ALPINE
SHIRE COUNCIL

Domestic Wastewater Management Plan 2019

Glossary

TERM	MEANING
The Act	*Environment Protection Act 1970*
AWTS	Aerated Wastewater Treatment System
Black Water	Wastewater from toilets only
Code of Practice	Environment Protection Authority *Code of Practice – Onsite Wastewater Management* 2016
DELWP	Department of Environment Land Water and Planning
DWMP	Domestic wastewater management plan
EPA	Environment Protection Authority
GMW	Goulburn Murray Water
Grey water	Wastewater from a shower, bath, hand basin, washing machine, laundry trough, kitchen sink and/or other household fixtures excluding toilets
NECMA	North East Catchment Management Authority
NEW	North East Water
SEPP	*State Environmental Protection Policy (Waters of Victoria), Environment Protection Authority 2003*
Septic Tank Systems	As defined in the Environment Protection Act: *means a system for the bacterial, biological, chemical or physical treatment of sewage, and includes all tanks, beds, sewers, drains, pipes, fittings, appliances and land used in connection with the system;*
Sewage	Any waste containing human excreta or domestic wastewater
Sewerage	Infrastructure that conveys sewage or runoff using sewers
Stakeholders	Persons and organisations who have an involvement in this DWMP

Table of Contents

Executive Summary

Alpine Shire Council is committed to responsible and sustainable domestic wastewater management practices to protect the health of the community and the surrounding environment. This plan serves to fulfil Councils obligations with respect to Clause 32 of the State Environment Protection Policy (Waters of Victoria) and the *Environment Protection Act 1970* (the Act).

The SEPP was gazetted in 2003 and requires all councils to develop DWMP working together with government agencies, businesses and the community to protect Victorian waters. It recognises the key role councils play in domestic wastewater management in assessing the capability of land to retain wastewater prior to approving new systems and requires councils to assess existing systems to determine their risk.

A report by the Auditor General 'Managing the Environmental Impacts of Domestic Wastewater'- September 2018 found that responsible agencies are not adequately managing the individual and cumulative risks and impacts from poorly performing onsite wastewater systems for the following reasons:

- an overly complex, onerous and duplicative regulatory framework
- a continued lack of clarity around roles and responsibilities
- regulatory tools that do not adequately drive property owners' compliance with planning permits and legislation
- councils not being held to account for their role in domestic wastewater management.

In response to the above findings this plan outlines strategies to mitigate potential risks to the community and environment via wastewater generated from domestic wastewater systems[1] referred to in the Act as septic tank systems.

This document and Council's responsibilities under the Act do not apply to any septic tank system designed to discharge more than 5000 litres of sewage a day. These systems fall under the direct jurisdiction of the Environment Protection Authority.

Within Alpine Shire, Council has incomplete data on the number, type, location and functionality of septic tank systems. The spatial risk assessment data that this document has been based around relates to septic system permits Council has issued (over the period records have been maintained for the Shire), and also an assessment of small townships without sewerage. The number and condition of existing systems will be more accurately determined over time as inspections are undertaken, however it is expected that the high risk areas will remain as those areas where there are higher density populations living without reticulated sewerage, and where there are nearby water courses or bodies.

This DWMP lists strategies in a phased approach to ensure existing septic tank systems and new installations in the municipality pose minimal impact to the health of the community and surrounding environment. The Actions are included at Appendix 1 and are phased as follows:

[1] The Act refers to septic tank systems as:
'a system for the bacterial, biological, chemical or physical treatment of sewage, and includes all tanks, beds, sewers, drains, pipes, fittings, appliances and land used in connection with the system'.

- Phase 1: Initial actions prior to full implementation of DWMP (FY 2018-19)
- Phase 2: Implementation of the DWMP from FY 2019-20 onwards, subject to Council budget processes and periodic review.

The DWMP provides a framework for Council to make clear and consistent decisions in relation to wastewater management, planning and building matters.

1 Introduction and Objectives

1.1 WHAT IS DOMESTIC WASTEWATER?

Domestic wastewater is the wastewater from:

- Toilet (called black water)
- Bathroom, laundry and kitchen (called grey water or sullage)
- All wastewater combined (all waste sewage)

1.2 RISKS ASSOCIATED WITH WASTEWATER

Wastewater contains pathogens like bacteria, viruses and protozoa, and also chemical pollutants (primarily nutrients and salts) that, if not managed appropriately, can pose a risk to:

- Public health - causing diseases such as hepatitis, gastroenteritis and cholera.
- Natural environment: salinity in soils, nitrogen and phosphorous which can cause algal blooms and weed growth, ammonia and organic matter which can impact aquatic life.
- Water supplies both surface and underground, which can become contaminated.
- Aesthetics, including visual and offensive odours
- Economic impacts – e.g. tourism or agriculture can be affected if waterbodies are unsafe.

1.3 WHAT IS A DOMESTIC WASTEWATER SYSTEM?

Onsite wastewater systems treat and dispose of domestic wastewater within the allotment boundaries. There are various types of systems used to treat wastewater and after treatment the wastewater must be retained within the allotment boundaries via a dispersal/ distribution method:

- Treatment processes include septic tank (anaerobic), aerated wastewater treatment systems (AWTS) (aerobic), compost system (dry systems), worm farms, reed beds and sand filters.
- Distribution methods include transpiration beds, absorption trenches, subsurface or surface irrigation and mound systems.

1.4 WHAT IS DOMESTIC WASTEWATER MANAGEMENT?

Councils are responsible for overseeing domestic wastewater management, which is the process by which homeowners, occupiers, local government and other authorities manage onsite systems. Owners of houses and other land uses that generate domestic wastewater in Victoria must, by law, treat and dispose of their domestic water within the boundaries of their own property, unless they are connected to a reticulated sewerage system.

Throughout history major outbreaks of disease and deadly epidemics have been attributed to the mismanagement of wastewater, through lack of education or forgetting past lessons. Where sewerage infrastructure is not available septic tank systems continue to be the most viable sewage management solution. Provided the system is adequately maintained and wastewater is contained

and disposed of effectively, septic tanks and wastewater treatment systems are one of the most valuable assets in the protection of our community and lifestyle.

1.5 AIM OF THIS PLAN

This Domestic Wastewater Management Plan (DWMP) is a document that sets out management processes for Alpine Shire Council to successfully manage domestic wastewater throughout the municipality.

The goal of domestic wastewater management is to protect the natural environment, community health, social wellbeing and economic stability against the risks posed by domestic wastewater. The objectives of this DWMP are to:

- Recognises the current risks and status of domestic wastewater management in Alpine Shire
- Develop a proactive approach to improve domestic wastewater management
- Promote ongoing evaluation of existing onsite systems
- Promote sustainable wastewater practices for future development
- Meet legislative responsibilities and achieve ongoing compliance with relevant legislation

1.6 STAKEHOLDER MANAGEMENT

The following stakeholders are relevant for the preparation and implementation of the DWMP:

- North-East Water Authority (NEW)
- Goulburn Murray Water Authority (GMW)
- North-East Catchment Management Authority (NECMA)
- North-East Region Environment Protection Authority
- Department of Environment, Land, Water and Planning (DELWP)
- Residents and visitors to Alpine Shire
- Septic tank system owners and operators
- Plumbers and installers of septic tank systems

1.7 CONCEPTUAL FRAMEWORK

Domestic wastewater management aims to ensure that existing and future domestic developments in unsewered areas install and maintain onsite systems that can manage wastewater within the boundary of the property in a manner that protects public health and the environment.

Table 1-1 shows a conceptual framework for domestic wastewater management. Elements of domestic wastewater management fall within one of four cells of the matrix. This DWMP is structured in a way that deals with each of these four categories and onsite systems in turn. The table summarises the generic key actions for local government in each of the four quadrants.

Table 1-1: A conceptual framework for domestic wastewater management showing generic examples of local government actions.

	UNSEWERED LAND	SEWERED (SEWERABLE) LAND
Existing onsite systems	Identify all septic tank systems in the municipality. Monitor and inspect onsite systems in a risk management approach. Educate operators and users of septic tank systems in safe and sustainable practices. Identify and rectify non-compliances. Develop and maintain information management tools (such as an onsite system database) for the purposes of managing existing onsite systems. Assess existing systems as part of planning processes (such as planning permits and building permits for house extensions and subdivisions) and request upgrades where necessary. Encourage water authorities to prepare sewerage management plans where the risk posed by a cluster of non-compliant onsite systems may justify the investment.	Facilitate the abandonment of onsite systems by ensuring owners to connect existing houses to sewer where available. Identifying high risk areas, monitor to determine whether further action or sewerage management scheme may be required (in conjunction with NEW).
Future onsite systems	Issue permits which comply with relevant Acts, Australian Standards, ministerial guidelines and codes of practice as applicable. Issue permits in line with planning and building requirements and guidance such as the planning scheme. Ensure land subdivision creates allotments that can sustain onsite systems. Encourage water authorities to prepare sewerage management plans where the desired urban development density is incompatible with onsite wastewater management.	Avoid the installation of any new onsite systems in sewered areas. Ensure that new houses connect to sewer at the time of their construction. Liaise with water authorities to establish clear sewerage districts.

2 Legislation and Policy

2.1 LEGISLATION AND STATUTORY RESPONSIBILITIES

Environment Protection Act 1970

The purpose of this act is to regulate the impact of human activity on the environment and maintain community wellbeing. The Environment Protection Authority administers the Act with Part IXB specifically dealing with septic tank systems, and Council and owner responsibilities in relation to installation and management. Council issues permits under the Act before a treatment and disposal system can be installed in Victoria.

Councils are required to lodge with the Authority an annual return containing the following:

- The number of permits issued for the septic tank systems;
- The number of septic tank systems disconnected
- The number of septic tank systems inspected
- The number of septic tank systems which have been in use within the municipality during the reporting period.

State Environment Protection Policy (Waters of Victoria) 2003

The SEPP (section 10.3) sets out a statutory framework for the protection of the uses and values of Victoria's fresh and marine water environments. As required by the Environment Protection Act 1970, the SEPP includes:

- the uses and values of the water environment that the community and government want to protect – these are known as beneficial uses;
- the objectives and indicators which describe the environmental quality required to protect beneficial uses;
- guidance to catchment management authorities, coastal boards, water authorities, communities, businesses and local government and state government agencies to protect and rehabilitate water environments to a level where environmental objectives are met and beneficial uses are protected – this is known as the attainment program.

The SEPP requires council to ensure permits are consistent with EPA Septic Tank Code of Practice and Australian Standards, monitor existing systems, develop and implement a DWMP and ensure waters in their municipality are not being contaminated.

Code of Practice – Onsite Wastewater Management

The Code provides standards and guidance to ensure the management of onsite wastewater (up to 5000 L/day) protects public health and the environment, and uses our resources efficiently. It has been written to support the onsite wastewater industry, regulators and premise owners design, install and/or manage sustainable sanitation and re-use systems in accordance with the Environment Protection Act 1970 and the State Environment Protection Policies Waters of Victoria (SEPP WoV) and Groundwaters of Victoria (GoV). It is based on current State, national and international best practice principles in public health and environmental protection, wastewater treatment, land capability assessment and effluent minimisation, reuse, recycling and disposal.

AS/NZ 1547:2012 Onsite Domestic Wastewater management

There are several Australian standards which form best practice for the construction, design, instillation, operation and maintenance of wastewater systems installed in Australia, these include:

- AS/NZS 1547:2012 Onsite Domestic Wastewater management
- AS/NZS 1546.1:2008 – Onsite Domestic Wastewater Treatment Units – Septic Tanks
- AS/NZS 1546.3:2008 – Onsite Domestic Wastewater Treatment Units – Aerated Wastewater Treatment Systems
- AS/NZS 3500 – National Plumbing and Drainage – Domestic Installations

Public Health and Wellbeing Act 2008

The purpose of the Public Health and Wellbeing Act is to promote and protect public health and wellbeing in Victoria and local councils have a duty of care in the prevention and control of threats to public health and the environment in their municipal district. In relation to wastewater the nuisance provision of the Act has been used to manage and mitigate public health risks. Section 58-60 applies to nuisances which are, or are liable to be, dangerous to health or offensive and requires council to remedy as far as is reasonably possible all nuisances existing in its municipal district. Therefore if there are failing septic tank systems in the municipality that are creating a nuisance authorised officers have the provisions under the Public Health and Wellbeing Act to require rectification to abate the nuisance.

Building Act 1993

Under the Building Act and Regulations, consent from council or a permit to Install a Septic Tank System must be obtained before a Building permit can be issued which requires the installation of a septic tank system.

Planning Legislation and Policy

Planning, and the Planning Scheme, plays an important role in domestic wastewater management. Council has within its control many of the tools and powers to ensure that new development occurs in a manner consistent with the constraints and opportunities provided by onsite wastewater management. Appendix 1 looks at the relevant parts of the Alpine Shire Planning Scheme and discusses their relevance to domestic wastewater management.

Water and Sewerage

Victoria's water sector is made up of water corporations under the Water Act 1989 which provide customer service in water supply and sewage. Alpine Shire's water corporation is North East Water. A large portion of the Alpine Shire is situated within a declared catchment zone (North East Catchment) and Council is required to refer any application for a septic tank system within a declared drinking water catchment area to Goulburn Murray Water and other relevant Authorities for their consideration.

Alpine Shire Council Plan 2017-2021

The Alpine Shire Council Plan defines how Council will continue to deliver high quality projects and services to the community and prioritise the health and wellbeing of the community. There are a number of strategies and directions within the council plan which directly relate to the Domestic Wastewater Management Plan including:

- **Part 2. A responsible and sustainable organization:**
  - Identify and manage council's risk.
  - Balance financial, environmental and community outcomes.
- **Part 6. A well planned and safe community:**
  - Plan for and manage development to enhance liveability.
  - Raise awareness and educate community about laws, regulations and codes.
  - Enforce local laws, regulations and codes.

Alpine Shire Stormwater Management Plan 2004

The purpose of the Stormwater Management Plan is to improve the management of stormwater in urban areas throughout the Shire in order to protect and enhance the receiving water environments. The Stormwater Plan is supported by more detailed capital investment plans for each township.

Local Government Act 1989

Part five of the Local Government Act empowers council to enact local laws and set special charges for council activities. Councils can use these powers to develop local regulations for wastewater management, as long as these regulations are consistent with State policy and legislation, and to raise revenue for its wastewater management programs. A number of councils have chosen to develop Local Laws and introduce wastewater levies to make it easier to fulfill their statutory responsibilities.

2.2 ALPINE SHIRE WASTEWATER POLICY AND PROCEDURES

Council wastewater policy and procedures are required to ensure consistency, efficiency, best practice and to minimise the risk wastewater systems have on health, environment, social and economic outcomes. As part of the DWMP, Council needs to review and update policy and procedures in the following areas:

- Determining when a permit to alter is required.
- Educate community, land owners and plumbers on the process of Issuing permits to use, install and alter.
- Undertaking inspection of wastewater treatment systems
- Maintaining council's electronic wastewater database.
- Logging complaints, investigation and follow up.
- Issuing fines, notices or legal action.
- Following up non-compliant systems and compliance issues.
- Developing education material

- Developing standard forms
- Determining if an LCA is appropriate for some alteration applications (outside declared catchment zones) or scaled back assessment as appropriate.

Action 1: Review and/or develop wastewater policy and procedures.

3 Assessment of Wastewater Profile

3.1 OVERVIEW OF ALPINE SHIRE

The Alpine Shire is in a mountainous region in north-east Victoria. Ninety-two per cent of the shire is public land. Freehold land and residential development is mainly confined to the narrow valleys of the Ovens and Kiewa Rivers and their tributaries.

The municipality is characterised by the fertile river valleys of the heritage Ovens River and the foothills and mountains of the Great Dividing Range. Productive rural land supports viticulture, agriculture and horticulture, while tourism is also an important local industry. Except for the Kiewa River valley downstream of Mount Beauty, the remainder of the municipality is within one or other Special Water Supply Catchments and most if the land in the Shire is public land (Appendix 3).

The findings from a spatial risk assessment are used throughout this plan. Appendix 3 shows the distribution of overall risk across Alpine Shire based on system permit data Alpine Shire has recorded and environmental characteristics of the different areas. There is incomplete data on the number, type, location and functionality of septic tank systems in the municipality. A review of existing systems and data gaps will be undertaken in phase one the Action Plan. It is expected that the high risk areas will remain in areas where there are higher density populations and water courses or bodies. Full details of the spatial risk assessment are presented in a separate report (RMCG 2017, *Spatial Risk Assessment – Alpine Shire Council DWMP*).

Key aspects relevant to domestic wastewater management in Alpine Shire are:

- The whole of the Shire is subject to high rainfall and a cooler climate than many other Victorian locations. Average annual rainfall ranges from a little over 900mm at Myrtleford and Dederang, up to nearly 1200 mm at Harrietville. This reduces the potential for wastewater uptake via evapotranspiration, resulting in a need for larger land application areas.
- This area has high quality surface water and groundwater supplies that are in demand for potable water supply as well as irrigation and industrial use. Onsite systems need to be designed and installed such that downstream surface and groundwater systems are not contaminated by nutrients, salt or pathogens.
- The region is a key tourist destination. Many houses are holiday homes or holiday rentals. As such, wastewater flows are irregular or intermittent andcertain systems do not function well on these intermittent or shock flow rates.
- There are a few towns within the municipality with a legacy of small lots (<4,000 m^2) that remain available for development. Consideration is given to the conditions for use of these lots with onsite systems.
- An average of 45 wastewater permits to install and 43 permits to use are issued annually across Alpine Shire. There is limited freehold land and a number of natural constraints (e.g. soil, slope, native vegetation, water supply catchments), so any development that does occur needs to be carefully planned.

Action 2: Determine number and location of all septic tank systems in the municipality, and any data gaps by collating data from North East Water, Council's rate database and other sources.

3.2 SPATIAL RISK ASSESSMENT

A spatial risk assessment was undertaken concurrently with the development of this DWMP. A total of twelve risk factors were mapped and using an algorithm developed for nearby shires of Mansfield and Benalla. Based on this a map of overall risk has been prepared. Full details of the spatial risk assessment are contained in a separate report attached as Appendix 5 (RMCG 2017, *Spatial Risk Assessment - Alpine Shire Council DWMP*). As previously noted the risk assessment was based on existing records of permits issued by Alpine Shire, which tend to be newer systems. There are likely to be a number of older systems that Council does not have records for, which will be investigated through the implementation of the DWMP, and the Spatial Risk Assessment can be updated accordingly.

It is noted that the Spatial Risk Assessment is largely based on desktop information, and as such it should not be solely relied upon for assessing risk. Rather, it represents a starting point for more detailed analysis of risk for a particular site.

Conclusions drawn from the spatial risk assessment include:

- The key risk for the Shire as a whole is high rainfall.
- While most the Shire is within Special Water Supply Catchment areas, actual offtake points for potable water supply are generally high in the catchments, upstream of the towns and associated with public land, or are a long way downstream of the Alpine Shire boundaries (e.g. on the Ovens at Wangaratta). The main exception to this is the offtake for Bright – there are several existing onsite systems in and around Freeburgh that are within 2 km of this offtake, and Harrietville is 15 km upstream.
- The key locations with existing onsite systems at high density are Wandiligong, Tawonga and Harrietville. There are also small areas east of Myrtleford and at the southern edge of Tawonga South. These areas are generally associated with development potential risk as well.
- Groundwater use is common along the Ovens Valley. The density of bores and shallowness of good quality groundwater means this risk is generally moderate. However, there are pockets of high risk near Porepunkah and downstream of Myrtleford.
- Risk associated with soil capability and slope are generally spatially aligned. Most of the non-public land is rated at moderate risk for both aspects. There are some high-risk areas at higher elevations and further distance from the rivers, where dwelling development is minimal.
- Land historically subjected to sluicing in the search of gold (tailings) needs to be assessed site by site as the modified soil characteristics can severely change its suitability for effluent disposal.

4 Managing existing systems

4.1 INTRODUCTION

This chapter discusses existing onsite wastewater systems in unsewered areas and identifies actions for their improved management, including:

- Initiate a risk based inspection and monitoring program to determine the risk systems pose and provide education to operators.
- Encourage house owners to achieve compliance and act to rectify non-compliances.
- Develop and maintain information management tools (such as an onsite system database) for the purposes of managing existing onsite systems.
- Assess existing systems as part of planning processes (such as planning permits and building permits for house extensions and subdivisions) and request upgrades where necessary.
- Work with water authorities to investigate potential future sewerage management plans where the risk posed by a cluster of non-compliant onsite systems may justify the investment.

