RMCG

MAY 2025

Onsite wastewater management plan 2025-2030

Melton City Council

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ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Wurundjeri, Wadawurrung and Bunurong peoples as the Traditional Owners of the Country on which this project has been conducted. We recognise their continuing connection to land, waters and culture and pay our respects to their Elders past and present, and we acknowledge emerging leaders. Moreover, we express gratitude for the knowledge and insight that Traditional Owners and other Aboriginal and Torres Strait Islander people contribute to our shared work in Australia.

Glossary

TERM / ABBREVIATION	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
OWMP	Onsite Wastewater Management Plan (formerly known as 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
Land capability assessment	An assessment of the risks of harm to human health and the environment of the proposed or existing OWMS at the site, taking into account the proposed or existing use of the system.
Legacy system	OWMS that were installed before 1996 that do not have a permit, have a permit without adequate maintenance requirements or were approved to discharge domestic wastewater offsite.
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)	An onsite wastewater treatment plant with a design or actual flow rate of sewage not exceeding 5,000 litres on any day and includes all beds, sewers, drains, pipes, fittings, appliances and land used in connection with the treatment plant. 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
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

TERM / ABBREVIATION	DEFINITION
	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
Sewage	See domestic wastewater
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
Wastewater	See domestic wastewater.

1 Introduction

11 PURPOSE OF THIS DOCUMENT

The purpose of this Onsite Wastewater Management Plan (OWMP) is to guide and support the management of onsite wastewater management systems (OWMS) across the Melton City Council Local Government Area (LGA), in a manner that provides a healthy environment, a prosperous economy and a thriving community, now and into the future.

The objectives of the Onsite Wastewater Management Plan are to:

- Identify current and emerging onsite wastewater management issues facing the municipality
- Prioritise the issues and provide management actions to address the issues
- Articulate the public health, wellbeing, environmental and economic benefits of sustainable management of domestic wastewater
- Provide policies to address wastewater management matters and for the management of OWMS within the municipality
- Outline the consultation process undertaken during plan development, and its outcomes.

12 COUNCIL RESPONSIBILITY

This document is designed to satisfy Council's obligation to develop an Onsite Wastewater Management Plan.

Clause 6 Part 3 of the gazetted Obligations of managers of land or infrastructure (OMLI) (Urban stormwater management and On-site wastewater management) dated 7 May 2024 sets out the details. In summary the OWMP should:

- Identify and assess the risks of harm to human health and the environment associated with existing and future OWMS including:
  - cumulative risks of existing OWMS that are discharging, or may discharge, wastewater beyond allotment boundaries;
  - the risks of OWMS that are impacting, or may impact, on groundwater or surface water;
- Identify actions with implementation timeframes to:
  - minimise these risks
  - prevent discharge of wastewater beyond allotment boundaries
  - set out the Council's approach to compliance and enforcement.
- Consult with relevant stakeholders, including the relevant water corporation, about the OWMP and where relevant, costs, timelines and prioritisation of actions proposed for the plan.
- Account for planning in special water supply catchment areas.
- Review and update the OWMP at intervals of no more than 5 years:
- Publish a report on implementation of the OWMP on its website.

Clause 7 of the OMLI provides a mechanism by which Council and the Water Corporation must evaluate options for new sewerage infrastructure if the OWMP "*identifies an action involving a sewage management solution that is not solely an on-site wastewater management system*".

1.3 RISK MANAGEMENT APPROACH

The goal of wastewater management is to protect the natural environment, community health, and social wellbeing against the risks posed by domestic wastewater, while enabling appropriate development.

Wastewater can contain nutrients, pathogens, and other pollutants. If OWMS have deteriorated, are poorly maintained, and/or of insufficient size, this can lead to wastewater discharging offsite and polluting nearby land and waterways.

A risk management framework has been applied to develop this OWMP and is outlined in Chapter 3.

1.4 SCOPE

The focus of this OWMP is all types of OWMS which treat flow rates of up to 5,000 litres per day on any day, including blackwater and/or greywater, generated from domestic (including multi- dwellings) and/or commercial premises.

Under the Environment Protection Regulations 2021, this is a prescribed permission activity A20 (On-site wastewater management systems). It applies to proposed new systems and alterations to existing systems, which includes alterations that increase the system's flow or load, such as a house extension or installation of a spa.

Prescribed permission activity A20 is a permit activity that is administered by the council in whose municipal district the OWMS is located.

OWMS that can treat more than 5,000 litres per day are classified as prescribed permission activity A03 (Sewage treatment) and need an EPA development licence and operating licence (unless an exemption applies). This applies both to proposed new systems and existing systems. Landholders deal directly with EPA Victoria on these larger systems.

The volumetric threshold of 5,000 litres per day relates to the design capacity OR the actual flow rate.

1.5 CONCEPTUAL FRAMEWORK

The matrix presented in Figure 1-1 shows the conceptual framework adopted for this OWMP. Elements of domestic wastewater management fall within one of the four cells of the matrix.

	UNSEWERED LAND	SEWERED (SEWERABLE) LAND
EXISTING SYSTEMS	▪ Develop & maintain information for the purposes of managing existing onsite systems ▪ Monitor & inspect onsite systems & request upgrades where necessary ▪ Achieve ongoing compliance with relevant legislation ▪ Request water authorities to investigate sewer or alternative services in response to high-risk clusters	▪ Facilitate the abandonment of onsite systems by connection of existing houses to sewer whenever possible ▪ Work with water authorities to plan and investigate community sewerage schemes, including alternative services
FUTURE SYSTEMS	▪ Ensure land subdivision creates allotments that can sustain onsite systems ▪ Ensure new onsite systems are installed to comply with best practice requirements ▪ Where increased development density is sought and proposed allotments cannot sustain onsite systems, work with water authorities to investigate sewer or alternative services	▪ Avoid the installation of any new onsite systems in sewered areas ▪ Ensure that new houses connect to sewer at time of construction ▪ Liaise with water authorities to understand sewerage extent and capacity for future development

Figure 1-1: Four-sector approach to Onsite Wastewater Management (RMCG)

1.6 OWMP DEVELOPMENT PROCESS

STAGES

Development of the OWMP commenced in March 2025 and involves the following stages:

- Background research, data gathering and analysis
- Risk analysis and evaluation
- Stakeholder engagement and collaboration
- Preparation of a Draft OWMP (this document)
- Adoption of the OWMP by Council.

STAKEHOLDER ENGAGEMENT

Key stakeholders engaged with the development of the draft OWMP included Council Officers and Greater Western Water.

2 Melton City Council Context

21 THE REGION

Melton City Council (Figure 2-1) is located on the eastern edge of the Victorian Volcanic Plains which covers 10% of the State and has a population of approximately 230,000[1]. It is a key part of Melbourne's western growth corridor and is one of Australia's fastest growing local government areas. The City of Melton consists of 31 suburbs.

Suburbs within the City of Melton are:

- Aintree
- Bonnie Brook
- Brookfield
- Burnside
- Burnside Heights
- Caroline Springs
- Cobblebank
- Deanside
- Diggers Rest
- Exford
- Eynesbury (parts)
- Fieldstone
- Fraser Rise
- Grangefields
- Harkness
- Hillside (parts)
- Kurunjang
- Melton
- Melton South
- Melton West
- Mount Cottrell (parts)
- Parwan (parts)
- Plumpton
- Ravenhall
- Rockbank
- Strathtulloh
- Taylors Hill
- Thornhill Park
- Toolern Vale
- Truganina (parts)

Melton City Council is a heavily urbanised local government area mostly with reticulated sewerage. However, there are also peri-urban and rural areas where existing houses and businesses rely on onsite wastewater management systems.

The City of Melton is located on the eastern edge of the Victorian Volcanic Plains, which supports many species of native flora and fauna and has a number of significant natural sites including volcanic hills such as Mount Cottrell and Mount Kororoit. The Plain is characterised by vast open areas of fertile plain covered with grasslands and grassy woodlands, and small patches of open woodland.

The key drivers of the economy are retail trade, education and training, construction, health care, manufacturing and public administration. The agriculture sector plays a role across the economy although it is not a large employer in the region.

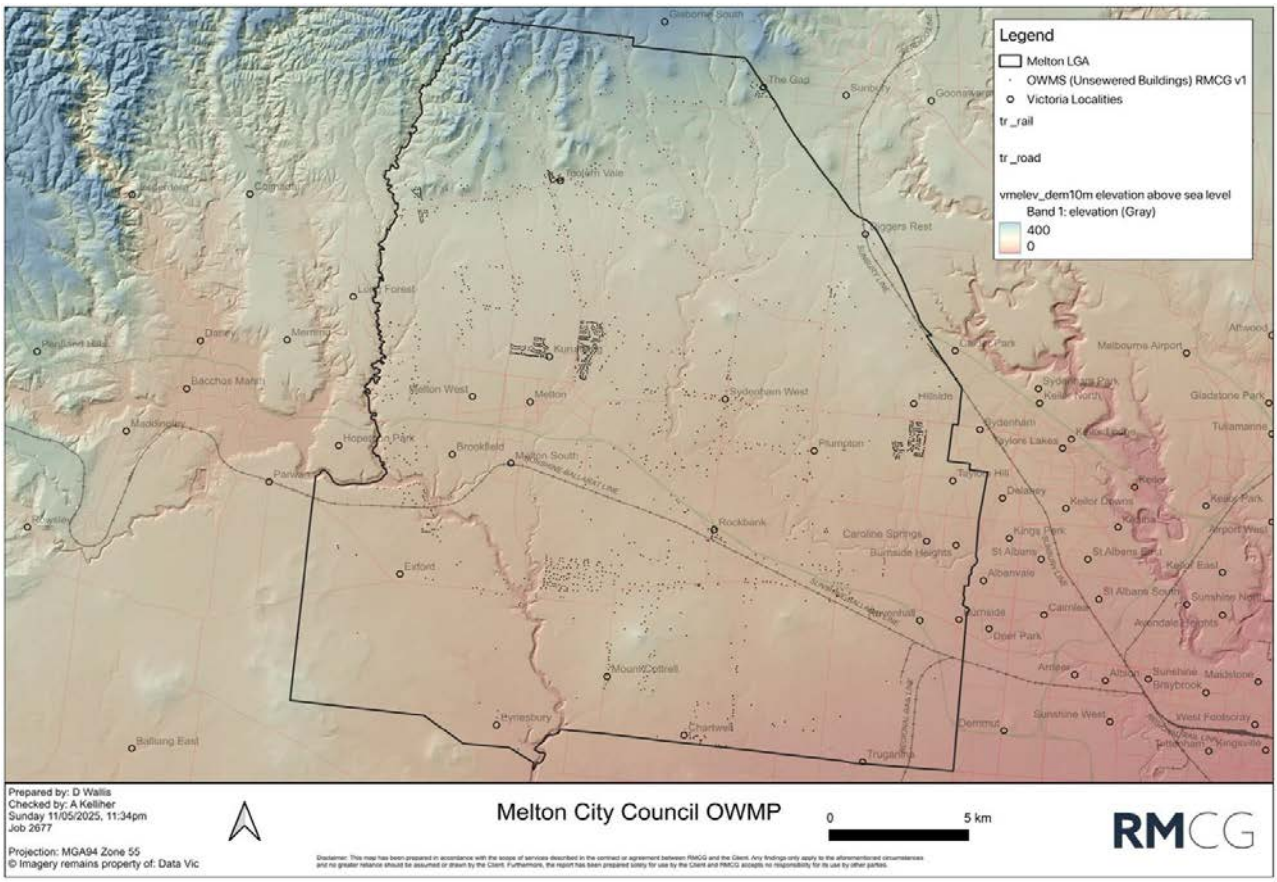

Figure 2-1: Melton City Council area

[1] MCC Annual Report 2023/24

22 CURRENT ONSITE WASTEWATER SITUATION

The Melton City currently has just over 1,600 properties that have been identified as domestic wastewater generators that are not connected to sewer. These properties need to use OWMS.

The key onsite wastewater management issues identified across the City are:

- High density of existing OWMS at Kurunjang, Croxton Drive, Sugar Gum Drive, Strathtulloh and Toolern Vale.
- Urban development that is occurring through the central parts of the City. In these areas a clear process must be in place for transition to sewerage alongside development.
- A Special Water Supply Catchment is located in the northwest corner of the LGA, although most of this area is public land and not available for development.
- Some areas are zoned as urban floodways or have a subject to inundation overlay. These areas are not extensive at an LGA scale.

23 COUNCIL POLICY AND STRATEGIC CONTEXT

OUR COMMUNITY'S VISION

Melton City 2041 – The City We Create is the community's vision for the City of Melton. Five themes frame the priorities that are most important to the community, including a socially connected City, a thriving natural environment, a well-built City, a strong local economy and actively engaged people. (Source: Melton City Community Vision 2041).

COUNCIL PLANNING SCHEME

Planning, and the planning scheme, play an important role in onsite wastewater management. Council has within its control many tools and powers to ensure that development occurs in a manner consistent with the constraints and opportunities provided by onsite wastewater management.

The following extracts from the Melton Planning Scheme illustrate key clauses related to onsite wastewater management and sewerage.

Settlement

- Non-urban land is significant in providing a buffer between Melbourne's urban land and the rural hinterland. These areas play an important role in protecting habitat and preserving the natural landscape character.
- Planning for growth areas seeks to:
  - Ensure PSP areas are not compromised by land fragmentation or land use and development.
  - Provide services and infrastructure to multiple development fronts.
  - Provide physical and community infrastructure in a timely manner through development contributions.

Environmental and landscape values

- Development should minimise its impact on the surrounding rural landscape and on significant landscape features.
- Design and site development to provide a sensitive interface with waterways and landscape and conservation areas.

Managing growth – Sequencing of Development

Objective: To manage the sequence of development in areas of growth so that services are available from early in the life of new communities.

Strategy: Ensure that planning for water supply, sewerage and drainage works receives high priority in early planning for areas of growth.

Integrated water management

Objective: To sustainably manage water supply and demand, water resources, wastewater, drainage and stormwater through an integrated water management approach.

Strategy: Plan and coordinate integrated water management, bringing together stormwater, wastewater, drainage, water supply, water treatment and re-use.

Strategy: Provide for sewerage at the time of subdivision or ensure lots created by the subdivision are capable of adequately treating and retaining all domestic wastewater within the boundaries of each lot.

Zones applicable to OWMS

RURAL ZONES

- Green Wedge Zones (GWZ and GWAZ) provide for non-urban use and create a ring around Melbourne. They provide opportunities for residents to pursue rural lifestyles, often combining farming, equestrian and other rural interests.
- Rural Conservation Zone provides for non-urban uses that are consistent with the conservation of environmental and landscape values of the area.

URBAN GROWTH ZONE:

- Enables urban development to occur once a precinct structure plan (PSP) is in place.
- Non-urban use can continue until development occurs. Where there is no PSP the minimum subdivision lot size is 40 hectares.

LOW DENSITY RESIDENTIAL ZONE:

- Purpose: To provide for low-density residential development on lots which, in the absence of reticulated sewerage, can treat and retain all wastewater
- Subdivision: A permit is required to subdivide land. Each lot must be at least 0.4 hectare where reticulated sewerage is not connected.

NEIGHBOURHOOD RESIDENTIAL ZONE

- Purpose: Recognise areas of predominantly single and double storey residential development. Manage and ensure that development is responsive to the identified neighbourhood character, heritage, environmental or landscape characteristics.
- Subdivision: A permit is required to subdivide land. Schedule 2 which applies to Kurunjang Ranches Estate specifies a minimum subdivision lot size of 0.4 hectare where reticulated sewerage is not connected. Schedule 1 does not specify a minimum.

2.4 ENVIRONMENTAL PROTECTION LEGISLATION

Since 2017 changes have been made to Victoria's environmental laws to strengthen and clarify the onsite wastewater management obligations for landowners and Councils.

The amended Environment Protection Act 2017 came into effect in Victoria on 1 July 2021. These environment protection laws, and supporting regulations, focus on preventing waste and pollution impacts, rather than managing impacts after they have occurred.

The **general environmental duty (GED)** is a centrepiece of the new laws and regulations. It applies to all Victorians. If you conduct activities that pose a risk to human health and the environment, you must understand those risks. You must also take reasonably practicable steps to eliminate or minimise them. Onsite wastewater management systems can be a risk to human health and the environment if they are poorly installed or maintained.

