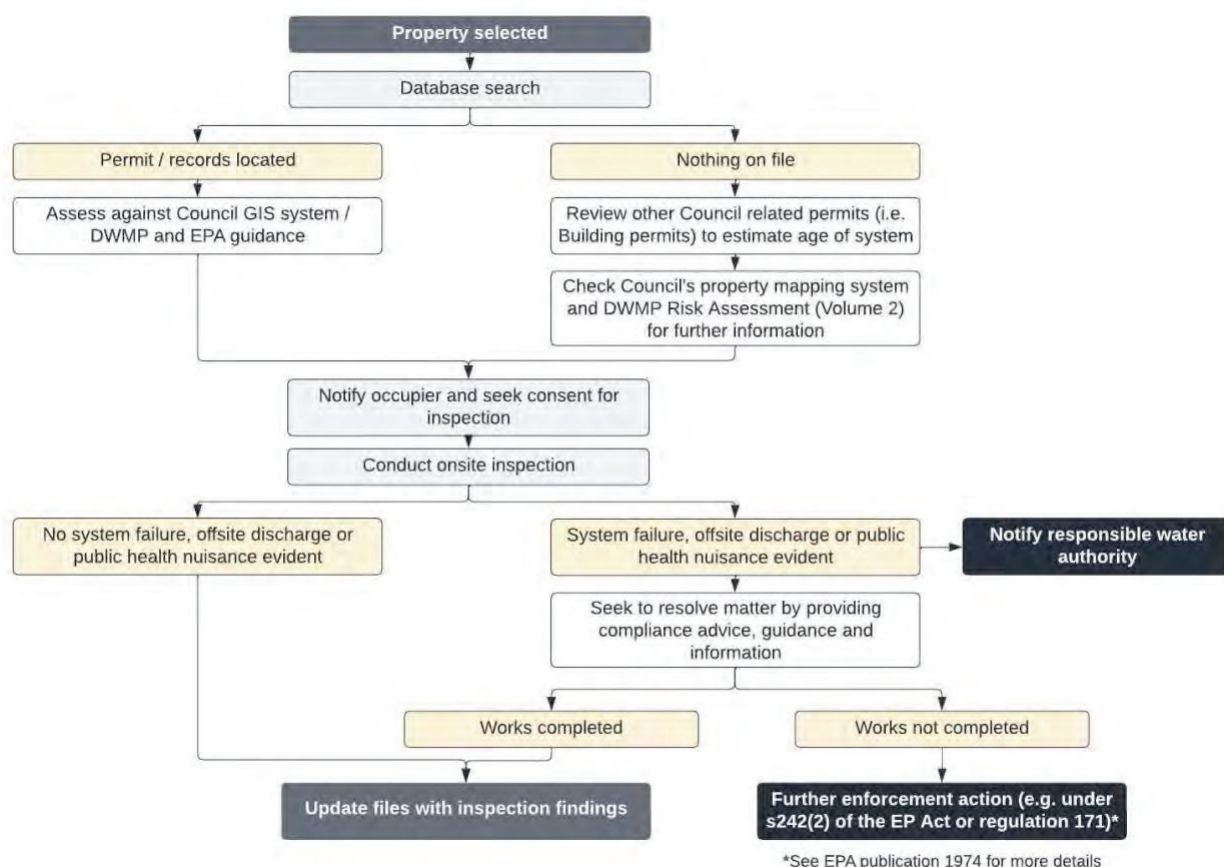


Figure 4-1: Inspection program compliance and enforcement flowchart

The environmental health team will prepare a brief annual report of the inspection program and provide this to key stakeholders where relevant. At a minimum the report should summarise the number and location of inspections undertaken in the previous year, the status of OWMS inspected since the start of the program, and any other outcomes for the program. The report should also identify the number and location of OWMS proposed for inspection in the next year.

Action 7 – Prepare a brief annual report of the inspection program and provide to key stakeholders where relevant.

4.2 COMMUNICATION AND EDUCATION

In addition to communication and education during onsite inspections, Council maintains several important online resources relating to domestic wastewater management. The materials support communication with key stakeholders; providing an up-to-date record of core requirements under environmental protection legislation and Council processes and making important information available to the residents and potential new residents of the Shire.

Current resources available (see <https://www.goldenplains.vic.gov.au/resident/building/septic-systems>) include:

- **OWMS Permit Application Guide (2021)** – explains the basic process and general requirements to obtain an OWMS Permit in the Golden Plains Shire
- **OWMS Permit application forms** – application forms for new permits or to renew or amend an existing permit, request forms for an assessment about the suitability of an OWMS for a fee
- **Request for information** – request form for owners or authorised parties to recover information about OWMS from Council archives for a fee
- **Fact Sheets** – information for owners and operators of OWMS developed under the Towards Better Onsite Wastewater Management in Victoria – Community Education Series initiative in 2012. The fact sheets are due for review for consistency with new environmental protection legislation and guidance.
- **Golden Plains DWMP** – the Golden Plains DWMP is made available on the Council website.

These resources should be kept current in accordance with environmental protection legislation and guidance.

Action 8 – Ensure DWMP resources provided on the Council website are up to date.

4.3 COMPLIANCE AND ENFORCEMENT

From time to time, council staff are required to investigate complaints or reports received about existing OWMS. This may include investigations into breaches of permit conditions, maintenance and operations issues or the regulation of risks and impacts under the general environmental duty (GED).

The EP Act (2017) and EP Regulations (2021) delegates certain compliance and enforcement powers to council staff to enable them to respond effectively to complaints or breaches. If an investigation finds that there has been an offence under the EP Act or Regulations and the matter cannot be resolved through advice, guidance and information, council staff may take appropriate compliance and enforcement action to resolve the matter.

The EPA Publication 1974 supports council officers to understand and enforce the laws under the Act and Regulations. It provides the latest guidance on when and how authorised officers (appointed under s242(2) of the Act) and Council appointed persons (under regulation 171) may take appropriate compliance and enforcement action. Depending on a range of circumstances this may include:

- Issuing notices to order maintenance or improvements
- Issuing prohibition notices
- Issuing infringements
- Initiate court proceedings.

Under this DWMP, Golden Plains Shire Council will continue to follow the guidance provided in EPA Publication 1974 to take appropriate compliance and enforcement action as required in response to complaints or other investigations.

Action 9 – Respond effectively to OWMS complaints or breaches including by following the guidance provided by EPA in Publication 1974 on compliance and enforcement.

4.4 COUNCIL OWNED OWMS

Golden Plains Shire Council manages properties with OWMS across the Shire. These are associated with public halls, recreation reserves and public toilets.

Non-residential OWMS, comprising commercial premises and community facilities, are not the focus of this plan. However, Council is keen to lead by example and ensure these OWMS are adequately maintained and upgraded where required, therefore this DWMP recommends an audit be conducted to confirm that existing Council owned OWMS are adequately maintained and operated, and upgrades pursued if required. The audit would comprise a brief desktop investigation, followed by onsite inspections as required.

Action 10 – Audit OWMS management at Council owned properties in unsewered areas.

5 Future OWMS in unsewered areas

There are significant expanses of land within Golden Plains Shire that have been identified for unsewered lower density residential development in which new OWMS will be installed. This chapter clarifies Council's approach for managing domestic wastewater in the context of future development and growth.

5.1 SUBDIVISION AND DEVELOPMENT OF SMALL LOTS

Dense residential developments in unsewered areas create challenges for domestic wastewater management. Onsite wastewater management requires sufficient land area to treat water via a septic tank or other method and retain treated wastewater onsite within the property boundaries within a disposal field area. It must also allow for buffers between wastewater and sensitive areas such as buildings, adjacent properties, services, recreational areas, surface water and groundwater bores.

The area required for wastewater treatment and retention ultimately depends on a range of factors such as the volume of wastewater produced, the type of treatment, soil types and rainfall, and is usually determined by a Land Capability Assessment (LCA) consistent with EPA guidelines and relevant standards. Nonetheless, there are known risks associated with small lots (i.e., less than 1 hectare in size) in unsewered areas.