Council will improve the compliance of onsite domestic wastewater systems through an integrated program of education, monitoring and compliance.

4.2 SEWERAGE MANAGEMENT PLANS

Much of the urban development in Alpine Shire is clustered along main watercourses, simply because that is where the land suitable for housing is located.

The town of Harrietville provides a typical example of the theoretical problems of higher density development in an unsewered area. NEW undertook a waterway monitoring program between December 2014 and February 2016. The report, dated March 2016, found that although there are theoretical reasons to be concerned about effluent disposal in Harrietville (no sewerage, heavy seasonal tourist load, commercial as well as residential premises, proximity to the river, permeable soil types), this was not borne out by the independent monitoring undertaken and the extensive data collected through the program found that water quality met relevant quality standards. .

This lack of evidence of impact by onsite systems on water quality is reassuring, but whether it will be sustained in Harrietville in the long term, and whether it can be translated to similar areas like Wandiligong, Freeburgh, Tawonga South is another question. It is also noted that the reliance on onsite wastewater treatment systems presents a constraint on some types of development in smaller townships, for example the growth of accommodation businesses or development of large residences on smaller lots may not be easily achieved with available technology for wastewater treatment and disposal.

In early 2016, Council and North East Water investigated the potential options for wastewater management at the community level and at the individual site level in Harrietville. The conclusion from the investigation was:

At this point, there is no environmental or financial driver to develop a centralised wastewater management system in Harrietville. However, the limitation on further residential development has a strong adverse impact on the sustainability of the town. There are, however, some options for

land owners and for Council that could make land development easier for some land owners. These options are:

1. Council should engage a consultant to provide an assessment of the development potential of the Tailings area, including an understanding of the capacity of the soils to rehabilitate wastewater and the feasibility of using a centralised location and alternative technology to service the tailings development area.

2. Council should advise landowners who wish to develop to engage a qualifiedLCA consultant to give advice on development and waste water treatment feasibility. For highly constrained sites, consideration of a dry treatment system for waste will reduce the land area required to treat waste water.

3. Council should advise landowners who wish to sell that a Land Capability Assessment will answer the questions of potential buyers as to where they would be allowed to site a building. This can provide some certainty to buyers and may improve the likelihood that a potential buyer converts into a land sale.

Harrietville is remote from existing reticulated sewerage systems so collection systems and treatment and disposal areas would all be required if it were to be sewered. However, several of the other high-risk clusters of onsite systems (such as Wandiligong, Freeburgh, Tawonga, around Bright and around Myrtleford) could be more readily connected to existing sewerage networks.

Validation of the desktop risk assessment through an inspection regime and water quality monitoring is required to determine any future business case for potential new sewer districts in Alpine Shire. As such, consideration of any new infrastructure would only occur if risks to health and / or the environment are confirmed and other risk mitigation methods have been investigated.

Action 3: Engage a consultant to undertake feasibility and design of a cluster waste water management system at the Harrietville Tailings area to facilitate further development of the area.

Action 4: Consult with NEW on management of identified risk areas through new Sewage Management Plans.

4.3 SURFACE WATER AND GROUND WATER QUALITY

The Spatial Risk Assessment recommends that water quality monitoring programs be considered in three high-risk areas – Wandiligong, Tawonga and Harrietville.

- Given the existing density of development and small lot sizes in central Wandiligong, it is recommended that further assessment is undertaken in relation to water quality impacts to Morses Creek and the connected shallow water table.
- Tawonga (Cooper Street / Charles Street area) has a very high density of onsite systems. An inspection of these systems in line with the risk framework will be carried out to determine if this area warrants further investigation and monitoring programs to better understand and reduce potential risks.
- Due to the existing density of onsite systems, the small lot sizes and proximity to the Ovens River, Harrietville has the theoretical potential for water quality pollution concerns. Although the waterway monitoring program between December 2014 and February 2016 found "there is

minimal evidence to suggest septic tanks in the Harrietville Township impact water quality in the Ovens River", continued monitoring of water quality and onsite systems should be undertaken to confirm this finding.

Water quality monitoring programs should involve other agencies with responsibilities and expertise relating to waterways, water quality or pollution, such as NECMA, to ensure the design of the monitoring and the data generated are suitable and that any monitoring is set up based on understanding the groundwater flow paths, identified through tracing or other means, to ensure where the monitoring was being undertaken that it was appropriate. The urgency of water quality testing can be informed by the results from the onsite system inspections.

Action 5: Consult with NEW, NECMA and GMW on the potential need to implement a water testing / monitoring program for high risk areas in Alpine Shire.

4.4 ONSITE SYSTEM DATABASE

While Council does have extensive historical data and hard copy permits for onsite systems, it is not all recorded on an electronic database, nor is it all validated for currency. Council uses a program known as Health Manager for the purposes of managing the environmental health administrative workflows. New system permits are being entered into this database, however older permits are not included on the system, and the data is not integrated with Council's GIS database.

Thought will need to be given as to whether the cost of entering in historic data would provide efficiencies and gains. Consultation with Council's GIS officer is required to determine what information can be integrated and mapped cost effectively and efficiently.

Action 6: Integrate onsite system data into Council's information systems.

4.5 PERFORMANCE OF EXISTING SYSTEMS

There is incomplete data on the number, type, location and functionality of septic tank systems in the municipality. Therefore it is recommended a dedicated inspection program be implemented to accurately assess the risks of the existing onsite systems and sensibly plan for their ongoing management. Appendix U of AS 1547 provides a standard inspection form, including site information, onsite assessment and soil investigation refer to Appendix 4.

The spatial risk assessment has established the highest risk areas which will be validated in phase one when all systems are mapped through rates and North East Water sewerage data. The high-risk areas identified in the spatial risk assessment are:

- Wandiligong
- Freeburgh
- Harrietville
- Peripheral areas of Myrtleford
- Tawonga (Cooper Street / Charles Street area)
- Tawonga South (Simmonds Creek Road / Glenbourn Drive area)

Council will need to determine how many systems are to be inspected and assessed over the three years of implementation of this DWMP and dedicate resources. The number and location of

systems to be inspected will be informed by a risk approach identifying properties by the following risk factors:

1. Properties in special water supply catchment.
2. Properties without a known permit to install and/or use.
3. Properties' proximity to sensitive areas including watercourse.
4. Properties where there are no records or systems are over 20 years old.
5. Density of development.
6. Properties on the periphery of sewered areas were sewer is readily available to connect.
7. Properties on blocks less than 4,000m^2.

These risk factors will be used in conjunction with the review of system numbers and locations to determine an appropriate inspection regime to validate the high level spatial risk data, and meet Council's legislative responsibilities. The inspection regime will be planned for in Phase 1 and implementation will be undertaken subject to budget bids in subsequent years.

Action 7: Undertake an appropriate inspection regime using the risk indicators and onsite system data.

4.6 HOUSE EXTENSIONS OR RENOVATIONS

Household wastewater flow rates can increase with a change of ownership, a higher number of occupants, connection to reticulated water supply and/or the addition of a bedroom, bathroom, spa or other water-using fixture. The original system land application area may not cope with the increase in flow, causing a risk to public health and the environment. This is particularly the case for older systems where disposal fields are more likely at the end of their capacity.

It is best practice and opportunity to review system functionality with extensions or renovations to determine if the system is functioning as intended and risks to health and the environment are minimised.

Before making any additions or renovations to a house or the wastewater system, owners must contact Council's Environmental Health team. Council will need to determine whether a Permit to Alter the system is required. If required, the owner must apply to Council for a Septic Tank Permit before the house alterations begin. A Land Capability Assessment may also be required, table 5.3 details specific requirements for permit applications.

As previously noted the Environment Protection Act defines a septic tank system as:

> *'a system for the bacterial, biological, chemical or physical treatment of sewage, and includes all tanks, beds, sewers, drains, pipes, fittings, appliances and land used in connection with the system'.*

A Permit to Alter is required if any of these parts of the system are being altered.

There is a requirement for a clear and consistent approach to when a Permit to Alter is required. This topic has the potential for different interpretations and approaches, which has historically made it difficult for environmental health officers to undertake their responsibilities in this area. This policy and procedure will be developed as part of Action 1.

4.7 EDUCATION AND ADVICE

Education for system owners and users on the management, use and maintenance requirements of their wastewater system will assist in minimising impacts on the surrounding environment from poorly performing or failing systems. Council environmental health staff routinely receive requests in relation to failing systems, or owners who are not aware of the location or condition of their wastewater system, and many people are not aware of the system requirements for ongoing maintenance of wastewater treatment systems.

Section 32 Vendor Statements provide a mechanism by which Council can inform prospective new owners of properties reliant upon onsite wastewater systems.

There is an opportunity to educate system owners and users when Permits to Alter or Use are issued, and to include written information. Section 7.3 of AS/NZ 1547:2012 lists the attributes in relation to advice and regulation those with responsibilities in overseeing wastewater management should have or be able to provide.

Action 8: Provide community education on the correct operation and maintenance of onsite wastewater systems.

Action 9: Develop fact sheets and other resources advising and educating on wastewater.

Action 10: Investigate options to provide information to homebuyers on onsite systems and the associated domestic wastewater management requirements.

5 New onsite wastewater systems

5.1 ONSITE SYSTEMS IN WATER SUPPLY CATCHMENTS

One of the key requirements related to domestic wastewater management and planning is the Ministerial document: *Planning permit applications in open, potable water supply catchment areas - November 2012*. These guidelines limit development to a maximum density of 1 house per 40 ha, with the exception that water corporations will consider allowing a higher density of development where certain conditions are met. These conditions are outlined in table 5.1 below.

Column one of the table specifies direct actions council must undertake to implement higher density living and column two addresses how this DWMP will meet these conditions.

Table 5-1: Conditions for implementing a higher development density (than 1 in 40 ha) in special water supply catchments

CONDITION	HOW THIS DWMP MEETS THE CONDITION
The minimum lot size area specified in the zone for subdivision is met in respect of each lot.	Not addressed in this DWMP, but is covered in normal statutory planning assessment processes.
The water corporation is satisfied that the relevant Council has prepared, adopted and is implementing a Domestic Wastewater Management Plan (DWMP) in accordance with the DWMP Requirements.	Involving GMW in the development and review of this plan. Ensuring agreed action plan is carried out and where required actions or timeline amended.
The proposal does not present an unacceptable risk to the catchment having regard to: ▪ the proximity and connectivity of the proposal site to a waterway or a potable water supply source (including reservoir); ▪ the existing condition of the catchment and evidence of unacceptable water quality impacts ▪ the quality of the soil; ▪ the slope of the land; ▪ the link between the proposal and the use of the land for a productive agricultural purpose; ▪ the existing lot and dwelling pattern in the vicinity of site; ▪ any site remediation and/or improvement works that form part of the application; and ▪ the intensity or size of the development or use proposed and the amount of run-off that is likely to be generated.	This DWMP includes: ▪ The spatial risk assessment tools and data can inform of high risk areas and ensure council monitors these areas and implements appropriate controls where necessary. ▪ LCA is a mandatory requirement before new developments and subdivisions occur as part of the planning or building processes. ▪ LCA is a mandatory requirement for alterations with additional flowrate estimates in SWSC areas. ▪ Development and revision of standardised policy and procedures, including alteration of systems where flow rates are not increased.
The DWMP must comprise a strategy, including timelines and priorities, to prevent discharge of wastewater beyond property boundaries; and prevent individual and cumulative	This strategy includes a three year action plan, a targeted inspection and compliance program and risk assessment that considers

CONDITION	HOW THIS DWMP MEETS THE CONDITION
impacts on groundwater and surface water beneficial uses.	impacts to groundwater and surface water beneficial uses.

The above mentioned planning guidelines also outline a set of DWMP requirements that must be met in addition to those set out in the SEPP. Table 5.2 summarises the way each of these requirements has been addressed in the preparation of this DWMP.

Table 5-2: Domestic Wastewater Management Plan Requirements (page 4 Planning permit applications in open, potable water supply catchment areas November 2012)

REQUIREMENTS	HOW THIS DWMP MEETS THE REQUIREMENTS
The DWMP must be prepared or reviewed in consultation with all relevant stakeholders including: ▪ Other local governments with which catchments are shared ▪ EPA ▪ Local water corporations.	The DWMP has been prepared in consultation with Goulburn-Murray Water, North East Water, North Central CMA and Rural City of Wangaratta. Consideration has been given to the DWMPs in place for the neighboring municipalities of Mansfield Shire and the Rural City of Benalla.
The DWMP must comprise a strategy, including timelines and priorities, to: ▪ Prevent discharge of wastewater beyond property boundaries ▪ Prevent individual and cumulative impacts on groundwater and surface water beneficial uses.	A risk-based approach to preventing these types of discharges and impacts is presented in this plan and an action plan has been developed to address potential risks. Timelines and priorities are presented in the Action Plan.
The DWMP must provide for the effective monitoring of the condition and management of onsite treatment systems, including but not limited to compliance by permit holders with permit conditions and the Code.	Compilation and maintenance of an onsite system database, along with inspections of existing systems, will be undertaken as set out in the Action Plan.
The DWMP must provide for the results of monitoring being provided to stakeholders as agreed by the relevant stakeholders.	Agreements between Council and stakeholders are in place and can be modified from time to time as required.
The DWMP must provide for enforcement action where non-compliance is identified.	The action plan identifies the need for policy and procedures for compliance and enforcement which will be developed in phase one.
The DWMP must provide for a process of review and updating (if necessary) of the DWMP every five years.	The Action Plan provides for updating the DWMP in line with the SEPP, every three years.
The DWMP must provide for independent audit by an accredited auditor (water corporation approved) of implementation of the DWMP, including of monitoring and enforcement, every 3 three years.	The Action Plan provides for a three-yearly review.
The DWMP must provide for the results of audit being	The Action Plan provides that the results of

REQUIREMENTS	HOW THIS DWMP MEETS THE REQUIREMENTS
provided to stakeholders as soon as possible after the relevant assessment.	the three-yearly audit will be provided to Stakeholders.
The DWMP must provide for councils are required to demonstrate that suitable resourcing for implementation, including monitoring, enforcement, review and audit, is in place.	Resourcing of the Action Plan is discussed in Section 7.3.

5.2 COMPLIANCE OF FUTURE WASTEWATER SYSTEMS

Key action areas have been identified by staff from their experience and lessons learned, as instrumental to ensure that onsite systems installed in the future, meet best practice and pose minimal risk. These actions have been detailed to be addressed with policy and procedure development or as action items throughout this document.

Action 11: New onsite systems are to be installed in line with the Code, Standard and other relevant legislation, policy and guidelines.

Action 12: Ensure staff who review, approve, inspect and assess wastewater treatment have experience in onsite domestic wastewater treatment systems best practice, design and legislation.

5.3 LCA REQUIREMENTS AND REFERRALS

Land capability assessments (LCAs) are required across most of the Shire due to the majority of the municipality being located in a Special Water Supply Catchment area. For consistency and best practice, it is recommended that the LCA requirements described here are applied to the whole Shire. LCAs must be submitted at the planning permit application stage, or if no planning permit is required, at building permit stage with the application for a Permit to Install an onsite wastewater management system.

It is recommended Council has a system in place (as required under clause 1.8.3 of the Code of Practice, EPA Publication 891.4) to verify that land capability assessors working in the Shire have the necessary:

- Qualifications
- Experience
- Professional membership
- Professional indemnity
- Independence

Council Environmental Health officers also need to have the skills, qualifications and experience to interpret LCAs and determine their suitability for the site.

The following table summarises requirements for land capability assessments in catchment areas and non-catchment areas within the Alpine Shire Council.

Table 5-3: Land Capability Assessment requirements and referrals

LOCALITY	TYPE OF APPLICATION	REQUIREMENT
Special Water Supply Catchment Area.	Subdivision	LCA required in line with the Code of Practice and Victorian Land Capability Assessment Framework. Must include water and nutrient balance. Referral to relevant authorities including GMW and NEW.
	New buildings with onsite wastewater disposal	
	Alteration increasing flow rate	
	Alteration	Requirements determined on individual application at EHO discretion
Non Special Water Supply Catchment Area.	Subdivision	LCA required in line with the Code of Practice and Victorian Land Capability Assessment Framework.
	New buildings with onsite wastewater disposal	
	Alteration increasing flow rate	Requirements determined on individual application at EHO discretion (likely LCA)
	Alteration	Requirements determined on individual application at EHO discretion.

Note: LCAs and soil test information provided with applications must refer to current standards and systems. Council EHOs cannot assess and issue permits for systems that do not meet the current standards, or tests which have been based on outdated scientific data. In these instances further testing or amendments made to system design will be required.

Council acknowledges there are existing challenging sites within township zones where residential development is an intended and appropriate use for the site. Council will consider these sites on a case by case basis subject to an appropriate land capability assessment and will support residential development where the risk has been reasonably and adequately managed, achieving the best environmental outcome for the site; and, where required, GMW consent has been achieved. GMW acknowledge that some low risk applications within Special Water Supply Catchment areas will not require referral to the agency as they pose low risk and council permit processes are adequate for such applications.

Action 13: Develop a Clause 66 Agreement between GMW and Council regarding planning referrals so that GMW do not have to assess lower risk proposals.

5.4 SEWERAGE

Installing sewerage in high risk areas where there are clusters of existing systems was discussed in Section 4. The other potential benefit of sewerage systems is that it allows future houses to connect to sewer and correspondingly obviates the need for onsite systems thus enabling more intensive housing development.

In areas where there is a drive for development at a density higher than can be sustained by onsite systems, sewerage should be considered. At the time of preparing this DWMP there was not significant pressure for new houses to warrant the need for sewerage in any particular area. However, this may change and the need for sewerage can be reassessed in future as need be.

North East Water has advised that there are no plans at this stage for any new sewerage schemes in Alpine Shire. However, if the monitoring and inspection program or other information identifies poor water quality outcome in a particular area, Council would work with NEW to further investigate the issue. As part of this it may be necessary to investigate the development of a sewerage management plan for the area in question.

It has been identified by environmental health staff that there are a number of properties on the fringe of sewered areas which are capable of connecting to the sewer. Identifying these properties and feasibility of connecting to sewer will be undertaken in phase two and three of this plan in conjunction with the property owners and North East Water.

Action 14: Investigate the number of properties in proximity to existing sewerage infrastructure and the feasibility of these properties to connect.

6 Sewered areas

6.1 EXISTING ONSITE SYSTEMS IN SEWERED AREAS

There are limited records on the operation of existing onsite systems within sewered areas. Where properties are identified which have the potential to connect to sewer, Council will liaise with NEW to determine the best viable outcome.

6.2 FUTURE HOUSES IN SEWERED AREAS

New dwellings inside declared sewer districts are required to connect to reticulated sewer network unless connection is proven non-feasible to Council and NEW. Developers need to liaise with North East Water regarding connection opportunities. NEW may also consider faciliating development on the fringe of sewer areas with connection to reticulated sewer, if viable to do so.

Action 15: Ensure maps and databases of sewerable land prepared and reviewed by North East Water are updated on Council's information systems.

During the development of this DWMP sewerage district boundaries were reviewed and amended, with updates provided to council.

7 Plan Management

7.1 DWMP PLANNING COMMITTEE-

The Alpine Shire DWMP planning committee is made up of both internal and external stakeholders including:

- Internal: Environmental Health, Planning, Building, Environment.
- External: North East Water, North East Catchment Management Authority, Goulburn Murray Water.

The objectives of the committee are to develop and have adopted by Council a Domestic Wastewater Management Plan which will inform sustainable and risk based wastewater management decisions to benefit the community and the environment over the three year period.

7.2 COMMUNITY CONSULTATION

Alpine Shire Council understands the importance of informed decisions from listening and discussing aims and outcomes with the public through a community consultation processes. Community consultation process for this plan are as follows:

- Plan is released to public for review.
- Hold community information and feedback sessions.
- Send or email out brochures on domestic wastewater management and the plan.
- Taking into account community submissions amend the plan accordingly.
- Final draft document presented to council for adoption.

7.3 PLAN IMPLEMENTATION, COST AND RESOURCES

There are a number of factors impacting council's wastewater management strategies, aims and outcomes. These include:

- Council's statutory responsibilities.
- Risks to the community, environment and economic impacts from domestic wastewater.
- Economic and resource capacity to undertake wastewater strategies.

Alpine Shire currently focuses attention on issuing permits to use and alter septic tank systems, deals with complaint and enquiries and makes comments on planning and building referrals. However, Council's statutory responsibilities require greater action to planning, investigation, monitoring and compliance of systems and therefore potentially greater resourcing.