The GED is underpinned by the Environment Protection Regulations 2021 which set out duties and obligations for persons in management or control of land where an onsite wastewater management system is located. These include requirements for the landholder or land manager to:

- Take all reasonable steps to operate the system so it does not pose a risk to human health or the environment
- Take all reasonable steps to maintain the system in good working order (for residential properties, this applies to the owner but not to a renter)
- Check for signs the system may be failing or is not in good working order and notify council if this is the case
- Respond to system failures
- Provide information to occupiers regarding the correct operation and maintenance of the system
- Keep maintenance records and, on request, provide them to council.

OWMS are a prescribed permission activity under the new environment protection regulations:

- A permit from the local Council is required to construct, install or alter an onsite wastewater management system with flow rates of up to 5,000 litres per day on any day. Under the regulations this is prescribed permission activity A20 (as set out in item 28 in the Table in Schedule 1 of the regulations). It applies to proposed new systems and alterations to existing systems, which includes alterations that increase the system's flow or load, such as a house extension or installation of a spa.
- Onsite wastewater management systems that can treat more than 5,000 litres per day are classified as prescribed permission activity A03 (Sewage treatment) and need an EPA development licence and operating licence (unless an exemption applies). This applies to both proposed new systems and existing systems.

Councils can refuse a permit if the OWMS doesn't meet EPA regulations or guidelines.

The Regulations also set offences and allow councils to order system maintenance and enforce breaches of duties.

These Regulations apply to all existing OWMS, including older systems installed before installation permits were introduced. People may still operate old systems, but they must take all reasonable steps to ensure the system is maintained in good working order and operated so as not to pose a risk to human health or the environment.

As discussed in Section 1.2, the OMLI adopted in May 2024 confirms Council's obligation to prepare an OWMP and provides a clear mechanism for sewerage planning.

GUIDELINES FOR OWMS

There are many relevant resources, but the key best practice guides relevant are:

- Guidelines for onsite wastewater management, EPA 2024
- Guidelines for effluent dispersal and recycling systems, EPA 2024
- AS/NZS 1547:2012 On-site domestic wastewater management, Australian/New Zealand Standard
- Victorian Land Capability Assessment Framework, Municipal Association of Victoria, January 2014.

3 Risk assessment

3.1 RISK FRAMEWORK

"Risk is the effect of uncertainty on objectives"[2]. In other words, risk arises where there is uncertainty about achieving an objective. Risk management assists in making informed decisions and setting strategy in the face of uncertainty. This section provides a risk assessment approach that is informed by the Australian Standards (AS/NZS ISO 31000:2018) and the Victorian Government Risk Management Framework Practice Guide (VMIA, 2016).

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 with human pathogens
- The environment – via pollution of surface waters and groundwater, with nutrients, pathogens and other pollutants, which can cause harm to aquatic fauna and indigenous vegetation
- Amenity – including offensive odours and unsightly discharges leading to reduced amenity and potentially impact on property values.

In relation to onsite wastewater management, these impacts can occur due to runoff or leaching of poorly treated or excess wastewater. This is more likely when OWMS have deteriorated, are poorly maintained, are not fit for purpose (e.g. inadequately sized), and/or are not properly located.

There can be uncertainty as to the extent of the impact occurring, particularly when considering the cumulative impact across a town or the City as a whole. As such, there is a need to take a risk management approach in determining the actions Council should take to improve wastewater management.

Once the level of risk has been determined, priority risks should be dealt with first. That is, the higher the risk the higher the priority. Also, risk is dynamic and therefore managing risk is iterative. This risk assessment and the selected risk treatments (actions) will need to be monitored and reviewed on a regular basis.

The risk assessment considers established practices at Melton City Council. As such, the assessment is of residual risk.

3.2 NON-SPATIAL RISK ASSESSMENT

This section describes non-spatial risks. The risk assessment included engagement with Council staff, and Greater Western Water[3].

An overview of risk is provided below (Figure 3-1). Appendix 1 provides risk assessment matrices that give likelihood, consequence and risk definitions.

[2] Australian Standard AS/NZS ISO 31000:2018 Risk Management – Guidelines
[3] Remains in progress

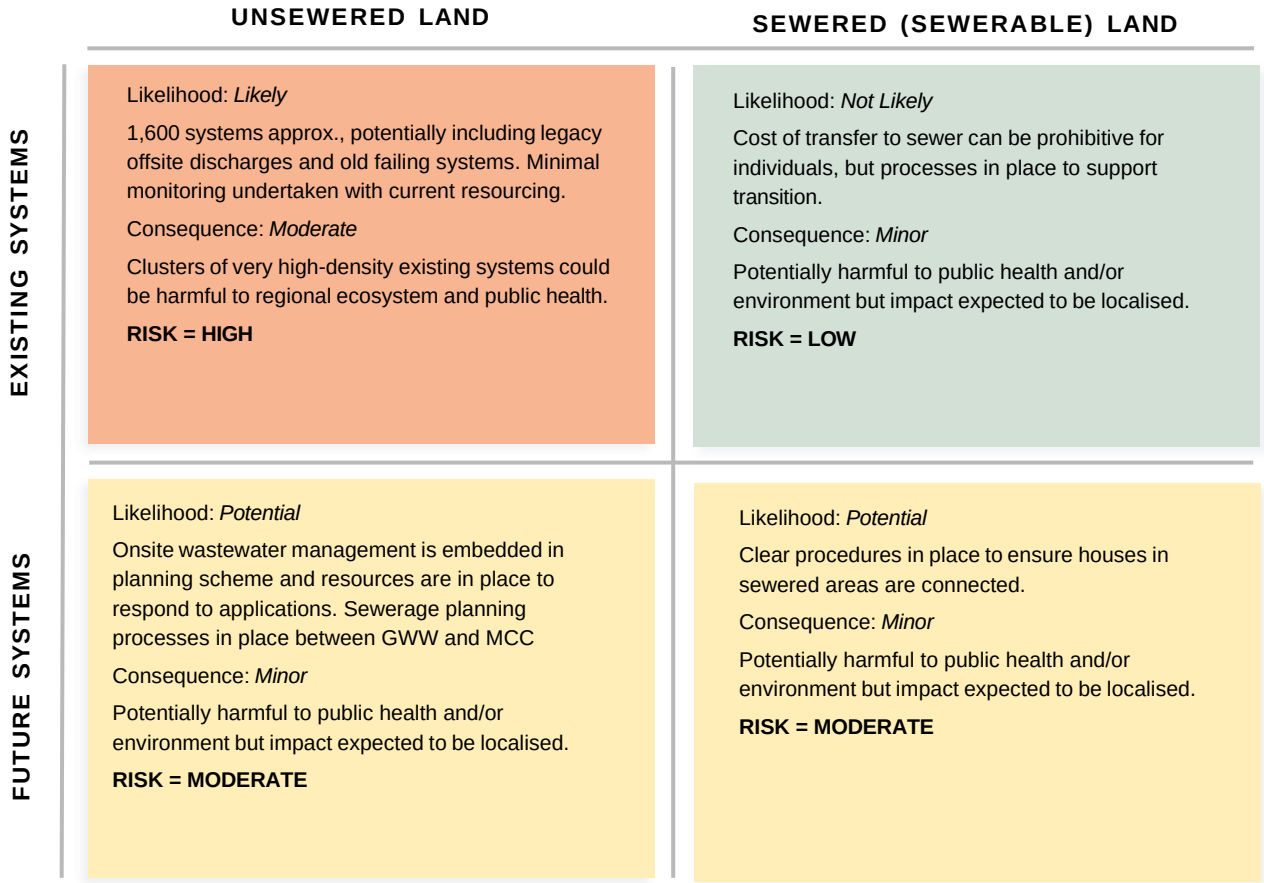

Figure 3-1: Onsite wastewater non-spatial risk summary

3.3 SPATIAL RISK ASSESSMENT

Many of the risks associated with onsite wastewater management vary spatially. This is of importance when investigating the cumulative risk associated with OWMS. Therefore, a spatial risk assessment has been undertaken. This is a mapping exercise that combines various types of geographic information. Risk factors include density of OWMS, planning zones and potential for development, topography, soil type and proximity to sensitive waterway and groundwater systems.

The spatial risk assessment was tailored to suit the City of Melton. The spatial risk report is provided in Appendix 2. It draws on recent approaches used by other councils in Victoria, and particularly the Edis Method that was developed for Mansfield Shire in 2014.

The risk assessment considers multiple risk factors to form an overall risk rating. The risk mapping can be used for the purposes of:

- Prioritising sites to be audited/monitored under an inspection program
- Understanding constraints on future development and the level of assessment required to ensure sustainable OWMS are installed
- Streamlining requirements for low-risk areas to reduce red tape and cost
- Understanding the need for and potential benefit of future sewerage connections or alternative services.

Conclusions drawn from the spatial risk assessment include:

- Density of onsite systems – there are multiple clusters of high and very high density OWMS across the LGA. These localities are considered high risk and include Kurunjang, Croxton Drive, Sugar Gum Drive, Strathtulloh and Toolern Vale.

- Urban growth zone – urban development is occurring through the central parts of the City. In these areas a clear process must be in place for transition to sewerage and clear lines of communication outlined between the MCC Planning and Environmental Health teams and GWW.
- Special Water Supply Catchment – located in the northwest corner of the LGA. Most of this area is public land and not available for development. There are a few OWMS on the eastern edge. Planning provisions for this area limit further development.
- Flooding - some areas are zoned as urban floodways or have a subject to inundation overlay. These areas are not extensive at an LGA scale. Development of OWMS in these areas is currently limited and planning controls are in place to ensure this remains the case
- Topography, groundwater and soil type – there is low to moderate risk associated with these factors.
- Lot sizes - most existing OWMS are on lots greater than 4000 m2.

The findings from the spatial risk assessment have been used to inform the Action Plan within this document.

4 Management Issues

4.1 CUMULATIVE IMPACTS OF OWMS

The spatial risk assessment considered many risk factors but the key one that drives cumulative risk and can be used to focus management action is density.

The City does not hold records the location of OWMS nor which properties have OWMS. For this study RMCG digitised the locations of onsite systems using detailed aerial imagery and maps of sewer systems. From this the density of onsite systems was able to be calculated.

Currently Council's Onsite Wastewater Management System database consists of 989 systems, leaving a gap of 611 units.

Figure 4-1 shows a map of the LGA illustrating the areas where the density of systems is greater than 20 systems per square kilometre. This indicates 7 clusters of OWMS at moderate (orange), high (red) and very high (purple) density. More detailed town-by-town maps are available in the Spatial Risk Assessment Report (Appendix 2).

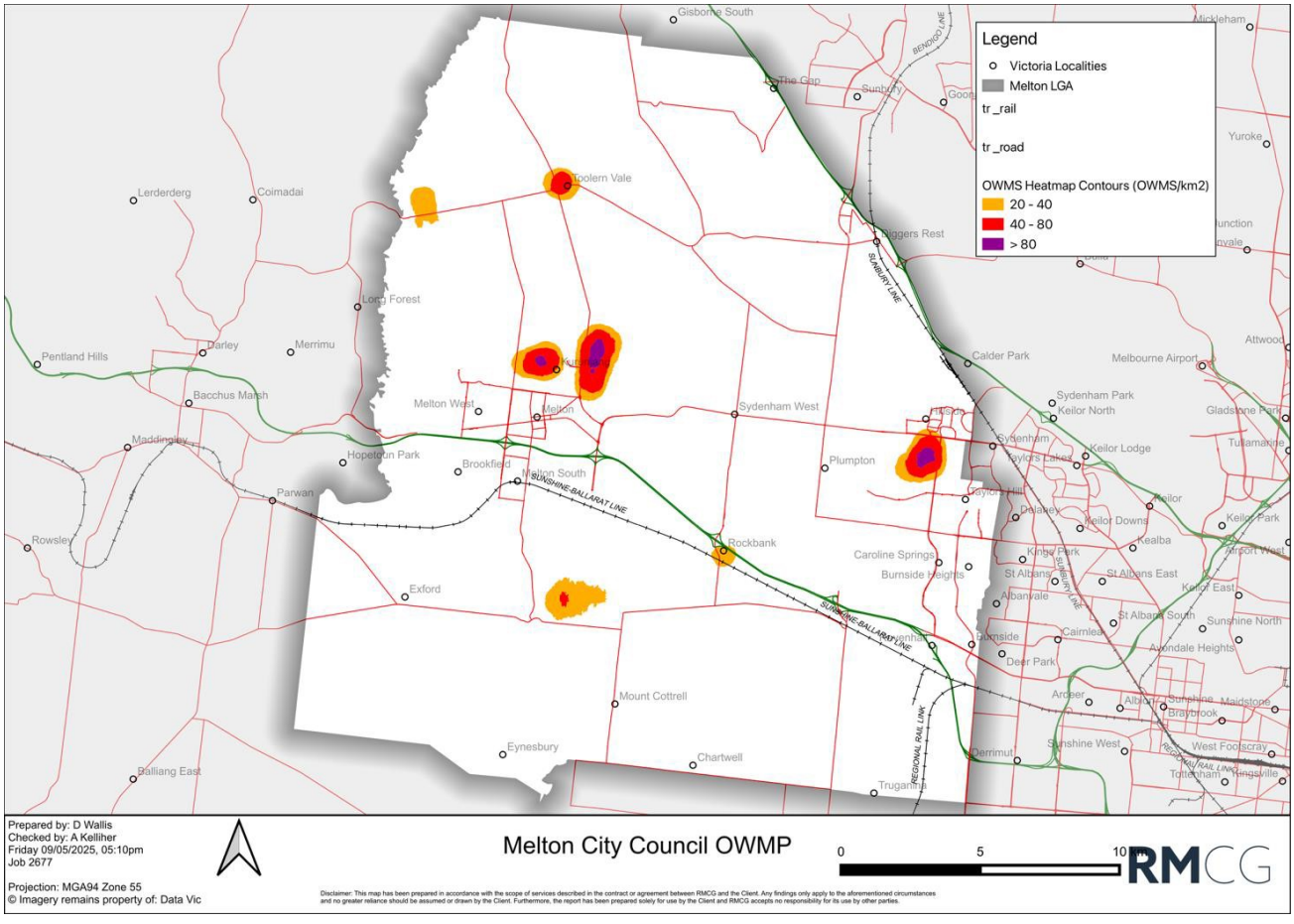

Figure 4-1: Map showing density of onsite wastewater systems

Action 1: Review and improve the OWMS database used within Council for identification and management of all existing systems – identify the additional 611 units and update the OWMS database.
Action 2: Review and refine the onsite wastewater management risk assessment every five years (as part of OWMP review), to incorporate improved datasets and changing circumstances

4.2 SEWERAGE PLANNING

The City of Melton is a key part of Melbourne's western growth corridor and is one of Australia's fastest growing LGAs. Urban development is mainly occurring through the central parts of the City.

Greater Western Water (GWW) provides sewerage services across the urbanised sections of the LGA. Predominantly these are gravity sewerage collection systems, with sewage pump stations and rising mains to convey sewage to treatment plants.

Most of the sewage collected from the urban areas ends up at GWW's Surbiton Park Wastewater Treatment Plant located near Eynesbury, where much of the treated effluent is treated and reused for irrigation. The balance of the sewage (from the eastern part of the City), gravitates to Melbourne Water's Werribee Treatment Plant.

In the urban growth areas a clear process must be in place for transition to sewerage and clear lines of communication outlined between the MCC Planning and Environmental Health teams and GWW.

There are three intense clusters of OWMS that are surrounded by or in close proximity to reticulated sewerage infrastructure – at Kurunjang, Croxton Drive and Sugar Gum Drive. Further discussions are proposed with GWW to understand the potential for infrastructure expansion at these locations.

Action 3: Review (with key stakeholders) the process/procedures for transition to sewerage within urban growth areas and ensure this receives high priority in early planning.
Action 4: Engage with GWW on the potential for extension of sewerage infrastructure to the high risk areas of Kurunjang, Croxton Drive and Sugar Gum Drive.

4.3 PERFORMANCE OF EXISTING OWMS

Approximately 1,600 sites in Melton City rely on OWMS. Some of the issues potentially associated with these systems include:

- Ageing septic tanks
- Inadequate onsite disposal areas
- Lack of system maintenance
- Discharge of wastewater offsite, including into drains, creeks and rivers.