Some minimum lot size restrictions on subdivision and dwelling development in the Golden Plains Planning Scheme are consistent with sustainable onsite wastewater management, even if they were not set for this purpose. However, there are also areas where minimum lot sizes applied to subdivision and development may not support the sustainable management of wastewater. As such, this Chapter sets out the approach Council will take to minimise the risks associated with subdivision and development of small lots in unsewered areas.

There are two main stages in the planning and development process where the risk of future OWMS on small lots can be managed:

- During the subdivision stage when the lot size is determined, or
- When determining whether existing small lots can be developed for residential use.

Subdivisions in the township (TZ) or low density residential (LDRZ) zones in unsewered areas are typically of greater concern, due to both existing OWMS and the potential for further growth.

5.1.1 TYPES OF SUBDIVISIONS

Residential subdivisions in Golden Plains Shire may involve:

- Greenfield development, or
- Infill development through the re-subdivision.

Greenfield developments in unsewered areas typically relate to land designated as LDRZ. The options for greenfield sites are to require sewerage and encourage higher density development or ensure lot sizes are sufficient for long-term sustainable onsite wastewater management. In the Golden Plains Shire, greenfield developments have recently occurred or are planned for areas around Teesdale, Inverleigh, and Lethbridge. In the longer term, new LDRZ developments are likely to be considered in the south west adjacent to the Geelong growth corridor, Cambrian Hill near Ballarat, and possibly further development around Lethbridge and Teesdale. Greenfield development adjacent to the Geelong growth corridor and in Cambrian Hill will be higher density (General Residential Zone) and therefore sewerage.

Infill developments may be sought by landholders in the TZ or LDRZ where there are vacant blocks, or unused areas of larger blocks, within or on the edge of townships. The subdivision of unsewered lots for infill development is challenging for domestic wastewater management because the lots are often already located in high-risk higher density areas, and there may be an expectation that smaller lot sizes (<4,000 m²) are acceptable based on the existing presence of smaller legacy blocks in the area. In-fill development subdivisions have recently occurred within the Meredith TZ resulting in lot sizes <4,000m². Over the last six months, complaints have been received regarding some of the OWMS installed in this area.

To ensure onsite wastewater can be managed sustainably now and into the future, Golden Plains Shire Council has adopted a consistent approach to minimum lot sizes that applies to both examples of subdivision in unsewered areas.

5.1.2 MINIMUM LOT SIZE FOR SUBDIVISIONS

Under the Planning Scheme:

- Subdivisions within the LDRZ are subject to a minimum lot size of 4,000 m² where reticulated sewerage is not connected,
- Applications to subdivide land in the TZ must provide for a wastewater system that satisfies the relevant water authority and the EPA and is consistent with the council's DWMP (this document),
- Applications to subdivide land in the LDRZ or the TZ in unsewered areas must be accompanied by a Land Capability Assessment, and
- To use land in unsewered areas of the TZ or LDRZ for a dwelling, all wastewater from each dwelling must be treated and retained within the lot in accordance with the EP Regulations 2021.

To support sustainable onsite wastewater management, Golden Plains Shire Council applies a default minimum lot size of 4,000 m² to subdivisions. However, achieving sustainable onsite wastewater management on a lot of this size requires relatively restrictive controls. Therefore, this minimum lot size is subject to the conditions set out in Table 5-1.

Table 5-1: Approach to minimum lot size in unsewered areas

APPROACH TO MINIMUM LOT SIZE IN UNSEWERED AREAS
<p>The minimum lot sizes for dwellings in unsewered areas must be sufficient to treat and retain wastewater onsite in accordance with the requirements of the EP Act (2017) and EP Regulations (2021). Minimum lot sizes created during subdivision must be consistent with relevant EPA guidance and Australian Standards (see Chapter 3.1) and should consider the recommendations of a site-specific Land Capability Assessment.</p> <p>Council will apply a default minimum lot size for subdivision in unsewered areas of 4,000 m² in the TZ¹⁵ subject to:</p> <ul style="list-style-type: none"> ▪ Maximum of 15% of each lot is to be set aside for land application areas ▪ Information that demonstrates the lot has an envelope suitable for OWMS, accounting for all risk factors including slope and setbacks ▪ House size is limited, and water reduction fixtures/fittings used to achieve 750 L/day wastewater generation ▪ Secondary treatment and drip irrigation with a minimum land application area of 375 m²(increasing to a minimum of 420 m² where average rainfall exceeds 600 mm per annum) ▪ Stormwater cut-off drains upslope of land application area ▪ Soil preparation to provide at least 150 mm depth of good quality topsoil (in situ or imported), and ▪ Application of gypsum to dispersive, sodic, or heavy clay-based soils. <p>Where there is evidence of higher permeability than Category 6 soils – e.g. soil survey data at an appropriate scale or a site specific land capability assessment – restrictions detailed above may be varied (in the TZ only).</p>

In practice, Golden Plains Shire Council will continue to target lot sizes over 4,000 m² for new subdivisions.

¹⁵ Note: Under the Golden Plains Shire Council Planning Scheme, mandatory minimum lot sizes already apply to subdivisions in other zones.

Default and target minimum lot size are consistent with recommendations made by the Land Capability for Onsite Domestic Wastewater Assessment Manual (Technical Report 1 of Volume 2) prepared in 2015 and updated in 2023. The recommendations in the Assessment Manual are based on a desktop Land Capability Assessment for Bannockburn and Meredith which applies EPA guidelines and Australian/New Zealand Standards. Shire's *OWMS Permit application guide* (2021) is a publicly available document which is consistent with the Assessment Manual recommendations and provides further information on OWMS sizing considerations.

Action 11 – Apply the approach to minimum lot sizes for subdivisions in unsewered areas as set out in Table 5-1.

5.1.3 DEVELOPMENT OF EXISTING SMALL LOTS

The construction of dwellings on existing small vacant lots (also sometimes referred to as infill development) in unsewered areas can create tension between sustainable domestic wastewater management and orderly urban development. On the one hand, OWMS require relatively large lot sizes to be sustainable, but on the other hand, smaller lots are attractive in urban areas because they allow for a more consolidated built form, and therefore more efficient use of urban infrastructure and land.

Restrictions to minimum lot size applied at the subdivision stage do not affect existing small lots. Therefore separate, yet consistent, requirements are needed to ensure the development of new dwellings on existing lots and associated OWMS is sustainable.

Within Golden Plains Shire, there are several localities with existing small vacant lots in unsewered areas – smaller than the recommended minimum of 4000 m² for new subdivisions. This is particularly the case for the central parts of older towns such as Meredith and Linton.

The Land Capability for Onsite Domestic Wastewater Assessment Manual (Technical Report 2 of Volume 2) considers the risks associated with development of these small lots. It recommends an approach that is consistent with minimum lot size recommendations for subdivisions (Chapter 5.1.2) while recognising the challenge that vacant lots can create in the township zone. Council has adopted the approach set out in Table 5-2 for the development of existing small lots which are consistent with these recommendations.

Table 5-2: Approach to the development of existing small lots

APPROACH TO DEVELOPMENT OF EXISTING SMALL LOTS
<p>Development on existing small lots must be sufficient to allow for a suitable envelope with sufficient area to treat and retain wastewater onsite, consistent with relevant EPA guidance and Australian Standards (see Chapter 3.1) and according to recommendations of a site-specific Land Capability Assessment.</p> <p>New development on existing small lots (<4,000 m²) reliant on OWMS will be restricted to sites where:</p> <ul style="list-style-type: none"> There is evidence of higher permeability than clay dominated Category 6 soils, or Wastewater volume generated is minimised through an approach consistent with EPA guidelines and Australian Standards, such as restriction of house size (number of bedrooms) or greywater reuse.

Land Capability Assessments and communication and education surrounding development on existing small lots is dealt with in Chapters 5.2 and 5.3 respectively.