Consideration will need to be given to the costs of resourcing activities required to satisfactorily carry out statutory responsibility and the risks associated with delaying accountabilities or negating statutory requirements.

Financial costs associated with the DWMP will largely depend on the level of risk identified by the in the inspection regime findings, and will be subject to Council's normal budget processes. Some of the costs and resources to be considered and allocated are mentioned below:

- Field equipment – ipad, car, phone
- Officer time – inspections, developing process and procedure, updating plans, compliance, data management, reporting.
- Education material
- Database management
- Compliance and enforcement activities.

State government funding may be available for priority domestic wastewater management projects in the region. If wastewater is causing significant risk in areas in Alpine Shire, Council will apply for funding assist with projects to mitigate risks.

7.4 DWMP IMPLEMENTATION AND EVALUATION PROCESS

Alpine Shire Council is committed to develop and implement a robust and transparent policy basis for management of domestic wastewater systems. This is Alpine Shire Council's first domestic wastewater management plan. The key element of the plan is the action plan, presented in Appendix 1. The implementation process for the DWMP is essentially the process of undertaking the action steps identified in the timeframes suggested.

Most actions, will require additional resources if they are to be implemented. Council will need to investigate and evaluate the economic cost of undertaking the action plan and allocate resources accordingly, through Council's normal budget process.

On an annual basis, Council will review the action plan, consulting with external stakeholders to determine progress against milestones and adapt future actions in response to lessons learned. The DWMP will be comprehensively re-evaluated every three years; which will require a risk assessment of the domestic wastewater management issues and re-development of the most appropriate action plan at that time.

The key to the successful implementation of the DWMP will be in its flexible and adaptable implementation, periodic reviews and realistic resourcing. It is important council adopt and implement this domestic wastewater management plan, to meet Council's regulatory obligations.

Action 16: Undertake periodic review and improvement of this DWMP, including:

I. Annual review and adaptation of the action plan

II. A full review of the DWMP three years after its adoption by Council as specified in the SEPP (Waters of Victoria)

III. A review of funding and resourcing requirements for the DWMP.

7.5 MONITORING AND REPORTING

The effectiveness of this plan will be measured by a number of monitoring and reporting indicators including:

- Feedback from community.
- Number of systems being used within the municipality.

- Number of complaints received about wastewater treatment systems.
- Number of new septic tank permits to use, alter and install.
- Number of systems inspected each year.
- Number of systems needing rectification.
- Number of enforcement actions undertaken.
- Number of known system posing high risk which require follow up/ rectification.
- Findings and reports from external stakeholders – i.e., NEW and GMW.
- Funding and expenditure.
- Targets met and action items outstanding.
- Number of planning applications referred to GMW, NEW and NECMA
- Number of planning applications that are referred and which are refused.

7.6 DEVELOPMENT, REVISION AND AMMENDMENTS

Development, revision and amendments of this plan have been provided in Appendix 6.

Draft 1: The initial draft of this plan was developed by Duncan Wallis, RM Consulting Group, 35 Mollison Street, Bendigo, Victoria 3550.

Major amendments and revisions to this draft were made by:

Environmental Health Staff:

Verity Jennings

Suzanne Walker

Manager Building and Amenity:

Tom Courtice

North East Water:

Arun Nirmalaraja – Graduate Engineer

Goulburn Murray Water:

Ranine McKenzie – Section Leader, Statutory Planning

Reference Documents

- Alpine Shire Council Plan – 2017- 2021
- Auditor Generals Report (2006)- *Protecting our environment and community from failing septic tanks.*
- Auditor Generals Report (2018)- *Managing the impacts of onsite wastewater in Victoria.*
- Australian and New Zealand Standards 1547:2012 – Onsite Domestic Wastewater Management.
- *Environment Protection Act 1970.*
- Environment Protection Authority *Code of Practice – Onsite Domestic Wastewater Management (EPA Publication 891.4)*
- Environment Protection Authority, *State Environment Protection Policy (Waters of Victoria) 2003.*
- *Local Government Act 1989*
- Municipal Association of Victoria *(2005) Domestic Wastewater Management, a planning guide for Local Government, MAV, Melbourne.*
- Department of Sustainability and Environment - *Planning permit applications in open, potable water supply catchment areas- 2012.*
- *Public Health and Wellbeing Act 2008.*
- Victorian Land Capability Assessment Framework- January 2018

Appendix 1: Action Plan

ITEM	ACTION	PHASE 1	PHASE 2		
		2018-19	19-20	20-21	21-22
Action 1	Review and/or develop wastewater policy and procedures.	X	X		
Action 2	Determine number and location of all septic tank systems in the municipality, and any data gaps by collating data from North East Water, Council's rate database and other sources.	X			
Action 3	Engage a consultant to undertake feasibility and design of a cluster waste water management system at the Harrietville Tailings area to facilitate further development of the area.	X	X		
Action 4	Consult with NEW on management of identified risk areas through new Sewage Management Plans.				X
Action 5	Consult with NEW, NECMA and GMW on the potential need to implement a water testing / monitoring program for high risk areas in Alpine Shire.		X		
Action 6	Integrate onsite system data into Council's information systems.	X			
Action 7	Undertake an appropriate inspection regime using the risk indicators and onsite system data		X	X	X
Action 8	Provide community education on the correct operation and maintenance of onsite wastewater systems	X	X	X	X
Action 9	Develop fact sheets and other resources advising and educating on wastewater.		X		

ITEM	ACTION	PHASE 1		PHASE 2	
Action 10	Investigate options to provide information to homebuyers on onsite systems and the associated domestic wastewater management requirements.		X		
Action 11	New onsite systems are to be installed in line with the Code, Standard and other relevant legislation, policy and guidelines.	X	X	X	X
Action 12	Staff who review, approve, inspect and assess wastewater treatment are to have experience in onsite domestic wastewater treatment systems best practice, design and legislation.	X	X	X	X
Action 13	Develop a Clause 66 Agreement between GMW and Council regarding planning referrals so that GMW do not have to assess lower risk proposals.	X			
Action 14	Investigate the number of properties in proximity to existing sewerage infrastructure and the feasibility of these properties to connect.			X	
Action 15	Ensure maps and databases of sewerable land prepared and reviewed by North East Water are updated on Council's information systems.	X	X	X	X
Action 16	Undertake periodic review and improvement of this DWMP, including: *I.* Annual review and adaptation of the action plan *II.* A full review of the DWMP three years after its adoption by Council as specified in the SEPP (Waters of Victoria) *III.* A review of funding and resourcing requirements for the DWMP.		X	X	X

Appendix 2: Planning considerations

INTRODUCTION

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

This appendix looks at the relevant parts of the Alpine Shire planning scheme and discusses their relevance to domestic wastewater management. Conclusions are drawn and recommendations made for inclusion in the DWMP operational document.

PLANNING PROVISIONS

The following extracts from the Alpine Planning Scheme illustrate the key clauses related to "sewer" and "effluent" and "domestic wastewater". Note, Particular Provisions, Special Use Zones, Design and Development Overlays, Realigning Common Boundaries and other incidental references are ignored in this summary.

State Planning Policy Framework 11 Settlement (p24)
Planning is to facilitate sustainable development that takes full advantage of existing settlement patterns, and investment in transport and communication, water and sewerage and social facilities.

State Planning Policy Framework 11.02-4 Sequencing of development (p31)
Ensure that planning for water supply, sewerage and drainage works receives high priority in early planning for new developments.

State Planning Policy Framework 19.03 Development Infrastructure – Water supply, sewerage and drainage

To plan for the provision of water supply, sewerage and drainage services that efficiently and effectively meet State and community needs and protect the environment.

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.

Municipal Strategic Statement 21.03-4 Built form and heritage 21.03-4
Ensure new residential development is serviced with water, sewerage, stormwater, underground electricity and sealed roads, appropriate for the area.

Investigate the development of a Domestic Wastewater Management Plan to assist in assessing the servicing of towns with reticulated sewerage.

Municipal Strategic Statement 21.04-6 Catchments and waterways
There are six Special Water Supply Catchment Areas which affect a significant proportion of the Shire. These catchments are protected under the Catchment and Land Protection Act 1994.

These Special Water Supply Catchment Areas have significant values as a source of water for urban water supplies, and domestic and stock use.

As a consequence of the Ministerial Guidelines restricting development and subdivision in these catchments there are implications not only for farm restructuring but also development in unsewered townships, villages and rural residential areas.

The strategies related to water will be implemented through the planning scheme by: using policy and the exercise of discretion. All development in rural areas will be required to retain and treat all effluent on site. Any application to construct a building within 100 metres of a waterway which would generate effluent should include evidence that the building site is capable of containing an appropriate water treatment system by providing an appropriate land capability assessment in accordance with the requirements of the relevant EPA "Code of Practice – Onsite Wastewater Management".

Liaise with Department, Environment, Land, Water and Planning, Goulburn – Murray Water, North East Water Corporation, North East Catchment Management Authority and East Gippsland Catchment Management Authority to prepare a regional water catchment policy so as to adequately address land use planning issues raised by designation of land as Special Water Supply Catchment Areas.

Investigate the development of a Domestic Wastewater Management Plan to assist in assessing the servicing of towns with reticulated sewerage.

And, investigate the development of a Domestic Wastewater Management Plan liaising with Department, Environment, Land, Water and Planning, Goulburn - Murray Water, North East Water Corporation, North East Catchment Management Authority and East Gippsland Catchment Management Authority.

Municipal Strategic Statement 21.06 Infrastructure

Bright, Mount Beauty, Tawonga South, Myrtleford, Porepunkah and Tawonga (part only) are serviced with reticulated sewerage.

Investigate the development of a Domestic Wastewater Management Plan to assist in assessing the servicing of towns with sewerage.

Encourage the use of alternative systems (effluent/power/water) in rural areas of the Shire.

Municipal Strategic Statement 21.07 Local Areas Harrietville

Investigate the development of a Domestic Wastewater Management Plan to assist in assessing the servicing of towns with reticulated sewerage.

Require Land Capability Assessments to ensure the ability of a site to adequately contain and treat any on-site effluent in accordance with the requirements of the relevant Environment Protection Authority "Code of Practice – Onsite Wastewater Management".

Investigate and implement the use of alternative effluent treatment systems to septic tanks.

Municipal Strategic Statement 21.07 Local Areas Tawonga

There is no reticulated sewer. Other urban services are limited.

Investigate the development of a Domestic Wastewater Management Plan to assist in assessing the servicing of towns with reticulated sewerage.

Municipal Strategic Statement 21.07 Local Areas Wandiligong
There is no reticulated sewer. Other urban services are limited.

Ensure future subdivision provides for a variety of lot size and lot layout patterns on land capable of disposing of waste water and effluent on site.

Local Planning Policies 22.01.02 Settlement, Built Form and Heritage – Rural Residential Living
It is local policy that in respect of development that cannot be serviced with reticulated sewer that a land capability assessment report be prepared in accordance with the Environment Protection Authority Code of Practice for Onsite Waste Water Treatment, demonstrating the capability of the land to contain and treat effluent on-site.

The design response should show: Proposed building envelopes, effluent disposal envelopes and vehicular access and egress.

Local Planning Policies 22.02 Environment and Natural Resources
It is local policy that: Buildings and works, including on-site effluent disposal fields and access tracks, should be sited and designed to minimise any potential to destroy or threaten native flora and fauna habitats.

Local Planning Policies 22.02 Alpine Areas

It is local policy that: Any development within alpine areas or sub-alpine areas: Retains and treats any on-site effluent to such a level that no environmental harm results from discharges.

And, requiring land capability assessments to demonstrate site suitability and recommend effluent disposal systems that are best suited to local conditions and provide the highest level of environmental performance.

Local Planning Policies 22.04 Infrastructure
Ensure that all forms of residential subdivision and/or development are connected to reticulated sewerage, water, power and stormwater facilities

It is local policy that applications for the subdivision and/or development of residential land will have regard to where it is impractical to connect low-density residential development to reticulated sewerage a report should accompany the application demonstrating how effluent is to be treated and disposed of. And an infrastructure report should be submitted with each application demonstrating that the site can be connected to reticulated water, sewerage and power. Comments from all servicing authorities should be submitted with this report.

Low Density Residential Zone 32.03
To provide for low-density residential development on lots which, in the absence of reticulated sewerage, can treat and retain all wastewater.

A lot may be used for one or two dwellings provided the following requirements are met: each dwelling must be connected to reticulated sewerage, if available. If reticulated sewerage is not available, all wastewater from each dwelling must be treated and retained within the lot in

accordance with the State Environment Protection Policy (Waters of Victoria) under the Environment Protection Act 1970.

A permit is required to subdivide land. Each lot must be at least the area specified for the land in a schedule to this zone. Any area specified must be at least: 0.4 hectare for each lot where reticulated sewerage is not connected; and 0.2 hectare for each lot with connected reticulated sewerage, based on Victorian planning provisions.

An application must be accompanied by a site analysis, documenting the site in terms of land form, vegetation coverage and the relationship with surrounding land, and a report explaining how the proposed subdivision has responded to the site analysis. The report must: In the absence of reticulated sewerage, include a land assessment which demonstrates that each lot is capable of treating and retaining all wastewater in accordance with the State Environment Protection Policy (Waters of Victoria) under the Environment Protection Act 1970. The report must also show for each lot: In the absence of reticulated sewerage, an effluent disposal area.

Township Zone 32.05

A lot may be used for a dwelling provided the following requirements are met: Each dwelling must be connected to reticulated sewerage, if available. If reticulated sewerage is not available, all wastewater from each dwelling must be treated and retained within the lot in accordance with the State Environment Protection Policy (Waters of Victoria) under the Environment Protection Act 1970.

For subdivision, each lot must be provided with reticulated sewerage, if available. If reticulated sewerage is not available, the application must be accompanied by: A land assessment which demonstrates that each lot is capable of treating and retaining all wastewater in accordance with the State Environment Protection Policy (Waters of Victoria) under the Environment Protection Act 1970. And a plan which shows a building envelope and effluent disposal area for each lot.

Rural Living Zone 35.03 & Rural Conservation Zone 35.06 & Farming Zone 35.07

A lot used for a dwelling must meet the following requirements: The dwelling must be connected to a reticulated sewerage system or if not available, the waste water must be treated and retained on-site in accordance with the State Environment Protection Policy (Waters of Victoria) under the Environment Protection Act 1970.

The location of on-site effluent disposal areas to minimise the impact of nutrient loads on waterways and native vegetation.

Neighbourhood Character and Infrastructure 55.02

To ensure development is provided with appropriate utility services and infrastructure and to ensure development does not unreasonably overload the capacity of utility services and infrastructure.

Development should be connected to reticulated services, including reticulated sewerage, drainage, electricity and gas, if available.

Particular Provisions 56.07 Integrated Water Management

Waste water management objective: To provide a waste water system that is adequate for the maintenance of public health and the management of effluent in an environmentally friendly

manner. Standard C24 Waste water systems must be: Designed, constructed and managed in accordance with the requirements and to the satisfaction of the relevant water authority and the Environment Protection Authority. Consistent with any relevant approved domestic waste water management plan. Reticulated waste water systems must be provided to the boundary of all lots in the subdivision where required by the relevant water authority.

Referral and Notice Provisions 66
An application to subdivide land must be referred to the relevant water, drainage or sewerage authority as a determining referral authority.

A permit granted to subdivide land in a manner that does not require referral under Clause 66.01 must contain the following conditions: The owner of the land must enter into agreements with the relevant authorities for the provision of water supply, drainage, sewerage facilities, electricity and gas services to each lot shown on the endorsed plan in accordance with the authority's requirements and relevant legislation at the time.

Municipal Strategic Statement 21.04-4 Environmental Risk (Flooding)

Flooding within parts of the Alpine Shire is a severe constraint on development with the extent of flooding in the Ovens River and tributaries being well documented. Strategies identified include:

- Discourage buildings, works, land use and subdivision that would be detrimental to the maintenance of the natural systems of land affected by flooding and inundation.
- Prevent inappropriate development in areas subject to flooding.
- Ensure residential development is not located on land … that is flood prone
- Apply the Land Subject to Inundation Overlay and Flood Overlay over identified land affected by the 1:100 year flood level. Land is identified in the Upper Ovens Flood Study 2015, The Myrtleford Floodplain Management Study and the Harrietville Floodplain Management Study.

Areas mapped with a Land Subject to Inundation Overlay (LSIO) require:

- A permit to subdivide land.
- A permit to construct a building or construct or carry out works.
- Applications must be referred to the relevant floodplain management authority (which is the NECMA) or must satisfy requirements or conditions previously agreed in writing between the responsible authority and the floodplain management authority.

Land subject to the 1 in 100 year or 1% flood frequency level is not considered suitable for rural residential development (refer to 21.03-2).

CONCLUSIONS

As shown in this appendix, Council's planning Scheme outlines numerous relevant planning provisions related to domestic wastewater management. The key conclusions from this summary are:

a) The preparation of this first Domestic Wastewater Management Plan for Alpine Shire Council is an important obligation under the planning scheme.

b) The planning system enforces logical thinking and sequencing of development, including the concept that where sewerage is available (or can be made available) it is preferred over onsite effluent management.

c) The catchment and waterways section of the MSS requires Council to prepare both a regional water catchment policy and a domestic wastewater management plan. Council needs to be clear about the distinct purposes of these two documents to avoid any confusion or duplication.

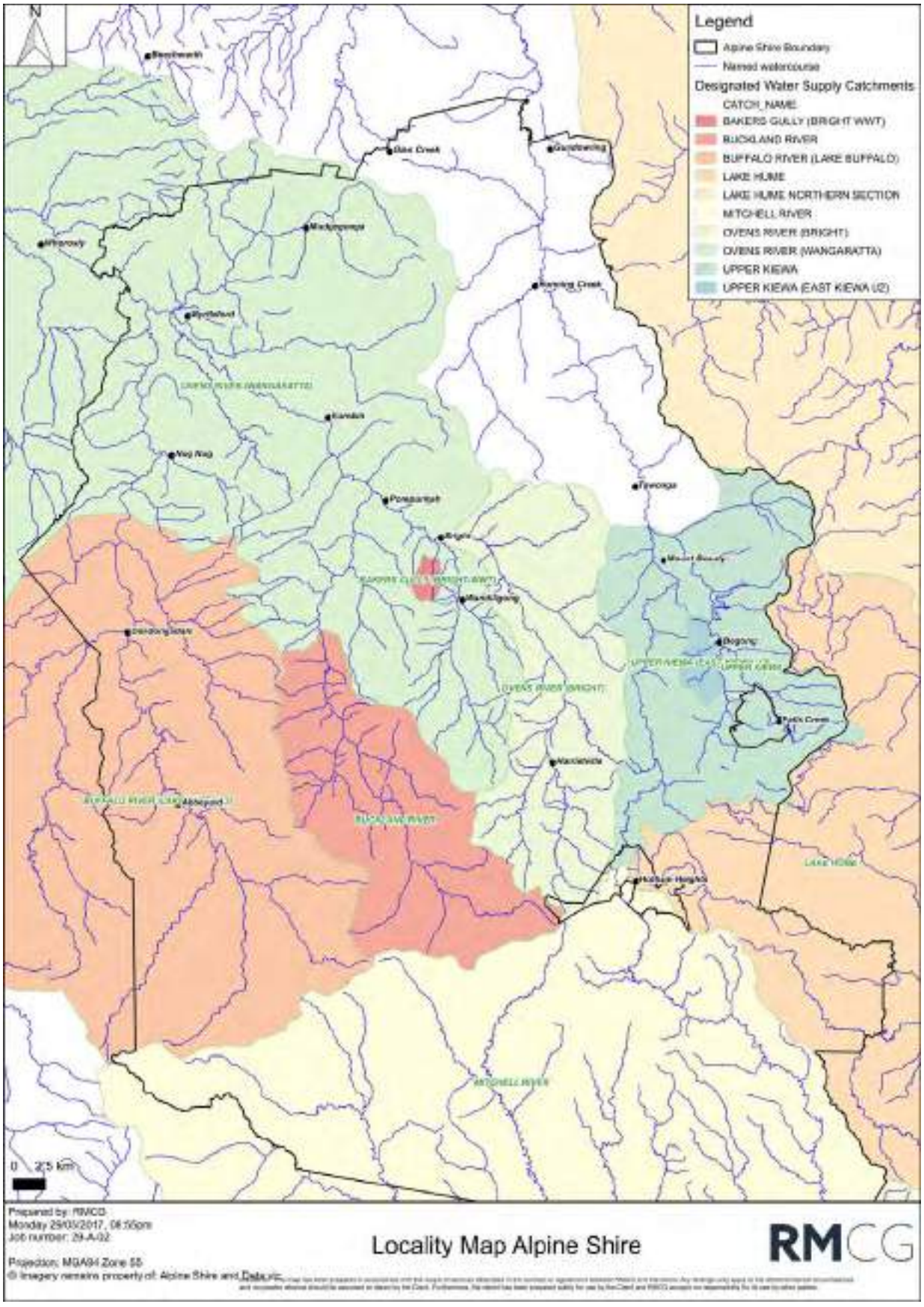
d) Three Local Area discussions in the MSS (Tawonga, Harrietville and Wandiligong) mention sewerage and effluent, suggesting these are the key areas for investigation of reticulated sewerage.

e) The zone provisions provide relatively standard and reasonable controls in relation to subdivision and dwelling development for unsewered lots.