At present non-compliances are dealt with in response to complaints, or when there is a major onsite change (such as a house extension) that requires a planning and/or a building permit.

Inspection of a sample of OWMS is recommended to confirm whether the existing systems are performing well or not. There will be a cost, but inspections will generate facts that will help Council to more accurately assess the risks posed by the existing OWMS and sensibly plan for their ongoing management. Inspections can also have flow-on benefits through awareness raising in the wider community.

Based on the results from the Spatial Risk Assessment, the following locations (in approximate priority order) are recommended as the focus for the inspection program due to density of existing systems, combined with other risks such as proximity to waterways:

- Croxton Drive
- Sugar Gum Drive
- Kurunjang
- Toolern Vale
- Strathtulloh
- Rockbank

- Hjorths Road.

Inspection protocols developed by other Councils and the inspection form in the Australian Standards (AS 1547, Appendix U) can be used as the basis of a checklist.

In relation to site access, Council authorised officers[4] have powers of entry under the Environment Protection Act 2017. However, for residential premises, entry for inspections can only occur:

- With the consent of the occupier
- If the authorised officer reasonably believes that a person has contravened, is contravening or is about to contravene a provision of the Act or Regulations; or
- If the authorised officer reasonably believes there is an immediate risk of material harm to human health or the environment.

If one of the last two points applies, the authorised officer can only investigate the part of the residential premises necessary to determine the suspected contravention. For example, this may only require the authorised officer to enter the land surrounding a house to inspect the system.

Action 5: Design and implement a dedicated program of inspections, targeting 20 OWMS in high-risk areas each year.
Action 6: Use compliance and enforcement tools as appropriate to respond to inspection findings and record in the OWMS database.

4.4 LAND CAPABILITY ASSESSMENTS

Council can require land capability assessments (LCAs) to support applications for new OWMS. An LCA is a report that assesses the viability of onsite wastewater management on a site where there is no reticulated sewerage. Further guidance on LCA requirements is provided by the EPA and MAV[5].

To reduce the financial cost to landowners and the administrative workload on Council, it is recommended that the spatial risk assessment developed alongside this OWMP be used to guide the level of complexity of the LCA, as illustrated in Table 4-1. All applications for new OWMS will still need to be accompanied by an LCA. However, standard proposals in lower risk areas need not have the same level of detail as higher risk proposals.

The risk definitions used in Table 4-1 employ OWMS density, proximity to sewerage and lot size as the three main drivers of risk for domestic onsite wastewater systems. All commercial developments will continue to require a full LCA.

Table 4-1: Land Capability Assessment Requirements and Referrals

RISK	RISK DEFINITION	LCA REQUIREMENTS	CONDITIONS
Low	All sites not considered moderate or high risk as per definitions below.	Description of proposed onsite treatment, land application and management strategies, including design maximum peak daily hydraulic flow and organic load. Plan of proposed OWMS, (including location of reserve land application area where	Landowners must comply with conditions on permits granted by Council.

[4] Council employees appointed as authorised officers under section 242(2) of the Environment Protection Act 2017.
[5] The Victorian Land Capability Assessment Framework (2nd Edition 2014), Municipal Association of Victoria (MAV), Department of Environment and Primary Industries (DEPI) and Environment Protection Authority Victoria (EPA) 2nd Edition 2014 (or as amended).

RISK	RISK DEFINITION	LCA REQUIREMENTS	CONDITIONS
		absorption/transpiration trenches/beds are proposed). Confirmation that setback distances meet requirements in EPA Guidelines.	
Moderate	Site is between 4,000m^2 and 10,000m^2. OR Site is mapped as Medium risk for OWMS density.	As above, plus: Soil profiling and texture assessment in line with site-and-soil evaluation procedures detailed in AS/NZS 1547:2012.	As above, plus: Secondary wastewater treatment standard preferred where there is high risk to water environments.
High	Site is smaller than 4,000m^2 OR Site is mapped as High or Very high or Extreme risk for OWMS density. OR Site is inside or within 250 m of a GWW sewerage district. OR A commercial development is proposed.	As above, plus: Full feature survey of the site. Detailed soil analysis, including in-situ permeability testing. Water and nutrient balance calculations.	As above, plus: Council will prioritise inspection and monitoring of high-risk areas to ensure routine maintenance is undertaken by landowners into the future.

Action 7: Implement a risk-based approach to guide the level of detail provided in land capability assessments.

45 TRAINING AND DEVELOPMENT

Training and information for land capability assessors and Council EHOs should result in better assessments, savings to homeowners and efficiencies for Council. All land capability assessors should hold the necessary qualifications, experience, professional membership, professional indemnity, and independence.

Training and development opportunities available for land capability assessors and Council EHOs include being active in the Environmental Health Professionals Association (EHPA), attending relevant forums and sharing resources and experiences with neighbouring local government areas. The EHPA North and West Metro Community of Practice[6] is a potentially useful regional forum.

Action 8: Work with the EHPA North and West Metro Community of Practice to establish an annual meeting with local/regional land capability assessors to discuss local issues and to share knowledge.

46 SMALL UNSEWERED LOTS

Spatial analysis included consideration of the number of existing lots across the City that are smaller than 4,000 m2 and do not have access to reticulated sewerage. OWMS on these small lots can be difficult to achieve sustainably. Dwelling size may be constrained on small lots as the EPA regulations use number of bedrooms as a measure of occupancy and therefore daily wastewater production rate.

Where there are multiple neighbouring small lots, consideration could be given to amalgamation, or where there is desire for development, sewerage services could be considered (in consultation with Greater Western Water).

[6] https://www.ehpa.org.au/EHPA-Groups/

There are relatively few small unsewered lots across the City. The key locations identified in the mapping aligned with locations identified as high density – see Section 4.1 – including Toolern Vale and Hjorths Road.

Section 32 Vendor Statements must disclose that a property is not connected to mains sewerage. Council could also provide information on its website targeted to new buyers and send information on onsite wastewater management to new owners of properties in unsewered areas.

47 DRINKING WATER CATCHMENTS

A Special Water Supply Catchment area (Djerriwarrh) is located in the northwest corner of the LGA. Special planning provisions[7] apply to this area. Runoff from this catchment area feeds raw water into reservoirs that is treated by Greater Western Water and supplied as potable drinking water in the area.

Most of this area is public land and not available for development. There are a few OWMS on the eastern edge. Planning provisions for this area limit further development (non-public land is zoned RCZ with a minimum lot size of 40 ha).

48 EXISTING OWMS IN SEWERED AREAS

There are very few existing OWMS within the sewered areas.

Houses in sewered areas that rely on OWMS should migrate to sewer whenever practical. Upgrades to OWMS should be actively discouraged by not issuing permits for OWMS and transferring applicants to Greater Western Water for provision of sewerage connection.

Where OWMS in sewered areas comply with EPA regulations, the urgency is not so great. These systems can be progressively resolved by opportunistic connection aligned with sewer connections to neighbouring properties.

Premises with failed OWMS in sewered areas (found through inspection or complaint) should be connected to sewerage as a priority. EPA regulations provide a framework and agency powers for this connection process.

49 COMMUNITY EDUCATION

Melton City Council's website provides basic information on OWMS under the title Wastewater-treatment-system. This is within the Regulations section of the website under the permits and forms tab. The information requires review and update.

DEECA[8] and EPA[9] provide a range of education and information material to help residents manage their OWMS, including a focus on the new EPA regulations, the General Environmental Duty, water conservation, use of cleaning products that are suited to onsite treatment systems, avoiding food waste, oils and fats going down the kitchen sink, encouraging regular maintenance of OWMS as appropriate to the type of system installed, protection of effluent disposal/irrigation areas from inappropriate development (e.g. driveways, sheds) and diversion of stormwater around the area.

Action 9: Keep Council's website up to date and expand links to other OWMS resources such as DEECA and EPA web pages.

[7] https://www.water.vic.gov.au/catchments/special-water-supply-catchment-areas
[8] https://www.water.vic.gov.au/our-programs/managing-onsite-wastewater-systems
[9] https://www.epa.vic.gov.au/for-community/environmental-information/water/about-wastewater/how-to-manage-your-own-septic-system

5 Implementing the OWMP

Melton City Council has a statutory obligation to oversee the management of the OWMS in its local government area. Adopting this OWMP will demonstrate that commitment to the community and stakeholders.

5.1 RESOURCING

Melton City Council is committed to implementing the actions identified in this OWMP and recognises that resources are required. Many OWMP actions reinforce current practices or enhance existing systems and can be achieved within existing budgets by existing staff. Some actions, however, will require additional resources if they are to be implemented effectively.

Experience from other Councils indicates that approximately 2 – 3 days per week support will be needed over and above the normal environmental health functions. The estimated cost for this is $100,000 per year.

Action 10: Investigate additional EHO resources to implement the actions in the OWMP (0.5 FTE for 2026/27 budget).

The monitoring and compliance inspections targeting 20 OWMS, are expected to cost approximately $5,000 per year, based on other Councils' experience of approximately $250 per site inspection plus administrative costs. There will also need to be an allocation of resources for enforcement of the compliance actions identified as these will need to be followed up. A further $5,000 per year is proposed for this function. These aspects could be covered by the additional EHO resources outlined above.

Other Councils in Victoria and the MAV have explored options for raising additional funds to cover OWMS management resourcing through, for example, a levy or special rate on properties with OWMS, or regular renewal of permits with associated application fees. However, due to State Government rate capping and fee limitations in the Environmental Protection Regulations, these options are currently not available.

5.2 MONITORING AND EVALUATION

Council recognises the importance of monitoring and evaluating this OWMP for continuous improvement. Periodic review and improvement of this OWMP, will be undertaken including:

- Review of the action plan every two-years and reporting to Council and stakeholders on progress, including results of the inspection and monitoring program
- Based on the two-year review, determine priorities for implementation and recommend to Council for consideration via the regular budget process
- Refine the spatial risk assessment as necessary if better resolution datasets become available or other risk factors come to light
- A full review of the OWMP (including independent audit) five years after its adoption by Council. Council will report back to the community on the implementation of the OWMP.

Action 11: Undertake an internal review of the OWMP action plan and report to Council and stakeholders on progress, two years after its adoption by Council.
Action 12: Undertake a full review of this OWMP, including the spatial risk assessment, five years after its adoption by Council.

6 Action Plan

Table 6-1: Melton City OWMP Action Plan

	ACTION	PRIORITY	COST	TIMING
1	Review and improve the OWMS database used within Council for identification and management of all existing systems	High	$40,000 included in 2025/26 operating budget. (Ongoing maintenance may be required in 2026/27)	2025/26
2	Review and refine the onsite wastewater management risk assessment every five years (as part of OWMP review), to incorporate improved datasets and changing circumstances	Medium	--	2030
3	Review (with key stakeholders) the process/procedures for transition to sewerage within urban growth areas and ensure this receives high priority in early planning.	High	Within current budget	2026
4	Engage with GWW on the potential for extension of sewerage infrastructure to the high-risk areas of Kurunjang, Croxton Drive and Sugar Gum Drive.	High	Within current budget	2025
5	Design and implement a dedicated program of inspections, targeting twenty OWMS in high-risk areas each year.	High	Using additional EHO resources (see Action 10).	2027
6	Use compliance and enforcement tools as appropriate to respond to inspection findings and record in the OWMS database.	High	Using additional EHO resources.	Ongoing
7	Implement a risk-based approach to guide the level of detail provided in land capability assessments.	Moderate	Using additional EHO resources	2027
8	Work with the EHPA North and West Metro Community of Practice to establish an annual meeting with local/regional land capability assessors to discuss local issues and to share knowledge.	Moderate	Within current budget	Ongoing
9	Keep Council's website up to date and expand links to other OWMS resources such as DEECA and EPA web pages	Moderate	Within current budget	Ongoing
10	Investigate additional EHO resources to implement the actions in the OWMP (0.5 FTE for 2026/27 budget).	High	If implemented: $100,000/y	2026
11	Undertake an internal review of the OWMP action plan and report to Council and stakeholders on progress, two years after its adoption by Council.	High	Using additional EHO resources	2027
12	Undertake a full review of this OWMP, including the spatial risk assessment, five years after its adoption by Council.	High	--	2030

Appendix 1: Risk assessment matrices

Table A1-1: Likelihood Ratings

INDICATOR	DESCRIPTION
Almost certain	Is expected to occur almost all of the time
Likely	Is expected to occur most of the time
Potential	Might occur
Not Likely	Might occur but not expected to
Rare	Only expected to occur under atypical conditions

Table A1-2: Consequence Ratings

DESCRIPTOR	DETAIL
Severe	Health – Major impact for large population
	Environment – Potentially lethal to regional ecosystem Widespread on-site and off-site impacts
	Economic – Immense financial loss
Significant	Health – Major impact for small population
	Environment – Potentially lethal to ecosystem. Predominantly local but potential for some off-site impacts
	Economic – Major financial loss
Moderate	Health – Minor impact for large population
	Environment – Potentially harmful to regional ecosystem with local impacts primarily contained to on-site
	Economic – Large financial loss
Minor	Health – Minor impact for small population
	Environment – Potentially harmful to local ecosystem with local impacts contained to on-site
	Economic – Small financial loss
Negligible	Insignificant impact or not detectable

Table A1-3: Risk Matrix

LIKELIHOOD	CONSEQUENCE				
	SEVERE	SIGNIFICANT	MODERATE	MINOR	NEGLIGIBLE
Almost certain	High	High	High	Moderate	Low
Likely	High	High	High	Moderate	Low
Potential	High	High	Moderate	Moderate	Low
Not likely	High	Moderate	Moderate	Low	Low
Rare	High	Moderate	Low	Low	Low

Appendix 2: Spatial risk assessment report

RMCG

MAY 2025

Onsite Wastewater Spatial Risk Assessment

Melton City Council

135 Mollison Street, Bendigo Victoria 3550
rmcg.com.au — ABN 73 613 135 247 — RM Consulting Group Pty Ltd
Victoria — Tasmania — NSW

Certified B Corporation

Table of Contents

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Traditional Owners of the Country that we work on throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present, and we acknowledge emerging leaders. Moreover, we express gratitude for the knowledge and insight that Traditional Owners and other Aboriginal and Torres Strait Islander people contribute to our shared work in Australia.

We pay respects to all Aboriginal and Torres Strait Islander communities. We recognise that Australia was founded on the genocide and dispossession of First Nations people and acknowledge that sovereignty was not ceded in this country. We embrace the spirit of reconciliation, working towards self-determination, equity of outcomes, and an equal voice for Australia's First People.

1 Overview

This report presents the method and results of a spatial risk assessment undertaken to inform onsite wastewater management in Melton City Council's (MCC) local government area (LGA).

This spatial risk assessment is designed to inform development of an onsite wastewater management plan (OWMP) for MCC. It is not suitable for use in designing an individual onsite wastewater management system or assessing the risk on a specific property.

Section 2 of this report outlines on the risk assessment method. We have drawn on various spatial data sets to analyse risk to public health and the environment. Underpinning the assessment is a layer that represents the location of each onsite wastewater management system (OWMS) across the LGA. This was developed using recent aerial imagery and sewerage information.

Section 3 presents a risk assessment of city-wide spatial factors, informed by a set of LGA-wide maps designed to illustrate the spatial nature of various factors that affect onsite wastewater management.

Section 4 presents a set of zoomed in maps to enable further analysis of high-risk locations.

Whilst this report can be printed and read as a hardcopy, reading on a computer screen will provide better clarity and image resolution and enable the viewer to zoom in on areas of interest.

2 Spatial risk assessment process

2.1 OVERVIEW

The target of the spatial risk assessment is existing onsite wastewater management systems (OWMS). However, consideration is also given to potential future development.

The spatial risk assessment has been tailored to suit Melton City. It draws on approaches used by other councils including the Mansfield Pilot, DEECA's risk framework, and methods developed by RMCG. In sequence the process followed was:

1. Develop X/Y coordinates of the location of the existing OWMS
2. Obtain relevant background layers (planning zones, topography, hydrology, soils and so on) to overlay on the existing OWMS
3. Develop map atlases showing the base layers and the results. Initially for the whole LGA and then for selected areas where there is a high density of OWMS
4. Analyse maps to determine potential risks to public health and the environment, and how MCC may be able to respond in the OWMP2025
5. Ground truth findings through discussions with MCC and field investigations to confirm assumptions made. Update analysis as required.

