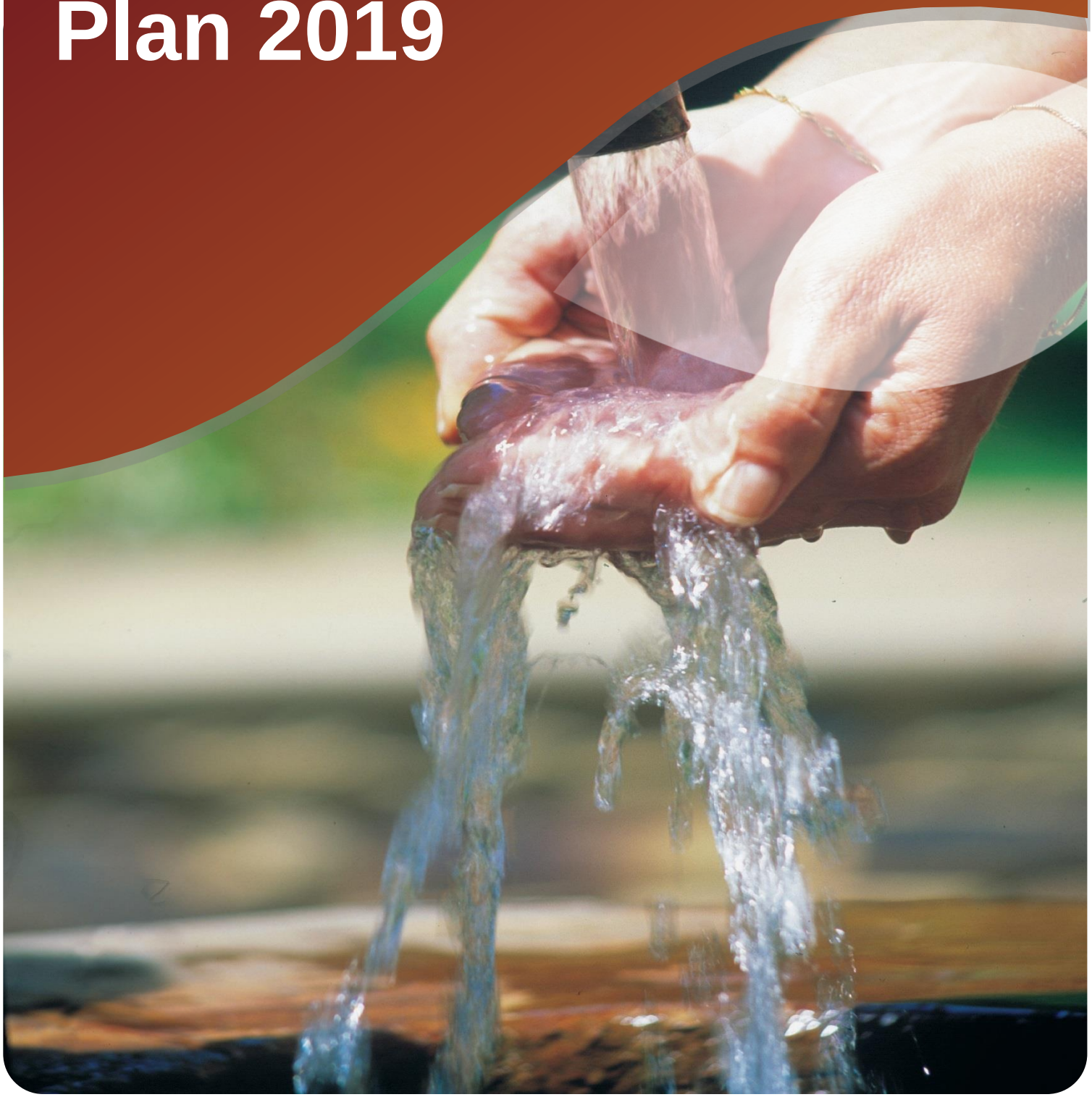
Macedon Ranges Shire Council

Domestic Wastewater Management Plan 2019



Macedon Ranges Shire Domestic Wastewater Management Plan 2019

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Introduction

Macedon Ranges Shire is a region in Central Victoria. The region covers an area of 1,747 square kilometres. It is located in between Bendigo and Melbourne and at the 2016 Census, had a population of 46,100. The shire is characterised by rural residential, farming and natural landscapes and includes a number of areas delineated as potable water catchments. It includes Gisborne, Kyneton, Woodend, Lancefield, Romsey, Riddells Creek, Macedon, Mount Macedon, Malmsbury, Tylden, Clarkefield, Lauriston, Monegeetta, Darraweit Guim, Newham, Bullengarook and Carlsruhe.

There are approximately 26,500 lots and 8,000 domestic wastewater systems (septic tanks) in the shire of which approximately 4,500 septic tanks are located in special drinking water supply catchments.

The Macedon Ranges is significant as it provides the headwaters for four major Victorian waterways; the Campaspe and Coliban rivers to the north which make their way to Lake Eppalock and on toward the Murray River, and the Maribyrnong and Werribee Rivers to the south which feed into the Maribyrnong River before entering metropolitan Melbourne and Port Phillip Bay.

The shire is almost evenly divided between the Maribyrnong River catchment and the Campaspe/Coliban River catchments. A small area also falls within the Goulbourn River Catchment. These catchments are designated by the State Government to provide drinking, and in some cases irrigation water for central and northern Victoria. The shire with other Councils and regional water corporations share in the administration of catchment management planning across these catchments.

Soil types vary widely across the region due to the changing landscape and rainfall. In the central and south-western areas of the shire around Ashbourne, Woodend and Macedon, soils have low fertility and are prone to erosion. In the Mount Macedon area where rainfall is relatively high, deep and fertile red soils are common.

From Gisborne to Lancefield, and around Kyneton in the northwest, red clays support potato and grape growing. Fine-grained, fertile alluvial soils and gravel and silt colluvial soils dominate the major water-courses, particularly around Lancefield and Woodend.

Purpose and Objectives

The Macedon Ranges Shire Council (MRSC) Domestic Wastewater Management Plan (DWMP) aims to reduce the environmental, public health and economic risks associated with the management of all domestic wastewater systems in the shire.

The State Environment Protection Policy (Waters of Victoria) (SEPP) requires Councils to prepare a DWMP in conjunction with water corporations and the community. The DWMP aims to reduce the environmental, public health and economic risks associated with the management of all domestic wastewater systems in the Shire. Council adopted its first DWMP in 2007. The DWMP 2013 was due for review at the end of 2018.

This plan considers key physical constraints which restrict the ability of some existing properties to be able to treat and contain wastewater from standard septics onsite. Most of these risks can be managed and potentially reduced through careful consideration and application of appropriate wastewater treatment systems.

The purpose of this DWMP is to provide Council with:

- a strategic planning tool for long term strategies to be developed for wastewater system management,
- a framework for making decisions about individual Domestic Wastewater Systems (DWS),
- a framework for enforcement and compliance options,
- a framework for resource management for proactive wastewater management,
- a framework for liaison between Council, the community, water corporations and catchment management authorities.

The objective of this DWMP is to ensure Council:

- complies with current on-site domestic wastewater legislation,
- minimises the impacts of domestic wastewater on human health, the natural environment and local amenity,
- directs the management of current DWS,
- resources the monitoring, enforcement, review and audit of septics in the shire.

DWMP Steering Committee

Council's Environmental Health Unit is responsible for:

- executing the actions set out in this DWMP,
- developing, implementing, monitoring and reviewing the DWMP as required,
- reporting the results of the high risk DWS audits and progress of the DWMP action plan to all of the relevant stakeholders.

The DWMP Steering Committee is responsible for providing input into the development of the DWMP. The committee comprises people from the following organisations:

External Stakeholders

- Coliban Water
- Western Water
- Goulburn Murray Water
- Department of Environment, Land, Water and Planning (DELWP)
- Environment Protection Agency (North West Regional Office – Bendigo)
- North Central Catchment Management Authority
- Southern Rural Water

Internal Stakeholders (MRSC)

- Environmental Health Unit
- Strategic Planning & Environment Department
- Information Technology (IT)

External Consultants

- Neil Dunbar – Waste Data Management Specialists

Legislative framework

The following is a summary of the legislation and regulations that govern on-site domestic wastewater management in Victoria.

State Environment Protection Policy (Waters)

The State Environment Protection Policy (Waters) 2018, also referred to as SEPP, provides a framework for the protection and management of water quality in Victoria, covering surface waters, estuarine and marine waters and ground waters across the state.

The SEPP aims to ensure that all residential subdivisions are provided with reticulated sewer access at the time of subdivision. Where this is not possible each lot must be capable of treating and retaining the domestic wastewater within the boundaries of the proposed allotments. The policy directs Councils to use the EPA's Septic Tanks Code of Practice, to assess the ability of proposed developments to retain wastewater within allotment boundaries.

The SEPP requires:

1. Property owners with Septic tank systems to manage their system and comply with permit conditions and the Code of Practice – Septic Tanks On-site Domestic Wastewater Management (2003).
2. Municipal Councils to develop and implement a DWMP that reviews land capability assessments (LCAs), available domestic wastewater management options, and assesses the compliance of onsite domestic wastewater systems with permit conditions.

Planning permit applications in open, potable water supply catchment areas

This guideline builds upon (but does not replace) Council's responsibilities for developing DWMPs as set out in the SEPP. This guideline requires:

- The effective monitoring of the condition and management of Domestic Waste System (DWS), including but not limited to compliance by permit holders with permit conditions and the Code,
- The results of monitoring being provided to stakeholders as agreed by the relevant stakeholders,
- Enforcement action where non-compliance is identified,
- A process of review and updating (if necessary) of the DWMP every 5 years,
- Independent audit by an accredited auditor (water corporation approved) of implementation of the DWMP, including monitoring and enforcement, every 3 years,
- The results of audit being provided to stakeholders as soon as possible after the relevant assessment,
- Councils to demonstrate that suitable resourcing for implementation, including monitoring, enforcement, review and audit, is in place.

Environmental Protection Act 1970

The Environment Protection Act 1970 (EP Act) is the primary legislation used by local government to regulate DWS by way of Permit upon installing altering or using a septic tank.

EPA Code of Practice onsite wastewater management, Publication 891.3 - Feb. 2013

This code of practice provides standards and guidance to ensure the management of onsite wastewater (up to 5000 L/day) to protect public health and the environment. It has been written to support the onsite wastewater industry, regulators and property owners manage domestic wastewater in accordance with the Environment Protection Act 1970 and the state environment protection policies (Waters).

Public Health & Wellbeing Act 2008

The Public Health & Wellbeing Act 2008 (PH&WB Act) enables Authorised Officers to investigate and remedy nuisances in their municipal district. Council has a duty to investigate all complaints relating to a nuisance or the illegal management of domestic wastewater and take action to rectify the nuisance where necessary.