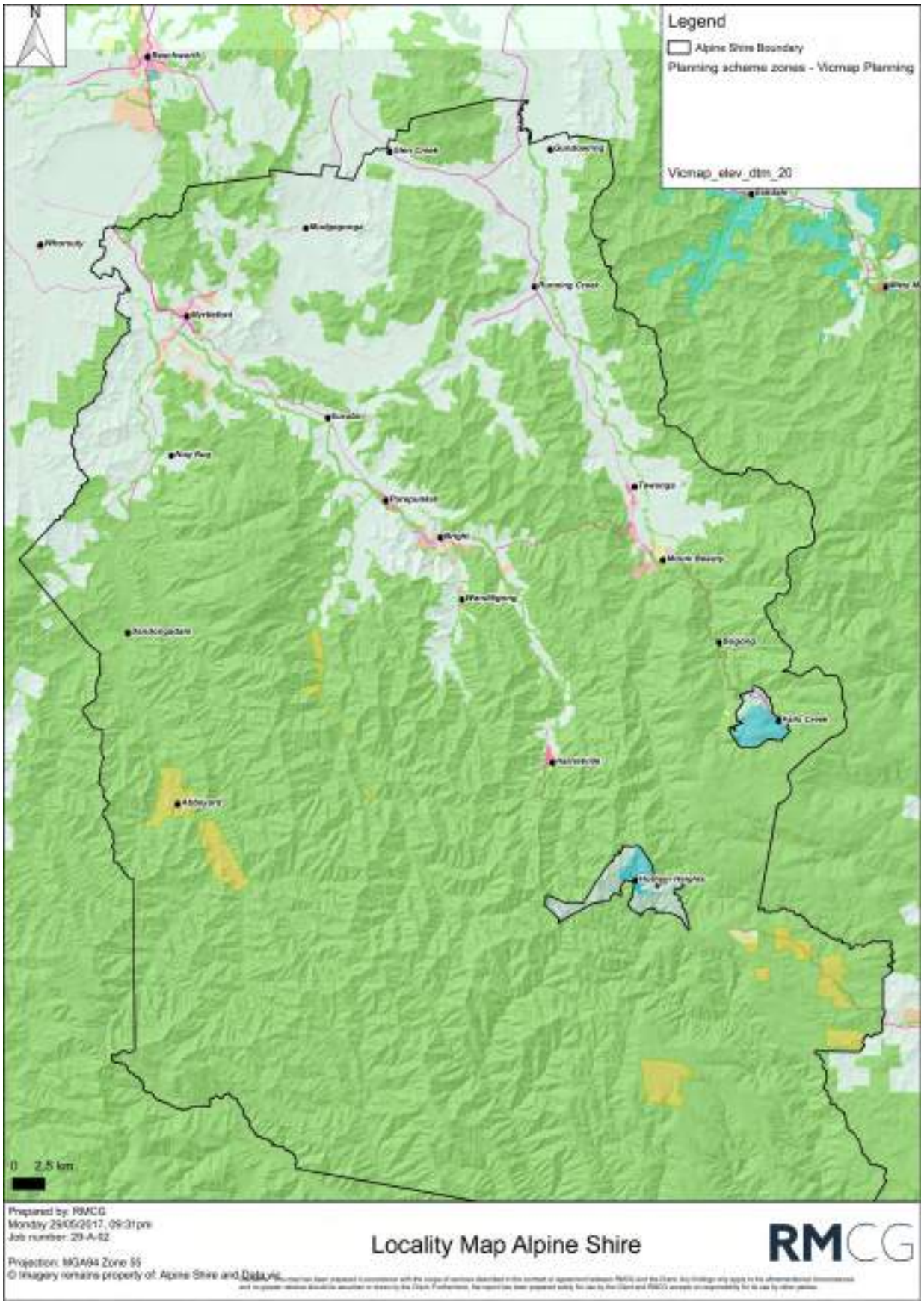
f) Flooding control on houses is explicitly addressed in the planning scheme in its own right.

g) The referral and notice provision in regard to Goulburn-Murray Water is currently subject to an MOU that should be able to be lifted once this DWMP has been adopted.

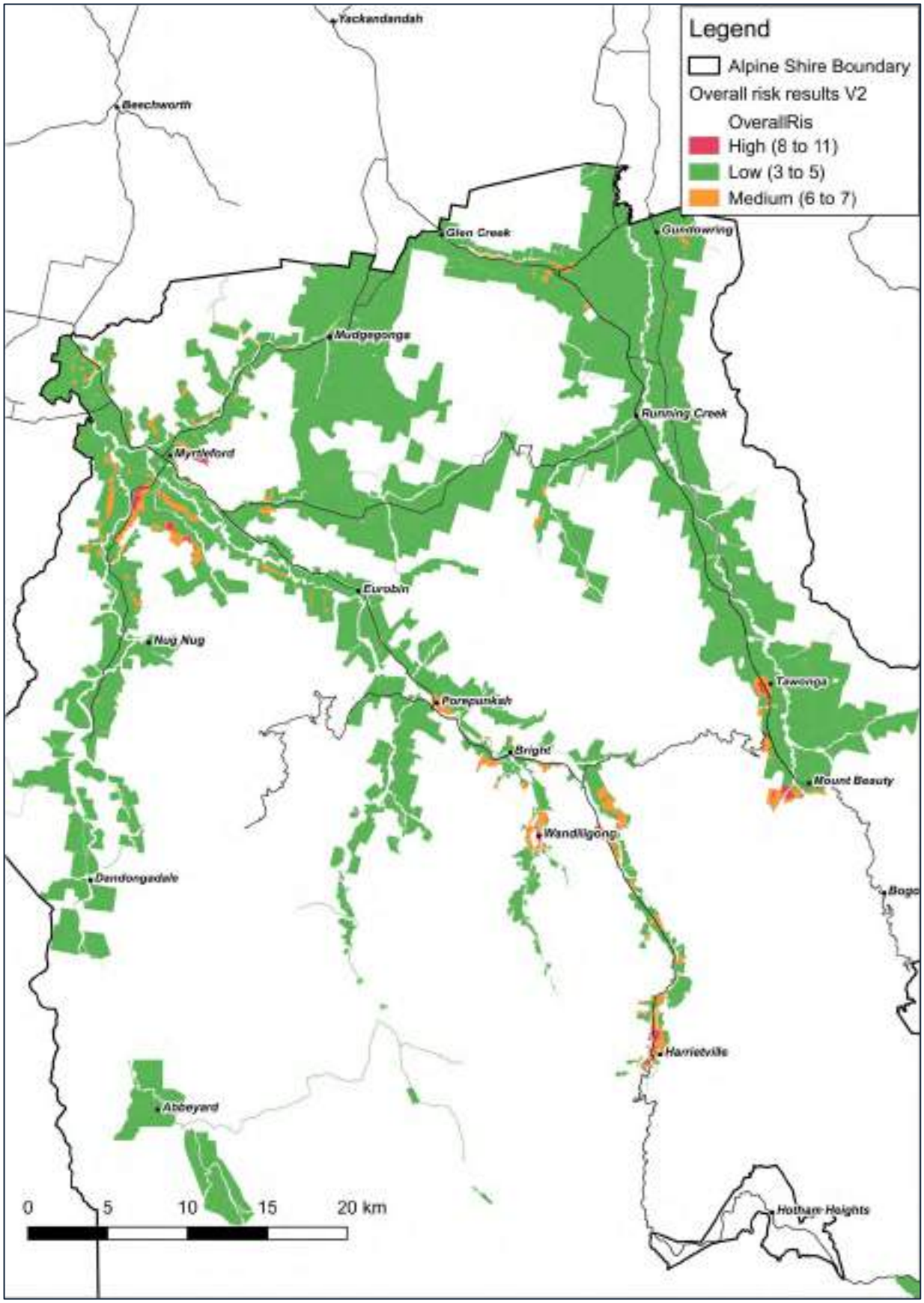
Appendix 3: Alpine Shire Maps



Map 1: Designated water supply catchments



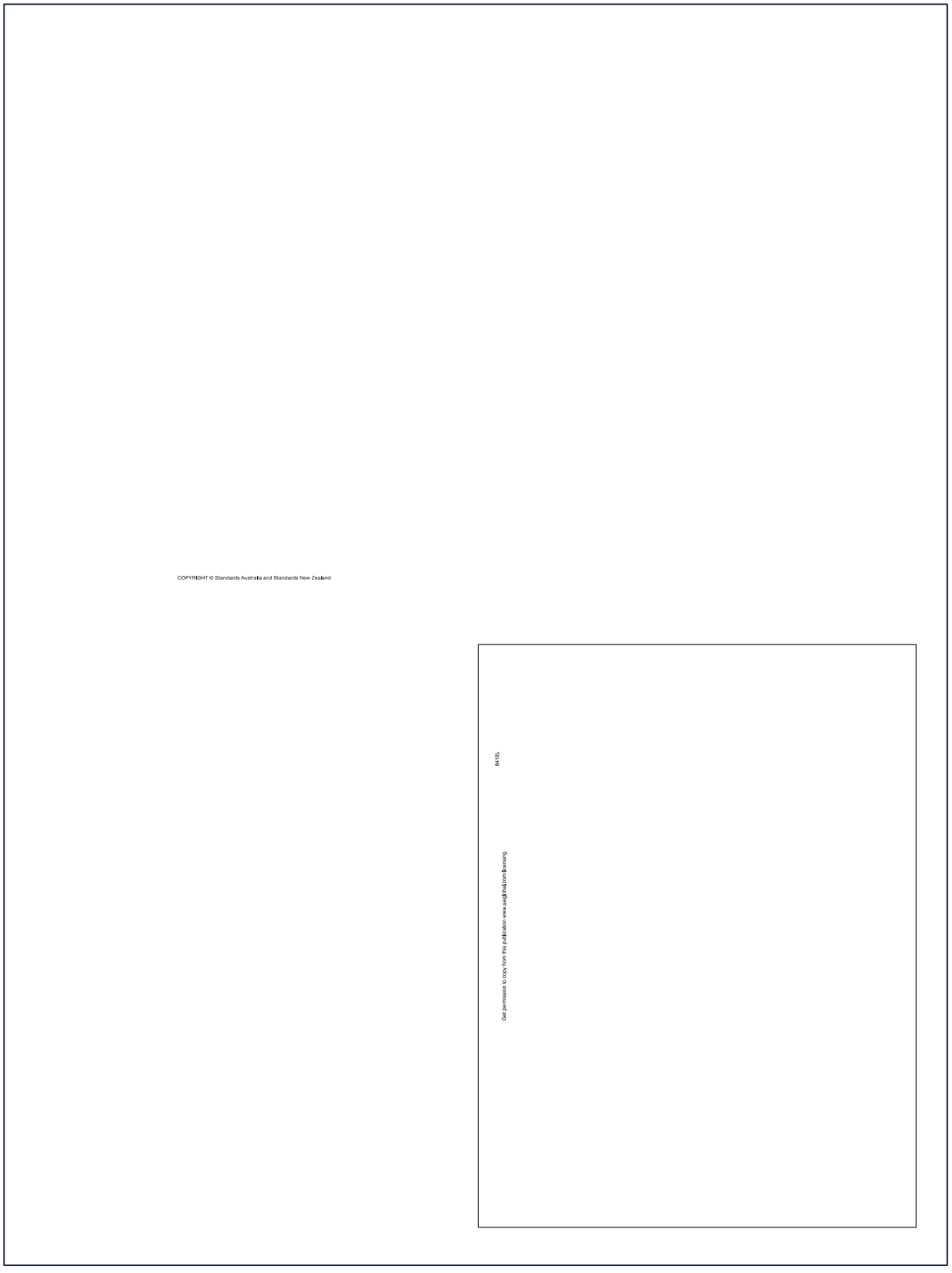
Map 2: Town planning zones



Map 3: Overall DWMP risk – extract from spatial risk assessment (RMCG 2017)

Appendix 4: Audit Assessment Tool

Figure 1: Inspection form (Appendix U from AS 1547)



Appendix 5: Spatial Risk Assessment

See attached: Domestic Wastewater Management Plan 2017 – Spatial Risk Assessment FINAL as prepared by RMCG October 2017

Appendix 6: Development and Review

VERSION	REVIEWED	DATE ADDOPTED
1	Development of the plan	

RMCG

OCTOBER 2017

Domestic Wastewater Management Plan 2017 - Spatial Risk Assessment

Final

Alpine Shire Council

135 Mollison Street, Bendigo, Victoria 3550

(03) 5441 4821 – rmcg.com.au

Table of Contents

1 Introduction

This report presents the method and results of a spatial risk assessment undertaken to inform development of a Domestic Wastewater Management Plan for Alpine Shire. Drawing on various spatial data sets, the risk assessment has generated a set of maps designed to illustrate the spatial nature of various risk factors that affect domestic wastewater management and how these factors combine to form an overall risk.

Firstly, this report discusses the risk assessment process (method), then presents the results (maps) for five key study areas and draws conclusions in relation to the management of onsite systems.

The focus of the risk assessment is on existing systems; however, consideration is also given to potential future development. Conclusions and recommended actions for inclusion into the Domestic Wastewater Management Plan are provided.

2 Spatial risk assessment process

2.1 OVERVIEW – RISK FACTORS

The spatial risk assessment was tailored to suit the Alpine Shire. It draws on recent approaches used by other councils in Victoria, including Golden Plains, Mansfield, and Benalla.

The following method was used for the risk assessment. This is largely based on the Edis Method that was developed for Mansfield Shire, and adapted for Benalla Shire [1]. The risk assessment was done across the whole shire; Figure 1 shows the results.

1. Land tenure and development potential. The risk associated with development potential was established as follows and relates to existing and potential future lot sizes:
   a. Low Density Residential and Township zones = high risk (red)
   b. Rural Living zones and Small lot exceptions to Farming Zone [2] = medium risk (orange)
   c. Other zones = low risk
   d. Public land is shown on all maps and is excluded from the analysis
2. Soil type. Land units of North East Victoria (obtained from data.vic, based on a Land Resource Assessment (LRA) for the North East, Centre for Land Protection Research, 2002) was used because it is the best available soil data for the area. RMCG correlated the codes developed for the land unit mapping with soil categories from AS/NZ 1547 and with the risk ratings developed by Edis for Mansfield. The focus for wastewater irrigation/disposal is on the most limiting soil layer, which is generally the subsoil. Refer to Appendix 1 for further details.
3. Density of onsite systems. The cumulative impact of domestic wastewater needs to be considered. Risk increases when the density of onsite systems across the landscape increases. The Mansfield DWMP Pilot adopted a rating scale that less than 20 houses/km^2 is “low”, between 20 and 40 is “medium” and greater than 40 houses/km^2 is “high” risk. Council provided a reliable set of points representing the

[1] Benalla Rural City Council. Domestic Wastewater Management Plan, Issues Paper, September 2015
[2] Council planning staff advised of two areas (Freeburgh and Centenary Drive, Wandiligong) where the rules relating to small lots within the Farming Zone are less strict.

locations of onsite systems throughout the Shire. Using the onsite system layer, densities for each onsite system and a heat map have been prepared.

4. Distance to potable water offtakes. North East Water extracts surface water at only five points. The Mansfield risk factors were adopted for this study, namely: low: >15km, medium: 2–15 km, and high: <2km distance upstream from active potable water offtakes.
5. Rainfall. This risk factor was added by RMCG to reflect the importance of rainfall in onsite system management. With greater than 900mm annual rainfall, short growing seasons and low evaporation mean that the whole of the Alpine Shire is high rainfall risk relative to other parts of Victoria.
6. Groundwater. According to Visualising Victoria's Groundwater (http://www.vvg.org.au), all groundwater in the Alpine Shire is high quality, with salinity lower than 500 mg/L total dissolved solids. The surface water and groundwater resources in the Ovens River valley are highly connected. An unconsolidated sedimentary aquifer lies beneath and adjacent to the Ovens River and its tributaries. Seasonal groundwater level trends in observation bores closely mirror the water level trends observed in the river. Given the close interaction, consideration of risk to groundwater also infers risk to surface water. For this risk assessment, three risk factors (depth to watertable, proximity to named watercourses, density of groundwater bores) have been combined to determine groundwater risk as follows:
    a. High Risk = 0-5m depth to water table OR >20 bores/km2 OR within 75m of a named waterway.
    b. Medium Risk = 5-10m depth OR 5-20 bores/km2 OR within 75-125m of a named waterway.
    c. Low risk = >10m depth AND <5 bores/km2 AND > 125m from a named waterway.
7. Slope. The median slope was calculated using digital elevation data obtained from data.vic. The following ratings were used, as per Edis: low risk: <10%, medium risk: 10% to 20%, high risk: >20% slope.
8. Overall risk. To derive a total score, the seven risk factors were aggregated as follows:
    a. High rating was allocated a score of 2 and medium was allocated a score of 1 (low = 0)
    b. A spatial topology overlay was used to cut the private land into unique combinations of all risk factors and the ratings were applied
    c. Scores ranged between 3 and 11
    d. Scores are plotted on the overall risk maps using a traffic light colour scheme:
        i. High overall risk (score 8-11) = red
        ii. Medium overall risk (score 6 or 7) = orange
        iii. Low risk (score 3-5) = green
9. Small lot development potential. The final map in the series shows onsite systems and vacant small lots. This can be interpreted to gauge the level of development potential without further subdivision.

2.2 RISK MAP SERIES

The results of the spatial analysis are illustrated by a series of maps and text presented in Chapter 3. Figure 1 shows the results of the risk assessment for the whole shire. The high risks are concentrated along the Ovens Valley and at the top of the Kiewa Valley. As such, detailed maps of only five key areas can be used to focus attention on these higher risks. These five key areas are:

1. Bright, Wandiligong and Freeburgh
2. Harrietville
3. Myrtleford, Ovens and Buffalo Creek
4. Porepunkah and Bright
5. Tawonga, Tawonga South and Mount Beauty

For each key area, a series of 14 maps has been prepared to illustrate the various data and results from the spatial risk assessment. Refer to Table 1 for further details on the map series provided. All focus area maps are provided at the same scale for ease of comparison between the areas.