Spatial risk assessment is an iterative and ongoing process. Actions are suggested in Chapter 4 aimed at improving Council's information management systems and facilitating improvement of future spatial risk assessments.

2.2 STEP 1 DETAIL

As noted above, Step 1 in the risk assessment process is to develop X/Y coordinates of the existing OWMS. The objective of this step is to identify where across the LGA the houses and other wastewater generators are located.

MCC does not currently maintain a formal GIS spatial layer of points for the OWMS within the LGA. Council's existing table-based "Wastewater Database" is not complete, nor does it contain X/Y coordinates, and so was not used in this analysis.

For this project, we have determined the approximate location of OWMS as follows:

a) Council provided the following spatial layers that were used:
    a. High resolution, recent aerial imagery in GIS format.
    b. Footprints[1] of all buildings across the LGA generated by AI in March 2025
    c. Sewerage infrastructure linework from Greater Western Water.
b) RMCG accessed relevant public layers including planning zones and property boundaries.
c) Using these background layers, RMCG undertook a desktop digitising process (Figure 2-1) and mapped the co-ordinates of every building in the shire likely to generate sewage but not connected to reticulated sewerage. The desktop process identified 1,614 OWMS within the MCC LGA.

Using the X/Y co-ordinates of the OWMS, the reader can interpret the various spatial risk factors against the locations of the OWMS, which allows targeted consideration of the various OWMP issues across the LGA. The X/Y co-ordinates are also used to calculate the density of onsite systems (refer to Section 3.1.2).

[1] AIVectorBuildingFootprints — Vertical_BuildingFootprints_Building_Mar2025.shp

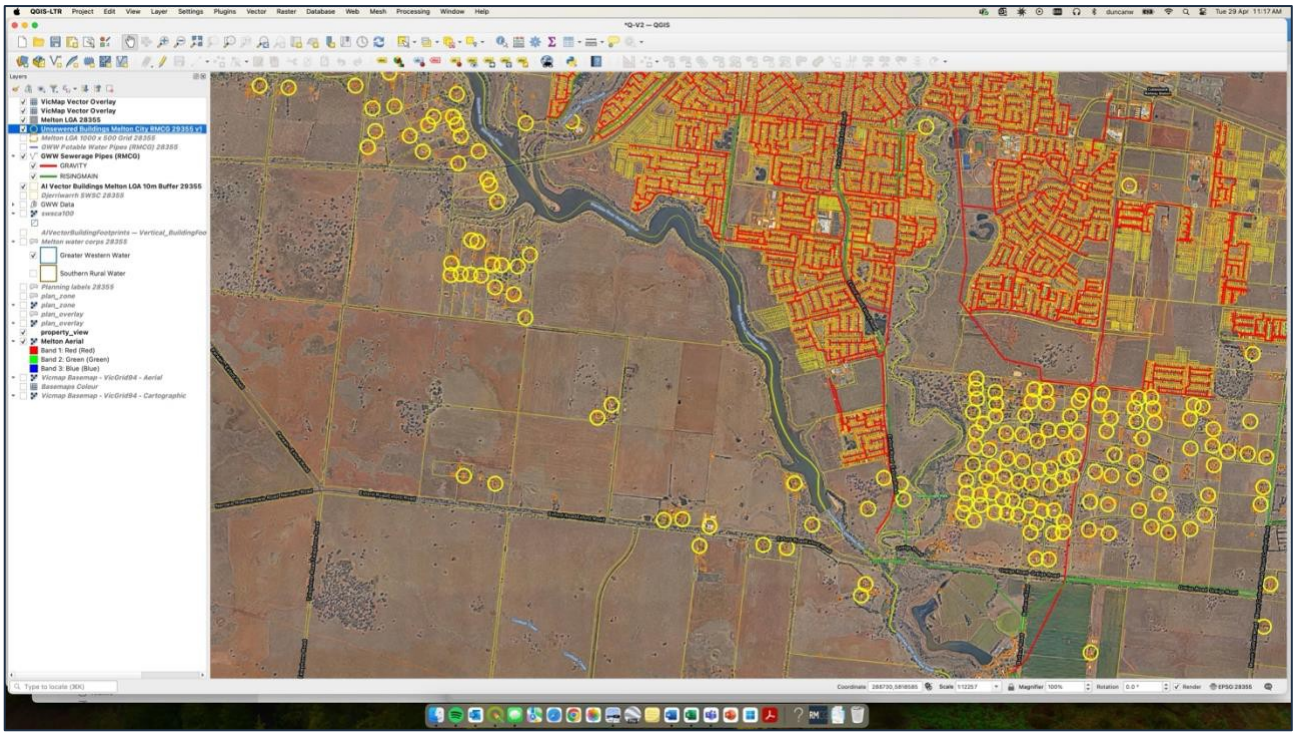

Figure 2-1 Screenshot of GIS showing OWMS digitisation workflow

3 Spatial Risks – City Wide

The various spatial constraints are presented on a series of city-wide maps. Table 3-1 lists the map names each of which is discussed in the following sections.

The LGA-wide maps each have an identical view, so the reader can flick back and forward to compare the data and for orientation. For clarity, locality names are not shown on all maps.

A set of zoomed-in locality maps is also presented (Section 4) for the highest-risk localities.

All maps are available as separate high-resolution files.

Table 3-1: List of city-wide maps

SECTION	NAME
3.1.1	OWMS and Sewerage infrastructure
3.1.2	Density of OWMS
3.1.3	Planning zones
3.1.4	Topography
3.1.5	Soils
3.1.6	Surface Water Hydrology
3.1.7	Groundwater
3.1.8	Property Size
3.1.9	Atlas Key Map for High Density Areas

3.1.1 OWMS AND SEWERAGE INFRASTRUCTURE

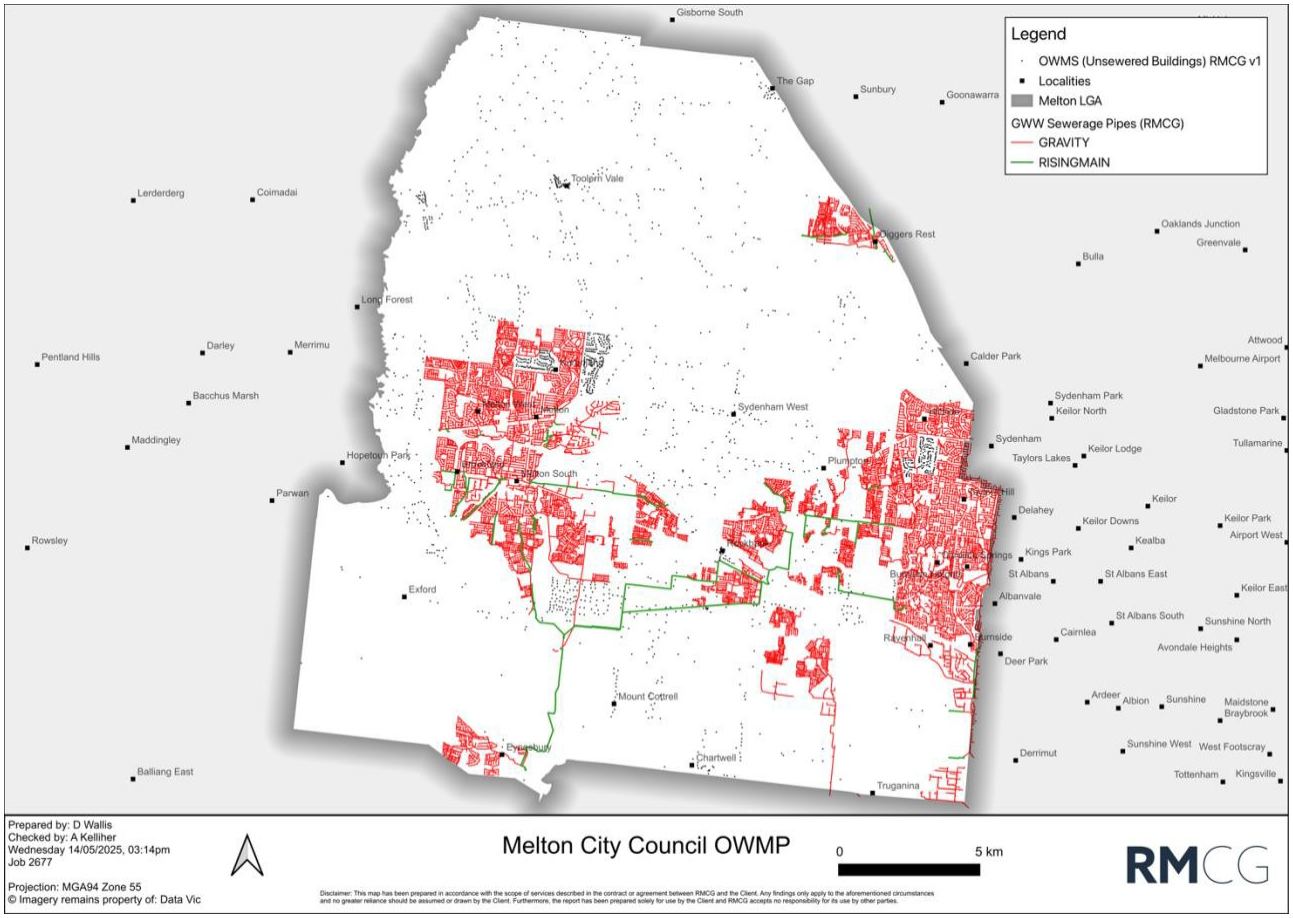

Figure 3-1: OWMS and Sewerage infrastructure

The OWMS are represented as small black dots on the map. These OWMS systems are not connected to the reticulated sewers.

There are 1614 OWMS identified across the LGA and these are located:

- In three intense clusters – two north of Melton and one south of Hillside.
- In rural residential type groupings – e.g. Toolern Vale, The Gap, Rockbank, etc
- Around the fringes of the urban areas
- In isolated rural areas

Greater Western Water (GWW) provides sewerage services across the urbanised sections of the LGA. Predominantly these are gravity sewerage collection systems (red lines on the map), with sewage pump stations and rising mains (green lines on the map) to convey sewage to treatment plants.

Most of the sewage collected from the urban areas ends up at GWW's Surbiton Park Wastewater Treatment Plant located near Eynesbury, where much of the treated effluent is treated and reused for irrigation. The balance of the sewage (from the eastern part of the City), gravitates to Melbourne Water's Werribee Treatment Plant.

The three intense clusters of OWMS are near reticulated sewerage infrastructure. Further discussions are proposed with GWW to understand the process and potential for infrastructure expansion.

3.1.2 DENSITY OF OWMS

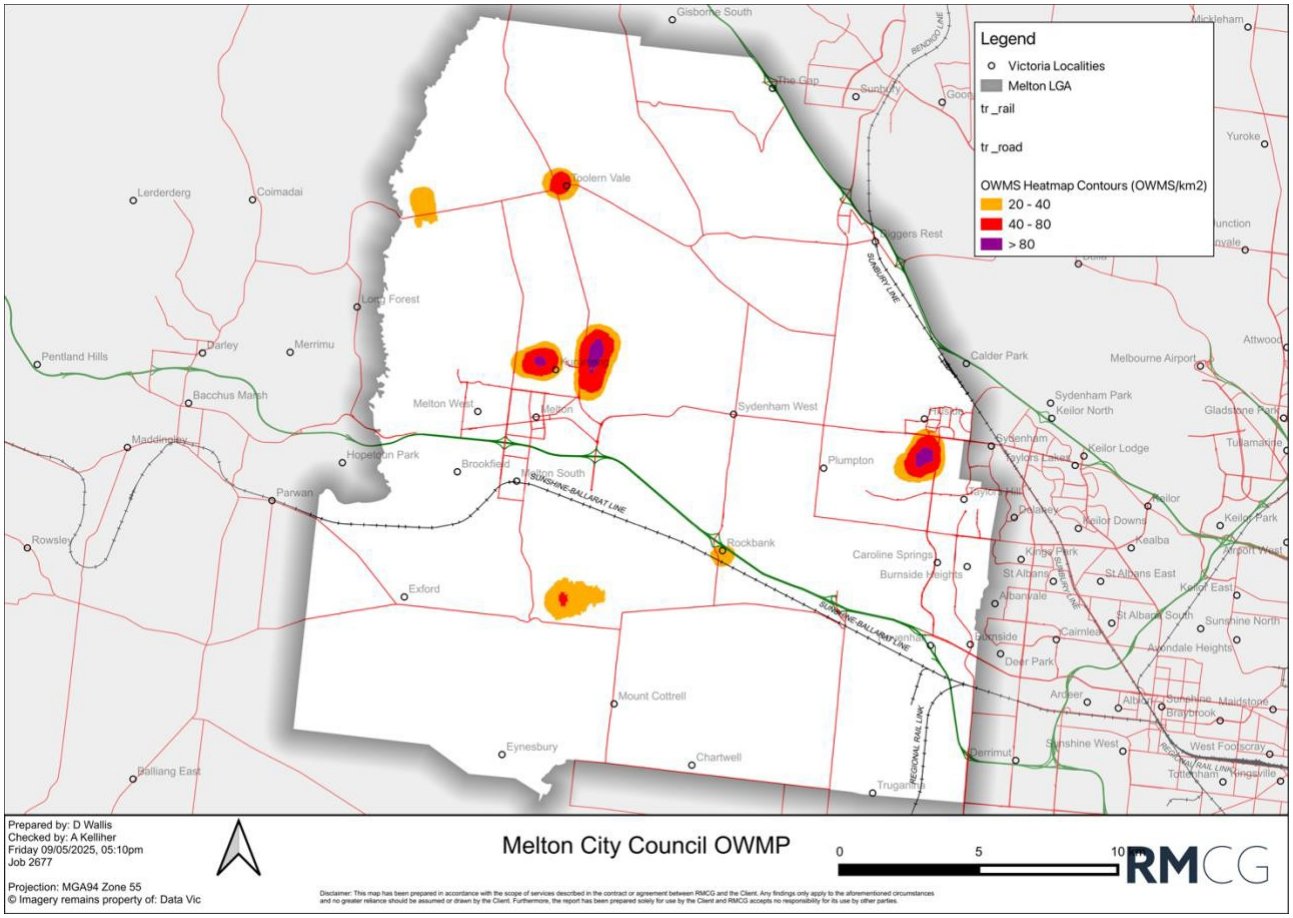

Figure 3-2: Density of OWMS

The cumulative impact of onsite wastewater needs to be considered, and risk increases when the density of onsite systems across the landscape increases. The Mansfield DWMP Pilot adopted a rating scale developed by Edis:

- Less than 20 houses/km^2 is “low” risk
- Between 20 and 40 is “medium” risk
- Greater than 40 houses/km^2 is “high” risk.

The modelled locations of the OWMS allows calculations and other analysis to be done regarding the location of the systems relative to themselves and relative to other spatial constraints. Using the OWMS X/Y coordinates layer developed for this project, densities for each onsite system have been calculated and the heat map above has been prepared. This map shows:

- In three areas (two north of Melton and one south of Hillside - shown purple on the map) the density of OWMS is extreme at greater than 80 per km^2, twice Edis’s value for HIGH risk.
- Two other areas (Toolern Vale in the north and Strathtulloh south of Melton), have densities between 40 and 80 OWMS per km^2 (red on the map) matching Edis’s HIGH rating
- Two other areas have a density above 20 per km^2 (orange on the map) equating to Edis’s MEDIUM risk rating.

Other areas have density less than 20 per km^2 and are low risk. They are not shown on this map for clarity.

The high-density localities are discussed in further detail in Section 4 of this report.