Water Act 1989

Section 183 of the Water Act 1989, provides a Water Corporation of a sewerage district with the power to inspect and measure existing septic tank systems within its sewerage district.

Local Government Act 1989

The Local Government Act outlines the provisions under which Council operates and empowers Councils to have local laws and regulations for DWS.

Building Act 1993

Licensed Plumbers are required to submit a compliance certificate upon completion of a Septic installation before an Occupancy Permit can be issued for a new dwelling.

Planning and Environment Act 1987

The Planning and Environment Act 1987 sets out the planning provisions, planning schemes, procedures for obtaining permits and enforcing compliance with planning schemes. Planning schemes set out how land may be used and developed. The Act sets out the requirements for obtaining planning permits and where domestic wastewater is required a planning permit may need supporting information such as a Land Capability Assessment (LCA) to show that the development can accommodate a DWS.

Macedon Ranges Shire Council Local Law

The General Purposes and Amenity Local Law No.10 was implemented on 25 September 2013. This Local Law has strengthened clauses relating to the maintenance of septic tanks.

Council Plan 2017 – 2027

The Council Plan 2017 – 2027 outlines the key priorities for the next four to ten years, and sets out how Council will invest in services and facilities. At the heart of the Council Plan is the vision for the shire, the community and the future. The plan also identifies five key priorities; our DWMP closely aligns with the following priority:

Our work so far

Over the last two and a half decades Council has worked on a number of projects and plans to improve wastewater issues in unsewered areas.

Septic Tank Policy 1996

The Septic Tank Policy was developed by Council in 1996, however this policy is no longer in use as Council is now guided by the EPA Code of Practice for onsite waste water management (refer to page 9).

Macedon Ranges Shire Domestic Wastewater Management Plan 2007

Council's first Domestic Wastewater Management Plan was a 4-year plan funded by the State government and adopted on 28 March 2007.

Macedon and Mt Macedon wastewater upgrades 2006 - 2014

Due to a large number of site constraints and failing wastewater systems, Macedon and Mt Macedon were identified as a priority town to receive improved sewerage services. The Council in conjunction with the EPA and Western Water implemented:

1. The Macedon Sewerage Scheme, which included 650 properties, this was completed in 2006 at a cost of $13.69M;
2. The Mount Macedon Wastewater project was delivered as a partnership between Macedon Ranges Shire Council and Western Water. The project was funded by the former Department of Sustainability and Environment to the value of approximately $1.3 million through the Country Towns and Sewerage Scheme Program. Council and Western Water committed around $150,000 each and landowner contribution of 30%.

61 constrained properties (including the Mount Macedon Primary School and township) were either connected to a Western Water Installed pressure pump sewer system or received upgraded septic tank systems managed by Council.

The project addressed public health risks by reducing the impact on the environment from wastewater runoff.

Macedon Ranges Shire Domestic Wastewater Management Plan 2013

Council adopted the 2013 Domestic Wastewater Management Plan (DWMP) in December 2013. The State Environment Protection Policy (SEPP) requires Councils to develop a DWMP in conjunction with water corporations and the community. The plan aims to reduce the environmental, public health and economic risks associated with the management of all domestic wastewater systems in the shire. The 2013 plan was due for review at the end of 2018.

Independent Audit of 2013 Domestic Wastewater Management Plan

It is a requirement that the plan is audited by an independent and accredited auditor (water corporation approved) on a three yearly basis. The audit reviews the monitoring and enforcement of the DWMP. The audit was conducted in November 2018. Recommendations from the audit have been incorporated in the new DWMP.
The audit was broken down into the following key areas to assist with the review of the DWMP and for future decision making:

- Information Management;
- Risk Management;
- Compliance;
- Community Education and Awareness
- Funding and Resourcing

The audit also reviewed the status of the Action Plan to identify which actions had been progressed and completed and whether there were any incomplete actions.

The development of an inspection program, resource allocation and data collection were identified as priority areas for completion and this has informed the development of the new DWMP Action Plan (see Page 29).

Stakeholder Roles and Responsibilities

Macedon Ranges Shire Council

Council is responsible for issuing permits for new DWS under the Environment Protection Act 1970. Council is also responsible for the management of all DWS in the shire; this includes the inspection of existing systems and ensuring compliance with Council and EPA requirements.

Council is also responsible for developing and implementing a DWMP that monitors the condition and management of DWS throughout the shire, including but not limited to compliance by permit holders with permit conditions and the Code.

Water Corporations

Rural Water Corporations provide rural water services for irrigation, recreation, domestic and stock and bulk water to urban water corporations for drinking water purposes. The Rural Water Corporations servicing the Macedon Ranges Shire are:

- Goulburn-Murray Water,
- Southern Rural Water.

Urban Water Corporations provide water supply and sewerage services to regional urban customers (customers outside of the metropolitan zone of Victoria). The Urban Water Corporations servicing the Macedon Ranges Shire are:

- Coliban Water,
- Western Water.

Both Rural and Urban Water Corporations have a responsibility for assessing and responding to all referred applications under clause 66 of Council planning schemes for Special Water Supply Catchments as listed in schedule 5 of the Catchment and Land Protection Act 1994.

Environmental Protection Authority Victoria (EPA)

The EPA develops policies, technical advice and codes of practice to regulate the use of DWS such as the SEPP (Waters), Septic Tank Code of Practice, Guidelines for Aerated Onsite Wastewater Treatment Systems.
The EPA approve and regulate systems discharging more than 5,000 litres per day and are a referral authority in the case of an application for offsite discharge.

Department of Health and Human Services Victoria

The Department of Health and Human Services DHHS have responsibilities under the Public Health and Wellbeing Act 2008 and administering the Safe Drinking Water Act 2003

North Central Catchment Management Authority (NCCMA)

The North Central Catchment Management Authority (NCCMA) works with local government to ensure on-site treatment systems do not impact on their water supply catchments. The NCCMA also has responsibilities to assess and respond to all referred applications under clause 66 of Council planning schemes.

Department of Environment, Land, Water and Planning (DELWP)

DELWP is responsible for the management of water resources, climate change, bushfires, public land, forests and ecosystems in Victoria. The DELWP may be referred to by Council for specialist advice where a DWS may impact on land or water resources.

Landholders

Landholders are responsible for:

- Obtaining a permit to install a septic tank system before a building permit is issued and installing the system,
- Obtaining a certificate to use the system once installed,
- Obtaining a permit to make any alterations to the existing system,
- Complying with permit condition requirements,
- Ensuring that septic tank systems are appropriately maintained to ensure adequate operational performance.

Definitions

Wastewater

Wastewater is any water that has been affected by human use. Wastewater is used water or by-product from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or stormwater, and any sewer inflow or sewer infiltration. The characteristics of wastewater vary depending on the source. Types of wastewater include: domestic wastewater from households, municipal wastewater from communities (also called sewage), or industrial wastewater from industrial activities. Wastewater can contain physical, chemical and biological pollutants.

Domestic Wastewater

Domestic wastewater is commonly described as any of three forms:

Blackwater – water grossly contaminated with human excreta e.g. toilet water, composting toilet leachate;

Greywater – water that can be contaminated by human excreta, but does not contain human excreta from a toilet, greywater is directly from the kitchen, bath/shower and laundry.

Sewage – a combination of both black and grey water.

Wastewater Treatment

In urban environments wastewater is managed in a sewerage system with treatment at a centralised wastewater treatment plant or sewerage plants with disposal via discharge to waterways or land application. Melbourne Water operates the Eastern and Western Treatment Plants in Carrum and Werribee respectively; and City West Water, Yarra Valley Water and South East Water operate a number of smaller treatment plants in metropolitan Melbourne.

In areas where a sewerage system cannot be provided, wastewater is managed onsite at each individual lot. Onsite domestic wastewater is generally managed by a number of different types of treatment systems, including but not limited to:

- Septic tanks with conventional effluent disposal fields,
- Aerated Wastewater Treatment Systems,
- Sand Filters,
- Composting Systems.

Following treatment, depending on the type of system used, the effluent is then disposed of onsite by absorption trenches, irrigation or sand mounds.

Risks associated with Domestic Wastewater

The management of domestic wastewater onsite poses a number of risks depending on the quality, treatment and application; these risks include:

Public Health

Poorly maintained, aging, over used systems, poorly drained soils or limited setback distances can result in septic tank effluent contaminating local waterways and drinking water supplies with chemicals and *microorganisms including bacteria, viruses and protozoan organisms*. Infectious doses of disease causing bacteria in wastewater can lead to illness like Gastroenteritis, Giardiasis, Cryptosporidiosis and Hepatitis.

Environmental

Nitrogen and phosphorous are found in a variety of forms in domestic wastewater. In excess, they may encourage nuisance growth of algae and aquatic plants in sensitive surface water systems and in some cases (nitrate) may pose a threat to human health.

Financial

Rectifying pollution from effluent discharges into waterways means our water corporations must apply an expensive higher level of treatment of drinking water prior to distribution back to our homes.

Failing DWM can cause odours or discharge into adjoining properties potentially impacting on public amenity creating a nuisance. There are financial implications for property owners required to complete upgrade works on failing DWS. Regularly maintaining a domestic wastewater system and using septic safe products is the best way to prevent the need for major upgrades.

This DWMP focuses on the prevention of these types of incidents.

Table 1: Risks of Domestic Wastewater Management Systems

Risk	Cause	Impacts
Failure of treatment system	Lack of maintenance/ poor installation/age of system	Environmental, Health & Social
Disinfection failure	No chlorine/poor upstream treatment	Health
Ineffective regulation	Lack of staff/time	Environmental, Health & Social
Offsite discharge	Failing/unapproved/illegal system	Environmental, Health & Social
Land application area/trench	Peak loads/overload of system inadequate settlement in primary chamber	Environmental, Health & Social
Unauthorised alterations of dwellings	Alterations undertaken to dwellings which can impact on effluent loads and also the disposal area	Environmental & Health
Unauthorised alterations to systems	Alterations undertaken to a system which were not approved by Council	Environmental, Health & Social
Human contact	Maintenance/inappropriate disposal methods	Health & Social
Pollution	Inappropriate effluent disposal/ damaged system	Environmental & Health
Owner ignorance	Lack of knowledge on system	Environmental, Health & Social
Damage to system by animals (domestic/farm/wild)	Inappropriate effluent disposal area	Health & Social
Odour	Poor treatment occurring in the primary tank	Social
Effluent disposal area failure onsite	Area inappropriately sized, located or overloaded	Health & Environmental
Groundwater contamination	Effluent disposal area overloaded reduced buffer distances, density of unsewered development, poorly designed, installed or maintained, inadequate treatment	Health, Social, Environmental
Surface water contamination	Surface runoff of effluent in area with reduced buffer distances, area inappropriately sized,	Environmental & Social
Human or animal disease outbreak	Poor treatment and management of system	Health

Assessment of Current Situation

There are approximately 8,000 DWS (septic tanks) within the shire, of which approximately 4,500 septic tanks are located in special drinking water supply catchments. Due to historical paper based permits prior to 1998, there are currently only about 4500 DWS on Council's electronic records system (Pathway).