Action 12 – Ensure the development of existing small lots is consistent with the approach set out in Table 5-3.

5.1.4 DEVELOPMENT OF OTHER LOTS

Development also occasionally occurs in lower density areas, such as the construction of a new house within the Farming Zone – perhaps following demolition of an old dwelling. The lots are expected to exceed 1 ha in area and sufficient area is usually available to accommodate onsite wastewater disposal/reuse.

The installation or alteration of an OWMS associated with such development must occur in line with the Shire's *OWMS Permit Guide* and relevant EPA guidance and Australian Standards.

5.2 LAND CAPABILITY ASSESSMENTS

Land Capability Assessments (LCAs) provide a site-specific assessment of the capability of land to sustainably utilise and manage wastewater within the boundaries of an allotment. In doing so, it identifies any high-risk areas, and recommends required wastewater quality and application system in accordance with EPA guidelines and Australian Standards. The Municipal Association of Victoria (MAV) has developed a model LCA report and procedures to assist LCA assessors and regulators.

In Golden Plains Shire, LCAs:

- Are typically required as part of a planning or subdivision application under the planning scheme (e.g., for subdivisions within the TZ and LDRZ in the absence of reticulated sewerage), and
- Are required by Council at the OWMS permit application stage if the property or development is considered high-risk or at the environmental health officers' discretion.

The criteria for high-risk properties are set out in Table 5-3 below, alongside the minimum inclusions for an LCA.

Table 5-3: Requirements for Land Capability Assessments

LAND CAPABILITY ASSESSMENT REQUIREMENTS
Properties or developments requiring LCAs
<ul style="list-style-type: none"> ▪ As required through the planning or subdivision process (refer to the Golden Plains Shire Planning Scheme), and ▪ High-risk properties and developments in unsewered areas meeting <u>any</u> of the following criteria¹⁶: <ul style="list-style-type: none"> – Site is smaller than 4000 m² – Site is within a designated Open Potable Water Supply Catchment Area – Site is classified as high risk for groundwater – i.e. water table is <5 m below the surface and the groundwater is of high quality (within Beneficial Use Class A, <1000 mg/L TDS). – Site is classified as high risk for topography – i.e. slope is steeper than 20% – Lots with greater than or equal to 50% flood overlay (FO) – Primary treatment system proposed on a lot sized less than 8,000 m² where clay-based soils are evident – Non-residential development that will generate wastewater.
Minimum requirements for LCAs in unsewered areas
<ul style="list-style-type: none"> ▪ Analysis of soil type to enable classification based on the soil categories used in AS/NZS 1547:2012 and the EPA Code of Practice, ▪ Constant head soil permeability test conducted in situ for clay soils (Categories 5b, 5c and 6) when recommending absorption/transpiration trenches, ▪ A nutrient balance assessment for high permeability soils (Categories 1, 2 and 3a) that are located <100 m from a freshwater lake or where good quality (Beneficial Use Class 1) groundwater is <5 m below the ground surface, and ▪ Projected water use determined based on house size, plus details on any reduction measures to be implemented.

LCAs are to be submitted at the planning stage, or building permit stage, if a planning permit is not required. For new subdivisions or developments, the findings of an LCA should inform the number and configuration of proposed lots and overall development density and any restrictions that might apply (including where a lot is unsuitable for development), taking into account requirements specified in this DWMP.

Golden Plains Shire Council's *OWMS Permit Application Guide* provides advice to property owners not required to provide an LCA, including on minimum treatment capacity, minimum land application areas and OWMS location and setback requirements.

Action 13 – Ensure Land Capability Assessments are:

- *Undertaken / provided at planning or subdivision application phase in accordance with the Golden Plains Shire Council Planning Scheme requirements (e.g., for subdivisions in the TZ and LDRZ)*
- *Undertaken / provided as part of the OWMS permit application for high-risk properties or developments and including the minimum requirements for LCAs in unsewered areas set out in Table 5-3.*

¹⁶ These areas were mapped within the spatial risk assessment (Technical Report 1 Volume 2) in 2015.

5.3 COMMUNICATION AND EDUCATION

An important part of managing future OWMS in unsewered areas is maintaining open and clear communication with prospective buyers or owner-developers or -builders (i.e., any prospective owner of a new OWMS), real estate agents and developers. Communication during the early stages of development, such as subdivision enquiries or before the purchase of a vacant block of land, is particularly important for setting expectations around what level of development is likely to be permitted.

Golden Plains Shire Council maintains important online resources relating to domestic wastewater management, including general information relevant to prospective owners of new OWMS. In particular, this DWMP (2023) and the OWMS Permit Application Guide (2021) clarify the Council's requirements for new OWMS (refer to Chapter 4.2).

There may be an opportunity for Golden Plains Shire Council to develop an information prospectus more specifically for prospective buyers, real estate agents and developers in the future. However, developing and regularly updating such materials can be resource intensive and it can be difficult to ensure such material reaches, and is read by the target audience.

Under this DWMP, Council will instead seek to enhance communications during the early stages of planning and development and extend the use of existing online materials. This will be led by the environmental health and planning teams, for example when responding to enquiries during the early stages of development. Opportunities to improve communication may include through training sessions for staff responding to development enquiries or regular discussions on high-risk sites into regular environmental health – planning team meetings. Through these engagements, Council will also monitor the need for a more detailed information prospectus in the future.

Regular communication with land capability assessors is also critical to ensuring Council's domestic wastewater management requirements are met for future OWMS in unsewered areas. The Environmental Health team will continue to maintain regular communication with land capability assessors and refer assessors to the most recent resources and advice on Council website, as per Action 4 and Action 8 of this DWMP.

Action 14 – Improve communication about OWMS requirements with prospective buyers, owner-developers or owner-builders, real estate agents and developers during the early stages of developments.

6 Sewered areas

6.1 EXISTING OWMS IN SEWERED AREAS

This chapter describes the management of existing OWMS in the three sewered areas in Golden Plains Shire (Smythesdale, Bannockburn and Enfield), which together cover <0.5% of the Shire area. Note that the sewered area mapped in this DWMP are for general reference only and should not be relied upon for OWMS matters regarding individual properties.

In practice, some land within sewered areas is difficult to connect to sewerage, while other land can be more readily sewered. The terms “sewered area”, “sewerable area” and “sewerage district” have slightly different meanings. Good communication between Council, Water Corporations and land owners is required to avoid confusion.

Table 6-1: Sewered area summary

NAME	AREA (KM ²)	PROPORTION OF SHIRE AREA (%)
Sewered area:	10.3	0.4
▪ <i>Smythesdale</i>	1.2	0.05
▪ <i>Enfield</i>	2.4	0.10
▪ <i>Bannockburn</i>	6.7	0.25
Unsewered area	2695	99.6
Golden Plains Shire	2705	100