3.1.3 PLANNING ZONES

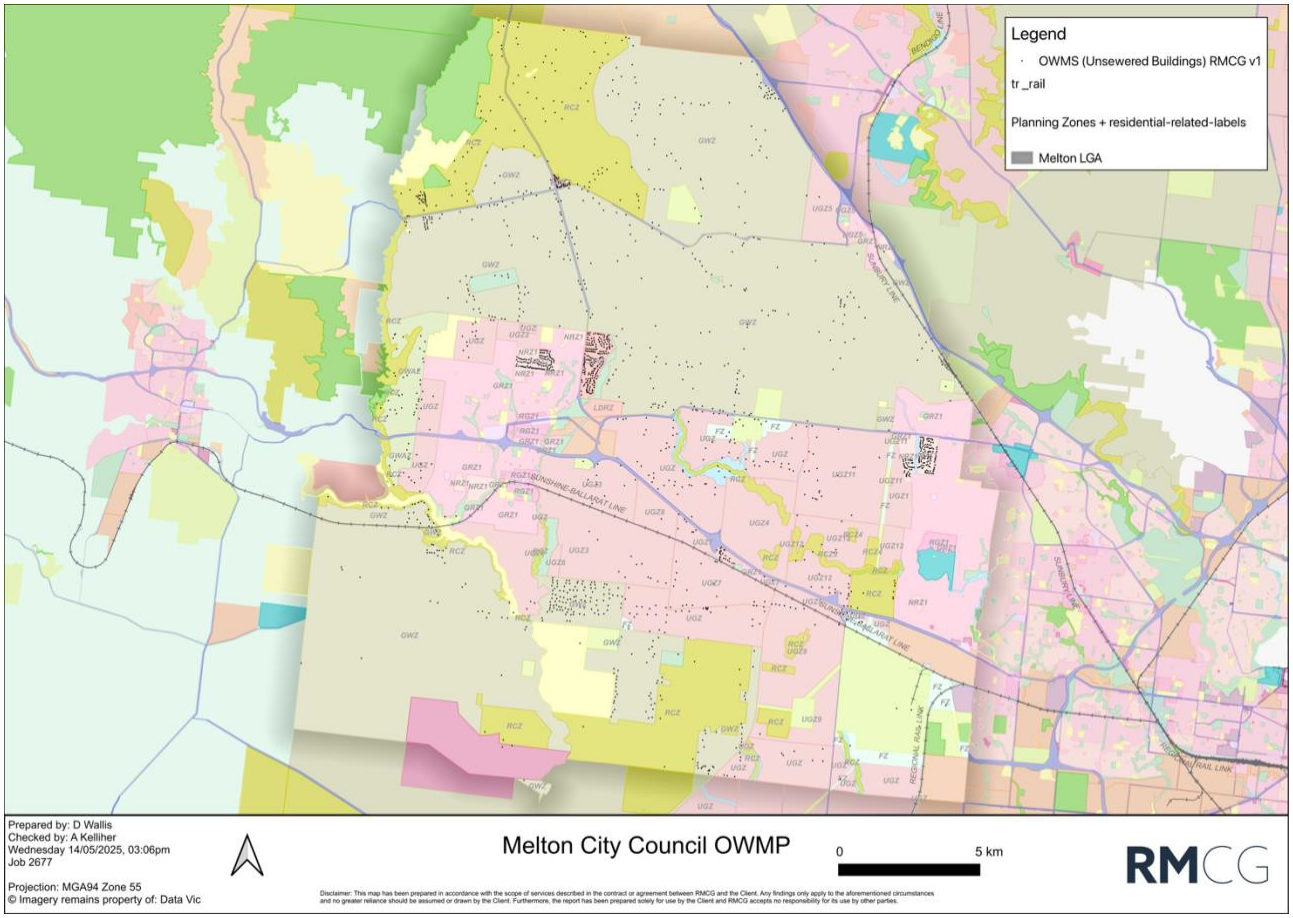

Figure 3-3: Planning zones

This map shows the Planning Zones across the LGA using the Department of Transport and Planning's standard colour scheme. Tan is Green Wedge Zone, shades of pink are residential zones, and so on. Planning zones are a key tool in the development process, providing controls on the type and scale of development, including setting minimum lot sizes for unsewered development.

The rural zones, including the Green Wedge Zones (GWZ and GWAZ) and the Rural Conservation Zone (RCZ), are the key areas where OWMS will be required in the long-term (i.e. these areas will remain unsewered). These zones include subdivision controls that will ensure lots remain of sufficient size for sustainable OWMS. For example, the minimum lot size in the GWZ is 1 ha (NB: this applies to only parts of the GWZ and needs to be balanced with larger lots), and the minimum lot size in the RCZ is 40 ha.

The Low Density Residential Zone (LDRZ) and the Neighbourhood Residential Zone Schedule 2 (NRZ2) apply to the high-density clusters of OWMS to the north of Melton. These allow minimum subdivision to 0.4 ha where reticulated sewerage is not connected. Whilst it is possible to have appropriate OWMS on lots of this scale, a higher level of design/management is required to minimise risk (e.g. higher standard of treatment, limits to dwelling size, etc). The NRZ Schedule 1 applies to the high-density cluster south of Hillside and there is no specified minimum lot size for this location. These high-density areas are discussed further in Chapter 4.

The Urban Growth Zone (UGZ) enables urban development to occur once a precinct structure plan (PSP) is in place. It is assumed that sewerage infrastructure will be provided at that time. Non-urban use can continue until development occurs. Where there is no PSP the minimum subdivision lot size is 40 hectares. In the UGZ the key action is to ensure a clear process is in place for transition to sewerage as development occurs and clear lines of communication continue between the MCC Planning and Environmental Health teams and GWW.

3.1.4 TOPOGRAPHY

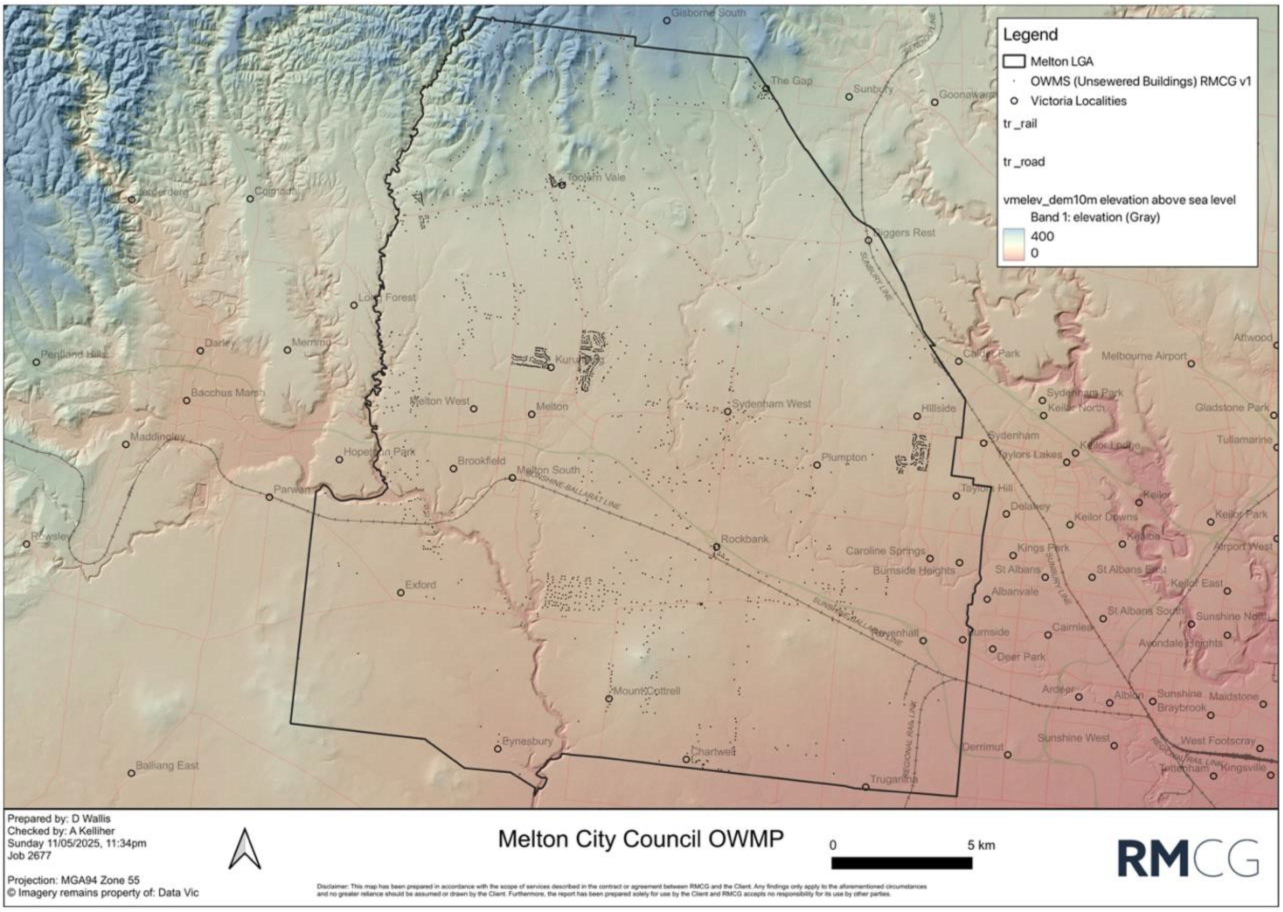

Figure 3-4: Roads, localities, topography and onsite systems (OWMS)

The topography across the LGA is relatively flat, with the exception of hill spurs in the north and incised gully type areas associated with the major waterways. There are relatively few OWMS associated with these steeper areas.

Risk associated with topography is considered low.

3.1.5 SOILS

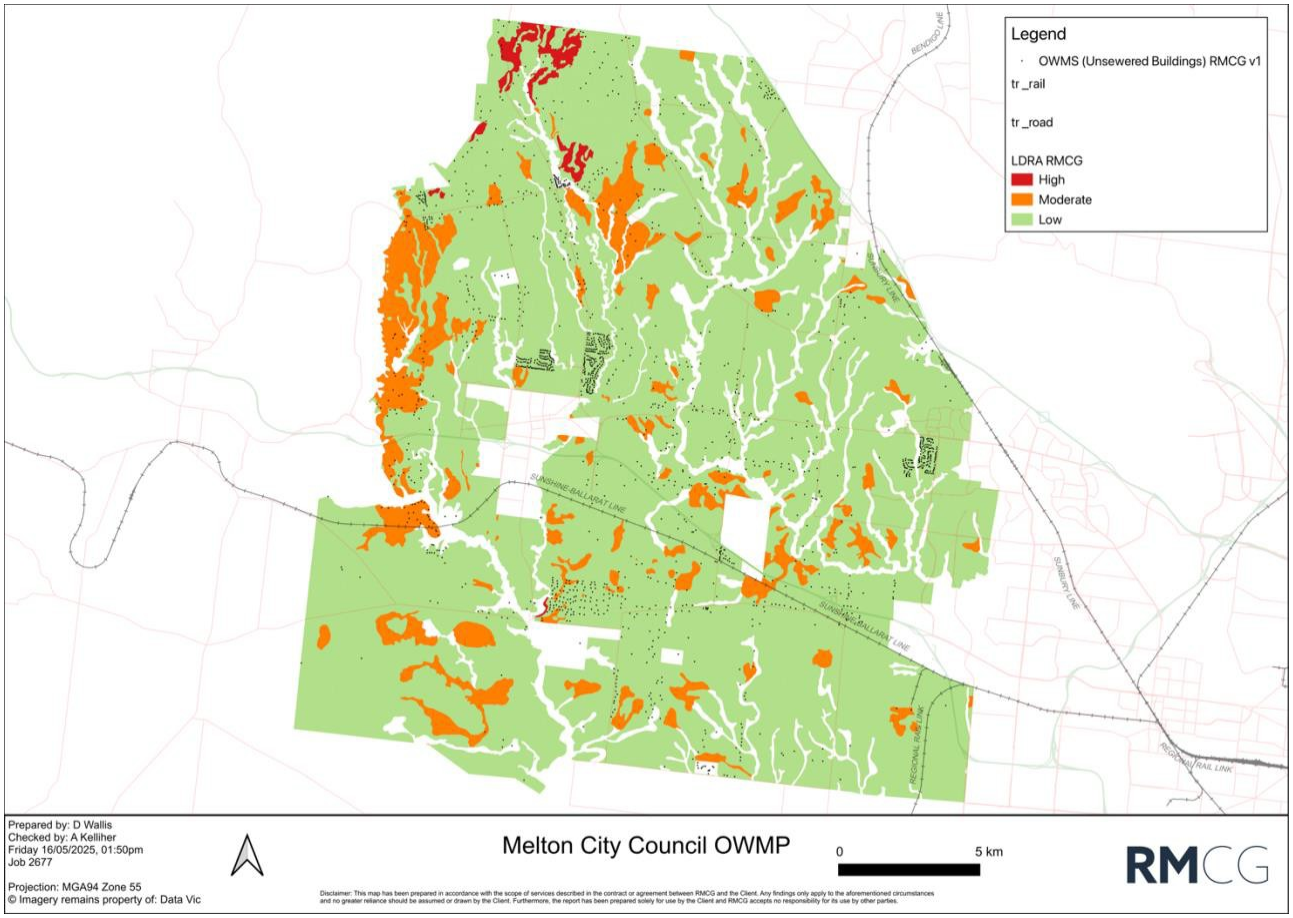

Figure 3-5: Soil mapping showing risk for OWMS

Soil texture and structure determines soil permeability and thereby the rate at which wastewater applied to land will be absorbed.

In 1985, a Land Resource Data Atlas (LDRA) was mapped around outer metropolitan Melbourne. The report[2] describes the various soils and provides rating of their suitability for various uses, including farming, effluent disposal, etc. This data has been analysed to create the map shown above outlining soil-related OWMS risk.

Low risk is associated with soils that are moderately permeable (e.g. loams, clay loams) – they can absorb wastewater but it doesn't pass through the soil too quickly. Moderate risk is associated with either sandy loam type soils with higher permeability (which can create risk to groundwater) or medium to heavy clay type soils with lower permeability (which can become waterlogged). High risk applies to very sandy soils (noting there aren't any identified in the mapping), shallow soils or very heavy clay soils, where sustainable onsite wastewater dispersal is difficult to achieve.

The OWMS are predominantly located in the low risk soil areas.

Note that the data is not suitable for assessing soil types at individual lot scale. It cannot be used to determine the land application area required for individual sites or to negate the need for a Land Capability Assessment.