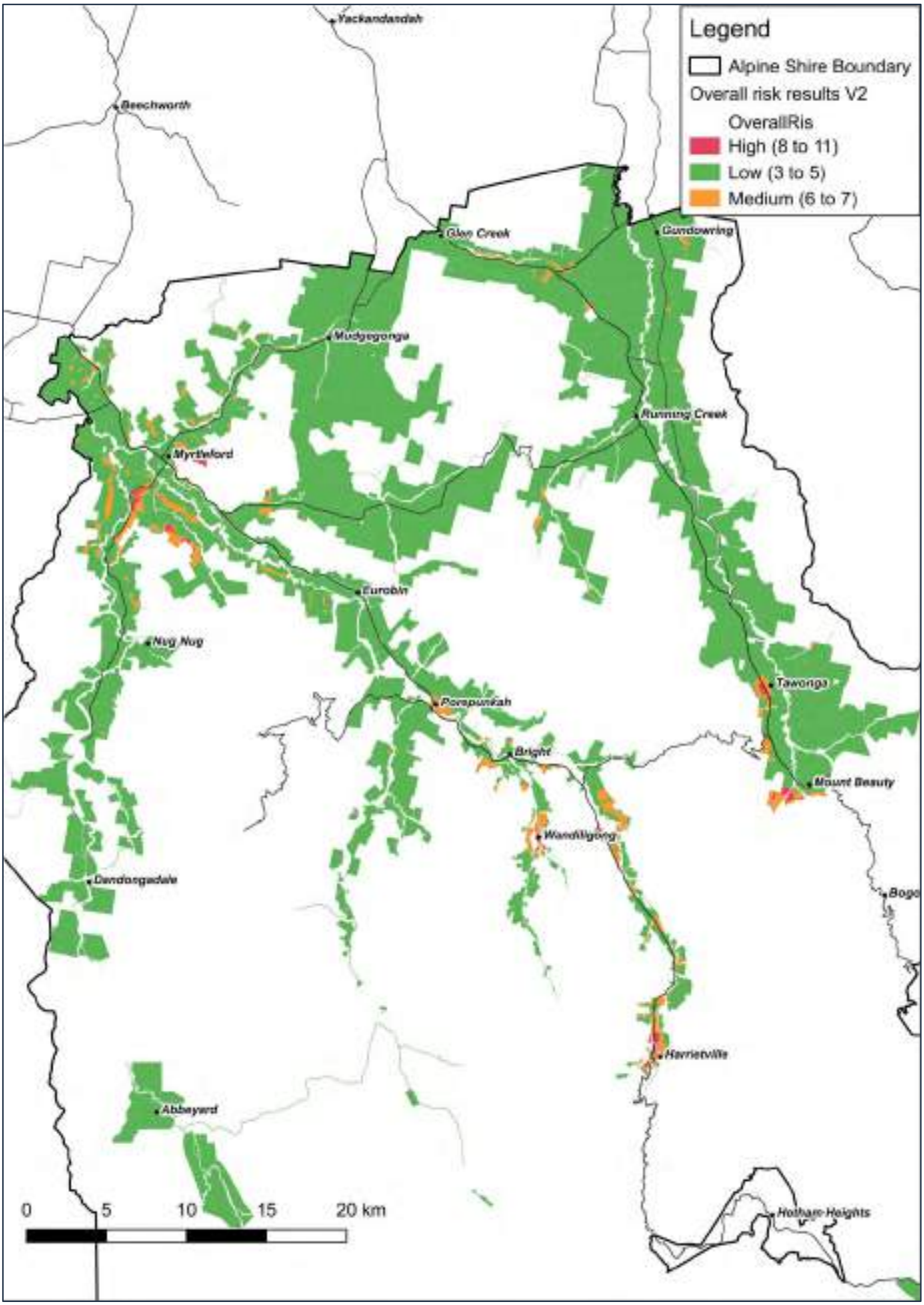


Figure 1: Alpine Shire overall domestic wastewater risk

Table 1: Map series description for focus areas

MAP	MAP NAME	MAP DETAILS
1	Aerial	Onsite systems – yellow squares Localities and labels Aerial imagery
2	Town planning	Localities and labels Onsite systems - black squares Cadastral area boundary Planning scheme (data.vic via Web Map Server)
3	Sewerage	Localities and labels Onsite systems – black squares Sewer Service Connections and Sewer Pipes Alpine Sewer Districts (note, these are subject to a current review by North East Water and many will change in 2018). Public land
4	Water supply	Localities and labels, Onsite systems Water Service Connections and Water Pipes Public land
5	Soils	Localities and labels Cadastral area boundary North East LRA Labels (NE Code) (refer to Appendix 1 for supporting information) North East LRA Soil Category based on AS/NZS 1547
6	Development potential risk	Onsite systems, Localities and labels Cadastral area boundary Public land Development potential risk (traffic light using Zone Description)
7	Soil type risk	Onsite systems, Localities and labels Cadastral area boundary Public land Soil type risk (traffic light using Soil Category)
8	Density of onsite systems risk	Onsite systems, Localities and labels Main roads Public land Onsite system density risk (traffic light using Density No/km^2)

MAP	MAP NAME	MAP DETAILS
9	Distance to potable water offtakes risk	Onsite systems, Localities and labels Named watercourses and name labels Unnamed watercourses Main roads and Public land North East Water (NEW) Potable Offtakes Potable offtake proximity risk (traffic light using km upstream)
10	Rainfall risk	All high risk Average rainfall labels (mm/year) Average rainfall
11	Groundwater risk	Onsite systems, Localities and labels Main roads, Public land Groundwater risk (traffic lights - raster)
12	Slope risk	Onsite systems, Localities and labels Contours 10m Property MP Outline and Public land Slope risk (raster colour coded traffic light)
13	Overall risk	Onsite systems, Localities and labels, Roads Public land Overall risk (traffic light using Overall risk grouping)
14	Small lot development potential	Onsite systems, Localities and labels Sewer pipes Public land Alpine Sewer Districts (note, these are subject to a current review by North East Water and many will change in 2018). Property MP (grey outline – fill traffic light using lot size): ▪ <2000 m^2 = red ▪ 2000 – 4000 m^2 = brown ▪ 4000 – 10000 m^2 = yellow ▪ >10000 m^2 = clear)

3 Results

3.1 BRIGHT, WANDILIGONG AND FREEBURGH

The map series on the following pages presents the data and risk assessment for the Bright Wandiligong and Freeburgh areas.

Map 1 Aerial – shows the densest development is around Bright, significant areas of forest and tree plantations with strips of cleared land along the valleys through Freeburgh and Wandiligong, where the largest concentrations of onsite systems are.

Map 2 Planning zones – the pink and tan areas illustrate the “urban” style development zones. Wandiligong has a strip of urban-zoned land. Freeburgh and west Wandiligong are rural (light blue).

Map 3 Sewerage data – Bright is sewered. The sewerage infrastructure and sewerage district extend only a short distance up the valleys towards Freeburgh and Wandiligong.

Map 4 Water data – Bright is fully reticulated with water supply, as is Wandiligong. Despite being close to where the potable water is drawn from the river and treated, houses in Freeburgh are not connected to town water.

Map 5 Soils data – the North East Water Land Resource Assessment provides good scale data (1:100,000) on soil type and soil variability. In these valleys, the subsoils are generally Category 5 – light clays.

Map 6 Development risk – around the fringes of Bright there are some areas (shown red on the map) zoned in a way that can be closely developed. These areas are adjacent to sewerage but outside the sewer district so whether they would be sewered or not is unclear. Wandiligong has a strip of high-risk zone for development. Freeburgh and west Wandiligong are rural zoning, but the smaller lots are considered medium risk because Council has made exceptions to minimum lot sizes in these areas. An area of rural living zoned land in Germantown is considered medium development risk.

Map 7 Soils risk – each soil has been classified according to its risk for domestic wastewater. The map shows there are no high-risk soil types in this area, but strips of medium risk land exist throughout the area associated with the moderately to weakly structured light clay subsoils (Category 5b & c). Note, land suspected of having been dredged for gold mining is considered to be High Risk, and although the extent of the old workings is not accurately mapped, development on these soils should be subject to a full land capability assessment.

Map 8 Onsite density – Central Wandiligong has more than 40 onsite systems per square kilometre, making it high risk. Outer Wandiligong and Freeburgh are currently moderate risk from an onsite system density point of view.

Map 9 Potable offtakes risk – the offtake for NEW’s Bright-Wandiligong water system is located at the northern end of Freeburgh. Many of the existing dwellings in Freeburgh are within the 2 km high-risk zone.

Map 10 Rainfall risk – all of Alpine is high rainfall and high rainfall risk. This map shows the rainfall is between 1300 and 1500 mm/year.

Map 11 Groundwater risk – the high number of bores near Wandiligong and Bright, combined with the shallow watertable along the valley floor results in high risk in central Wandiligong and areas of medium risk elsewhere.

Map 12 Slope – the topography of the valleys is such that the steeper land is located along the edge of the private land, where it abuts the public land / forests. Freeburgh is relatively flat as it is close to the valley floor.

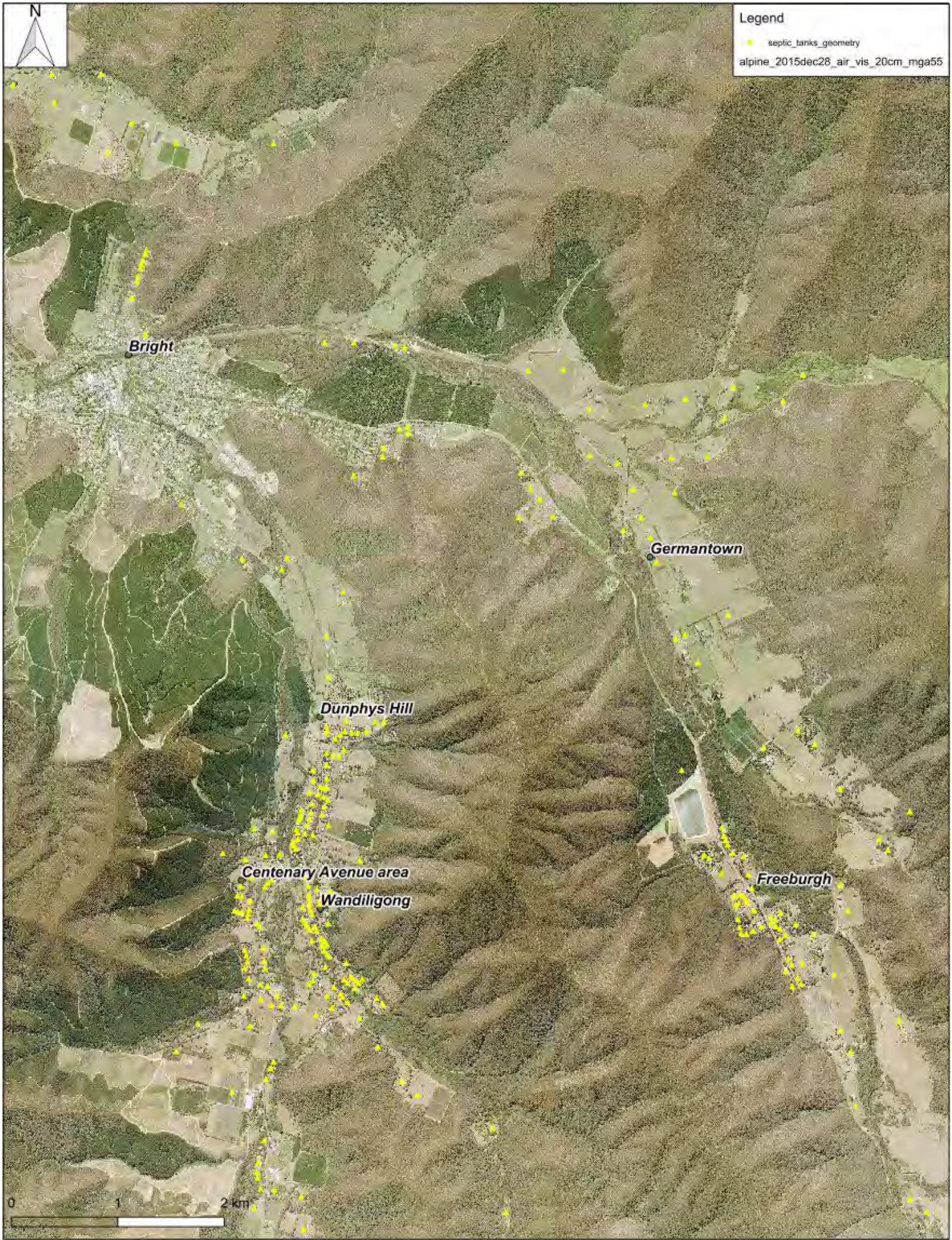
Map 13 Overall risk – when the various risk factors are combined, in this study area the highest risk areas are central Wandiligong and central Freeburgh, and the medium risk areas include the balance of Wandiligong and Freeburgh and some parts of Germantown, plus some medium-risk areas surrounding Bright.

Map 14 Small lot risk – there is a number of quite small lots in central Wandiligong (red and brown) but most of these are already developed. There are quite a few vacant medium sized lots (tan coloured, 0.4 ha to 1 ha) in Wandiligong and Freeburgh.

CONCLUSIONS – BRIGHT WANDILIGONG AND FREEBURGH

Based on the discussion above and the risk maps, the following conclusions are drawn:

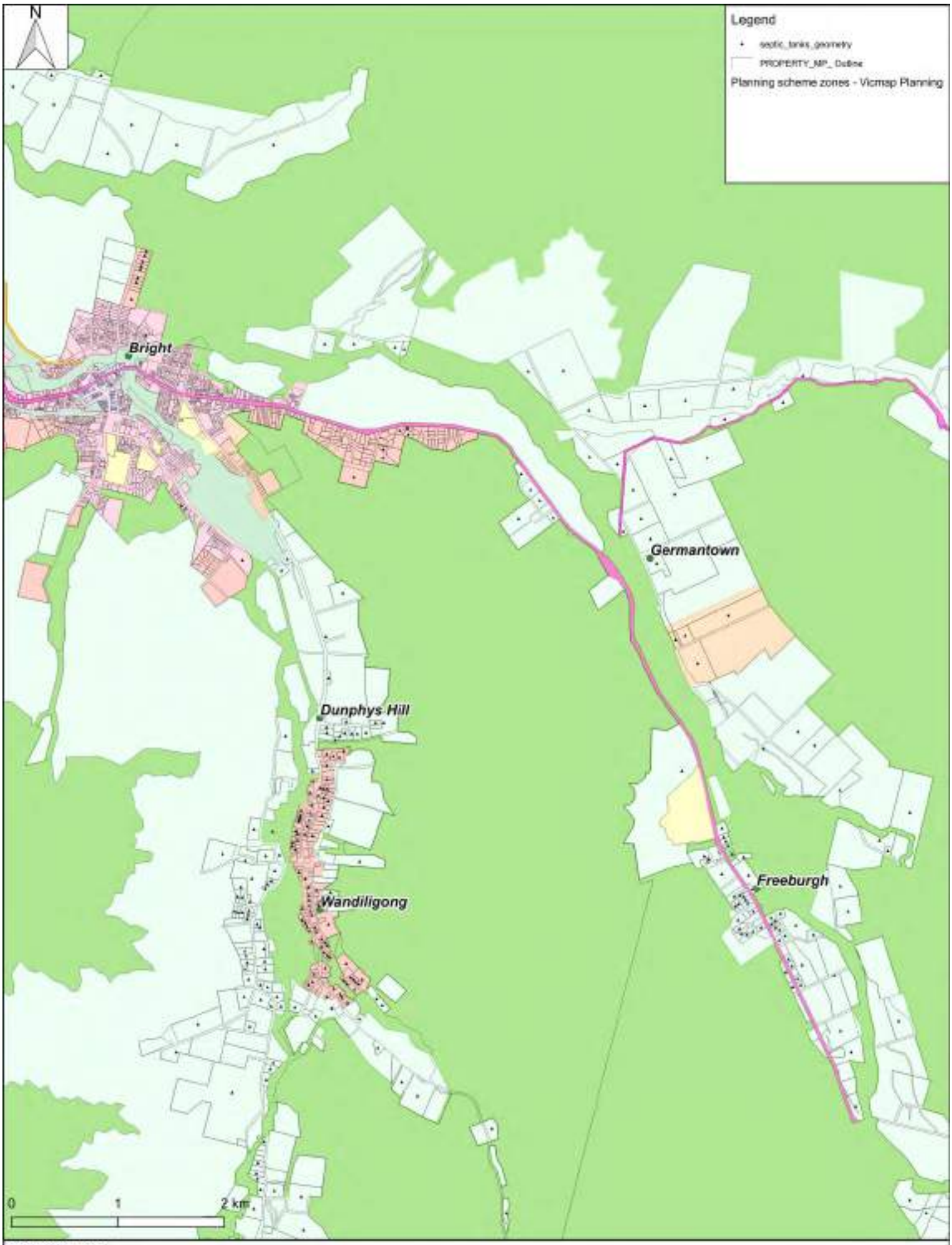
- Development on the fringes of Bright should be sewered wherever possible.
- The auditing program developed as part of the DWMP should include focus on the areas mapped as high risk in Wandiligong and Freeburgh.
- Given the existing density of development and small lot sizes in central Wandiligong, it is recommended that further assessment is undertaken in relation to water quality impacts to Morses Creek and the connected shallow water table.
- Future development in the areas mapped as medium and high risk in Wandiligong and Freeburgh should be subject to detailed land capability assessment prior to proceeding. Use of secondary treatment (potentially with disinfection and nutrient removal) is preferred to minimise risk to downstream water quality. For smaller lots (<0.4 ha) consideration needs to be given to minimising wastewater volumes (e.g. use of dry composting toilets) to reduce required land application areas.
- Land suspected of having been dredged for gold mining is considered to be High Risk.
  - If development pressure increases in Wandiligong, consideration should be given to extending sewerage to this area.



Prepared by: RMCG
Wednesday 21/06/2017, 11:28am
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Aerial overview
Bright, Wandiligong and Freeburgh

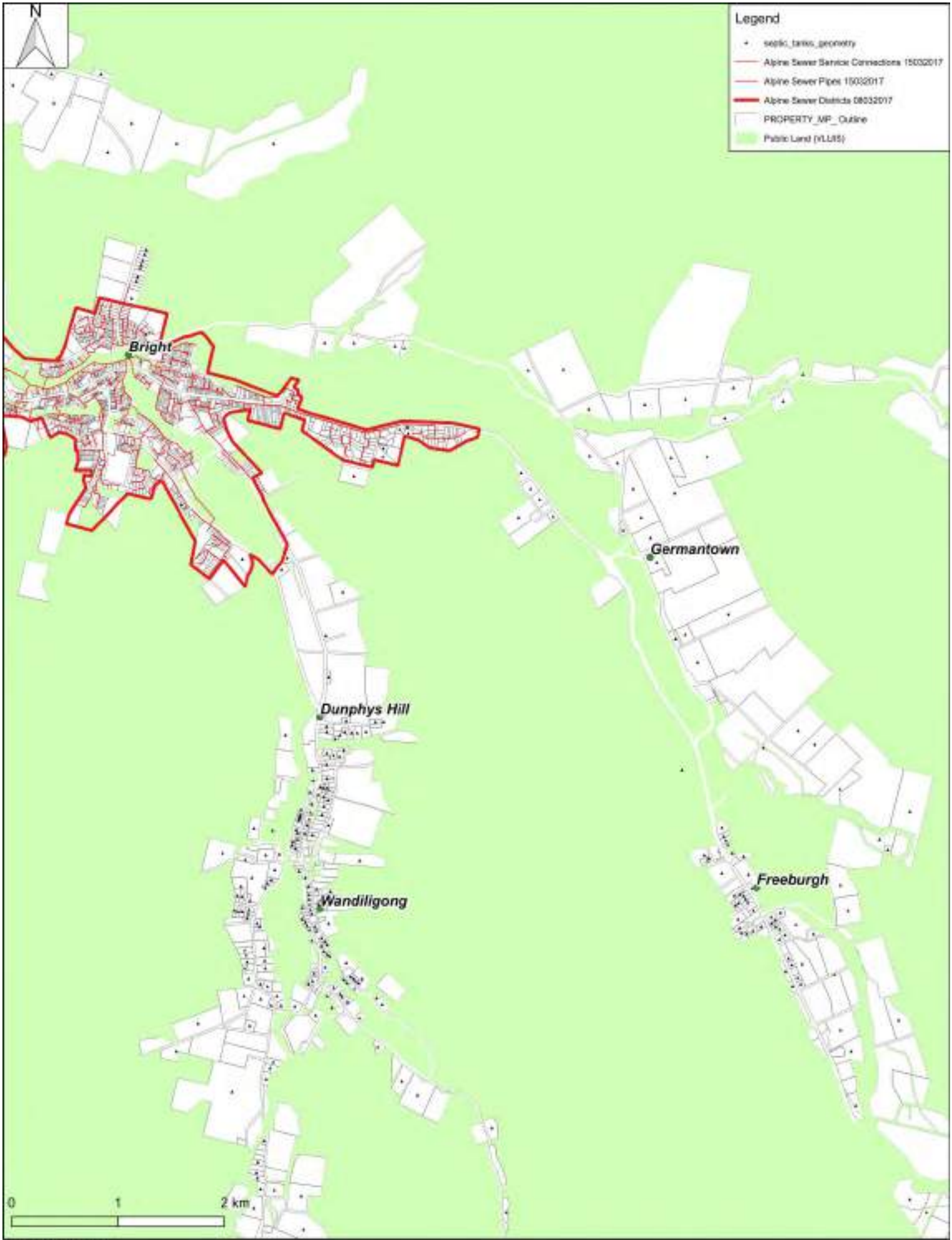
RMCG



Prepared by: RMCG
Friday 16/06/2017, 03:37pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Planning zone data
Bright, Wandiligong and Freeburgh