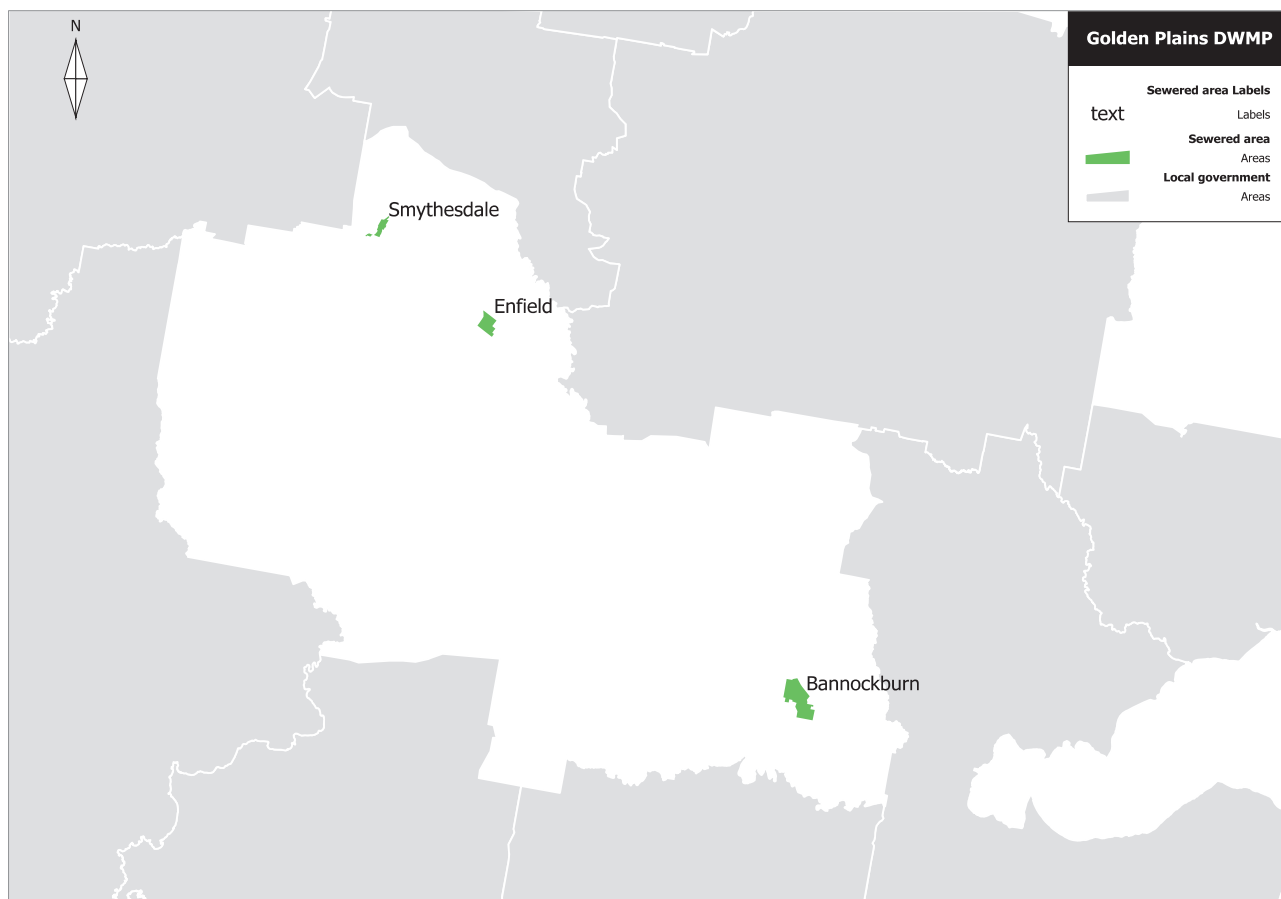


Figure 6-1: Map of sewerage areas

Smythesdale

Central Highlands Water completed a sewerage scheme in Smythesdale within the past ten years. A sewerage district has been gazetted, but this does not exclude extensions beyond the sewerage area. Houses previously serviced by an OWMS have been progressively connected to sewerage over time. Discussions with Central Highlands Water suggest it is likely there are still some houses within the sewerage district which are yet to be connected. The sewerage district area for Smythesdale also includes at least one area which is not able to be connected based on current infrastructure. This has created challenges for communication and landowner expectations.

Enfield

The Enfield scheme was installed in 1996. All existing houses are connected, and no further extensions are possible.

Bannockburn

Bannockburn is the largest sewerage scheme in the Shire. It started in the late 1990s as a backlog scheme to service the closely developed inner part of the town, but now also serves intensive new residential development to the west and south. The original scheme commands all of the General Residential and Business Zones and it is understood that very few houses within these areas are not already connected to the scheme. Within the bounds of the sewerage district there is a significant amount of vacant land that will over the next decade convert into small lot (sewered) residential development.

6.2 CONNECTION TO SEWER

In principle all houses within these sewerage areas should be connected to sewerage. In practice however, for various reasons, there are existing houses that are not connected to sewerage.

Water corporations typically lead the sewer connection process; however, Council plays an important role in sharing information and sometimes facilitate communication between water corporations and OWMS owners. OWMS owners are also required to notify Council when they decommission their OWMS, which is important information when facilitating sewer connections. Thus, coordination between Council, the water corporations and the affected landowners is the key.

Council will continue to maintain regular communication with water corporations and share data to help facilitate sewer connections. Opportunities to share data include:

- Water corporations (Barwon Water in the south east and Central Highlands Water in the north west) have plans detailing the layout of sewer networks and records of connections
- Council maintains records of dwellings across the Shire, existing OWMS, decommissioned OWMS, and applications for future OWMS
- Water corporations will also have conceptual plans for the layout of any proposed future sewer network which can be used to initiate the connection of unsewered houses.

Together this information helps to locate houses within sewerage areas (i.e., areas with access to the sewer system) that are not yet connected to the sewer.

The approach to avoiding future OWMS in sewerage areas is similar. Council will avoid the installation of new OWMS in these areas by:

- Supporting water authority requirements for new properties to connect to sewerage
- Working with the water corporations to develop plans and procedures for the efficient extension of the sewer networks
- Being consistent with decisions.

OWMS in sewerage areas are not a major domestic wastewater risk but coordinated efforts to opportunistically connect these houses will depend on good planning and communications between the water corporations and Council.

Action 15 – Help to facilitate the connection of existing houses to sewer through regular data sharing and communication with water corporations (also see Action 4).

Action 16 – Avoid new OWMS in sewerage areas through good communication with water corporations and land owners (also see Action 4).

7 Risk by township and locality

7.1 INTRODUCTION

Development and growth may be constrained by high levels of domestic wastewater management risk in unsewered towns. At a minimum, managing high risks towns typically involves data management (see Action 1), OWMS inspections (see Action 5), and monitoring to determine whether further action is needed. For some towns where domestic wastewater is leading to unacceptable levels of environmental and health risks, and there are growth pressures, there may be a case for a sewer system.

This section of the DWMP considers the risk of the main unsewered towns and localities and the need for specific actions to manage domestic wastewater management risks. Factors which may indicate higher levels of risk in these towns include:

- Density of existing OWMS
- Age of existing OWMS and complaints
- Growth pressures
- Environmental factors such as soil, slope, and proximity to waterways and high-quality groundwater.

Actions relating to sewerage towns are discussed in the previous chapter.

7.2 TEESDALE

Teesdale is in the south east of the shire, around 10 km west of Bannockburn or 30 km from Geelong. Teesdale has a small township zone area with legacy lots <4,000 m² and some older houses with a risk of ageing OWMS.

According to the latest ABS Census (2021)¹⁷, the town has grown rapidly in recent years (by 10% since 2016) and is now the second largest township by population in the Shire. Much of the recent growth in Teesdale has occurred through greenfield development on lots around 4,500 m² on the edge of town. There is potential for further growth in the LDRZ in the future¹⁸.

During 2022 there were a relatively high number of complaints regarding existing OWMS in Teesdale associated with properties in the LDRZ. Golden Plains Shire Council is responding to these complaints and monitoring the situation closely to inform future management decisions.

Risks associated with soils, slope, groundwater, and proximity to waterways are lower than for other townships in the Shire. There has also been opposition to sewerage in Teesdale in the past¹⁹.

Existing high-risk OWMS have been identified in Lethbridge and Maude and included in the inspection program (Action 5) and the DWMP clarifies Council's approach to the development of small lots in unsewered areas (Actions 11 – 16).

7.3 INVERLEIGH

Inverleigh is close to the southern border of the Shire, located 10 km south west of Bannockburn close to the junction of the Barwon and Leigh Rivers. As a result, much of Inverleigh is subject to inundation from the Barwon and Leigh Rivers. Overlays showing the extent of floodway and land subject to inundation are shown in the planning scheme. Extra care is required when planning, installing, and operating OWMS on flood prone land.

¹⁷ Australian Bureau of Statistics (ABS), 2022, 2021 and 2016 Census – Employment, Income and Education, Datasets accessed December 2022 via TableBuilder, ABS.