Although Council's electronic database is not exhaustive, Council is able to determine exactly which properties are serviced by an on-site wastewater system using GIS Mapping techniques.

The DWMP action plan aims to establish a complete list of all existing systems over time with a priority being given to high risk properties located in areas which are in close proximity to waterways or may present a risk to the environment due to high development density.

Council's Environmental Health Unit currently assess applications and issues permits for new or altered DWS under the Environment Protection Act 1970 and responds to complaints or requests under the nuisance provisions of the Public Health and Wellbeing Act and Council's Local Law No.10.

Given there are no ongoing fees or licences for DWS it is very difficult to conduct proactive assessments of existing systems in the shire. This means there could be many failing systems operating without any oversight.

Using Council's DWS database and GIS system, Council has identified:

- 1290 properties as being located in a high risk area. That is, dwellings within: 100m of a waterway in a special drinking water supply catchment area. The intention is to audit these properties as part of Council's implementation of the DWMP as outlined in the action plan.
- 1290 properties as being located in a high risk area. That is, dwellings within: 300m of a reservoir in a special drinking water supply catchment area. The intention is to audit these properties as part of Council's implementation of the DWMP as outlined in the action plan.
- 1500 properties in high density unsewered areas where Council will write to the property owners requesting a septic tank pump out or AWTS maintenance report if they do not already do so.
- Approx. 4500 septic tank permits which have been issued with permit conditions; these properties will be required to comply with the permit conditions and if required to submit maintenance reports.

Wastewater Threats in the Shire

Many wastewater issues are common across all areas and regions, however there are some specific issues which arise due to site location. Table 2 outlines the specific threats from wastewater treatment in the targeted townships in the Council area.

Table 2: Threats from Wastewater Treatment by Targeted Township

Town	Threats	
Targeted un-sewered townships		
Lauriston	Within a potable drinking water catchment, current land use primarily residential and farming/agricultural/forestry, proximity to waterways (Coliban River and Lauriston and Malmsbury Reservoirs), highly constrained by lot size, potential groundwater depth risk, groundwater bores located near Coliban River. The entire township is moderately constrained by soil, many lots in the township are located within 300m of the reservoir in a special drinking water supply catchment area. Flood inundation located around the Coliban River and reservoirs.	
Carlsruhe	Current land use primarily residential and farming/agricultural/forestry, highly constrained by lot size, groundwater bores present, potential groundwater depth risk. The entire township is moderately constrained by soil, many lots within 100m of a waterway in a special drinking water supply catchment area, flood inundation.	
Mount Macedon	Current land use primarily residential, public/community services and environmental reserves. Very highly constrained by slope, potential groundwater depth risk, groundwater bores in locality. The entire township is moderately constrained by soil except for the south-eastern region, many of lots within 100m of a waterway in a special drinking water supply catchment area.	
Monegeetta	Current land use primarily farming/agricultural/forestry, slightly constrained by slope. The majority of township is moderately constrained by soil, a large proportion of lots in the township are located partially within waterway setback distances.	
Darraweit Guim	The entire township is moderately constrained by soil except for the northern region which is highly constrained, majority of lots in the township are located partially within waterway setback distances, flood inundation potential directly surrounding the town.	
Other Townships		
Woodend	While this township is sewered there are urban fringes which remain unsewered and are serviced by DWS. These areas are constrained by lot size and proximity to surface waters. There are many lots within 100m of a waterway in a special drinking water supply catchment area.	
Gisborne	While this township is sewered there are urban fringes which remain unsewered and are serviced by DWS. Current land use is primarily residential, commercial/retail and public/community services, large flooding potential, constrained by lot size, slightly constrained by slope, moderate soil constraint.	

Town	Threats	
Macedon	While this township is sewered there are urban fringes which remain unsewered and are serviced by DWS. Current land use primarily residential, within the drinking water catchment, constrained by lot size, moderate soil constraint, Wombat soil landscape system, proximity to surface waters. There are many lots within 100m of a waterway in a special drinking water supply catchment area.	
Riddells Creek	While this township is sewered there are urban fringes which remain unsewered and are serviced by DWS. Current land use primarily residential, commercial/retail, industrial and public/community services, flooding potential, groundwater risk, constrained by lot size, constrained by slope primarily to the northwest, high soil constraint, and slight proximity to surface waters.	
Romsey	While this township is sewered there are urban fringes which remain unsewered and are serviced by DWS. Current land use primarily residential, commercial/retail, industrial and public/community services, flooding potential, high groundwater risk, moderately constrained by lot size with slight proximity to surface waters.	
Lancefield	While this township is sewered there are urban fringes which remain unsewered and are serviced by DWS. Current land use primarily residential, commercial/retail, industrial, farming/agricultural/forestry and public/community services, flooding potential, slight groundwater risk and moderately constrained by lot size.	
Kyneton	While this township is sewered there are urban fringes which remain unsewered and are serviced by DWS. These areas are constrained by lot size and proximity to surface waters. There are many lots within 100m of a waterway in a special drinking water supply catchment area.	
Malmsbury	While this town is sewered there are fringes which remain unsewered and are serviced by DWS. Local vineyards and small scale tourism operations are the primary land use. There are many lots within 100m of a waterway in a special drinking water supply catchment area.	
Tylden	While this town is sewered there are fringes which remain unsewered and are serviced by DWS. Tylden is constrained by the Upper Coliban Reservoir which is to the northwest of the town. There are many lots within 100m of a waterway in a special drinking water supply catchment area.	
Newham	This small town is characterised by rural residential, wineries and has no sewer or town water services available.	
Bullengarook	This is a very small town and characterised by rural residential development, farming, and a large recreation reserve, there are no town commercial facilities and no sewer or town water services available.	
Clarkefield	This small town is characterised by rural residential development and farming. The town has no sewer or town water services available.	

Risk Assessment Framework

A detailed risk assessment matrix has been developed to provide Council with a tool to prioritise existing dwellings and associated DWS within the close proximity to waterways, and reservoirs and higher development densities in water catchment areas with the greatest potential impact on the environment and human health.

This risk matrix prioritises properties to inform the inspection and compliance program and is not to be used as a guide for areas for future development.

The risk matrix used by Council detailed in the following table calculates each constraint risk category against each other to determine the domestic wastewater threat level on a particular wastewater application. This determines the priority given to each property and potential resources allocated to determine operational status.

Domestic wastewater can be highly variable in quantity and quality which can impact on the performance of DWS. It should be noted that this section does not consider the risk of poor management and / or installation of systems, which is a constraint unable to be mapped.

Any site assessment that is based solely on site conditions is inadequate. Following an inspection, a decision on the future DWS inspection frequency will be made based on a combination of site conditions and DWS conditions. Any DWS that has failed to operate in accordance with manufacturers requirements and/ or permit conditions will be classified 'high risk'.

By applying the following constraint layers on Council's GIS system we have been able to establish which properties with a domestic wastewater system were high, medium or low risk.

- Within drinking water supply catchment areas
- Proximity to waterway and reservoir
- Housing density (cumulative effect)
- Land subject to inundation
- Soil type
- Slope
- Lot size

The threshold to determine a high density unsewered area is a ratio of 1:40; one house for every 40 hectares as stated in the '*Guideline 1: Density of dwellings*' in the Guidelines for Planning permit applications in in Open Potable Water Supply Catchment areas (November 2012)

This ratio is applied over a 1km (314ha) radius, therefore a high density unsewered area is considered to be where there is eight or more existing dwellings within a 1km radius (314/40 = 7.85 – rounded up to 8).

See Map 3: Housing Density in Proclaimed Catchments Boundaries.

Table 3: Domestic Wastewater Management Risk Matrix

Threat	Low Risk	Medium Risk	High Risk
Lot Size	>1ha	4000sq m-1ha	<4000 sq. m
Proximity to waterway	>200m	Between 100-200m	<100m
Proximity to reservoir	>500m	Between 500-300m	<300m
Land Subject to Inundation	No	Yes	Yes
Soil Type – from GIS database	(Rs) Red earths (Ri) Red duplex soils, Brown earths (Ru) Red earths, Red earths (Rzc) Red loams (Rx) Red friable earths (Rzg) Reddish yellow earths (Rzf) Reddish brown earths	(Md) Mottled duplex soils, Shallow sands (Yl) Yellow earths (Ri) Red duplex soils, Brown earths (Mc) Mottled duplex soils, Sands (Rg) Red duplex soils (Fd) Friable earths, Mottled duplex soils (Bn) Brown loams (Rn) Red duplex soils, Mottled duplex soils (Yp) Yellow earths, Mottled duplex soils (Rzb) Red loams, Grey loams (Szk) Stony mottled duplex soils (Szl) Stony red earths (Ma) Mottled duplex soils	(Sz) Shallow stony loams, Shallow stony clays (Yt) Yellow earths, Yellow duplex soils (Ga) Grey clays (Gb) Grey clays, Brown duplex soils (Sv) Shallow stony earths, Friable earths (Ye) Yellow duplex soils, Grey clays, Red friable earths (Bc) Black self-mulching cracking clays (St) Shallow stony earths, Dark clays (De) Duplex soils, Grey clays Yd) Yellow duplex soils, Grey clays (Szf) Stony earths
Slope	Slope<10%	Slope between 10-20%	Slope > 20%
Housing Density			>1:40ha

Compliance & Enforcement

Wastewater Inspection and Compliance Program

Macedon Ranges Shire and Coliban Water have agreed to each contribute $20,000 for investment in domestic wastewater management within the *Coliban Water - A Healthy Coliban Catchment* program area.

This new partnership program, commencing in 2019, aims to ensure that homeowners within the Coliban drinking water catchment area are maintaining their DWS in accordance with the Septic Tank Code of Practice and their permit conditions under the Environment Protection Act 1970 (EP Act).

It is anticipated that this project will expand to other catchments and water corporations in the coming years by building on previous learnings, and the risk assessment framework, to prioritise properties with the greatest potential to impact the environment and human health.

The tools available to ensure septic tank systems are appropriately maintained include:

- Education,
- Mandatory/Maintenance Reporting,
- Inspection / audit process for septics in high risk areas,
- Section 173 agreements,
- Enforcement under the EP Act and Local Law.

Education

Educating property owners to better understand their wastewater system is critical to minimising the potential environmental impacts of their system.

Council's Website: Provides residents with information on what is required when applying for a septic tank permit, with fact sheets on the various system types and their maintenance requirements. Council's website will soon enable residents to make permit applications on-line.