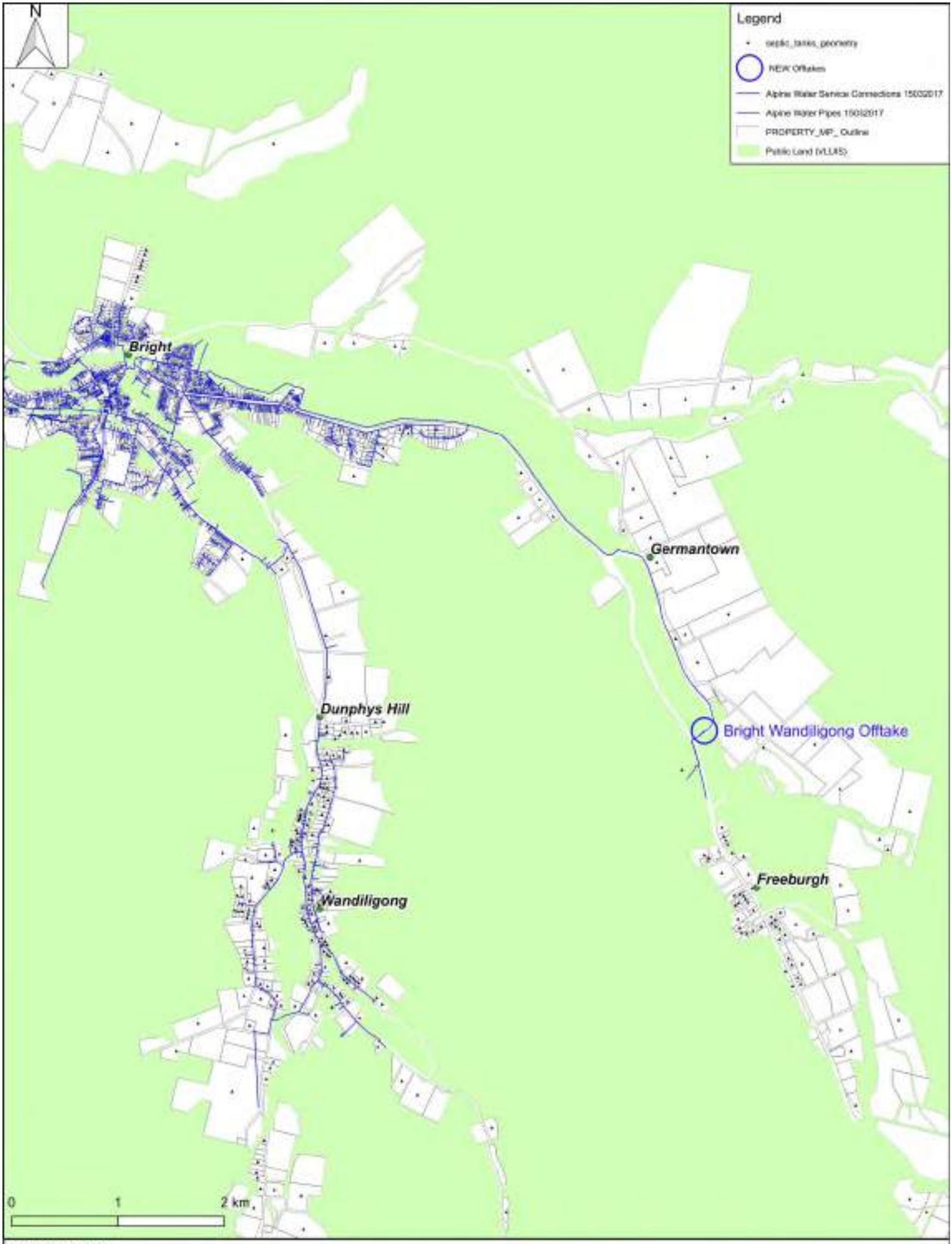
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:41pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Sewerage data
Bright, Wandiligong and Freeburgh

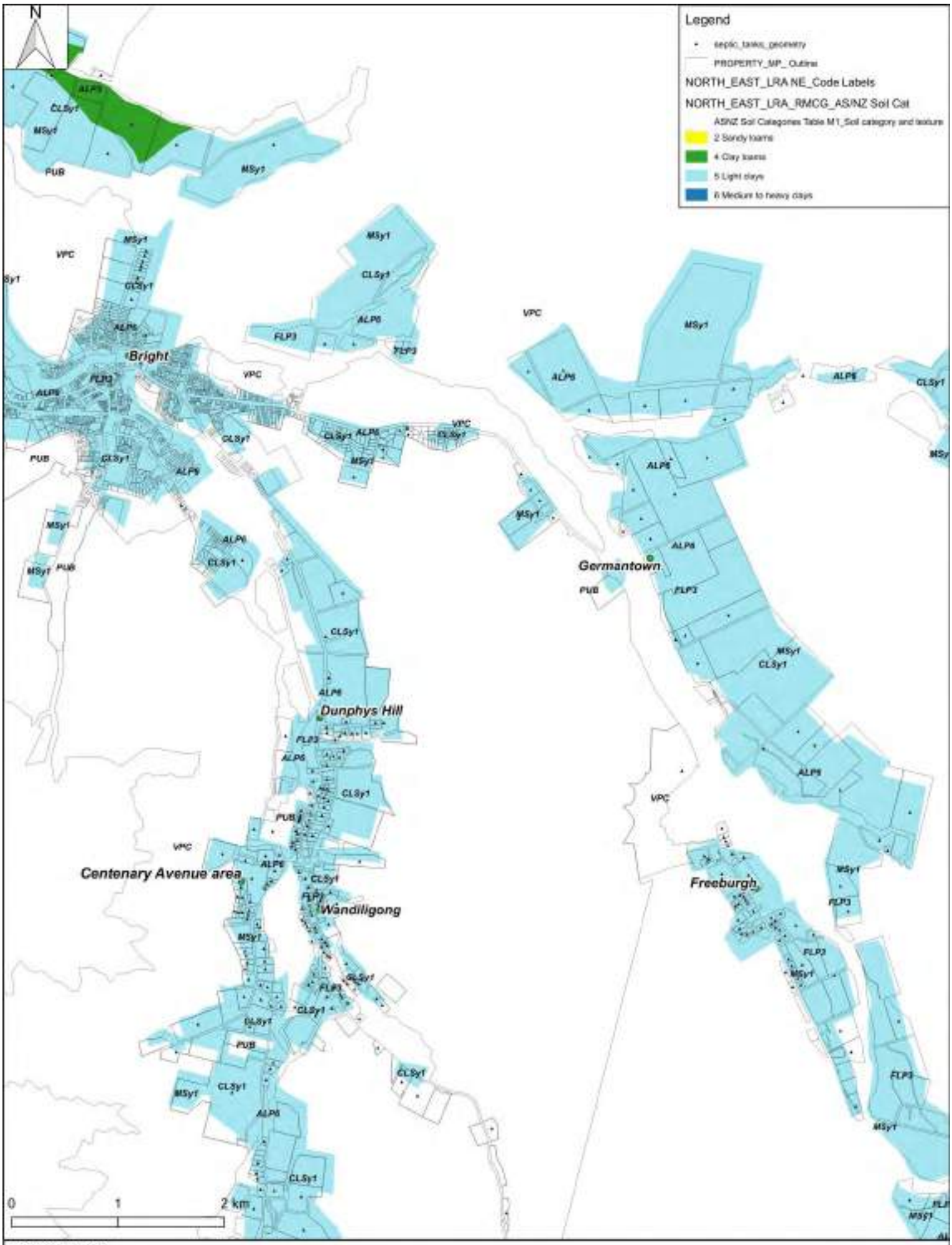
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:43pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Water supply data
Bright, Wandiligong and Freeburgh

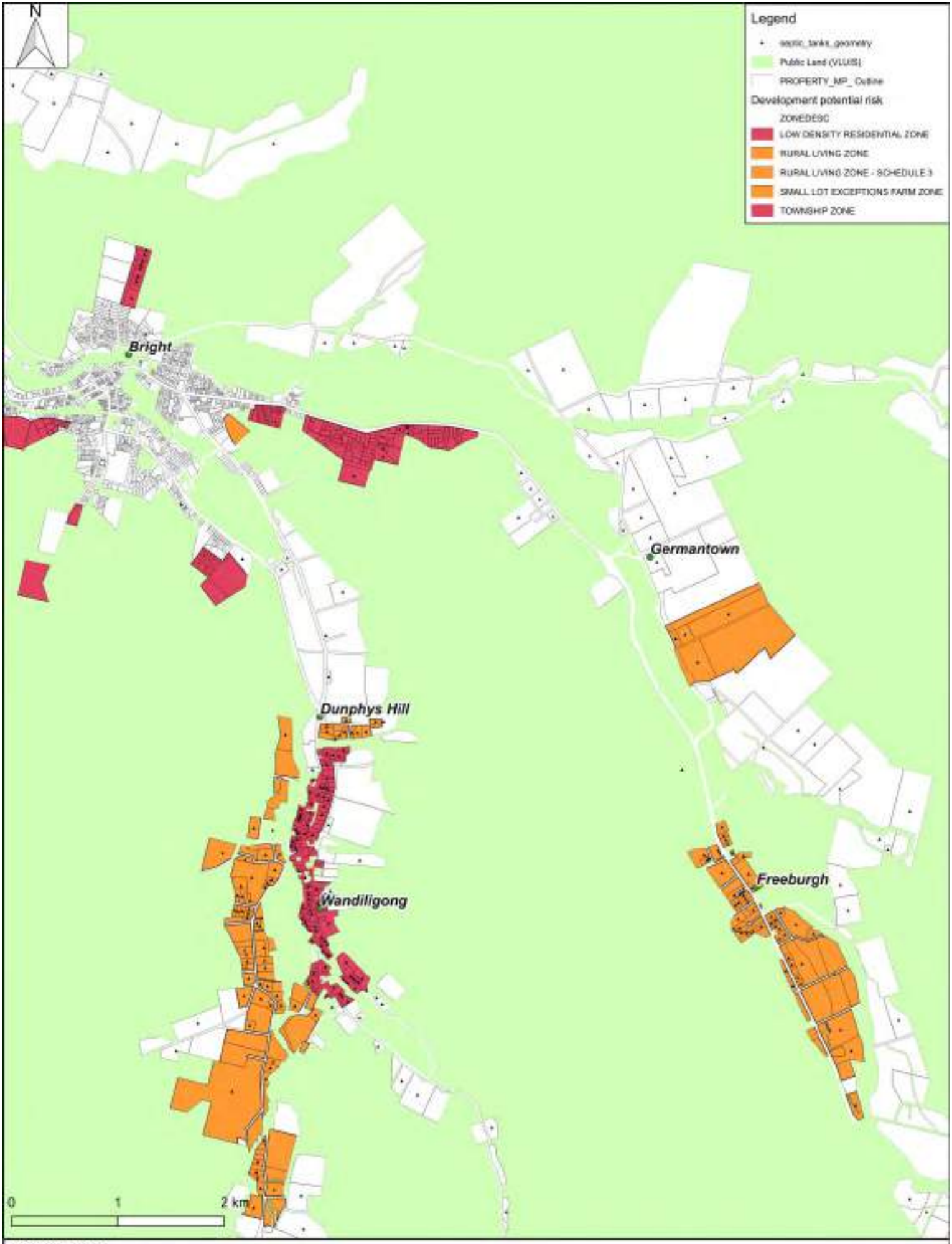
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:54pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Soils data
Bright, Wandiligong and Freeburgh

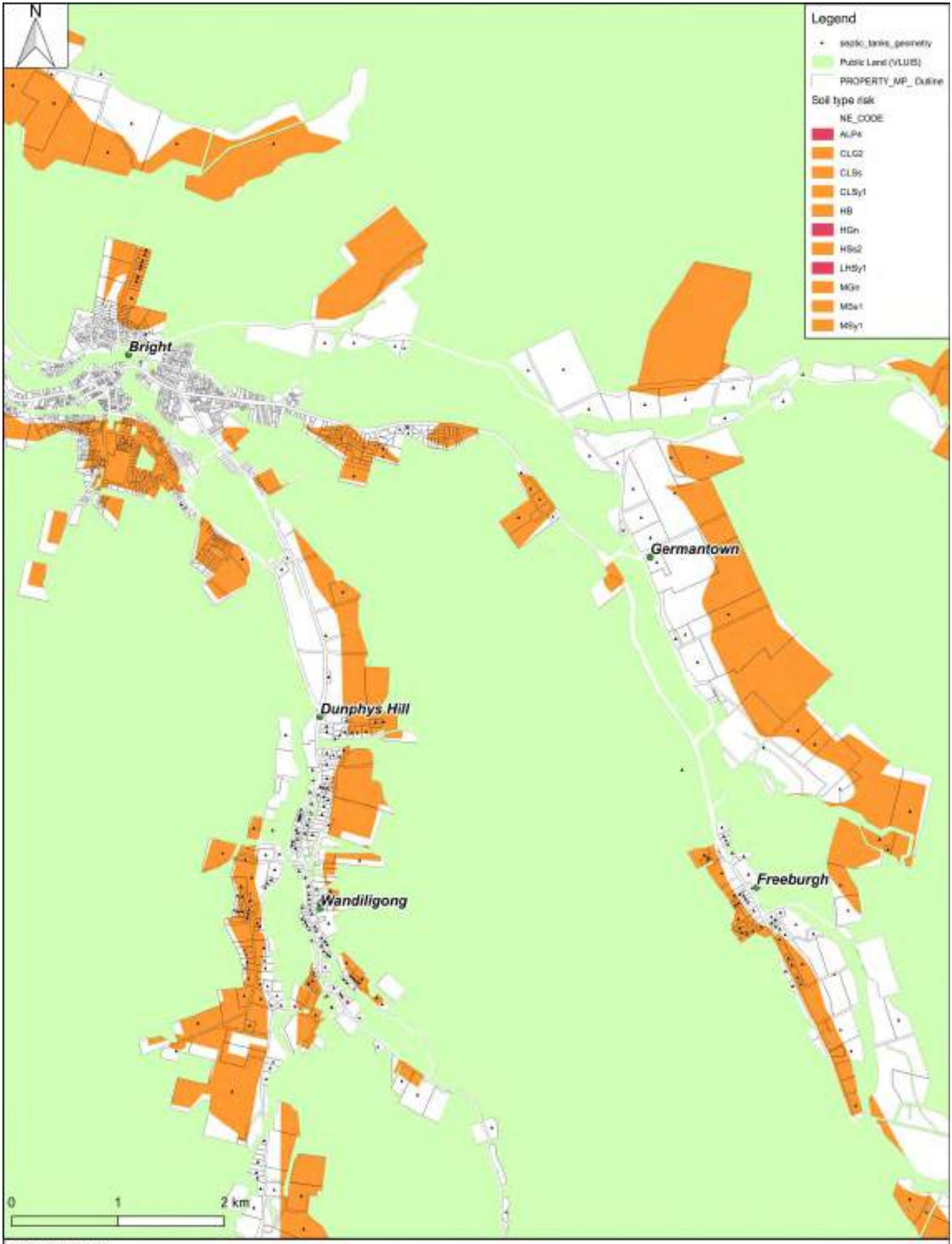
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:46pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Development risk
Bright, Wandiligong and Freeburgh

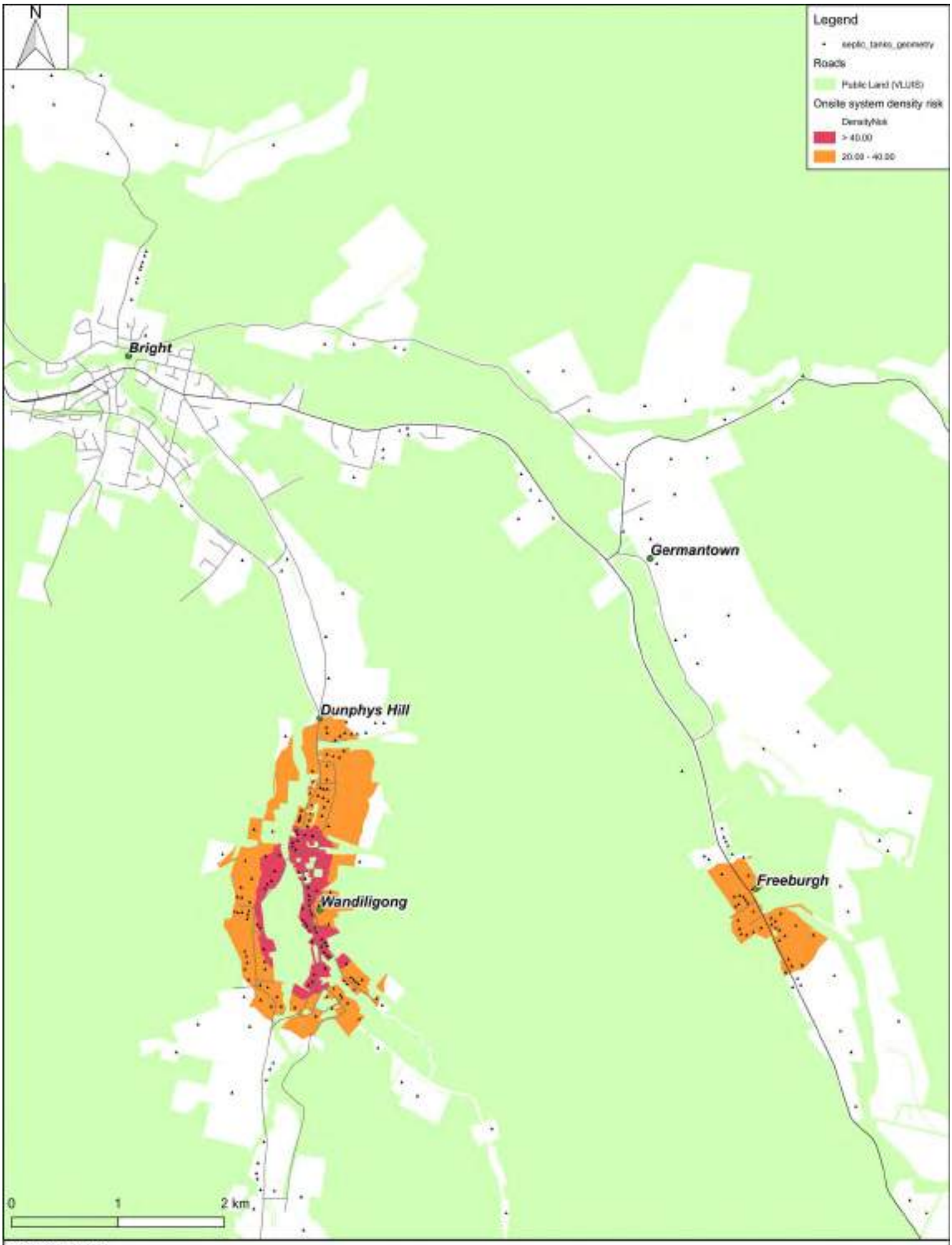
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:35pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Soil type risk
Bright, Wandiligong and Freeburgh