¹⁸ Golden Plains Shire Council (GPSC), 2021, Teesdale Structure Plan. GPSC, Bannockburn, Victoria.

¹⁹ Personal Communications, 2022, Barwon Water.

The town has a relatively higher proportion of older houses and a larger township area with many small lots (<4,000 m²). Existing smaller lots within the township zone have caused problems with effluent run-off from OWMS and this has constrained development of the township zone area²⁰. Since the last DWMP, Golden Plains Shire Council has worked closely with existing OWMS owners to resolve issues.

The Inverleigh Structure Plan Review (2005) anticipated that sewerage may be developed at Inverleigh, however, Barwon Water require a more detailed case for sewerage to prioritise Inverleigh ahead of other higher-risk towns for sewer development within their service area.

The last DWMP (2015) suggested building more evidence to demonstrate that this is the best option for the town. A stormwater study commissioned through the last DWMP concluded that while water quality levels in the Leigh River are poor (precluding recreation, aesthetic enjoyment and aquatic ecosystems), there was no obvious signs of contamination from OWMS failure²¹. The study also noted that water quality exceedances were recorded consistently across the up-stream, mid-stream (township) and downstream sampling locations suggesting that poor water quality may be independent of contaminants from town sources.

There is little new evidence to suggest the level of risk in Inverleigh has changed since the last DWMP. The town has not grown as quickly as some other localities in the Shire, and most development has occurred as greenfield development in the LDRZ. However, some potential development sites in the LDRZ are considered higher risk for domestic wastewater due to their proximity to steep river banks.

The most recent Inverleigh Structure Plan (2019) now suggests that a sewerage scheme is unlikely to be pursued. Other factors, such as flooding, constrains growth in the TZ, and the village scale of development and character is generally supported by the community.

From a water corporation perspective, Inverleigh is unlikely to be considered a higher priority for sewer services when compared to other towns without further evidence. For the time being, it is proposed that domestic wastewater management risks at Inverleigh continue to be monitored through the data management system and re-instated inspection program, and further action considered in future reviews of the DWMP as necessary.

Action 17 – Monitor domestic wastewater management risks at Inverleigh and consider further action where necessary.

7.4 LETHBRIDGE AND MAUDE

Lethbridge and Maude are located 10 km north of Bannockburn and around 30 km from Geelong. The township of Lethbridge has a much larger population (around 1,100) than neighbouring Maude and the Moorabool River runs between the two towns.

Lethbridge has a larger TZ than many similar size towns in the area and there are many existing small lots in the central areas. The town is not as densely developed as older areas of Inverleigh, and there have been fewer recent complaints than in Meredith or Teesdale. However, the town has experienced a recent increase in in-fill development and small to moderate sized greenfield development, and the area is likely to continue to grow given its proximity to Geelong.

The soil types around Lethbridge and Maude are medium to low risk. There has also been opposition to sewerage in Lethbridge in the past²².

²⁰ Golden Plains Shire Council (GPSC), 2005, Inverleigh Structure Plan Review. GPSC, Bannockburn, Victoria.

²¹ Landserve Environment, 2017, Surface water quality assessment, Meredith and Inverleigh, Golden Plains Shire, Victoria

²² Personal Communications, 2022, Barwon Water.

Existing high-risk OWMS have been identified in Lethbridge and Maude and included in the inspection program (Action 5) and the DWMP has clarified Council's approach to the development of small lots in unsewered areas (Actions 11 – 16).

7.5 MEREDITH

Meredith has a small population of around 820 people and is around 30 km north of Bannockburn. It is located in the Moorabool catchment, although run-off from the area discharges downstream of Barwon Water's offtake at Sheoak so it is considered outside of the open potable water supply catchment.

Meredith has been identified as high-risk for domestic wastewater for several reasons:

- The town has a relatively large TZ area adjacent to a tributary creek in the Moorabool catchment
- The community have previously expressed concern regarding stormwater drainage and environmental issues throughout the town, including impacts on the creek²³
- These issues have been thought to be compromised by failing OWMS
- There have been a high number of complaints regarding OWMS discharging offsite both historically, and more recently
- There has been demand for growth in Meredith for many years
- Recent in-fill growth, including the development of small lots (2,000-3,000 m²) has further increased the density of OWMS within the TZ and has been associated with a several recent OWMS complaints.

Options for reticulated sewerage have previously been explored. The Meredith Structure Plan Review (2010) found that the lack of sewer services in the town was a key constraint to further development. The plan found that implementation of reticulated sewerage in Meredith was not opposed by Barwon Water however the costs to residents make this option cost prohibitive. At the time the community were supportive of further investigation into alternative systems, including options which might allow the golf course and other businesses to take advantage of treated wastewater that may become available.

Under the previous DWMP, Meredith and Inverleigh were considered the highest priority for sewerage feasibility investigation. A stormwater quality monitoring study was carried out as a result. The study concluded that the water quality of Coolebarghurk Creek at Meredith was at a level that precluded recreation, aesthetic enjoyment, stock watering, irrigation and impacted aquatic ecosystems.²⁴ The study also noted that nutrient concentrations were highest at the mid-stream (township) location which may suggest run-off and discharge from in an around the town are impacting water quality. Nonetheless, the study found there was no obvious signs of contamination from OWMS failure and further investigation would be required to demonstrate domestic wastewater impacts.

This DWMP recommends re-instating the inspection program (including high-risk sites in Meredith) (Action 5) and clarifies Council's approach to the development of small lots in unsewered areas (Actions 11 – 16) to help mitigate against domestic wastewater management risks in Meredith.

Barwon Water have established policies on the provision of reticulated wastewater services to unsewered towns and processes for assessing the highest priority towns²⁵. Unless more than 50% of property owners in town support services on the basis of covering full cost of assets (on top of standard charges), Meredith would need to be prioritised above all other towns for sewer services within the Barwon Water service area to be considered for sewer servicing within the next five year pricing submission period.

²³ Golden Plains Shire Council (GPSC), 2010, Meredith Structure Plan Review. GPSC, Bannockburn, Victoria

²⁴ Landserv Environment, 2017, Surface water quality assessment, Meredith and Inverleigh, Golden Plains Shire, Victoria

²⁵ Personal Communications, 2022, Barwon Water.

It is recommended that Golden Plains Shire Council lead a case for sewerage, with input from Barwon Water, through the following steps:

- Needs assessment – Demonstrating the current impact and need through evidence such as DWMP, initial economic analysis, planning reports, water quality testing, environmental impact assessments, local media, letters from the community, census data demonstrating growth
- Alignment with planning policy – Demonstrated through Council Plans, Township Structure Plans, Regional Growth Plans and the DWMP
- Demonstrated support – From community and council to investigate options demonstrated through Council Plans, letters or written support, community survey results, funding commitments.

If successful, Golden Plains Shire Council would then work in partnership with Barwon Water through project development (e.g. options investigations) and project delivery phases.

Table 7-1: Recommended steps to pursue a case for sewerage in Meredith

PURSUING A CASE FOR SEWERAGE IN MEREDITH	
This DWMP recommends the following actions to pursue a case for sewerage in Meredith:	
1.	Council to confirm the highest priority Golden Plains town for sewerage, including planning and environmental health teams
2.	Gauge indicative level of support from the local community and gather evidence to support a case for sewerage
3.	Engage with Barwon Water and work through the steps required to demonstrate the case for sewerage
4.	If successful, work with Barwon Water to put forward a proposal in the next water plan.

The re-instated inspection program for existing OWMS (Action 5) will lead to increased understanding of the performance of wastewater management in the town.

Action 18 – Take steps towards a case for sewerage for Meredith as set out in Table 7-1.

7.6 SCARSDALE

Scarsdale is a small town and (around 850 people) in the north of the Shire. It is less than 4 km from Smythesdale and there are several low-density residential developments between the two towns.