[2] https://vro.agriculture.vic.gov.au/dpi/vro/soilsurv.nsf/SearchResults/49?Open

3.1.6 SURFACE WATER HYDROLOGY

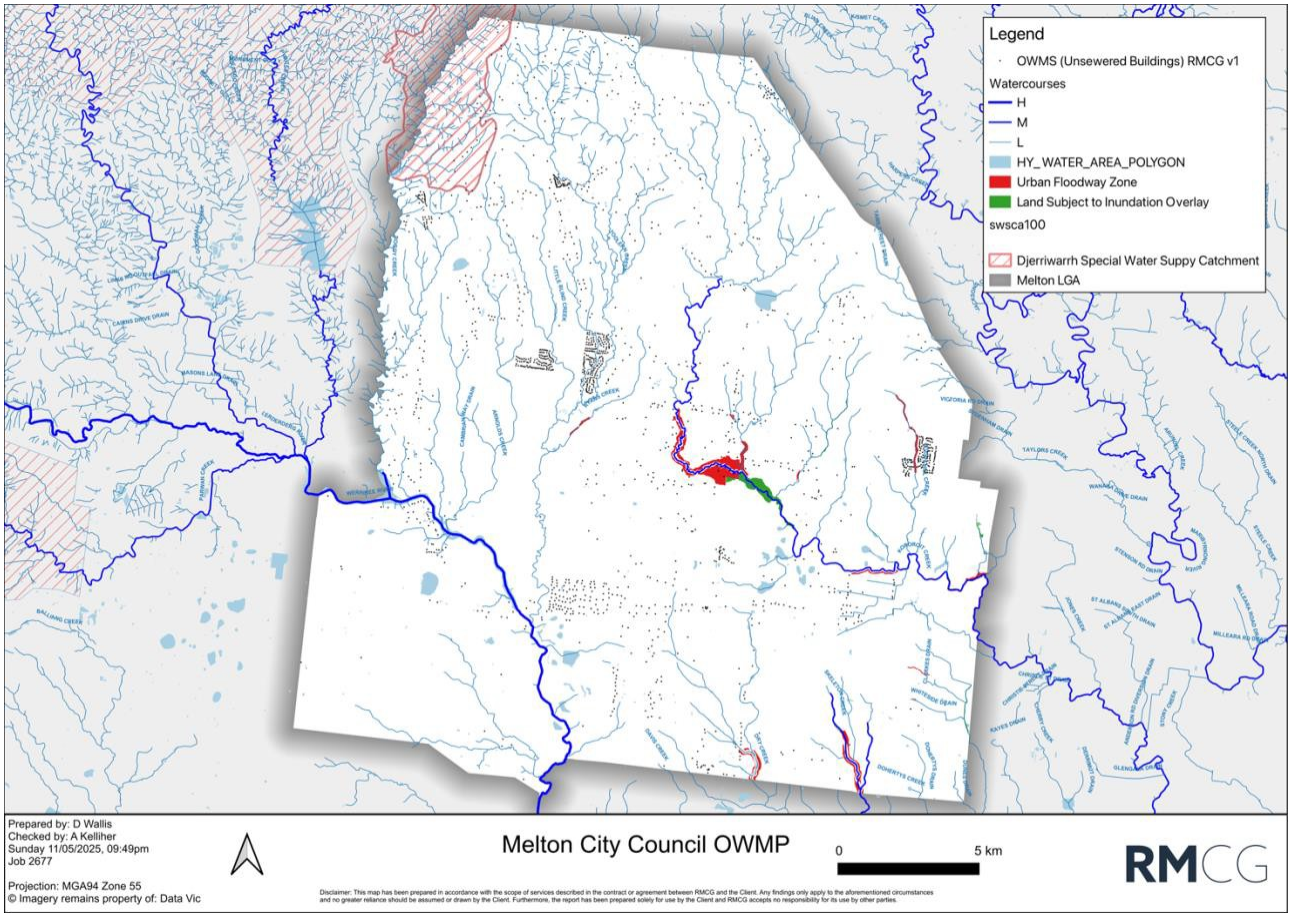

Figure 3-6: Surface water hydrology

This map shows the relationship between existing OWMS (black dots) and various surface water hydrological features. Note:

- A Special Water Supply Catchment area (Djerriwarrh) is located in the northwest corner of the LGA (shown in red outline and red hatching). Special planning provisions[3] apply to this area. Runoff from this catchment area feeds raw water into reservoirs that is treated by Greater Western Water and supplied as potable drinking water in the area. Most of this area is public land and not available for development. There are a few OWMS on the eastern edge. Planning provisions for this SWSC area limit further development (non-public land is zoned RCZ with a minimum lot size of 40 ha).
- The main watercourses (blue lines) are the Werribee River, Toolern Creek and Kororoit Creek. There are numerous smaller watercourses across the LGA, generally flowing from north to south. Water bodies such as dams (light blue areas on the map) also occur across the region. Appropriate buffer zones need to be applied between OWMS and waterways or water bodies. This aspect is primarily dealt with on an individual site basis. Where there is a high density of OWMS development (e.g. Kuranjang) risk to surface water quality is increased – this is discussed in Section 4 for the selected localities.
- Some areas are zoned as urban floodways (red on map) or have a subject to inundation overlay (green on the map). These areas are not extensive at an LGA scale. Development of OWMS in these areas is currently limited and planning controls in place will ensure this remains the case.

[3] https://www.water.vic.gov.au/catchments/special-water-supply-catchment-areas

3.1.7 GROUNDWATER

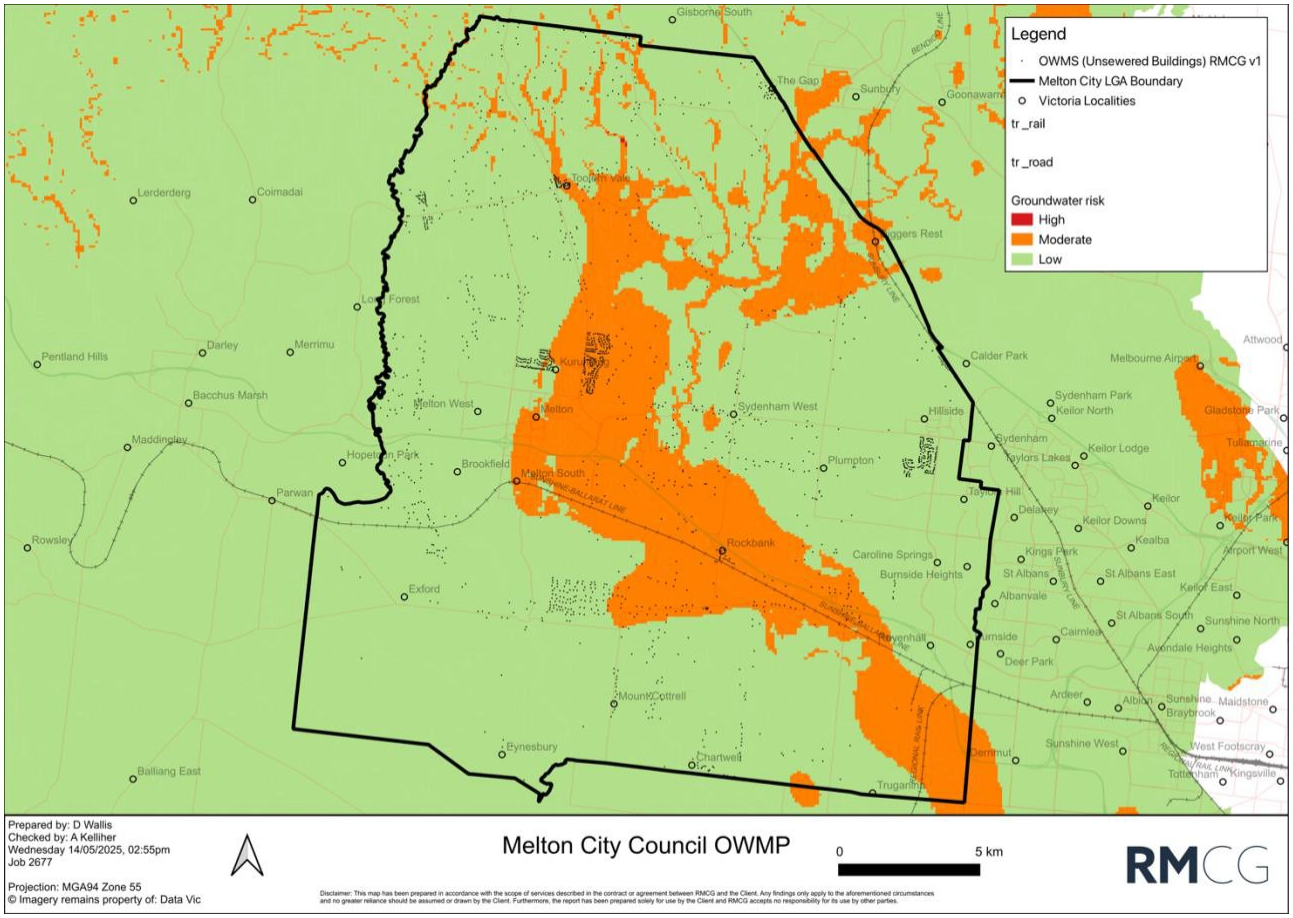

Figure 3-7: Groundwater

This layer showing risk to groundwater has been created by combining information on groundwater quality and depth to the watertable. Groundwater quality (based on salinity) defines the environmental values of Victoria's groundwater resources and these include both existing and potential uses. Depth to the watertable relates to the likelihood of wastewater leaching to groundwater.

In Melton City:

- The northwestern highlands have high groundwater quality (Segment A2) but depth to watertable is generally significant (can be >50m) so overall risk reduces to low.
- There are “tongues” of moderate quality groundwater (Segment B) extending into the LGA from the northwest. Where these intersect with higher water tables (<10m below surface) there is moderate risk to groundwater as shown on the map.
- Remaining areas in the LGA have lower quality groundwater (Segment C or below) and/or reasonable depth to the watertable, creating low risk.

3.1.8 PROPERTY SIZE

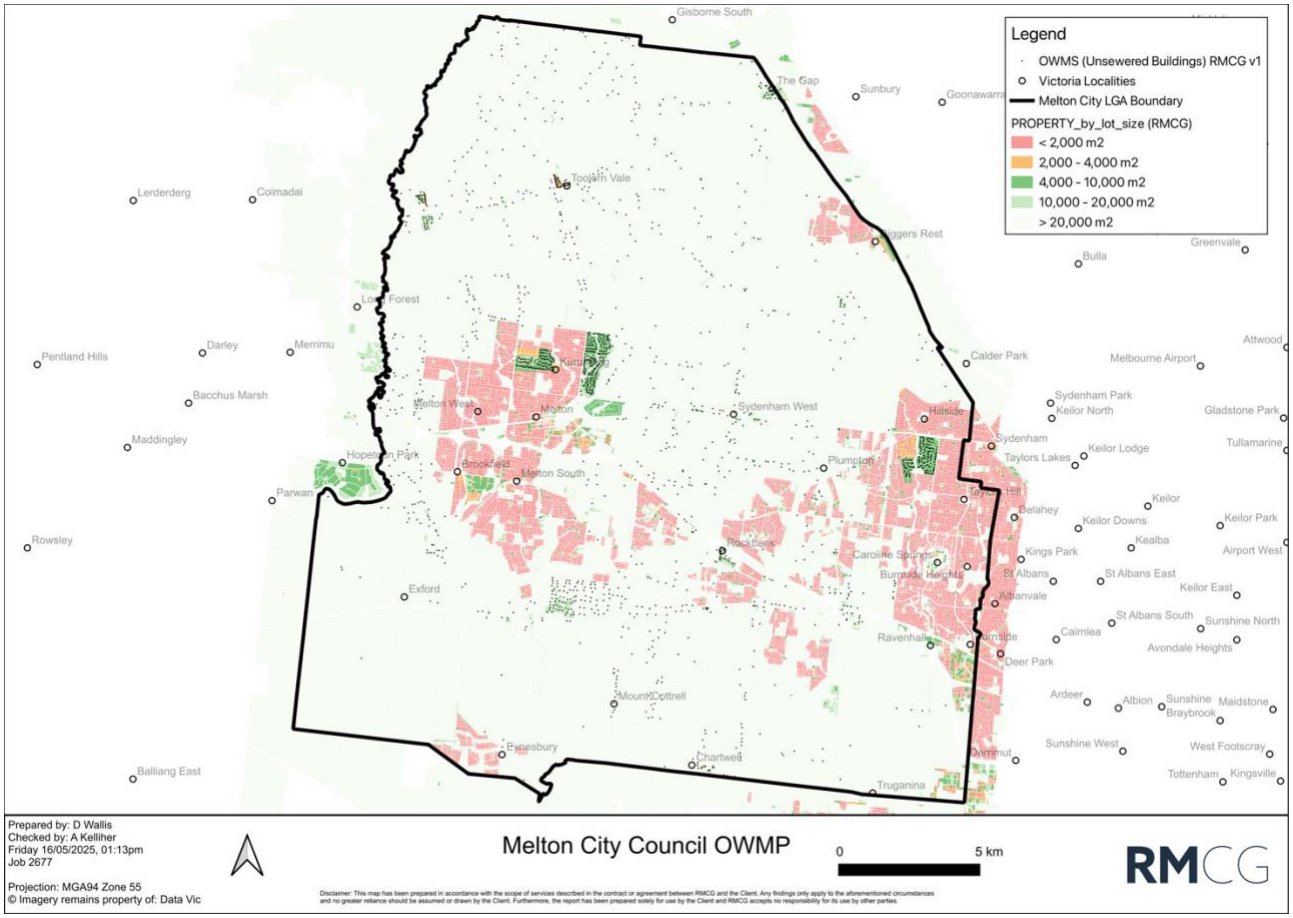

Figure 3-8: Property size

Property size is an important consideration for onsite wastewater management planning; lots need to be a certain size to allow for the absorption of effluent to be contained within the property boundaries.

Broadly speaking, properties larger than 10,000 m2 (1.0 ha) are lower risk for effluent disposal as there is sufficient room for the effluent field, along with the house, garden, sheds, playgrounds, driveways and parking areas, offsets from boundaries and other constraints such as creeks and steep slopes.

Broadly speaking, properties smaller than 4,000 m2 (1 acre) can be high risk because there is not enough space for all of these activities and an effluent field.

The map above indicates that:

- In Toolern Vale and Hjorths Road there are onsite systems on lots smaller than 4,000 m2.
- The intense areas (Kuranjang, Croxton Drive and Sugar Gum Drive) are typically between 4,000 m2 and 10,000 m2.
- Elsewhere across the LGA the existing systems are on properties larger than 20,000 m2.
- There are very few small vacant unsewered lots.

3.1.9 ATLAS KEY MAP FOR HIGH DENSITY AREAS

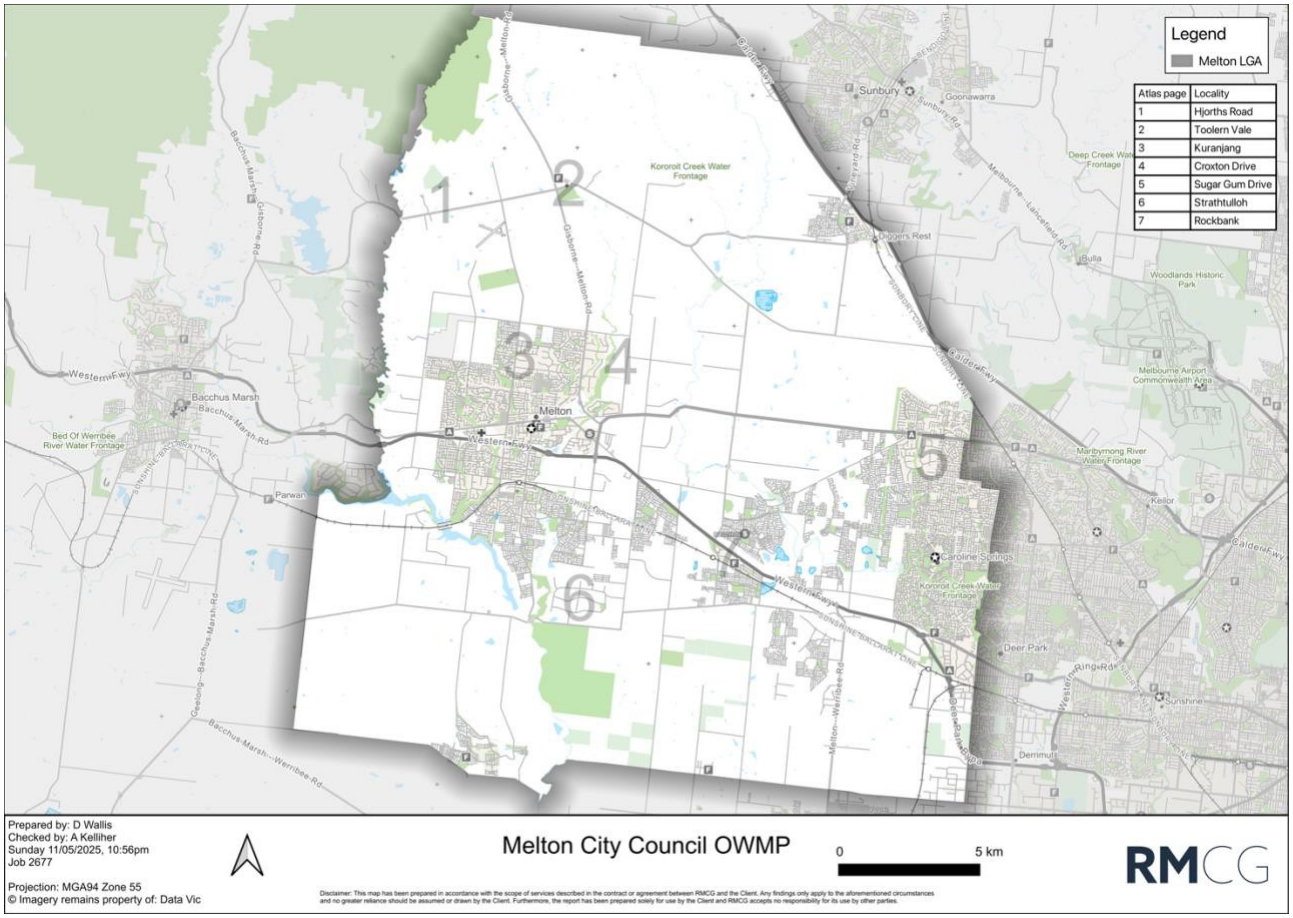

Figure 3-9: Atlas key map

This map shows the location of the seven zoomed-in areas addressed in Chapter 4 of this report.