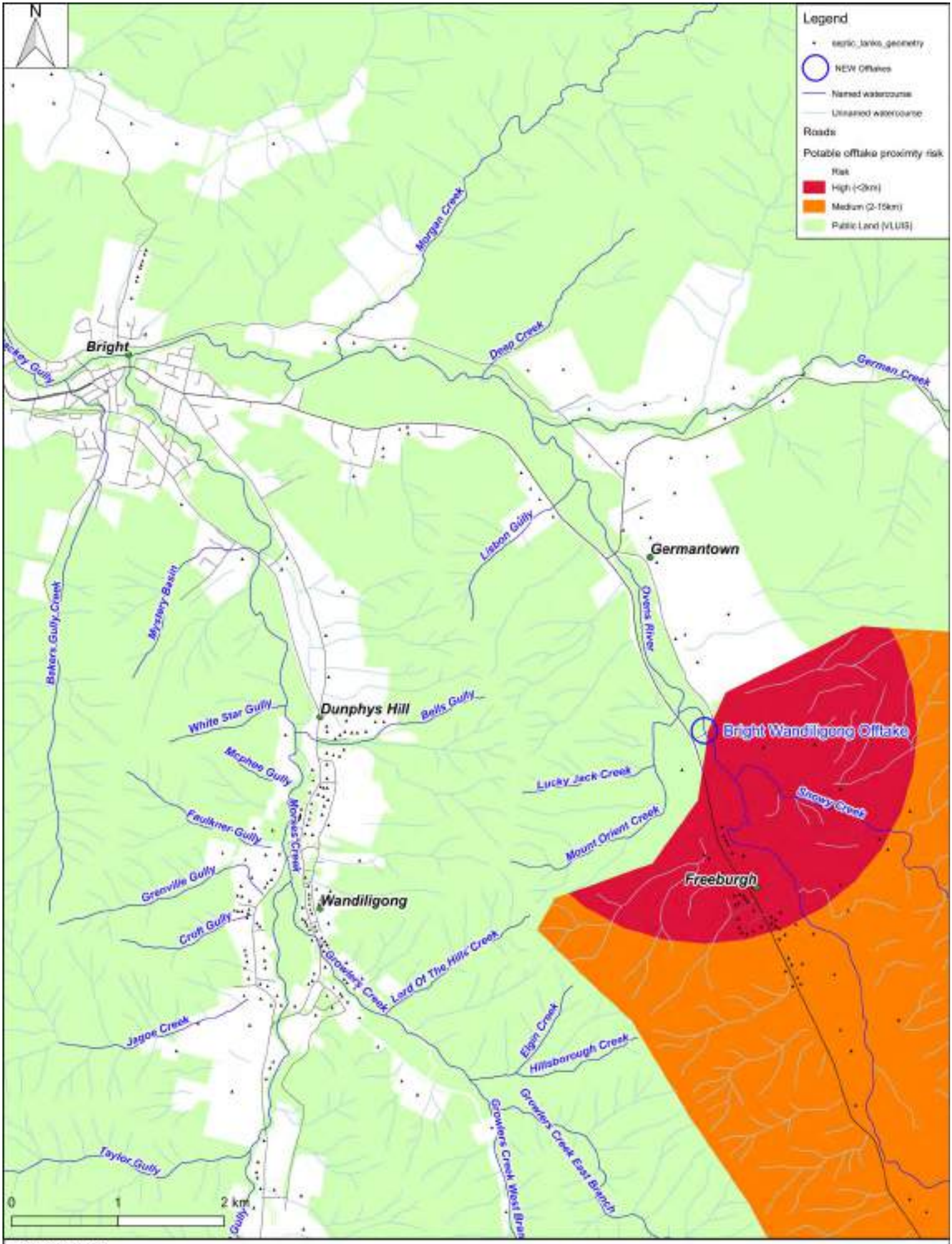
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:21pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Density of onsite systems risk
Bright, Wandiligong and Freeburgh

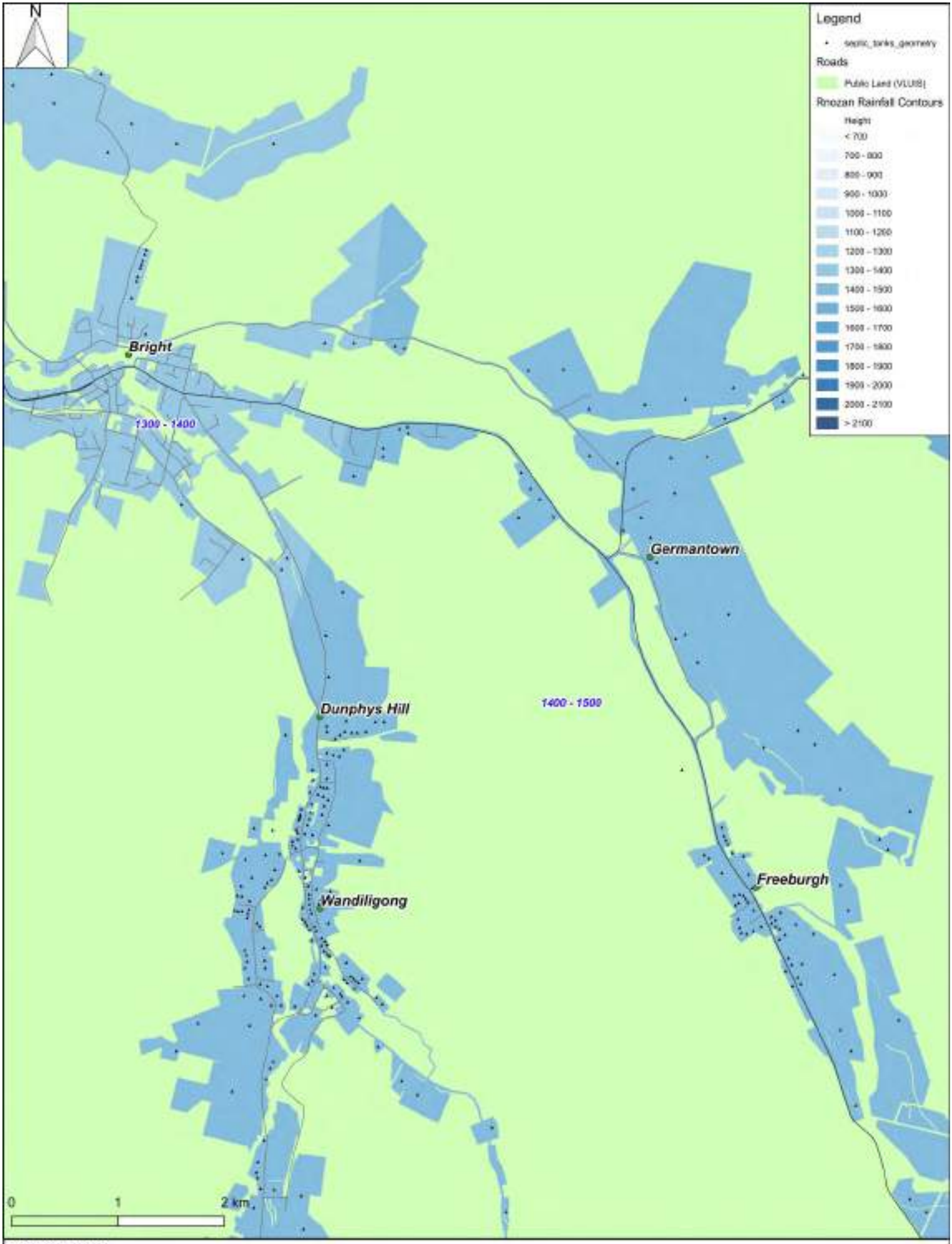
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:13pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Potable offtakes risk
Bright, Wandiligong and Freeburgh

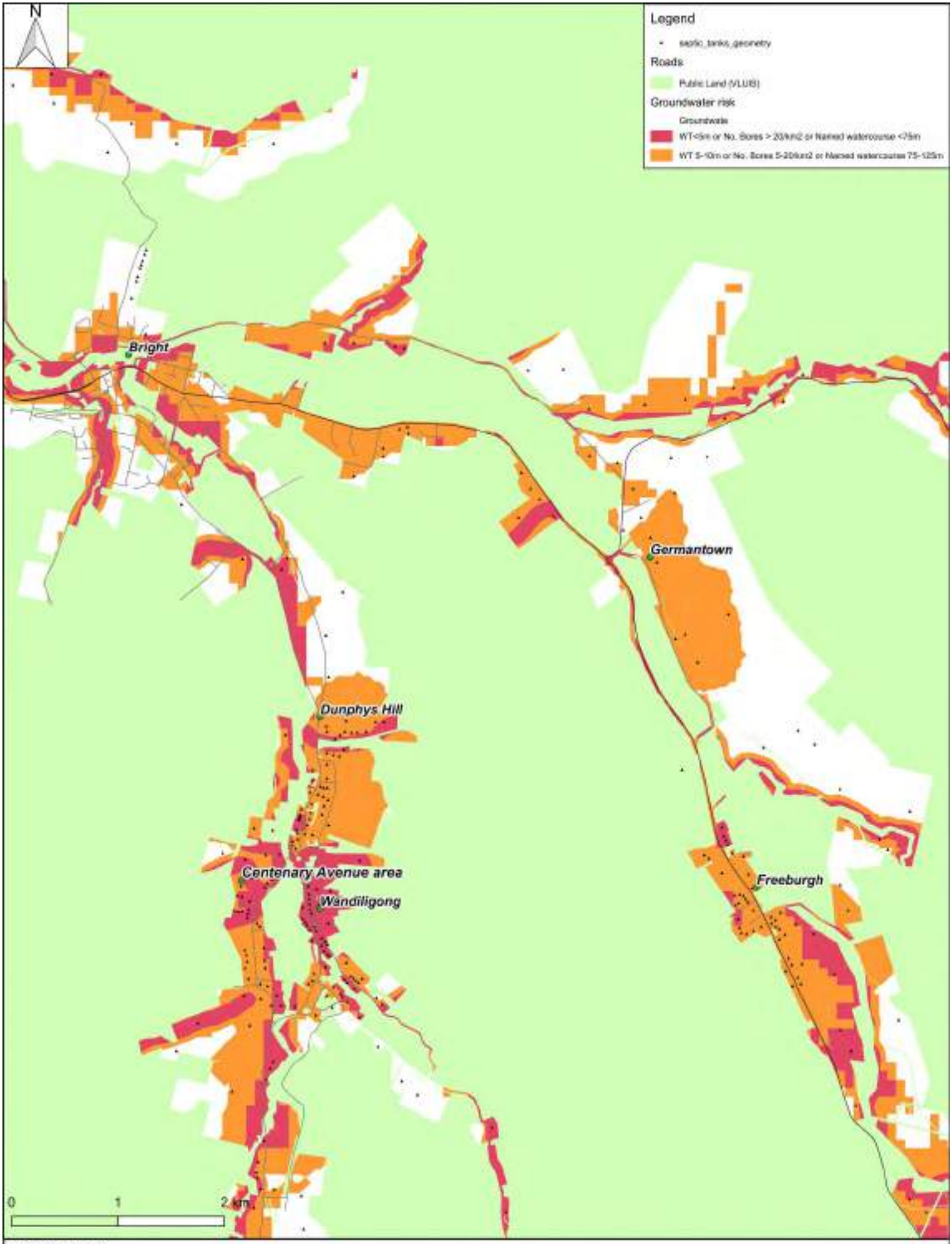
RMCG



Prepared by: RMCG
Friday 16/06/2017, 12:51pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Rainfall risk
Bright, Wandiligong and Freeburgh

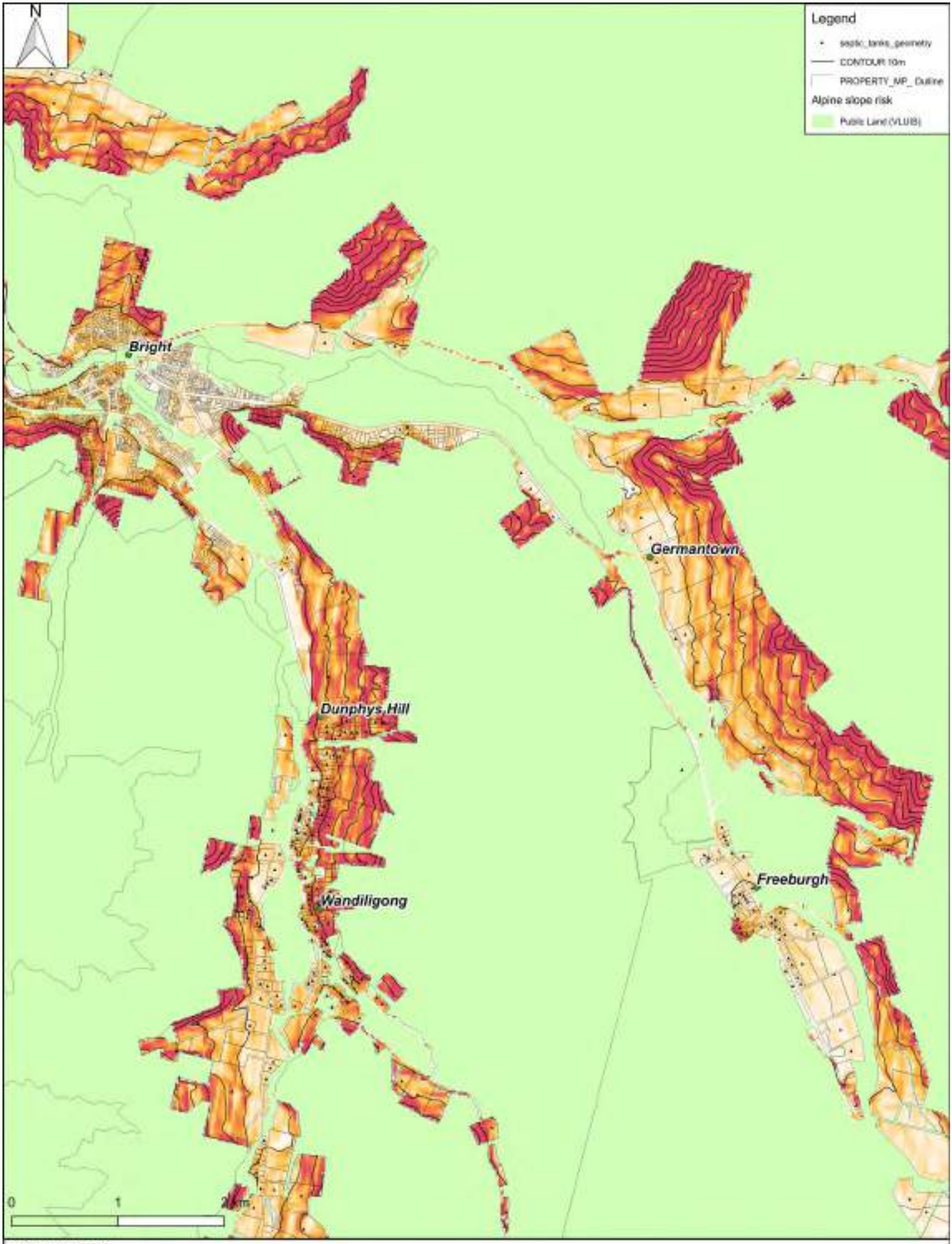
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:22pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Groundwater risk
Bright, Wandiligong and Freeburgh

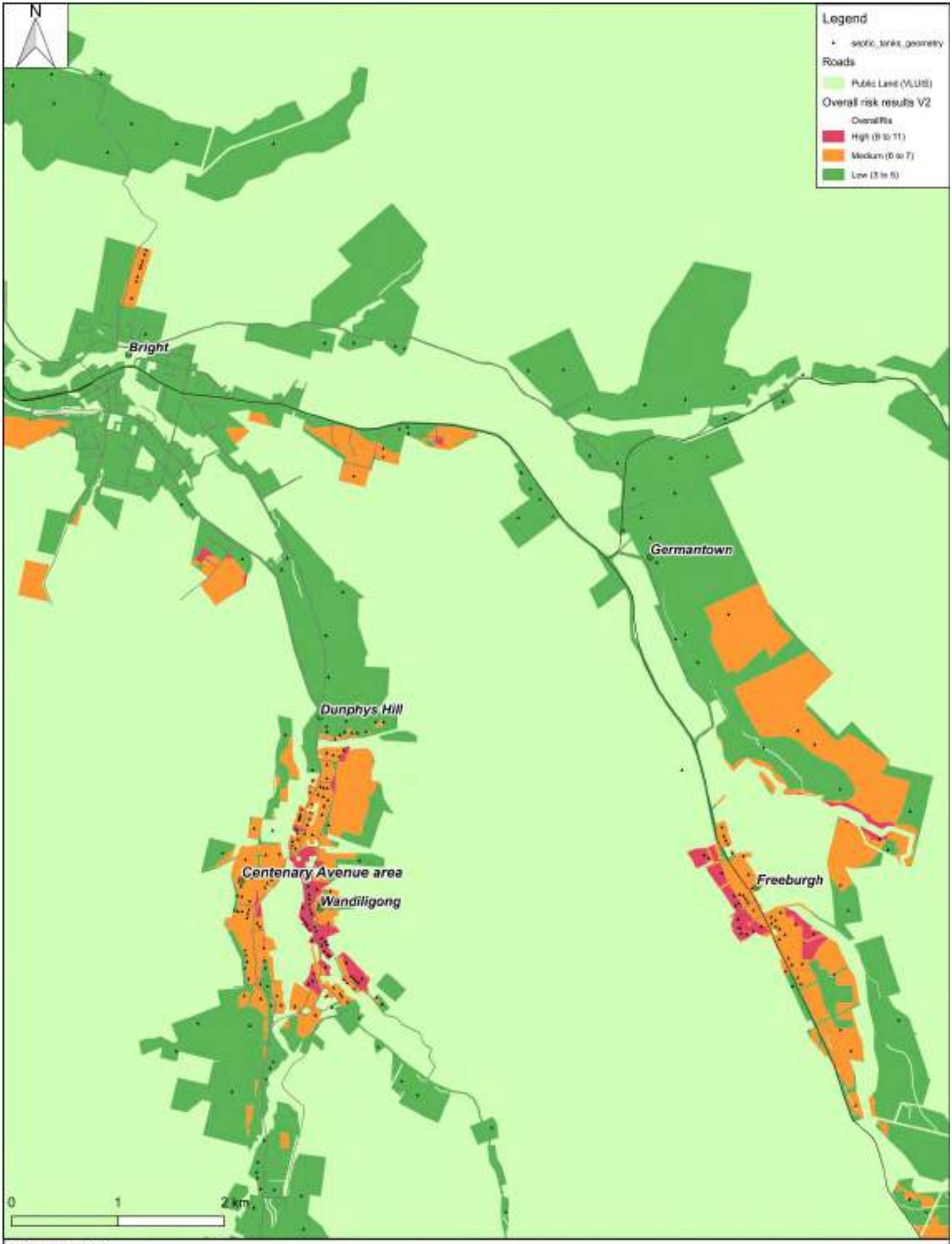
RMCG



Prepared by: RMCG
Friday 16/06/2017, 11:21am
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Slope risk
Bright, Wandiligong and Freeburgh

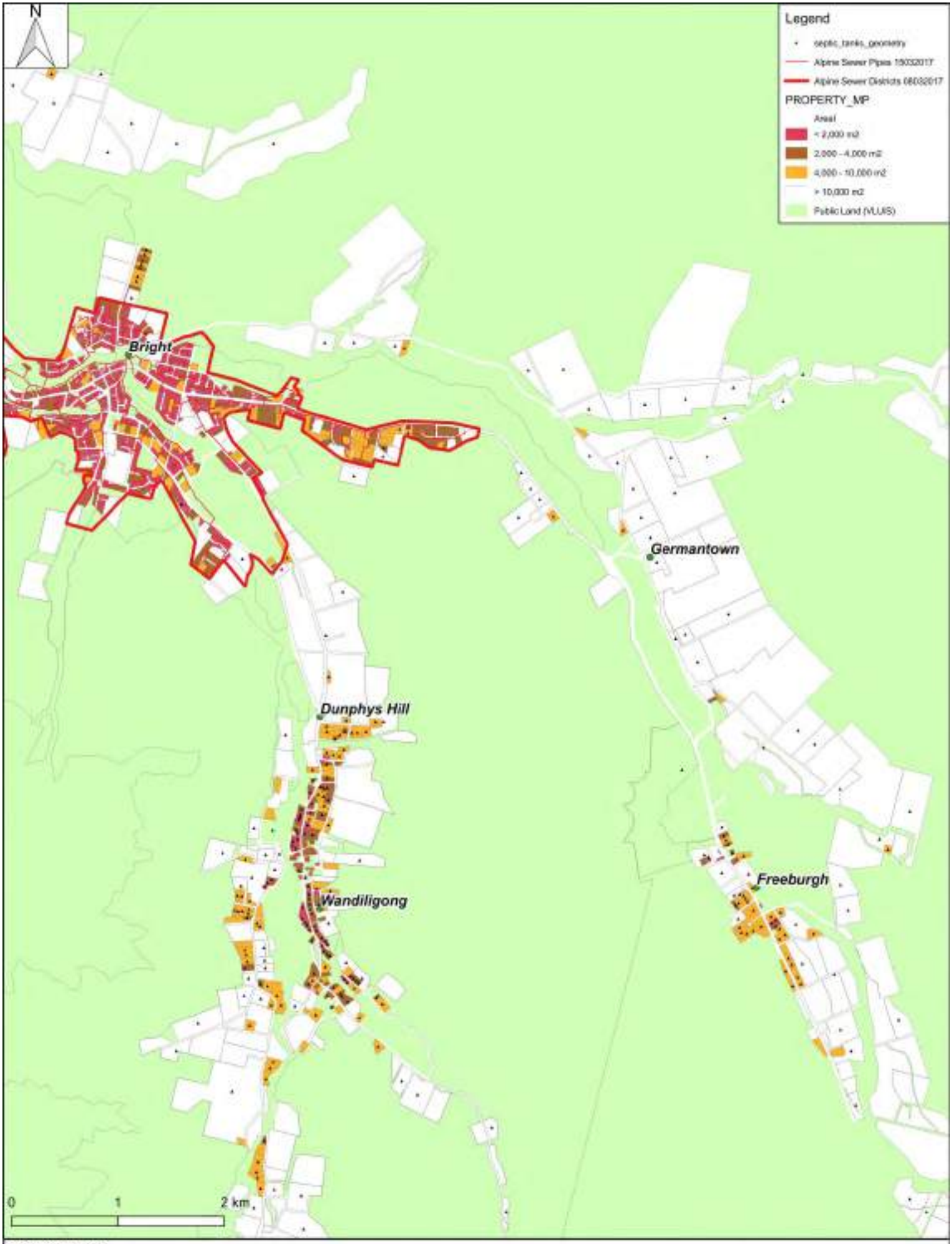
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:30pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Overall Risk
Bright, Wandiligong and Freeburgh

RMCG



Prepared by: RMCG
Thursday 15/06/2017, 10:55pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Small Lot Development Potential
Bright, Wandiligong and Freeburgh

RMCG

3.2 HARRIETVILLE

The map series on the following pages presents the data and risk assessment for the Harrietville area.