New property owners: Council is made aware of unsewered property as part of the property transfer process when a property changes hands. Information packs will be sent to new owners of properties with septic tank systems to inform them of their obligations to maintain the operational performance of their system.

Plumbers and authorised service agents: Council will support and provide guidance to plumbers and authorised servicing agents to improve standards in the industry.

Mandatory septic maintenance reporting

Council's Local Law requires property owners to have their septic system inspected by a Licenced Plumber or an accredited service technician every 3 years. A maintenance report must be provided by the plumber/ technician to the property owner and submitted to Council within 30 days of the maintenance inspection.

This requirement is enforced by two mechanisms:

- The Environment Protect Act if a permit is in place; or,
- The Local Law if no permit is in place.

Council's Wastewater Inspection and Compliance Program will aim to establish a system to ensure these maintenance reports are submitted.

Council's Inspection and Compliance Program Inspection Checklist

Council Officers will use a Septic Tank Inspection Checklist (see over) when conducting the audits of high risk DWS as part of the Council's Inspection and Compliance Program. Results of these inspections will be followed up and all of these details will be recorded in Council's database for future reference and reporting.

Upon completion of the audit, correspondence will be sent to the owner confirming the audit and thanking them for their participation in the program; fact sheets will be provided where appropriate.

Minor issues, such as a buried septic tank or broken distribution box, will result in a letter to the owner with advice on how to rectify the issue, as well a system specific fact sheet.

Medium issues identified during the inspection, such as pooling or wet areas near the distribution field which have a potential health risk, will result in a letter to the owner requiring rectification works as required by the conditions in their Septic Permit (if a permit can be located) or requirements of the Local Law. A follow up inspection will be required to ensure the works have been completed.

High risk issues identified during the inspection such as offsite discharge will result in an improvement notice under the PHWB Act to upgrade or replace the existing system.

Macedon Ranges Shire Council

Septic Tank Inspection Checklist

Property Address:		**Date:**	
Property Owner:		**Permit No:**	
Owner Contact		**Age of system**	
Officer:		**GPS Location:**	

Permit Located: ☐Yes ☐ No

Premises Type: ☐ Occupied ☐ Holiday house ☐ Other

Type of System:	☐ Septic Tank	☐ Treatment Plant	☐ Worm farm	☐ Other
Water supply:	☐ Reticulated	☐ Rainwater	☐ Bore	☐ Spring/ Dam
Date last desludge/ service		**Service reports**	☐ Yes	☐ No

Notes:

Disposal Area Type:	☐ Trenches	☐ Sub-surface Irr	☐ Surface Irr	☐ Other
Disposal area length/ size:				
Disposal Area Appearance:	☐ Wet/ boggy area	☐ Ponding	☐ Overgrown	☐ Covered
	☐ Odour	☐ Tree roots	☐ Damaged	☐ DB damaged
	☐ Exposed lines	☐ Unable to Locate	☐ Offsite Discharge	

Notes:

Inspection Result	☐ **Satisfactory** (No issues)	☐ **Minor**	☐ **Major** (Health risk)	☐ **Critical** (System failing or discharging offsite or into waterway)
Follow up required	☐ **NO**	☐ **YES**		

Regulations

Environmental Protection Act 1970

Upon installation of a septic tank Council will issue a permit under the EPA Act which will contain a number of conditions. Council has the power to enforce compliance with these conditions imposed including maintenance and function of the wastewater system.

SECT 53MA - Compliance with permit

A person must comply with a permit and any conditions to which it is subject.
Penalty: 120 penalty units

SECT 53N - Maintenance of septic tank systems

An occupier of premises on which a septic tank is located must maintain it in accordance with the requirements specified in the permit issued by the municipal council for that septic tank system.

Penalty: 10 penalty units

Public Health and Wellbeing Act 2008

Council investigates nuisance complaints under the Public Health and Wellbeing Act 2008 (Vic) with regard to septic tank systems that may be causing public health and/or environmental issues.

SECT 61 - Offence of causing a nuisance

(1) A person must not —

(a) cause a nuisance; or
(b) knowingly allow or suffer a nuisance to exist on, or emanate from, any land owned or occupied by that person.

Penalty: In the case of a natural person, 120 penalty units;

If an existing permit cannot be located, enforcement action can be taken under the Local Law to ensure compliance.

Operation and maintenance of septic tank systems

1. An owner or occupier of land on which a septic tank system is located must ensure that the system operates and is maintained so that it does not:

   (a) cause a nuisance to others because of odour or by nature of a discharge;
   (b) cause or could cause a risk to public health; or
   (c) cause or have the potential to cause environmental degradation.

   Penalty: 10 Penalty Units

2. An owner or occupier of land on which a septic tank system is installed must:

   (a) make the septic tank system available for inspection by an Authorised Officer when requested to do so; and
   (b) have the septic tank system inspected by a licensed plumber or an accredited service technician every 3 years or at a frequency prescribed in the risk based compliance program contained in Council's Domestic Wastewater Management Plan.

3. In determining whether a septic tank system is operated and maintained in contravention of subclause (1) an Authorised Officer may consider:

   (a) whether the system is operated and maintained in accordance with the requirements in the Code of Practice for Onsite Wastewater Management; and
   (b) whether it discharges water contrary to Council's Domestic Wastewater Management Plan.

4. If an Authorised Officer considers that a septic tank system is operating or maintained contrary to subclause (1), the owner of the land on which the system is located may be required to modify the system to the standards prescribed in the *Code of Practice for Onsite Wastewater Management and the Australian Standard AS/NZS 1547.*

Funding and Resourcing

Due to the large number of wastewater systems and no state legislated on-going licence fees, there is a need for innovative funding opportunities and risk analysis to target the highest risk properties in any Inspection and Compliance Monitoring Program.

Using Council's GIS mapping system approximately 1290 dwellings and septic tank systems are within close proximity to a waterway or reservoir in a special drinking water supply catchment area; these dwellings pose the highest risk to the environment and public health. Council has entered into a partnership with Coliban water with each party allocating $20,000 to commence the Inspection and Compliance Monitoring Program in 2019/20.

Although funding has been secured for the 2019/20 financial year, further funding is required to ensure this Inspection and Compliance program continues in the future. A partnership approach with all water corporations is required to jointly fund programs to enhance the health of our waterways.

An annual allocation of funding is required for implementation of actions additional funding is required to enable Council to accurately and comprehensively assess the risks from high-risk unsewered areas.

Action Planning

The following Action Plan (Table 4) forms the major component of this DWMP. It determines the steps and milestones required to ensure Council positively contributes to domestic wastewater in the highest risk areas.

Three actions outlined here are particularly critical (13, 14 & 15) relating to reporting, auditing and reviewing the progress of this DWMP. The action plan requires review annually to respond to funding opportunities, this will ensure the action plan remains current.

Please Note: Some actions are subject to available funding.

Table 4: DWMP Action Plan

Action	Audit Recommendation	Description	Priority	Due Date	Cost Estimate
Adoption of the DWMP	N/A	1. Council adopts and implements the DWMP to meet the requirements of the SEPP.	High	Nov-19	Within existing Council budget
Preparation of policies and procedures	N/A	2. Review and update Council's current Septic procedures in line with the EPA Code of Practice.	Medium	Dec 2020	Within existing Council budget
Expansion of existing Pathway electronic data management	Information management	3. Input remaining paper archived Septic tank Permit data into Pathway Data management system.	Medium	July 2020	Within existing Council budget
	Information management	4. Capture all information collected as part of the MRSC Wastewater Inspection and compliance program on Pathway.	High	Reviewed Quarterly	Within $20,000 new Initiative included in 2019/20 budget
Data collection improvement	Information management	5. Request property owners to provide a maintenance report in accordance to the relevant EPA Certificate of Approval or Council's Local Law that existing systems are being serviced.	Medium	Ongoing	Within existing Council budget
	Information management	6. Investigate the purchase and integration of electronic collection of field data during audits.	Medium	July 2020	Within $20,000 new Initiative included in 2019/20 budget
	Information management	7. Council to investigate improvements to Pathway to provide maintenance report due dates, timeframes and reminder letters.	Medium	July 2020	Within existing Council budget

Action	Audit Recommendation	Description	Priority	Due Date	Cost Estimate
Wastewater Inspection and Compliance Program **(Coliban Project)**	Risk Management	8. Develop process and procedures to inspect, record and follow up existing wastewater systems in high risk water catchment areas.	Medium	July 2020	Within $20,000 New Initiative included in 2019/20 budget
	Risk Management	9. 1290 Council audits of wastewater systems identified high risk using the DWMP Risk matrix water catchment areas over a 10 year period.	High	129 audits each year for 10 yrs.	$20,000 Annually.
Community education program	Community Education and Awareness	10. Update Wastewater forms, fact sheets and information on Council's website	Medium	Dec 2020	Within existing Council budget
	Community Education and Awareness	11. Develop information statements and review educational material new owners of properties with septic tank systems to improve system performance			Within existing Council budget
	Community Education and Awareness	12. Council support and guide plumbers and authorised servicing agents to improve standards in the industry			Within existing Council budget
Report to key stakeholders	Reporting	13. Council to report annually on the progress of the Action Plan.	High	July Annually	Within existing Council budget
Audit and review of MRSC DWMP	Reporting	14. The DWMP to be reviewed and updated (if necessary) every 5 years.	High	Dec 2024	Within existing Council budget