3.1.10 OVERALL RISK

The risk assessment at the city-wide level has identified the following key aspects:

- **Density of onsite systems** – there are multiple clusters of high and very high density OWMS across the LGA. These localities are considered high risk and are discussed in further detail in Chapter 4.
- **Urban growth zone** – urban development is occurring through the central parts of the City. In these areas a clear process must be in place for transition to sewerage and clear lines of communication outlined between the MCC Planning and Environmental Health teams and GWW.
- **Special Water Supply Catchment** – located in the northwest corner of the LGA. Most of this area is public land and not available for development. There are a few OWMS on the eastern edge. Planning provisions for this area limit further development.
- **Flooding** - some areas are zoned as urban floodways or have a subject to inundation overlay. These areas are not extensive at an LGA scale. Development of OWMS in these areas is currently limited and planning controls are in place to ensure this remains the case
- **Topography, groundwater and soil type** – there is low to moderate risk associated with these factors.
- **Lot sizes** – most existing systems are on lots greater than 4000 m2.

4 Spatial Risks – Selected Localities

The following sections consider selected localities in more detail. Selection has been based on the higher risks identified for OWMS which primarily relates to the high density of OWMS in these locations.

Table 4-1: List of maps

SECTION	LOCALITY
4.1.1	Hjorths Road
4.1.2	Toolern Vale
4.1.3	Kuranjang
4.1.4	Croxton Drive
4.1.5	Sugar Gum Drive
4.1.6	Strathtulloh
4.1.7	Rockbank

4.1.1 HJORTHS ROAD

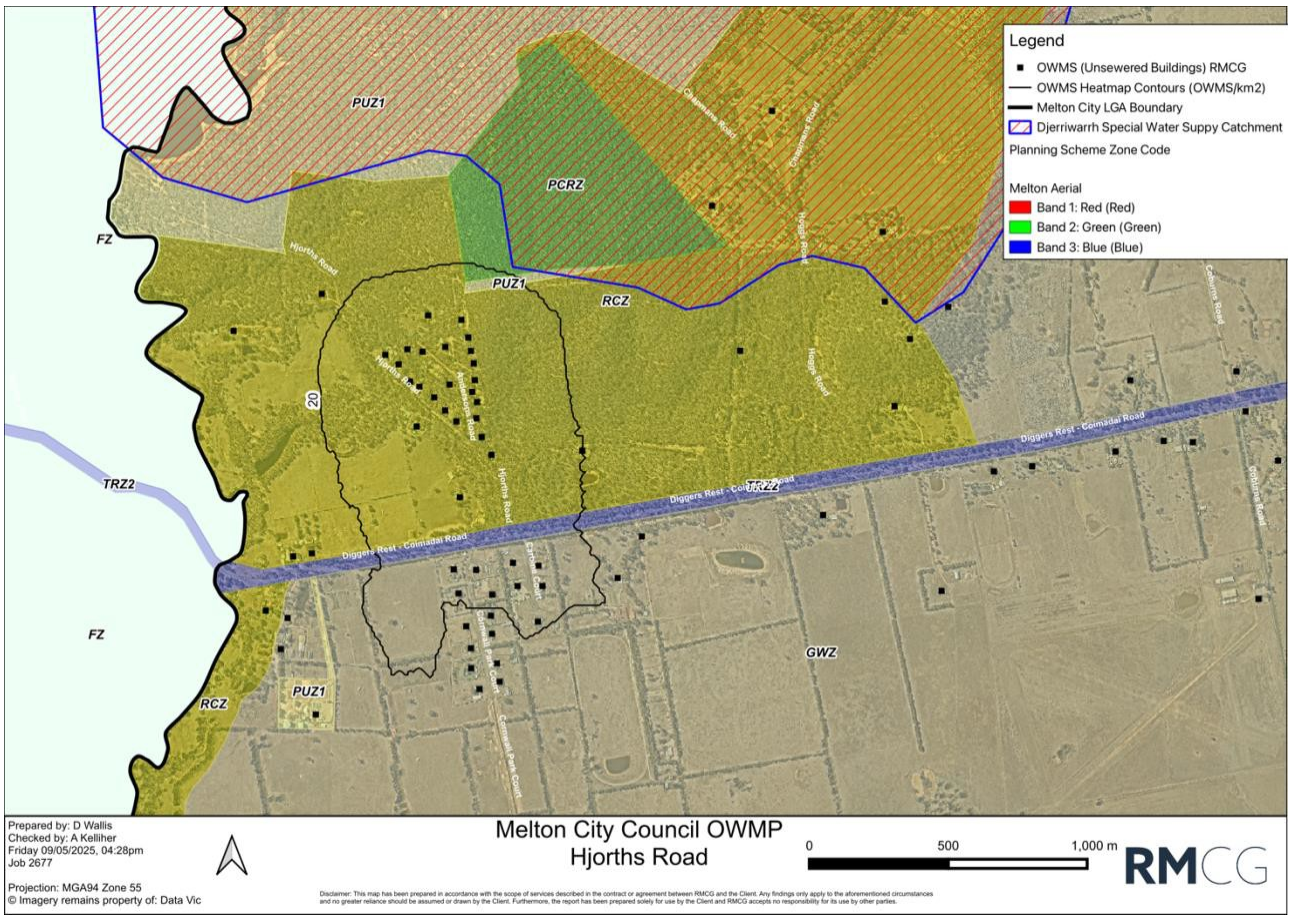

Figure 4-1: Hjorths Road

There is a cluster of approximately 60 OWMS in this area associated with a former rural residential type subdivision.

The density of OWMS is calculated as medium risk. The area is zoned as RCZ or GWZ which controls further development in the area. There is a low risk associated with soils and groundwater. The area is on the edge of the hills and just outside the special water supply catchment area.

Action: Monitor performance of existing systems through audit of a random sample of sites and visual assessment to determine if any offsite discharge is occurring.

4.1.2 TOOLERN VALE

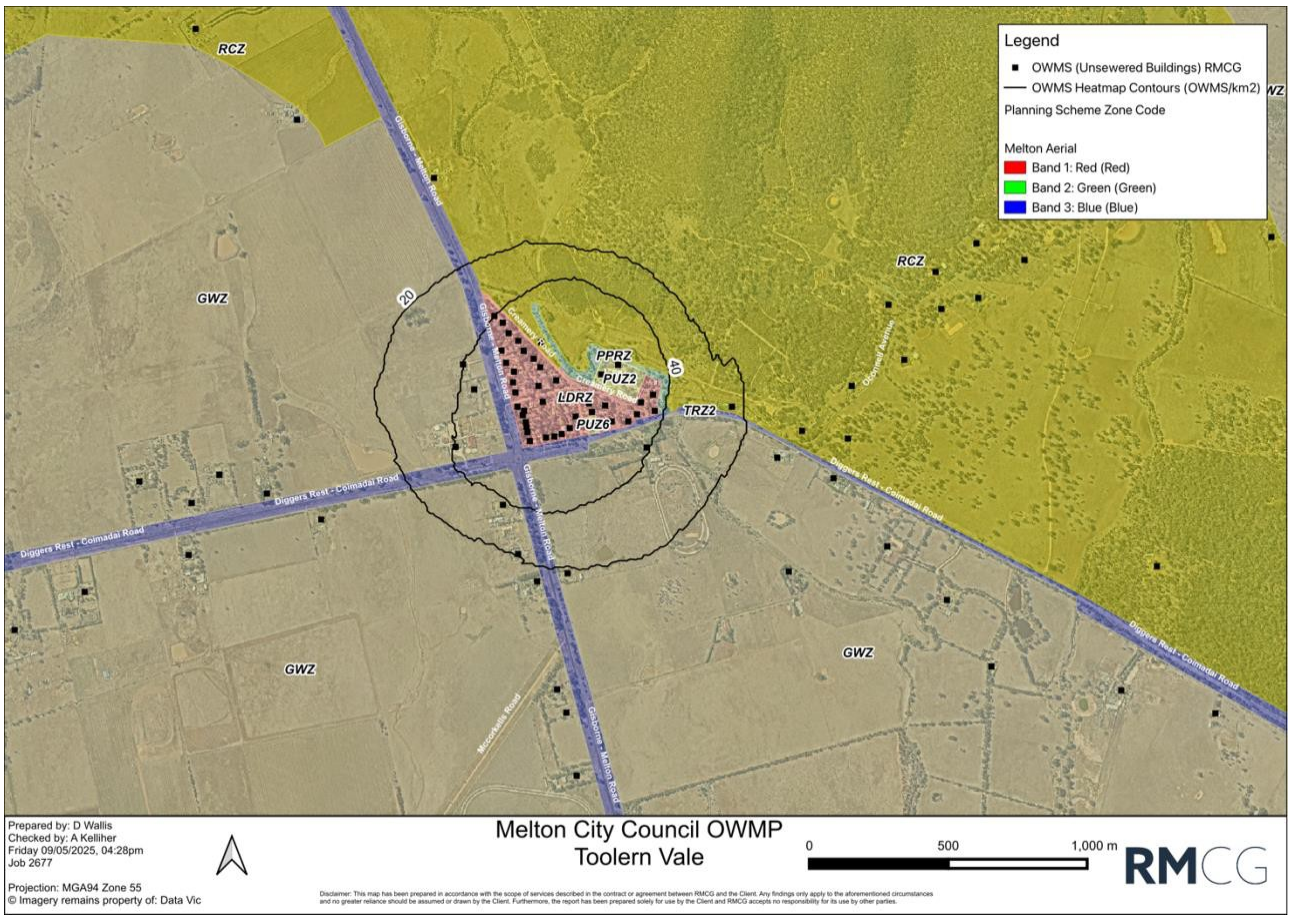

Figure 4-2: Toolern Vale

There are approximately 50 OWMS in Toolern Vale, resulting in a high density in the centre of town. Some of these lots are quite small and there is potential for off-site discharges of effluent leaving the properties to stormwater.

Given the small scale of the town and distance from existing sewerage infrastructure, it is unlikely to be considered for sewerage.

Action: Monitor performance of existing systems through audit of a random sample of sites and visual assessment to determine if any offsite discharge is occurring.

4.1.3 KURANJANG

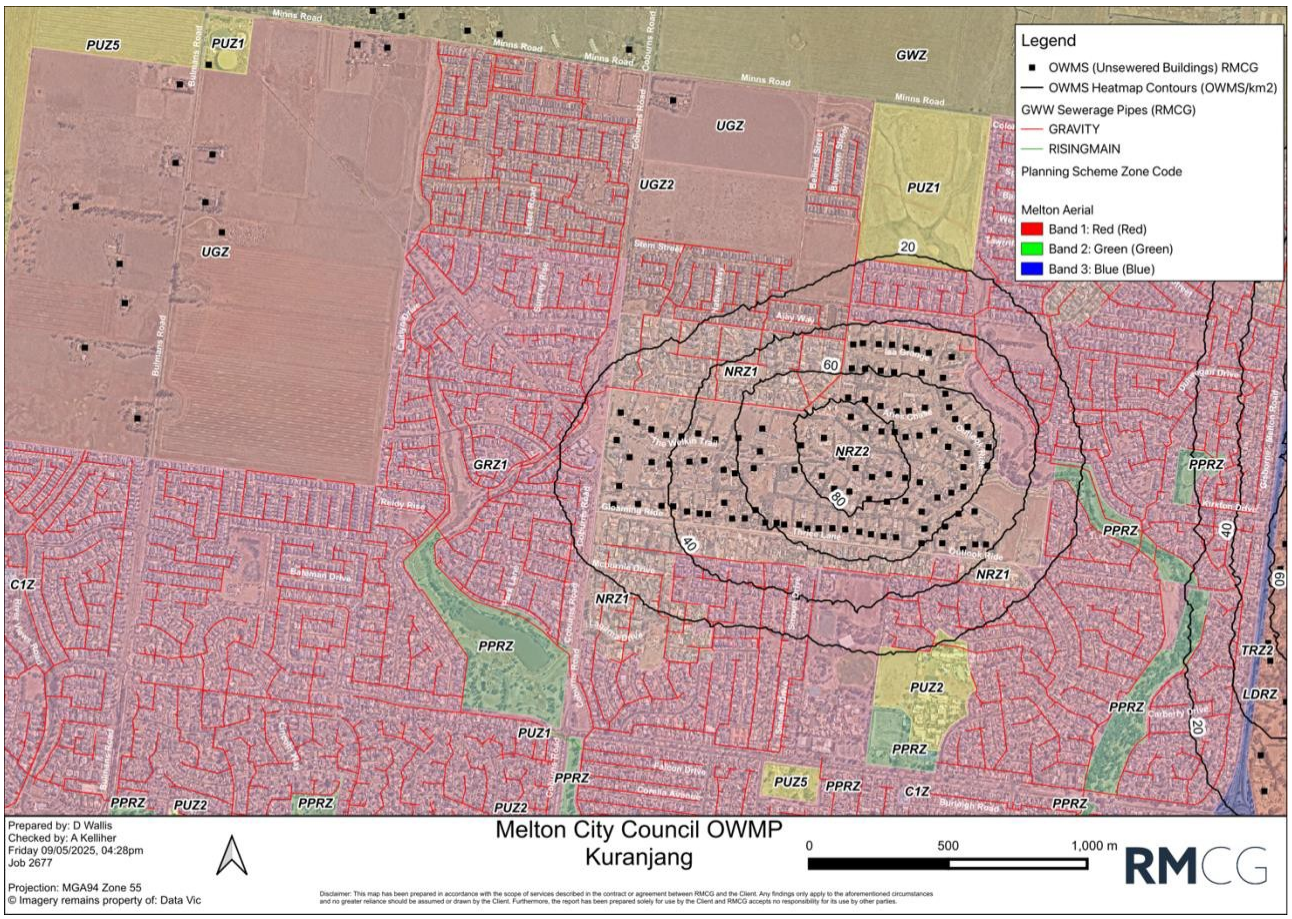

Figure 4-3: Kuranjang

There are approximately 110 OWMS in Kuranjang. This unsewered area was developed in the mid 1980s (judging by the age of the GWW water mains) before the surrounding more intensive developments occurred from 2005 onwards.

The lot sizes are between 5,000 m^2 and 10,000 m^2. Sustainable OWMS can be achieved on lots of this scale, although a higher level of design/management is recommended to minimise risk (e.g. higher standard of treatment, limits to dwelling size, etc).

The City-wide mapping in Chapter 3 indicates a low risk associated with soils, groundwater, topography and surface waters.