While the old part of Scarsdale contains an area of relatively dense existing OWMS, there are too few houses to justify sewerage. Extensive greenfield development is unlikely in this area of the Shire due to bushfire risk, however further in-fill development is likely. Existing high-risk OWMS have been identified in Scarsdale and included in the inspection program (Action 5).

7.7 LINTON

Linton has a population of around 630 and located in the north west of the Shire. The main township includes a cluster of older houses on smaller lots which are higher risk, however officers indicate that the town has less development pressure than the other unsewered towns.

As such, Linton is considered to be lower priority for reticulated sewerage than Inverleigh or Meredith. Existing high-risk OWMS have been identified in Linton and included in the inspection program (Action 5).

7.8 ROKWOOD

Small group of houses, with very little development since the last DWMP. The presence of existing small lots presents some risk, however demand for new dwelling development remains low. Some complaints have recently been reported. However overall, compared to other towns in the Shire, domestic wastewater in Rokewood is understood to present a lower risk. Existing high-risk OWMS have been identified in Rokewood and included in the inspection program (Action 5).

7.9 HADDON, SMYTHES CREEK, CAMBRIAN HILL AND NAPOLEONS

Haddon, Smythes Creek, Cambrian Hill and Napoleons are developments adjacent to the growth corridor of Ballarat in the north of the Shire. They are mostly low-density residential areas with the exception of a cluster of lots in Haddon and in the corridor between Cambrian Hill and Napoleons.

There are some high risk soils in the area. Further development in this area is unlikely, other than around Cambrian Hill, due to bushfire risk. A small area adjacent to the Ballarat is being considered for sewerage as an extension of the South Ballarat sewered areas.

Existing high-risk OWMS have been identified in this area and included in the inspection program (Action 5).

8 Potable water supply catchment

A small but important part of the Shire is contained within a designated open potable water supply catchment. The rules for development in the designated catchment area are more stringent than other areas, as set in the Ministerial guidelines²⁶ (see Chapter 2.3.3).

The open potable water supply catchment includes an area known as the Moorabool River inner catchment, (within 3 km upstream of the She Oaks Weir river offtake), and a portion of the Upper Stoney Creek Reservoir inner catchment (within 3 km upstream of the reservoirs).

The Moorabool River inner catchment represents the end of the source water catchment, where river water is extracted for treatment at Moorabool Water Treatment Plant. The Upper Stoney Creek Reservoir inner catchment is crown land managed by Barwon Water; however, the Moorabool River inner catchment is primarily freehold land with sparse native vegetation. These areas are considered high-risk for domestic wastewater management.

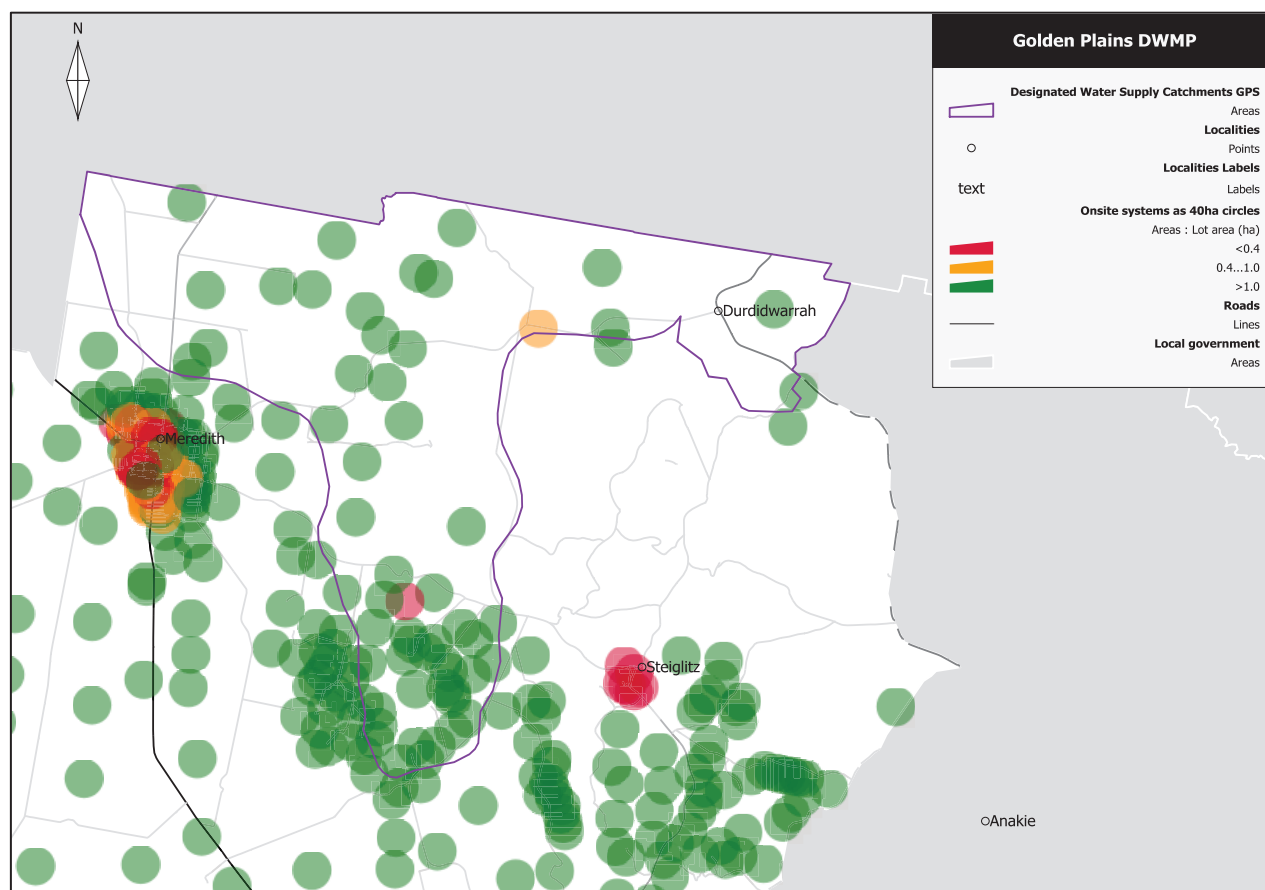


Figure 8-1: Designated open potable water supply catchment (from DWMP 2015)

²⁶ Department of Sustainability and Environment, 2012, Guidelines for planning permit applications in open, potable water supply catchment areas, DSE, Melbourne, Victoria.

8.1 EXISTING OWMS

It is estimated there are around 57 existing houses in the open potable water supply catchment. Around 20-30 of these houses are within the Moorabool River inner catchment (3 km upstream of She Oaks Weir).

Figure 8-1 shows the designated catchment area and existing OWMS as 40 ha circles centred on the parcel centroid. The colour of the circles indicates that all except two of the OWMS in the designated catchment are located on lots greater than 1.0 ha in size. Where the circles overlap this indicates that the density of the existing OWMS is greater than 1 house per 40 ha.

Soil types in the area are generally understood to be medium to low risk, however some slopes above 20% and a small area of high groundwater risk occurs within the catchment²⁷.

In 2022, Barwon Water and Corangamite Catchment Management Authority (CMA) commissioned a pathogen risk assessment on the Moorabool River catchment for drinking water and recreational risks²⁸. At the time of the report, the risk assessment found that the Moorabool River inner catchment water source currently rates as a Category 4 or unprotected catchment indicating that source water was highly vulnerable to pathogen contamination.

The report found that *'the significant number of onsite wastewater treatment systems and a varying level of compliance and inspection program'* contributed to the high vulnerability of the drinking water source to contamination. The report identified the discontinued audit program (which ceased due to changes in the EP Act (Powers of Entry)) to be one of the major challenges preventing a consistent approach to domestic wastewater management which meets the Ministerial guidelines criteria for exemption. Since the pathogen risk assessment report was released, Barwon Water have indicated that they will not provide planning approval to developments under 40 ha unless Golden Plains Shire Council can demonstrate best practice domestic wastewater management is being practiced to reduce the risk of existing OWMS in the inner catchment.