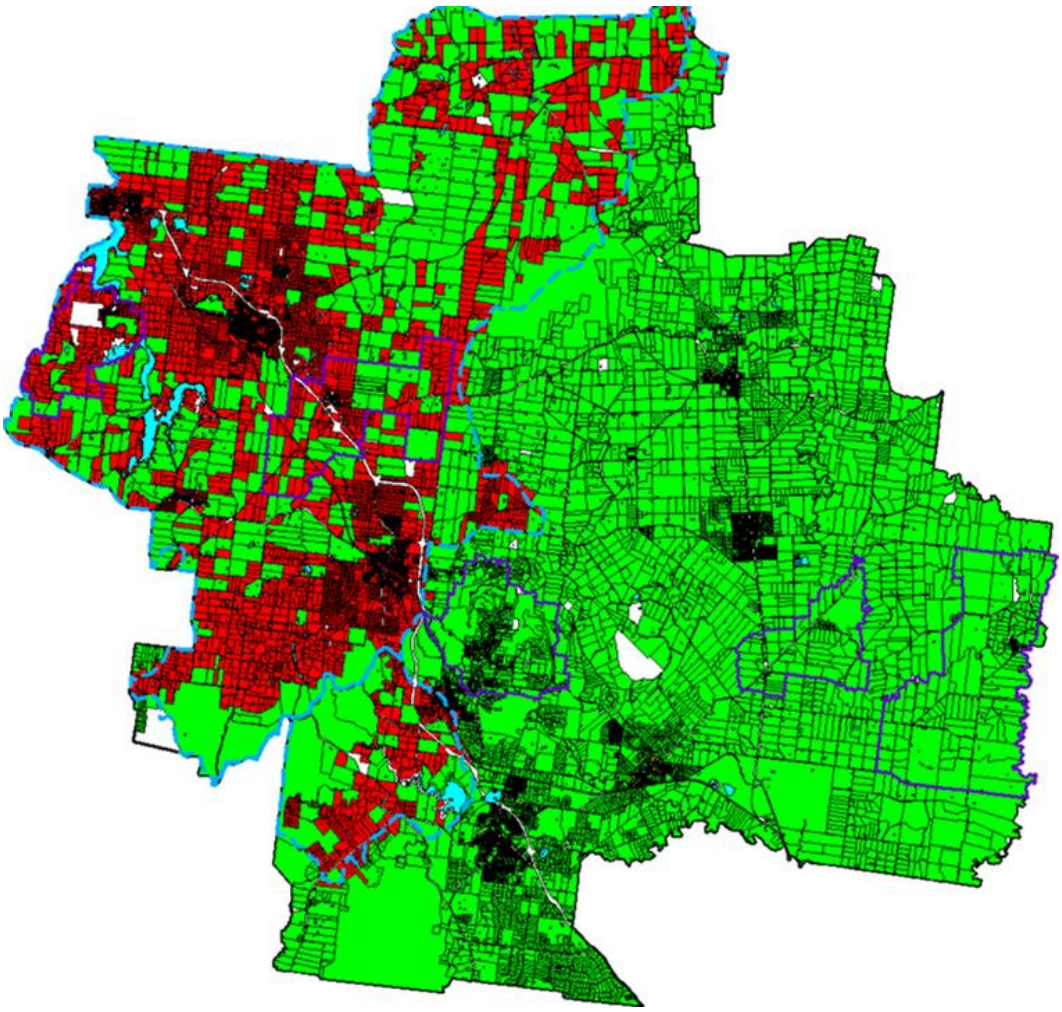
	Reporting	15. Independent audit of DWMP by an accredited auditor (water corporation approved) including implementation monitoring and enforcement	High	Dec 2022	$5000 every 3 years

Domestic wastewater management land capability constraint maps

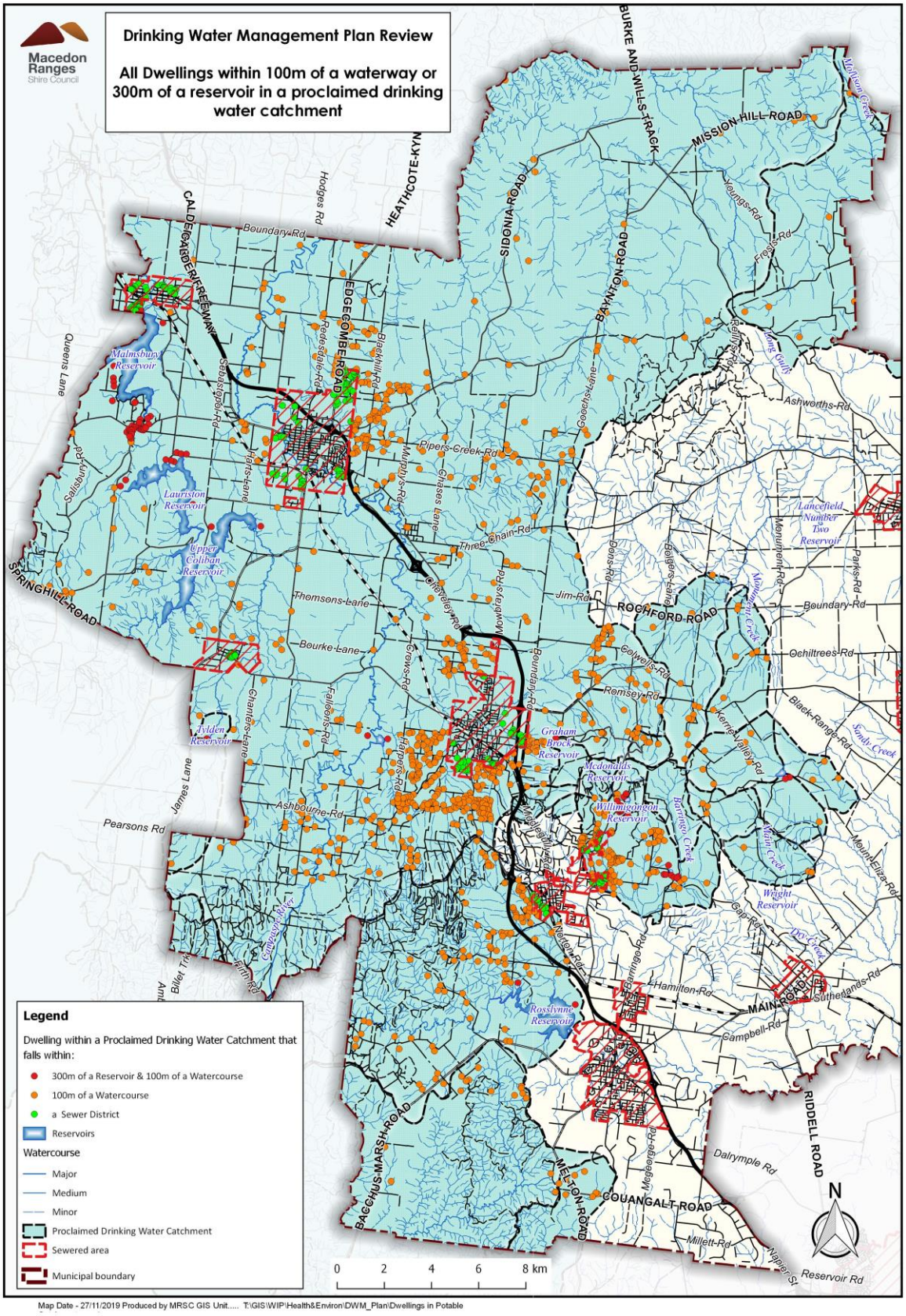
A series of wastewater management land capability constraint maps have been developed on Council's GIS mapping system which can be used as a tool to prioritise properties as part of the Inspection and Compliance Program. These maps are a representation of the GIS layers available to Council to identify high, medium and low risk properties. The live system enables Council Officers to use these layers with greater detail and accuracy.

Map 1: Lot Size Constraint Map Summary

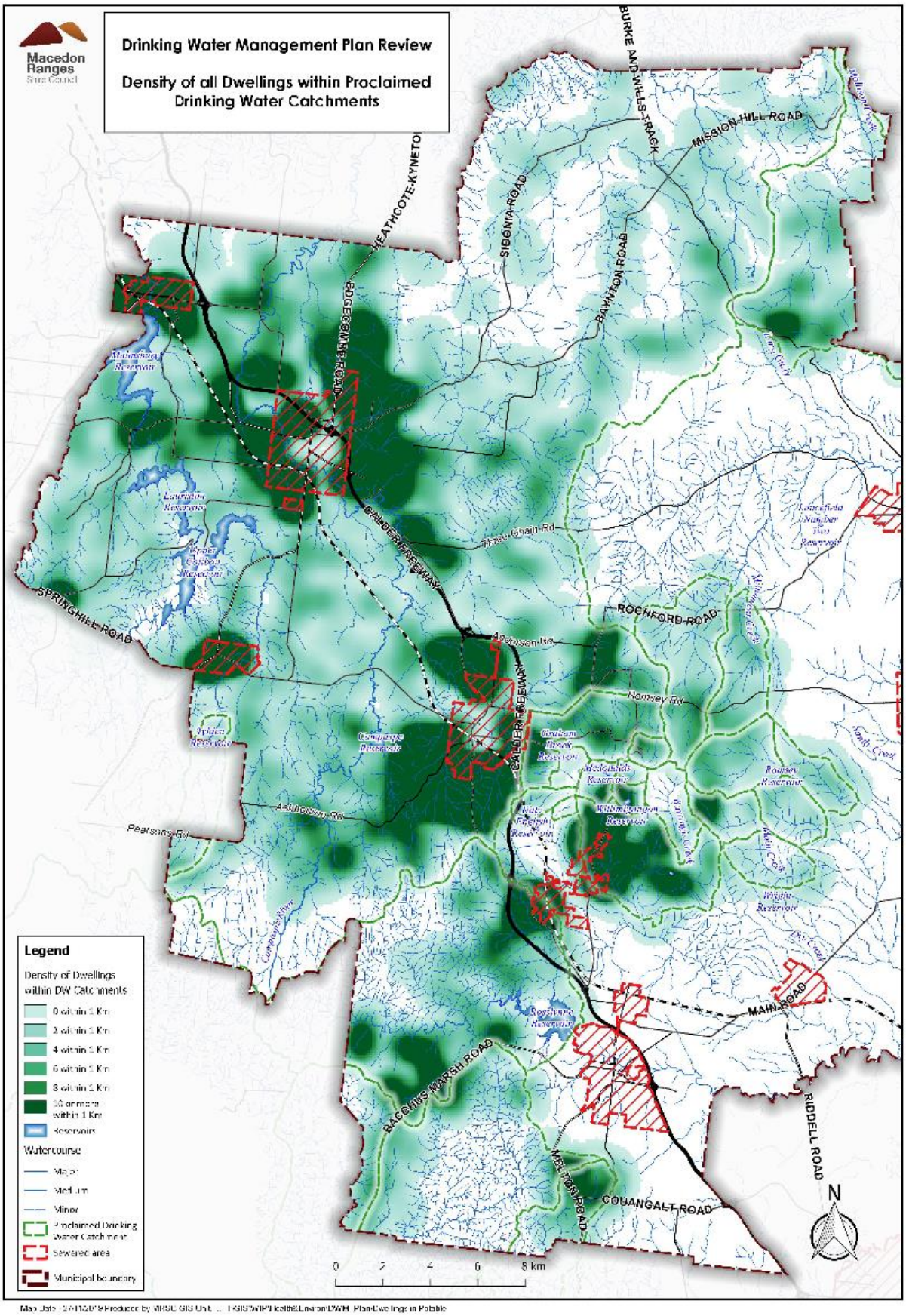
DWM Discrete Constraint Analysis	Assigned Constraint Class (Number of Lots)		
	High	Moderate	Low
	<1,000m2	1,000 - 4,000m2	>4,000m2
Lot Size (Overall)	14,282	4,682	7,255