Actions:

- Monitor performance of existing systems
- Consider monitoring of stormwater quality subject to outcomes from monitoring of existing OWMS
- Discuss potential for provision of sewerage with GWW
- Prevent further subdivision if area remains unsewered

4.1.4 CROXTON DRIVE

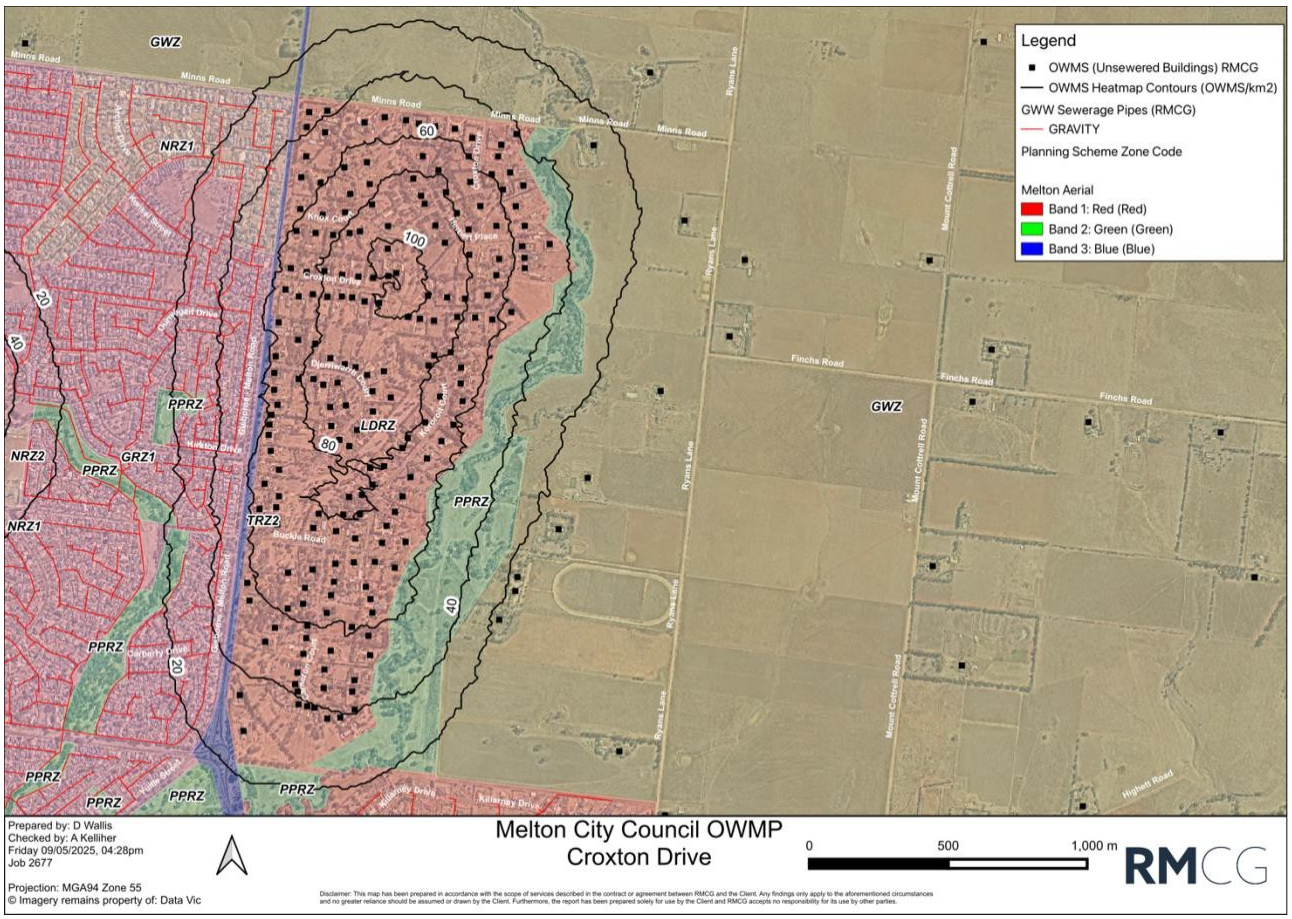

Figure 4-4: Croxton Drive

There are almost 200 OWMS in this area creating very high density. Existing sewerage infrastructure is in place to the immediate west and south.

Most lot sizes are between 5,000 m^2 and 10,000 m^2. Sustainable OWMS can be achieved on lots of this scale, although a higher level of design/management is recommended to minimise risk (e.g. higher standard of treatment, limits to dwelling size, etc).

The City-wide mapping in Chapter 3 indicates a low risk associated with soils and topography and a moderate risk relating to groundwater. There are also creeks running through or along the boundary of the area creating increased risk to surface waters.

Actions:

- Monitor performance of existing systems
- Consider monitoring of stormwater quality
- Discuss potential for provision of sewerage with GWW
- Prevent further subdivision if area remains unsewered

4.1.5 SUGAR GUM DRIVE

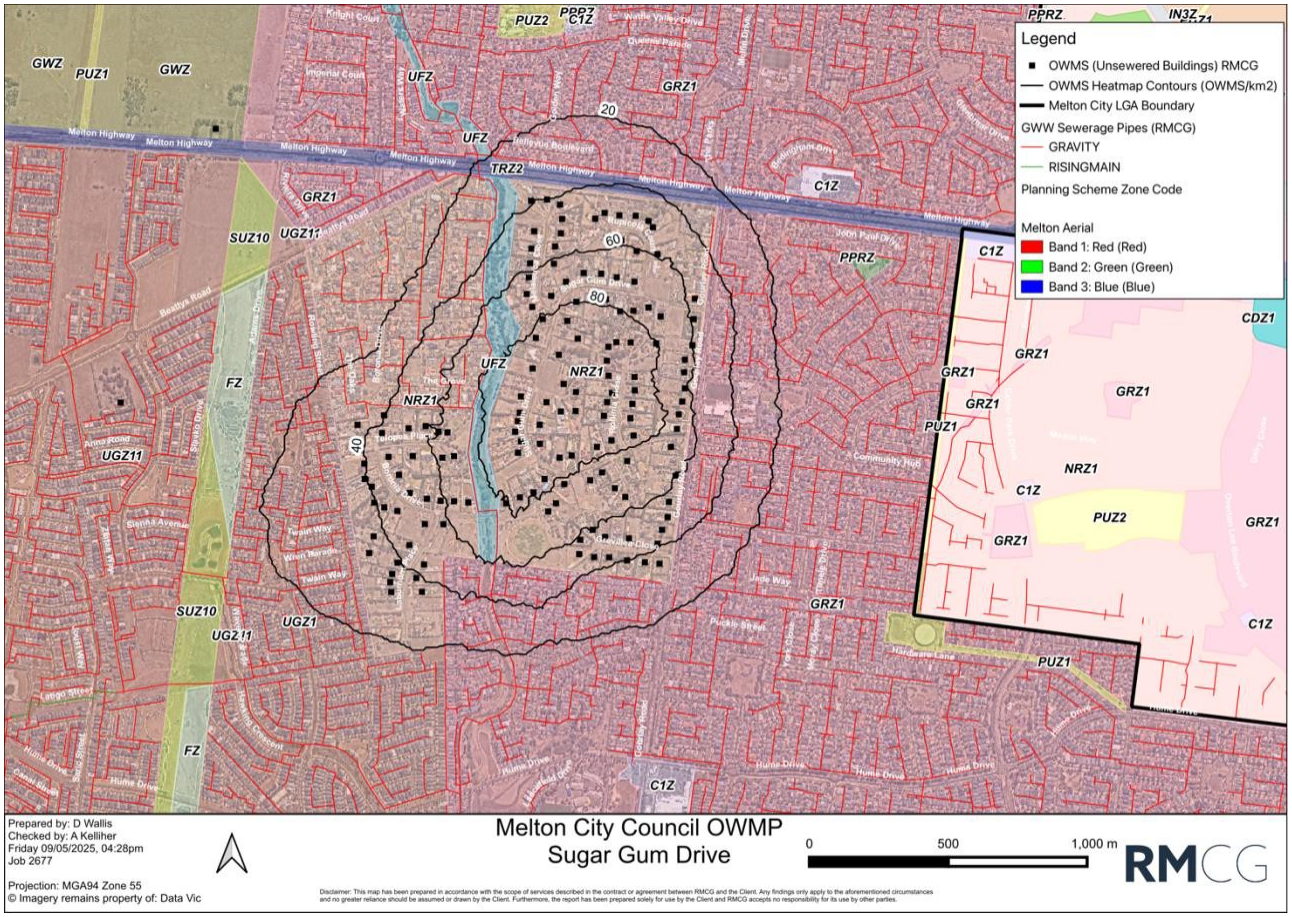

Figure 4-5: Sugar Gum Drive

There are approximately 150 OWMS in the Sugar Gum Drive area, creating very high density. Existing sewerage infrastructure is in place in all surrounding areas.

All lot sizes are between 4,000 m^2 and 10,000 m^2. Sustainable OWMS can be achieved on lots of this scale, although a higher level of design/management is recommended to minimise risk (e.g. higher standard of treatment, limits to dwelling size, etc).

The City-wide mapping in Chapter 3 indicates a low risk associated with soils, groundwater and topography. Stony Hill Creek runs through or along the boundary of the area and is subject to a floodway zone, creating increased risk to surface waters.

Actions:

- Monitor performance of existing systems
- Consider monitoring of stormwater quality
- Discuss potential for provision of sewerage with GWW
- Prevent further subdivision if area remains unsewered

4.1.6 STRATHTULLOH

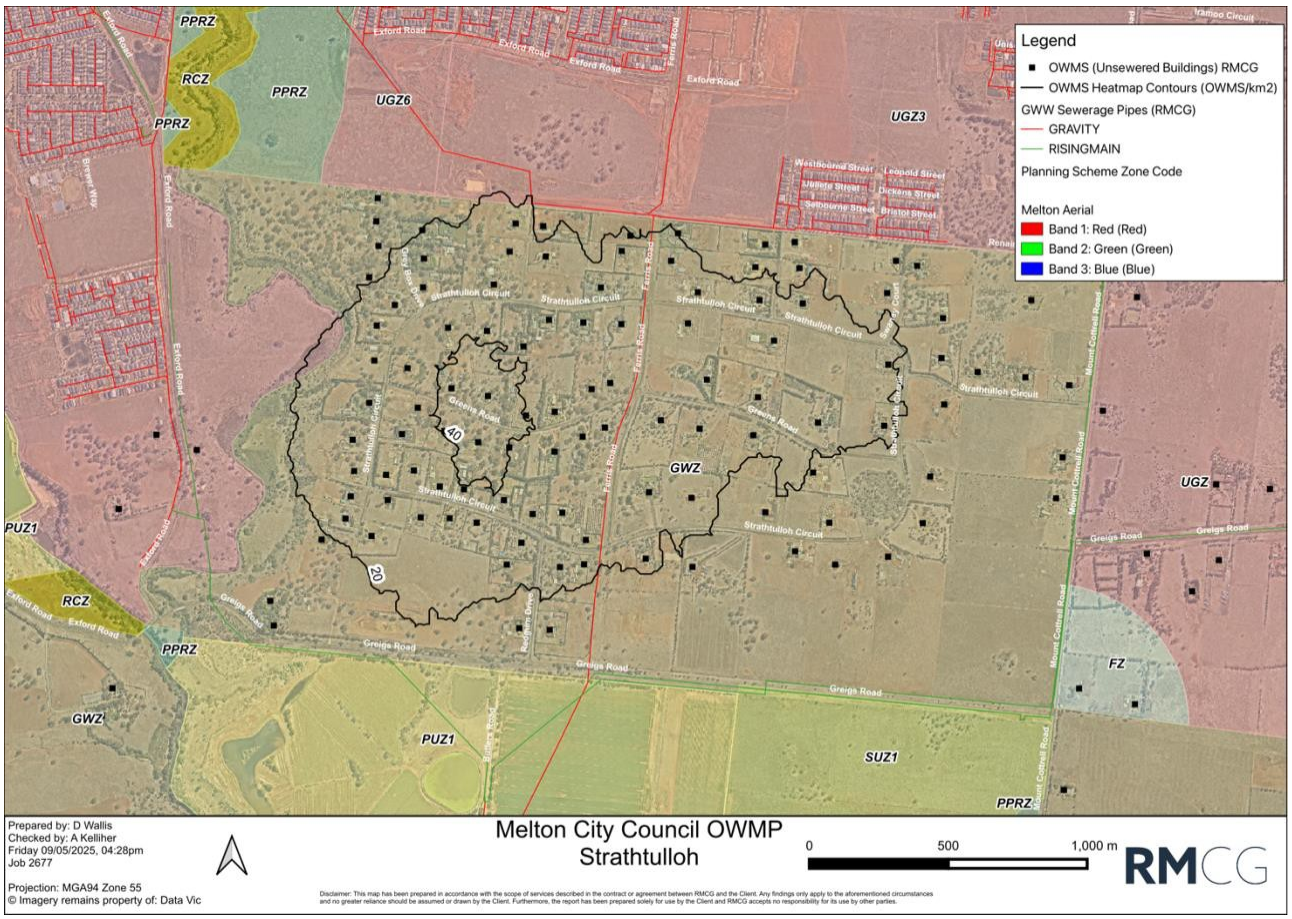

Figure 4-6: Strathtulloh

There are approximately 100 OWMS in Strathtulloh. This is a rural residential area within the Green Wedge and is located between sewered areas to the north and the Surbiton Park wastewater treatment plant to the south.

Lot sizes are approximately 1.5 ha and larger. These sizes are large enough that the risks associated with OWMS can be appropriately managed. Further subdivision is also controlled through the current GWZ.

The City-wide mapping indicates predominantly low risk associated with soils, groundwater, surface waters and topography.

Action: Monitor performance of existing systems through audit of a random sample of sites and visual assessment to determine if any offsite discharge is occurring.

4.1.7 ROCKBANK

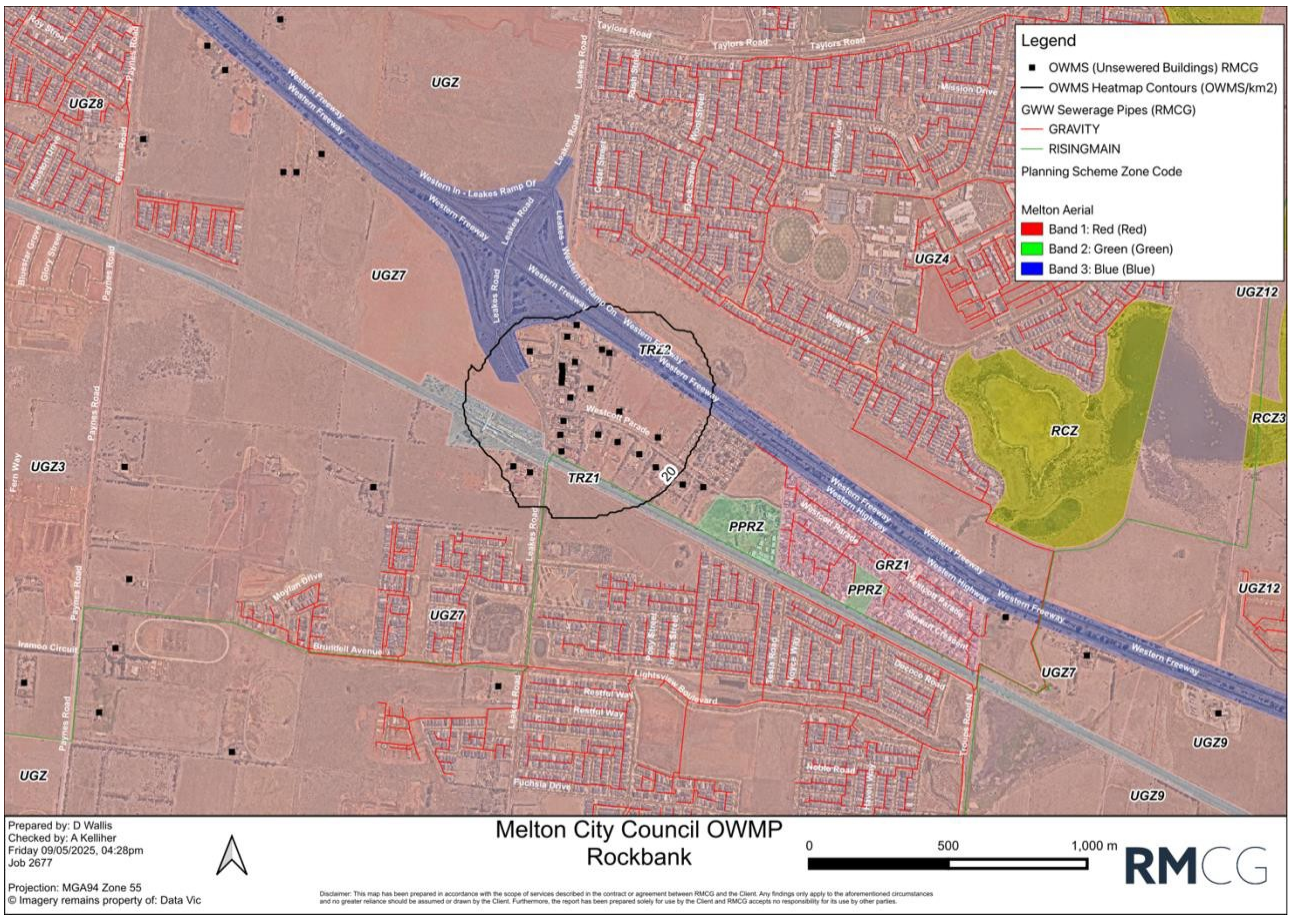

Figure 4-7: Rockbank

There are approximately 25 OWMS in Rockbank, sandwiched between the freeway and railway.

This area is surrounded by urban growth zone and likely to be developed more intensely in the future. It is expected that sewerage infrastructure would become available when more intense development occurs.

City-wide mapping indicates a low risk associated with soils, topography and surface waters and a moderate risk to groundwater.

Actions:

- Monitor performance of existing systems
- Discuss potential and timing for provision of sewerage with GWW and Planning team