Under this DWMP, Golden Plains Shire Council has strengthened the approach to domestic wastewater management in the open potable water supply catchment.

The re-instated inspection program set out in this DWMP (see Chapter 4.1, Action 2 and Action 5) prioritises inspection of existing OWMS within the potable water supply catchment area. Steps needed to meet Power of Entry requirements have also been clarified in EPA guidelines and this DWMP and additional resourcing will be sought to enable the program to continue.

Alongside other actions in this DWMP, this will ensure that existing OWMS within the potable water supply catchment area are operating in accordance with permit conditions and EPA requirements and not discharging beyond property boundaries or causing public health risks.

8.2 FUTURE OWMS

A key objective of the Ministerial guidelines relevant to future OWMS is that density of dwellings should be no greater than 1 dwelling per 40 ha, and each lot created in a subdivision should be at least 40 ha in area. Any further development within the catchment must also be referred to Barwon Water for approval.

There has been limited in-fill development (subdivision of lots or construction of dwellings) in the catchment since the last DWMP.

²⁷ RMCG, 2015, Technical Report 2 Volume 2: Spatial Risk Assessment. Prepared for Golden Plains Shire Council. Bendigo, Victoria

²⁸ Natural Logic, 2022, Pathogen Risk Assessment on the Moorabool River including drinking water and recreational risks. for Golden Plains Shire Council. Bridgewater, South Australia

Subdivision

The private land in the catchment area is zoned either Farming Zone (FZ) or Rural Conservation Zone (RCZ) Schedule 3, which limit the subdivision to lots of a minimum of 100 ha and 60 ha respectively. So, from a subdivision point of view, Council's planning scheme gives adequate protection to the potable water supply catchment areas.

Dwellings

The planning scheme states for dwellings:

- Must be the only dwelling on the lot, both in the FZ and the RCZ
- If the lot size is below 100 ha in the FZ a planning permit is required for a dwelling and a permit is required for a dwelling regardless of lot size in the RCZ
- The wastewater must be treated and retained on-site in accordance with the State Environment Protection Policy (Waters of Victoria) under the Environment Protection Act 1970. (Both FZ and RCZ.)

This suggests that there is room for new houses in the northern part of the catchment, but not the south because, as shown in Figure 8-1, the density of existing dwellings across most of the southern area of the designated catchment already exceed one house per 40 ha.

All new dwelling proposals in the potable water supply catchment area must be supported by a detailed land capability assessment, which specifically addresses potential impacts on the potable water supply catchment. These land capability assessments will be carefully considered by both planning and environmental health officers.

9 Action plan

9.1 INTRODUCTION

This chapter presents a proposed action plan for implementing the DWMP based on the actions made in previous chapters in this document.

9.2 ACTIONS FROM PREVIOUS DWMP

The 2015 DWMP had a series of actions, which are listed in full in Appendix 2 along with an indication of whether or not the action was implemented and whether or not the action is carried forward into this new plan.

9.3 PROPOSED ACTIONS FOR THIS DWMP

The actions listed throughout the earlier chapters form the action plan. Table 9-1 summarises the actions along with suggestions for budget, responsibility and timelines.

Table 9-1: DWMP 2023 action plan

ACTION	BUDGET	RESP.	PARTNERS	TIMELINE
Action 1 – Draw on the 2015 DWMP spatial risk assessment to guide implementation of the DWMP.	Existing	Sen. EHO		2023
Action 2 – Maintain up to date records in the OWMS database and relevant spatial layers within the council's property mapping system.	Existing	Sen. EHO	IT	2023
Action 3 – Consider additional resources to implement DWMP actions.	Existing	Sen. EHO	Development and Regulatory Services	2023
Action 4 – Maintain regular up to date communication with key internal and external stakeholders according to the guide in Table 3-1.	Existing	Sen. EHO	See Table 3-1	2023
Action 5 – Reinstate an inspection program of existing high-risk OWMS with a target of more than 500 sites inspected over the life of the plan.	Future program	EH team		2023
Action 6 – Use onsite inspections as an opportunity to engage constructively with existing OWMS owners, and to communicate with and educate owners about their OWMS.	Existing	EH team		2023
Action 7 – Prepare a brief annual report of the inspection program and provide to key stakeholders where relevant.	Future program	EH team	Development and Regulatory Services	2024
Action 8 – Ensure DWMP resources provided on the Council website are up to date.	Existing	Sen. EHO	Comms and Engagement, IT	2024

ACTION	BUDGET	RESP.	PARTNERS	TIMELINE
Action 9 – Respond effectively to OWMS complaints or breaches including by following the guidance provided by EPA in Publication 1974 on compliance and enforcement.	Existing	Sen. EHO		2023
Action 10 – Audit OWMS management at Council owned properties in unsewered areas.	Existing	Sen. EHO	Community Places and Environment	2024
Action 11 – Apply the approach minimum lot sizes for subdivisions in unsewered areas as set out in Table 5-1.	Existing	Dev. Mgr	EH and planning	2023
Action 12 – Ensure the development of existing small lots is consistent with the approach set out in Table 5-2.	Existing	Dev. Mgr	EH and Planning	2023
Action 13 – Ensure LCAs are: <ul style="list-style-type: none"> ▪ Undertaken / provided at planning or subdivision application phase in accordance with the Golden Plains Shire Council Planning Scheme requirements (e.g., for subdivisions in the TZ and LDRZ) ▪ Undertaken / provided as part of the OWMS permit application for high-risk properties and including the minimum requirements for LCAs in unsewered areas set out in Table 5-1. 	Existing	Dev. Mgr	EH, Planning, Land Capability assessors	2023
Action 14 – Improve communication about OWMS requirements with prospective buyers, owner-developers or owner-builders, real estate agents and developers during the early stages of developments.	Existing	Dev. Mgr	Comms and Engagement, Planning	2023
Action 15 – Help to facilitate the connection of existing houses to sewer through regular data sharing and communication with water corporations (also see Action 4).	Existing	Sen. EHO	Water Corporations	2024
Action 16 – Avoid new OWMS in sewered areas through good communication with water corporations and land owners (also see Action 4).	Existing	Sen. EHO	Water Corporations	2023
Action 17 – Monitor domestic wastewater management risks at Inverleigh and consider further action where necessary.	Existing	Sen. EHO	Water Corporations	2024
Action 18 – Take steps towards a case for sewerage for Meredith as set out in Table 7-1.	Existing	Dev. Mgr	EH, Planning, Barwon Water	2024

Appendix 1: Inspection Checklist



DOMESTIC WASTEWATER MANAGEMENT PLAN

Appendix 1 – Audit Checklist Page 1 of 3

Property Address:		
Owner's name:		
Owner's phone no.:		
Officer's name:		
System Type (Circle): All Waste Septic Tank Split System Aerated Wastewater Treatment System Sand Filter Other		
Disposal Method (Circle): Absorption Trenches Sub-surface Irrigation Surface Irrigation Other		
Desktop Audit		
Permit no.:	Yes / No / N/A	Comments
Is there an existing permit on file?		
Do the permit/plans comply with current EPA Code of Practice?		
Do the permit/plans comply with DWMP? eg. location to groundwater		
GIS check for LSIO and setbacks to surface water?		
Are there any records for servicing of the system?		
Are there records of complaints regarding the system?		
Site Inspection		
Date & Time:	Yes / No / N/A	Comments
If a permit is available, is the system in compliance with permit conditions?		
Is a site plan is available of the system		
Are there any odours evident?		
ST	Is the tank at ground level and accessible for inspections and maintenance? I/O's, access lids.	
ST	Does the tank appear in good condition? Does it require repair?	
ST	Has the tank been desludged appropriately? Can the owner provide evidence of this?	
ST	How large is the tank? i.e. 1500/1800L or 3000L.	
DB	Are any distribution boxes at ground level and accessible for inspections and maintenance?	
DB	Do the distribution boxes appear in good condition? Do they require repair?	
DB	Is effluent surfacing through the DB above outlet to ST?	
PW	Is the pump well in good condition? Does it require repair?	
PW	Is the pump well fitted with an alarm?	
PW	Is power supply to the pump well connected and turned on?	