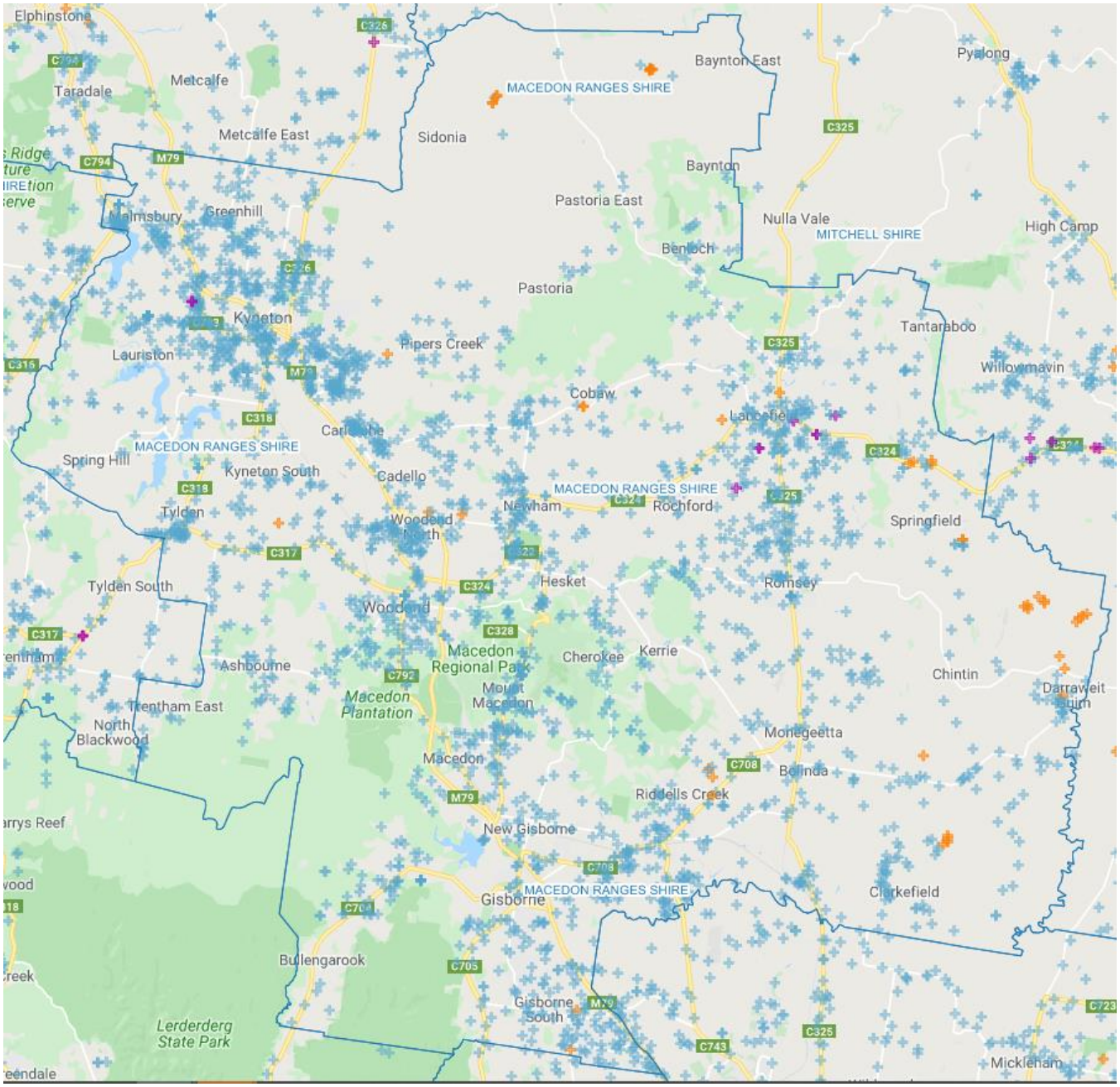
Map 2: Proximity to Surface Waters and Reservoirs



Map 3: Housing Density in Special Water Supply Catchment Areas.

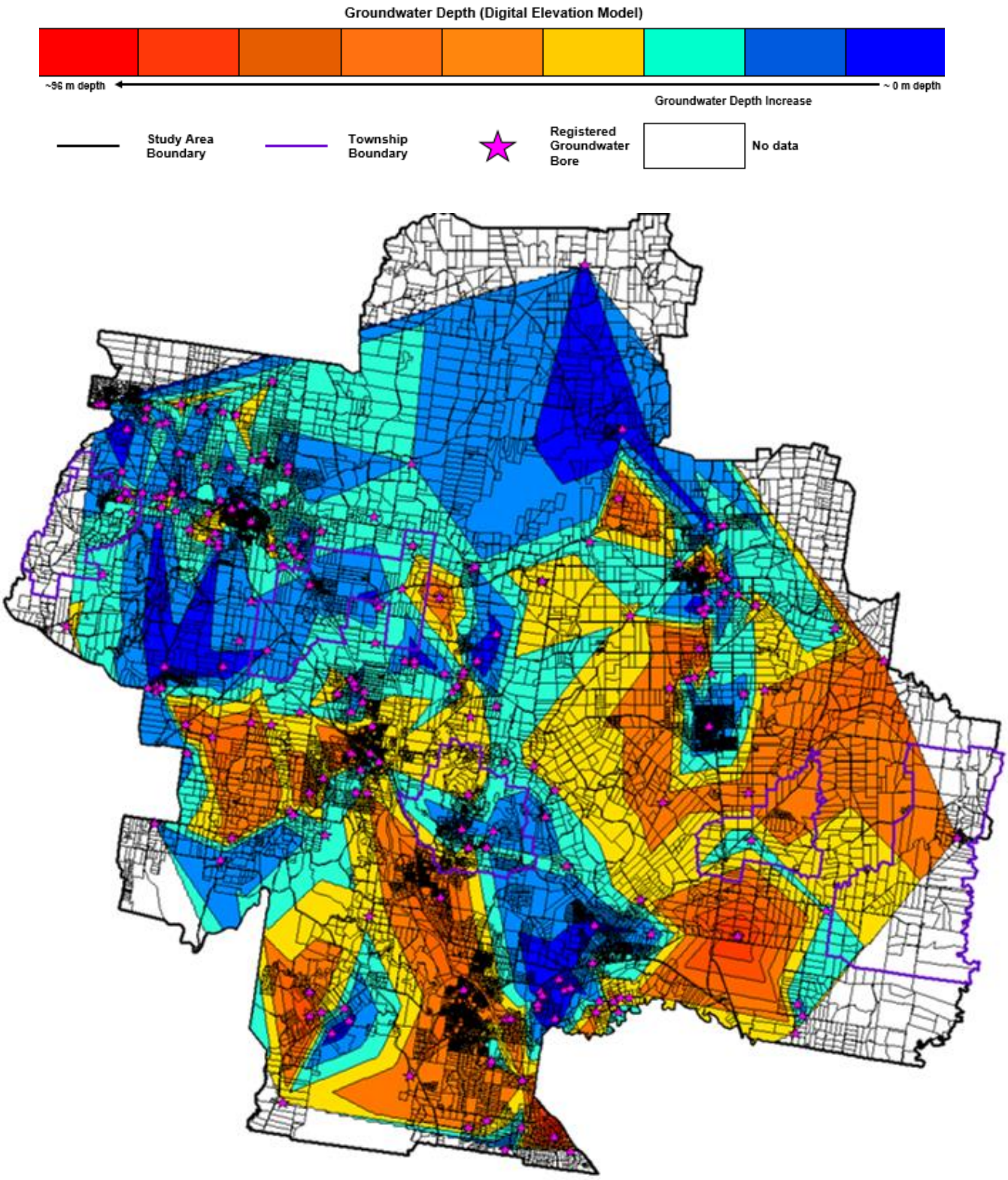


Map 4: Location of Groundwater Bores



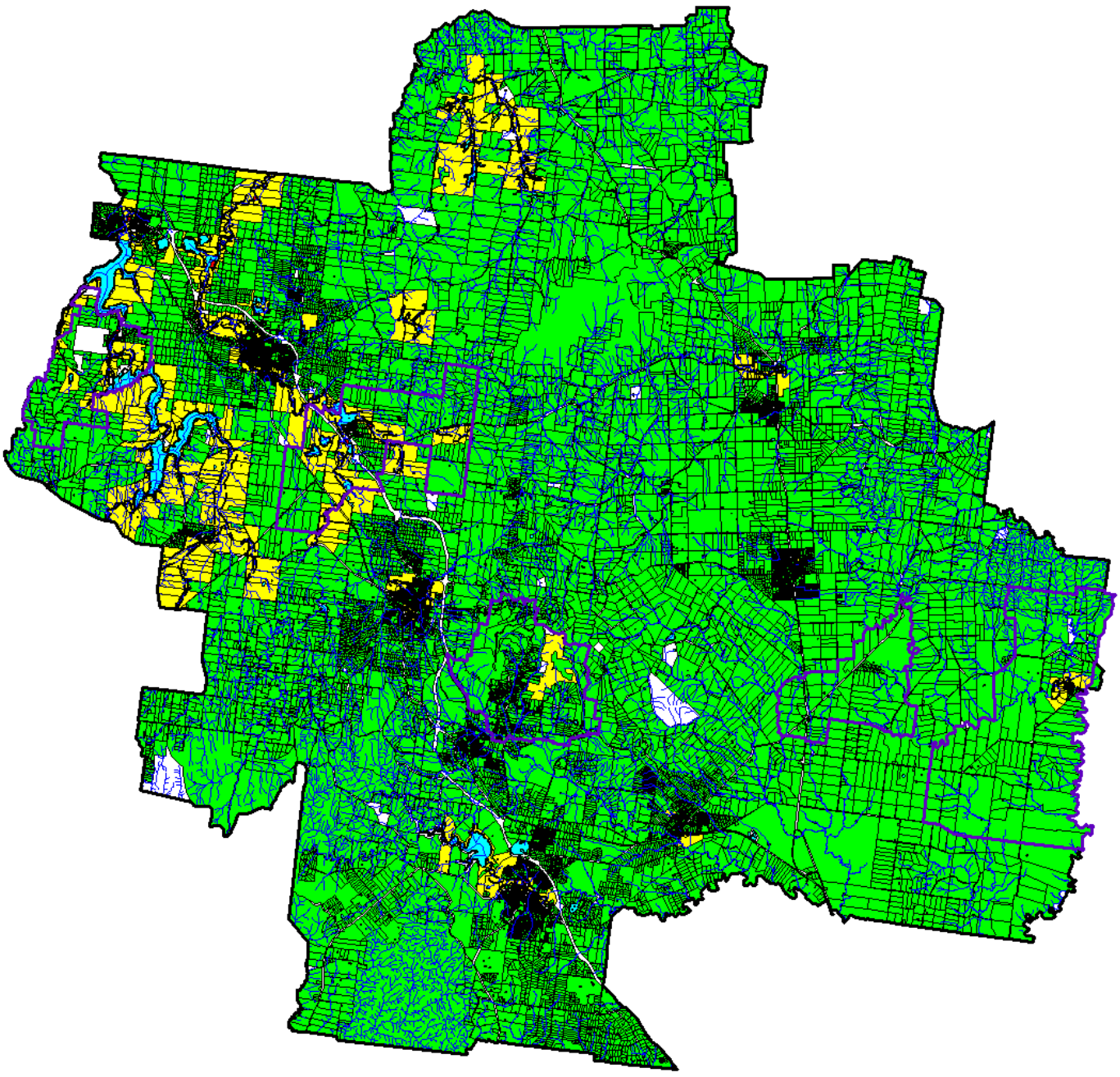
Source: Visualising Victoria's Groundwater - https://www.vvg.org.au/vvg_map.php

Map 5: Groundwater Depth (Digital Elevation Model)



Map 6: Flood Prone Land

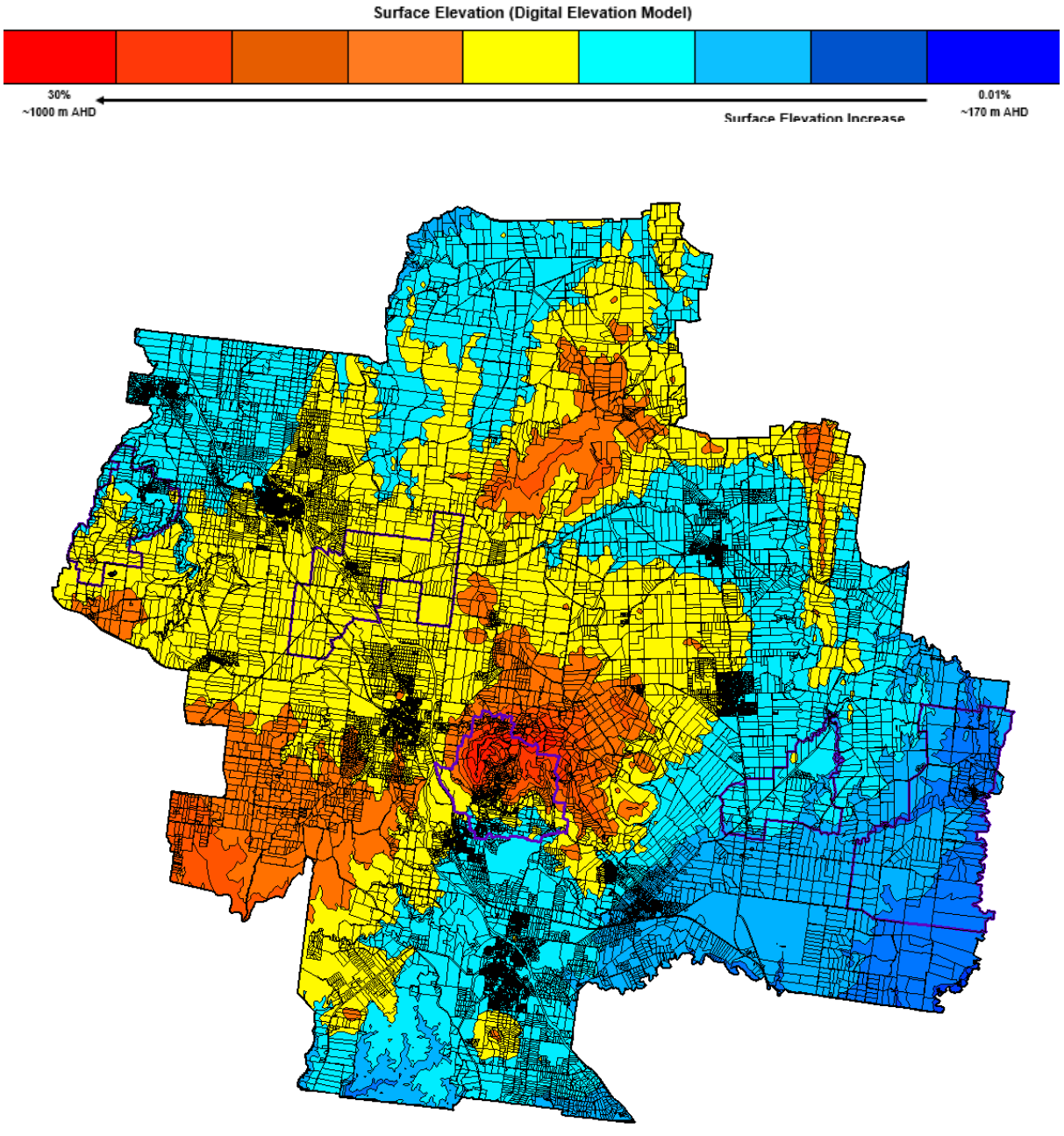
DWM Discrete Constraint Analysis	Assigned Constraint Class (Number of Lots)		
	High	Moderate	Low
	Entirely flood affected	Partly flood affected	Not flood affected
Flood Prone Land (Overall)	179	943	25,137



Map 7: Average Lot Slope

The table below interprets the elevation map (Map 7) and provides a risk indicator based on percentage incline.

DWM Discrete Constraint Analysis	Assigned Constraint Class (Number of Lots)		
	High	Moderate	Low
	>12%	8 - 12%	<8%
Overall Ave Lot Slope	733	849	26,231



Soil Suitability

Soils and associated landform elements play a vital role in the design, operation and performance of DWS. Key soil properties can be evaluated to assess a soil's capacity for absorption of wastewater, including texture, structure, permeability, drainage characteristics, total depth, and depth to limiting layers such as bedrock, hardpans or water tables.

The most current soil landscape dataset was contained within the 'Land Systems of Victoria' (2000) dataset (1:250,000) published by the former Department of Conservation and Environment and the Land Conservation Council in 1990. However, this data did not cover the entire shire and only contained certain physical and chemical soil attributes. There were 31 different soil landscape systems identified within the shire.

The Land Systems of Victoria (2000) dataset provided information on the following productivity and land degradation constraints:

- Landform
- Vegetation
- Soil description/ Classification
- Compaction (soil structure)
- Mass movement
- Water erosion (soil depth)
- Wind erosion
- Lithology
- Climate
- Soil code
- Soil landscape system
- Leaching of nutrients
- Salting
- Waterlogging/ drainage

The degree of constraint (constraint class) has been assigned to each soil landscape system within the shire based on the following key soil attributes:

- Soil depth
- Soil structure
- Topsoil texture
- Indicative permeability
- Indicative drainage
- Subsoil texture

Table 5: Summary of Constraint Classes for the Selected Soil Attributes

The final soil suitability was defined by the depth constraint and hydraulic constraint parameters. Greater depths of unsaturated soil provide increased treatment of effluent and reduced lateral water movement

Constraint Type	Parameter	Constraint Class	Description
Depth Constraint	Profile Depth	Low	>2m
		Moderate	1-2m
		High	<1 m
Hydraulic Constraint	Indicative Permeability	Low	0.12-1.5m/day
		Moderate	0.06-0.12 & 1.5-3.0 m/day
		High	<0.06 & >3.0 m/day (extremes)
	Topsoil Structure	Low	Moderate to strong
		Moderate	Weak to moderate
		High	Massive to weak
	Indicative Drainage	Low	Well drained
		Moderate	Imperfectly drained
		High	Poorly to very poorly drained

A weighted constraint score has been calculated for each soil landscape system based on their associated depth and hydraulic constraints to determine the final soil suitability constraint class for each soil landscape system within the shire.
Refer to Table 7 for the method of this process.

An example for Theaden Hill soil landscape system is provided below:

Indicative Permeability	*Structure*	*Depth*	*Indicative Drainage*	*Cumulative Hydraulic Constraint*	*Final Hydraulic Constraint*	*Final Soil Suitability Constraint**
3	*2*	*2*	*3*	*8*	*3*	*2**

*[(Depth HS x w) + (Hydraulic HS x w)] / 2
= [(2 x 1.25) + (3 x 0.75)] / 2
= 2.375
= 2 (Low final soil suitability constraint)

The following range is used to determine the DWS constraint classification for soil suitability:

- **High risk:** lots have a final soil suitability constraint rating of 7–9;
- **Moderate risk:** lots have a final soil suitability constraint rating of 4–6; and
- **Low risk:** lots have a final soil suitability constraint rating of 1–3.