DOMESTIC WASTEWATER MANAGEMENT PLAN

Appendix 1 – Audit Checklist Page 2 of 3

ORG	Is an ORG installed?		
ORG	Is there any evidence of effluent surfacing through ORG?		
AT	Is the absorption area wet or ponding effluent?		
AT	Is there any evidence of damage to lines?		
AT	Are there any trees in absorption area that may cause problems with root intrusion?		
AT	Is there any evidence of access from vehicular or livestock traffic?		
AT	Do the absorption lines appear to be installed level (i.e. across the contour)?		
AT	Have any structures been built over or within minimum setbacks to absorption trench area? i.e. sheds, paths, tennis court, piles of dirt, etc.		
SF	Is the sand filter area wet or holding effluent/water?		
AWTS	Is power supply connected and turned on?		
AWTS	Has the system been serviced as required? Have these records been submitted to Council?		
I	Is the irrigation area wet or ponding effluent?		
I	Is there any evidence of damage to lines?		
I	Is there any evidence of unapproved alterations to the irrigation lines?		
I	Is there any evidence of access from vehicular or livestock traffic?		
I	Have any structures been built over or within minimum setbacks to irrigation area? i.e. sheds, paths, tennis court, piles of dirt, etc.		

Notes (Works / Action Required):



DOMESTIC WASTEWATER MANAGEMENT PLAN

Appendix 1 – Audit Checklist Page 3 of 3

Site Sketch – If site plan not located on existing permit or not accurate

Abbreviations

ST = Septic Tank

DB = Distribution Boxes

PW = Pump Wells

ORG = Overflow Relief Gully

AT = Absorption Trenches

SF = Sand Filter

AWTS = Aerated Wastewater Treatment System

I = Irrigation

Appendix 2: Golden Plains DWMP 2015 actions and status

Table A2-1: Indicative status of DWMP 2015 actions as of 2022. Note that the environmental health coordinators provided feedback on the status of actions during the review and update in 2022 and this information has informed the revised DWMP in 2023.

NO.	ACTION (FROM 2015 DWMP)	PROGRESS
1.	Integrate the onsite system database with Council's septic tank and valuations databases and spatial system.	Completed
2.	Focus onsite system audits on high risk systems as identified in the spatial risk assessment (Volume 2).	Partially completed
3.	Source spatial soil layers at better resolution ASRIS, if available, and refine the soil risk rating.	To be completed
4.	Develop category for failed onsite systems within Council's complaints database for better reporting on failed systems.	Completed
5.	Develop an information flyer to distribute to all properties located within the potable water supply catchment area. This flyer will contain general information on wastewater systems and the importance of safe operation within the potable water supply catchment area and further specific details of Council's inspection/audit program of existing systems.	Completed
6.	Gather information regarding location of existing systems in the potable water supply catchment area as part of the audit program. Explore mapping options for these systems on Council's GIS software.	Completed
7.	Audit non-residential onsite systems progressively in line with routine food safety and property maintenance inspection programs.	Partially completed
8.	Encourage comprehensive Land Capability Assessments be prepared prior to the detailed design of Greenfield sub-divisions. The findings from these Land Capability Assessments should inform the number and configuration of proposed lots and the overall development density (average lot size).	Completed
9.	<p>The minimum lot size for sub-division in unsewered areas is 4000m², subject to:</p> <ul style="list-style-type: none"> Maximum of 15% of each lot is to be set aside for land application areas, and House size is limited and water reduction fixtures/fittings used to achieve 750 L/day wastewater generation, and Secondary treatment and drip irrigation with a minimum land application area of 375m² (increasing to a minimum of 420m² where average rainfall exceeds 600mm per annum), and Stormwater cut-off drains upslope of land application area, and Stormwater cut-off drains upslope of land application area, and Soil preparation to provide at least 150mm depth of good quality topsoil (in situ or imported), and Application of gypsum to dispersive, sodic or heavy clay based soils. 	Partially completed
10.	Where there is evidence of more permeable soils – e.g. Soil survey data at an appropriate scale (1:25,000) or a site (or town) specific land capability assessment – restrictions detailed in Action 9 may be varied.	Completed

NO.	ACTION (FROM 2015 DWMP)	PROGRESS
11.	Develop an information prospectus regarding wastewater issues and new dwelling developments in unsewered areas. Provide information brochures to local estate agents, property developers and land capability consultants.	To be completed
12.	Limit new development on existing small lots (<4000m ²) relying on onsite wastewater management to site where: soil analysis provides evidence of higher permeability than clay dominated Category 6 soils, OR wastewater generated can be minimised through construction of a small house, indoor recycling of treated greywater or another alternative approach.	Completed
13.	Allotments created through re-subdivision of township zones or excision of lots in low density residential areas should be a minimum of 4000m ² unless there is potential for development as per Action 10. Care needs to be taken to ensure that both the existing system and any proposed system can each comply with the code and standard within the bounds of the respective new lots.	Partially completed
14.	Develop an engagement and education program for residents of Inverleigh and Meredith to promote best practice onsite wastewater management.	To be completed
15.	Undertake stormwater quality analysis programs in Inverleigh and Meredith to determine whether existing onsite systems are causing pathogen or nutrient pollution.	Completed
16.	Review outcomes of engagement and monitoring in Inverleigh and Meredith in 5 years and determine the need for sewerage and/or stormwater management controls. If required, request Barwon Water to develop sewerage management plans under Section 32 SEPP WOV.	Completed
17.	Integrate the potable water supply catchment area into Council GIS software.	Completed
18.	Identify the number of properties within the potable water supply catchment area that could potentially be sub-divided or developed with additional dwellings.	Completed
19.	Establish MOUs with Barwon Water and with Central Highlands Water that set out the agreed principles for managing existing onsite systems (and avoids any new onsite systems) in sewerage areas.	To be completed
20.	Develop and shared understanding between Council and Central Highlands Water of the plan for extending sewerage throughout the Smythesdale Sewerage District and share this information with owners and prospective owners through brochures and information.	Partially completed
21.	Avoid new onsite systems in sewerage areas through good communication with water authorities and land owners.	Completed
22.	Maintain up-to-date communication with plumbers, treatment plant installers, maintenance contractors, land capability assessors, liquid waste removal contractors etc. to inform on relevant waste management issues.	Completed
23.	Update the Guide for Installation or Alteration of a Septic Tank System to reflect the guidance provided in Volume 2 – Land Capability Assessment Manual.	Completed
24.	Provide an annual report summarising the results of auditing program and monitoring activities and other actions within this DWMP to be distributed to Barwon Water, Central Highlands Water and the Environment Protection Authority.	To be completed

NO.	ACTION (FROM 2015 DWMP)	PROGRESS
25.	Engage an accredited independent auditor to conduct an audit of this DWMP and associated implementation and scheduled actions relating to the Potable Water Supply Catchment Area. Audit report is to be distributed to Barwon Water and the Environment Protection Authority as soon as it is made available.	To be completed
26.	Incorporate actions from this plan into the appropriate planning and environmental health programs funded through normal rate revenue.	Completed
27.	Conduct an internal review of the resources (ie. number, experience and training of staff, effectiveness of the administration systems and workflow processes) used to administer existing and future onsite systems.	Completed

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Document review and authorisation

Project Number: #1770

Doc Version	Final/Draft	Date	Author	Project Director review	BST QA review	Release approved by	Issued to
1.0	Draft	16/02/2023	R. Schwarzman	D. Wallis	J. Longford	D. Wallis	Golden Plains
2.0	Final	15/03/2023	R. Schwarzman	D. Wallis	M. Sandford	D. Wallis	Golden Plains