Map 8: Soil Types

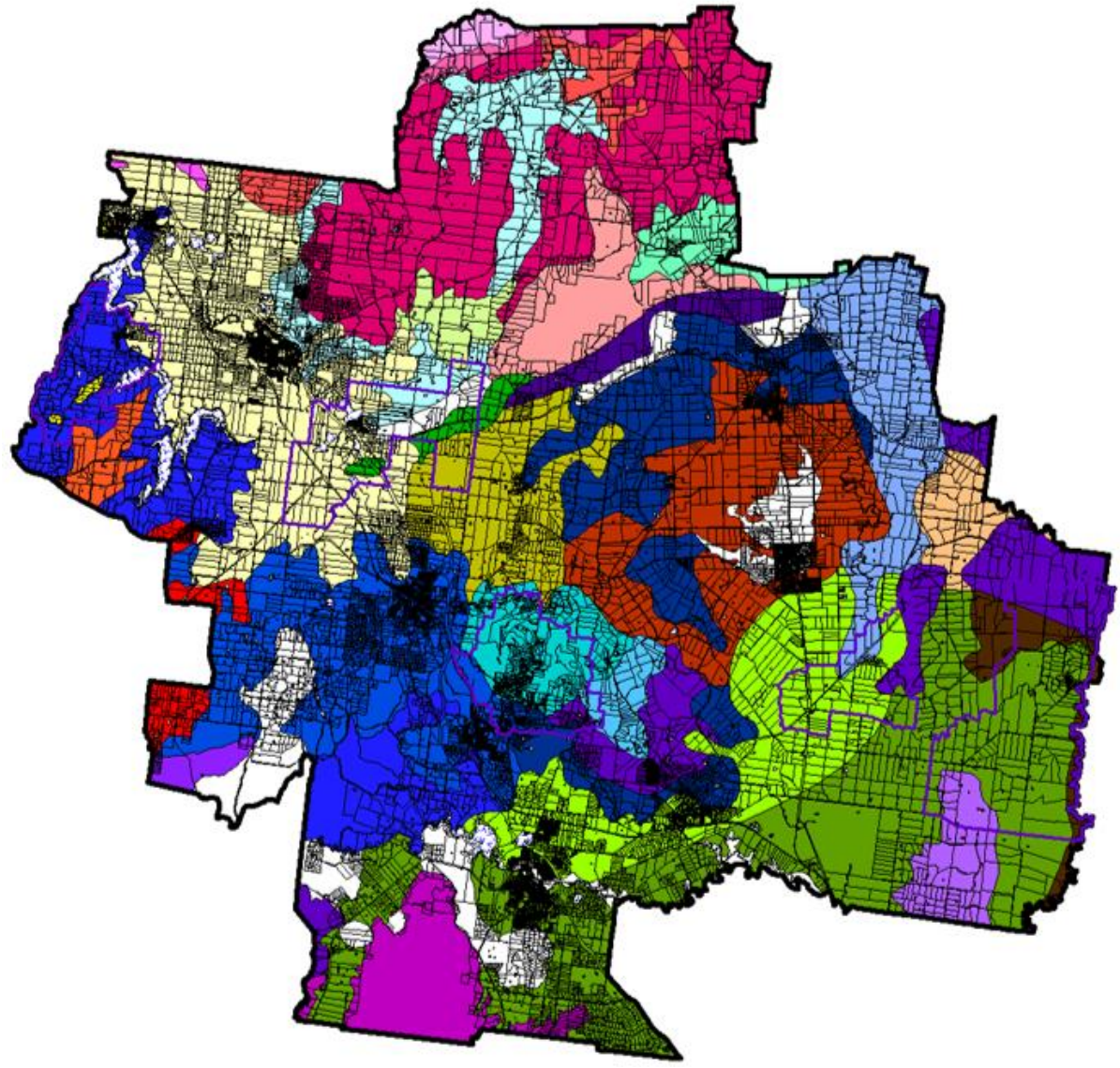


Table 6: Soil Landscape System, Texture and Associated Constraint Classes

Soil Code	Soil Landscape System	Topsoil texture	Subsoil Texture	Texture (subsoil)	Indicative Permeability	Topsoil Structure	Indicative Drainage	Cumulative Hydraulic Constraint	Hydraulic Constraint Summary	Soil Depth	Weighted Constraint Classification	Final Soil Suitability Constraint
2.1HgP7-2	Cobaw	coarse LS	MC	3	3	2	3	8	3	2	2.375	2
2.1HgP7-3	Theaden Hill	coarse LS-SL	MC	3	3	2	3	8	3	2	2.375	2
2.1HmP7-5	Koala	SL-L	SL-L	2	2	2	2	6	2	2	2	2
2.1HmP7-6	Darraweit Guim and Springfield	gravelly CL- LC-L-SL	L-SL-LC-CL/LC- MC on slopes	2	2	2	3	7	3	3	3	3
2.1HsP5-2	Palaeozoic Sediments and Darraweit Guim	gravelly CL- LC	CL-LC	2	2	2	3	7	3	3	3	3
2.1HsP6-4	Fryers	L-SL	L-SL	2	2	2	1	5	2	2	2	2
2.1HsP6-7	Wolfscrag	L	L	1	1	2	2	5	2	2	2	2
2.1HsP7-6	Darraweit Guim and Springfield	gravelly CL- LC-L-SL	L-SL-LC-CL/LC- MC on slopes	2	2	2	3	7	3	3	3	3
2.1HsP8-1	Unidentified			2	2	3	3	8	3	3	3	3
2.1LsP6-2	Palaeozoic Sediments			3	3	1	3	7	3	2	2.375	2
2.1LsP6-4	Glenmona	stony L	sodic C	3	3	1	2	6	2	2	2	2
2.1LsP7-1	Wombat	L	C for duplex	3	3	2	3	8	3	2	2.375	2
2.1LsP7-2	Palaeozoic Sediments			3	3	2	3	8	3	2	2.375	2
2.1LsP8-1	Wombat and Palaeozoic Sediments	L	C for duplex	3	3	3	3	9	3	2	2.375	2
2.1MbP7-2	Mt William	gravelly CL	CL	1	1	3	2	6	2	2	2	2
2.1MgP7-1	Granite Hills			3	3	2	3	8	3	2	2.375	2
2.1MvP7-1	Macedon	SiL	C	3	3	3	3	9	3	2	2.375	2
2.1RgP7-3	Sidonia	coarse LS- coarse SL	LC-MC	3	3	2	2	7	3	1	1.75	2
2.1RgP7-4	Unidentified			3	3	2	2	7	3	1	1.75	2
2.1RsP7-1	Wombat	L	C for duplex	3	3	2	3	8	3	2	2.375	2
7.1LsP8-1	Wombat and Palaeozoic Sediments	L	C for duplex	3	3	3	3	9	3	2	2.375	2
7.1PbfQ5-1	Mickleham, Freshwater Creek, Basalt Plains and Geelong	C-CL	C	3	3	1	3	7	3	1	1.75	2
7.1PbfQ6-6	Mickleham and Clarkefield	C-CL	C sodic	3	3	1	3	7	3	1	1.75	2
7.1PbfQ7-11	Glenvue	SiL	C acidic	3	3	2	3	8	3	1	1.75	2
7.1PbfQ7-2	Basalt Plains			3	3	2	2	7	3	1	1.75	2
7.1PbfQ7-4	Pastoria East	L	C for duplex	3	3	2	3	8	3	1	1.75	2
7.1PbfQ7-5	Diogenes	SiL	C	3	3	2	3	8	3	2	2.375	2
7.1PbfQ7-6	Drummond	SiL	C	3	3	2	3	8	3	2	2.375	2
7.1PbfQ7-7	Kyneton	SiL-SiC	C	3	3	2	3	8	3	2	2.375	2
7.1PbfQ7-8	Pretty Sally	L-CL	C	3	3	2	3	8	3	2	2.375	2
7.1PbfQ7-9	Unidentified			2	2	3	1	6	2	1	1.375	1
7.1PbfQ8-1	Basalt Plains and Trentham East	SiL-SiCL	SiL-SiCL	1	1	3	1	5	2	1	1.375	1
7.2PbQ6-2	Redesdale	SiL-CL	MC	3	3	2	3	8	3	2	2.375	2

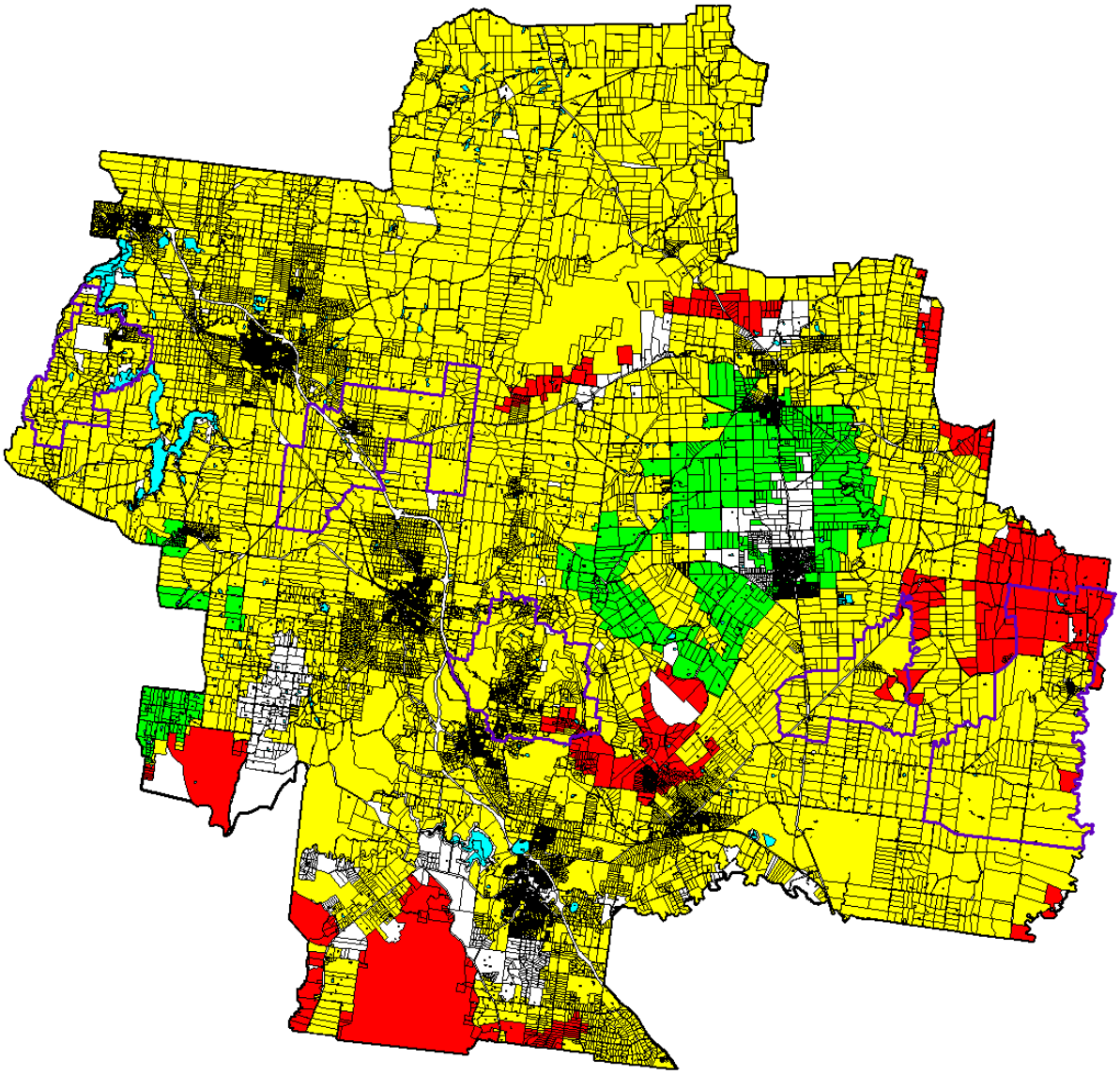
Hydraulic Constraints Determination Matrix
Weighted Constraint Classifications
Final Soil Constraint

Table 7: Final Weighted Constraint Class Matrix for Soil Suitability

Constraint Type	Constraint Scores (HS)	Weighting (w)	Calculation
Depth Constraint	Low Constraint = 1 Moderate Constraint = 2 High Constraint = 3	1.25	**Final Weighted Constraint Classes** [(Depth HS x w) + (Hydraulic HS x w)] / 2
Hydraulic Constraint	*Cumulative Constraint* Low Constraint = 1-3 Moderate Constraint = 4-6 High Constraint = 7-9	0.75	**Final Soil Suitability Constraint Class** Low Constraint = 1 (1-1.5) Moderate Constraint = 2 (1.5-2.5) High Constraint = 3 (2.5-3)

Map 9: Soil Suitability Map Summary

DWM Discrete Constraint Analysis	Assigned Constraint Class (Number of Parcels)		
	High	Moderate	Low
	Rating 7-9	Rating 4-6	Rating 1-3
Overall Soil Suitability	696	21,687	2,163



Auditing and review

Councils are required to review and update their Domestic Wastewater Management plans every five years and have them independently audited by an accredited auditor (water corporation approved) every three years.

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