Map 1 Aerial – the built-up part of Harrietville is located at the south end of a narrow valley of cleared land, surrounded by forested, steep hills.

Map 2 Planning zones – the valley is generally farm zone (blue). Harrietville itself is predominantly township zone (pink) with some rural living zone (tan) land on the eastern fringe.

Map 3 Sewerage data – Harrietville is within a sewerage district, (presumably because sewerage has been investigated in the past) but no sewerage system currently exists in Harrietville.

Map 4 Water data – reticulated town water is available and most houses are connected to town water.

Map 5 Soils data – the subsoils are generally Category 5 – light clays.

Map 6 Development risk – township zone and rural living zones show up as high and medium risk respectively.

Map 7 Soils risk –there are no high-risk soil types in this area, but medium risk land dominates the area due to the moderately to weakly structured light clay subsoils (Category 5b & c). Note, land suspected of having been dredged for gold mining is considered to be High Risk, and although the extent of the old workings is not accurately mapped, development on these soils should be subject to a full land capability assessment.

Map 8 Onsite density – central Harrietville has more than 40 onsite systems per square kilometre, making it high risk from an onsite system density point of view.

Map 9 Potable offtakes risk – the offtake for Harrietville itself is upstream of the town. Harrietville is located approximately 15 km from the Bright offtake point at Freeburgh, so the north part of the town is medium risk.

Map 10 Rainfall risk – all of Alpine is high rainfall and high risk. This map shows the rainfall is between 1400 and 1700 mm/year.

Map 11 Groundwater risk – the narrow valley floor has shallow water tables resulting in a core of high risk northern Harrietville and mixed risk elsewhere.

Map 12 Slope – the topography of the valleys is such that the steeper land is located along the edge of the private land, where it abuts the public land / forests.

Map 13 Overall risk – when the various risk factors are combined, the highest risk areas are central and northern Harrietville, and medium risk occurs elsewhere in Harrietville.

Map 14 Small lot risk – there are very few vacant small lots in Harrietville (red and brown without an onsite system) but there are some vacant medium sized lots (tan coloured, 0.4 to 1 ha).

ADDITIONAL DISCUSSION – HARRIETVILLE

Due to the existing density of onsite systems, the small lot sizes and proximity to the Ovens River, Harrietville has the potential for water quality pollution concerns. Although a waterway monitoring program

between December 2014 and February 2016 found *there is minimal evidence to suggest septic tanks in the Harrietville Township impact water quality in the Ovens River,* RMCG recommends continued water quality monitoring to confirm this finding.

Harrietville is remote from the nearest sewerage system, so, a standalone system including treatment would be required if it were ever sewered. This makes the cost of sewerage high.

At this point, there is no environmental or financial driver to develop a centralised wastewater management system in Harrietville.

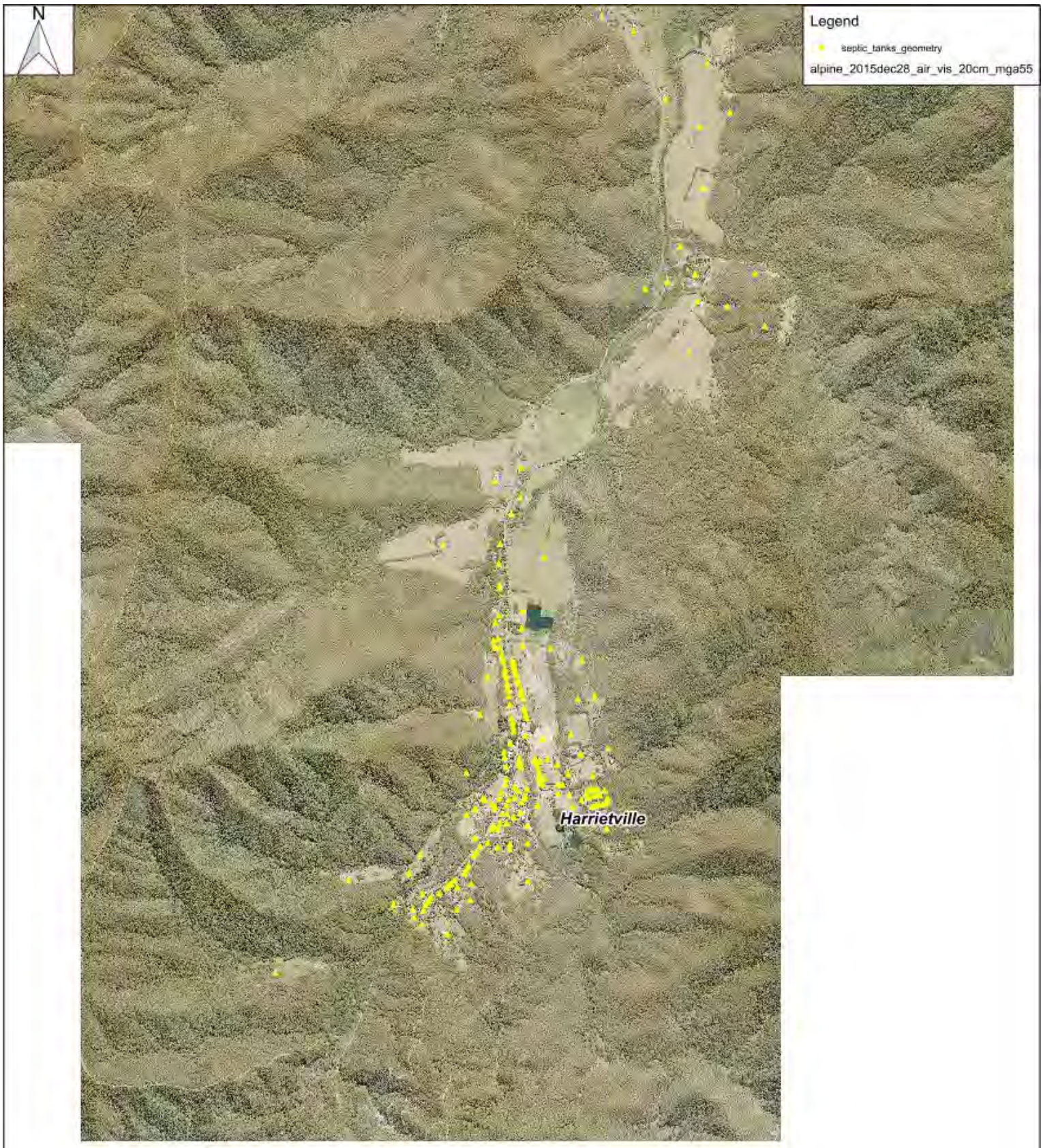
Further residential development is somewhat constrained due to onsite wastewater management risk. However, there is currently limited development pressure in the area.

Land suspected of having been dredged for gold mining is considered to be High Risk, and although the extent of the old workings is unknown, development on these soils should be subject to a full land capability assessment.

CONCLUSIONS – HARRIETVILLE

Based on the discussion above and the risk maps, the following conclusions are drawn:

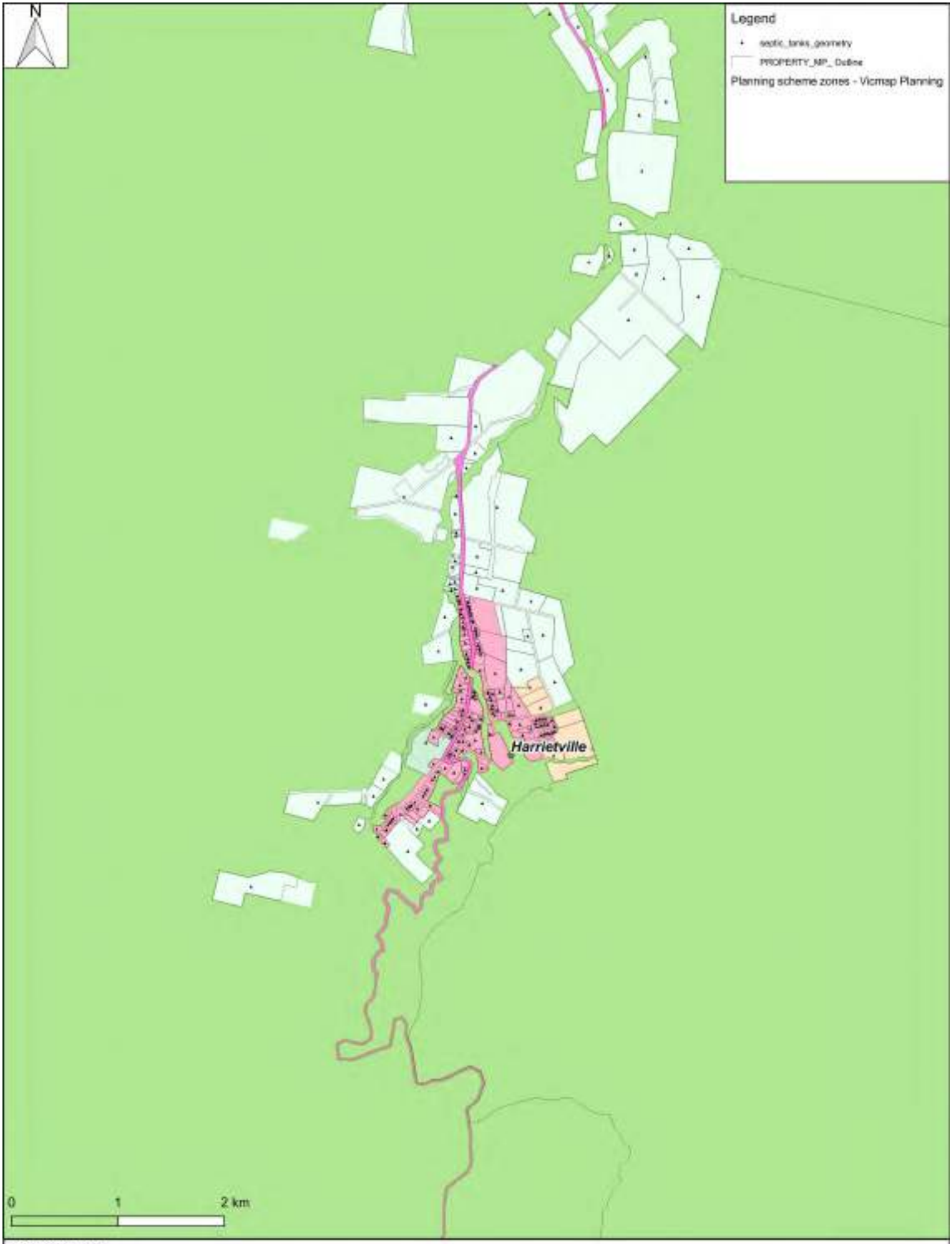
- The mapped sewer districts should be updated to remove Harrietville.
- The auditing program developed as part of the DWMP should include focus on the areas mapped as high risk in Harrietville.
- Given the existing density of development and small lot sizes in Harrietville, it is recommended that further assessment is undertaken in relation to water quality impacts to Ovens River and the connected shallow water table.
- Future development in the areas mapped as medium and high risk in Harrietville should be subject to detailed land capability assessment prior to proceeding. Use of secondary treatment (potentially with disinfection and nutrient removal) is preferred to minimise risk to downstream water quality. For smaller lots (<0.4 ha) consideration needs to be given to minimising wastewater volumes (e.g. use of dry composting toilets) to reduce required land application areas.
- Land suspected of having been dredged for gold mining is considered to be High Risk.
  - If development pressure increases in Harrietville, the need for sewerage should be reconsidered.



Prepared by: RMCG
Wednesday 21/06/2017, 11:28am
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Aerial overview
Harrietville

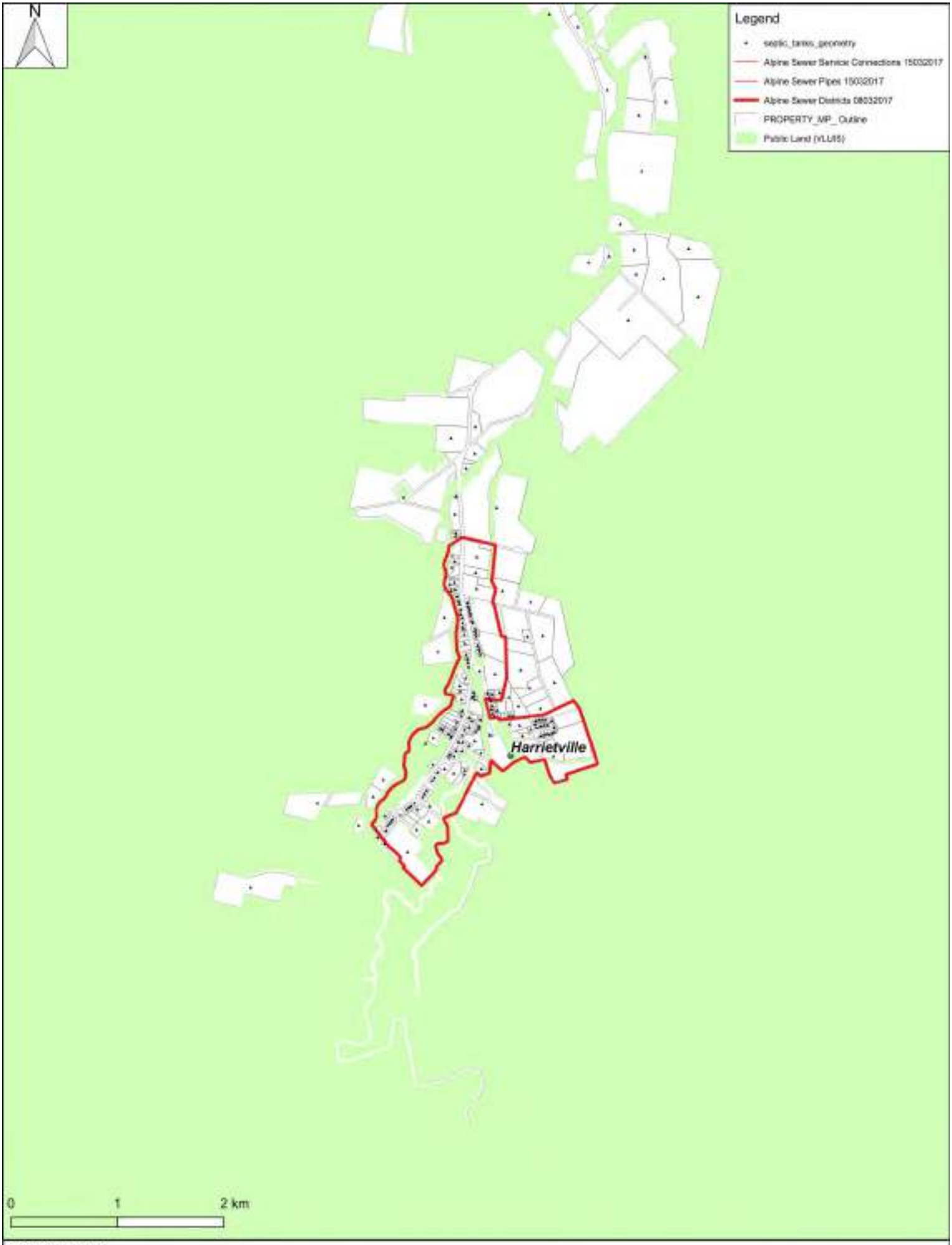
RMCG



Prepared by: RMCG
Friday 16/06/2017, 03:37pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Planning zone data
Harrietville

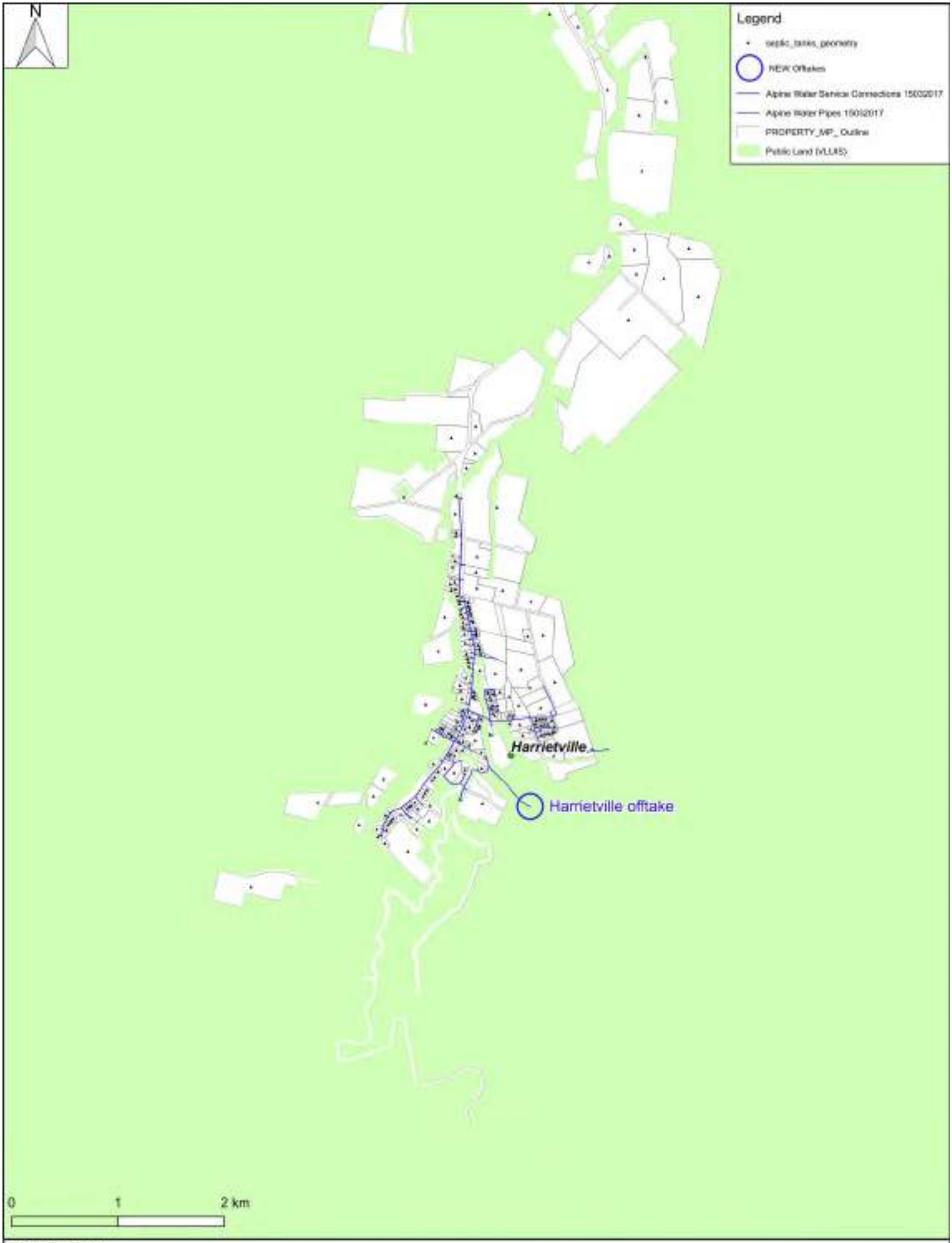
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:41pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Sewerage data
Harrietville

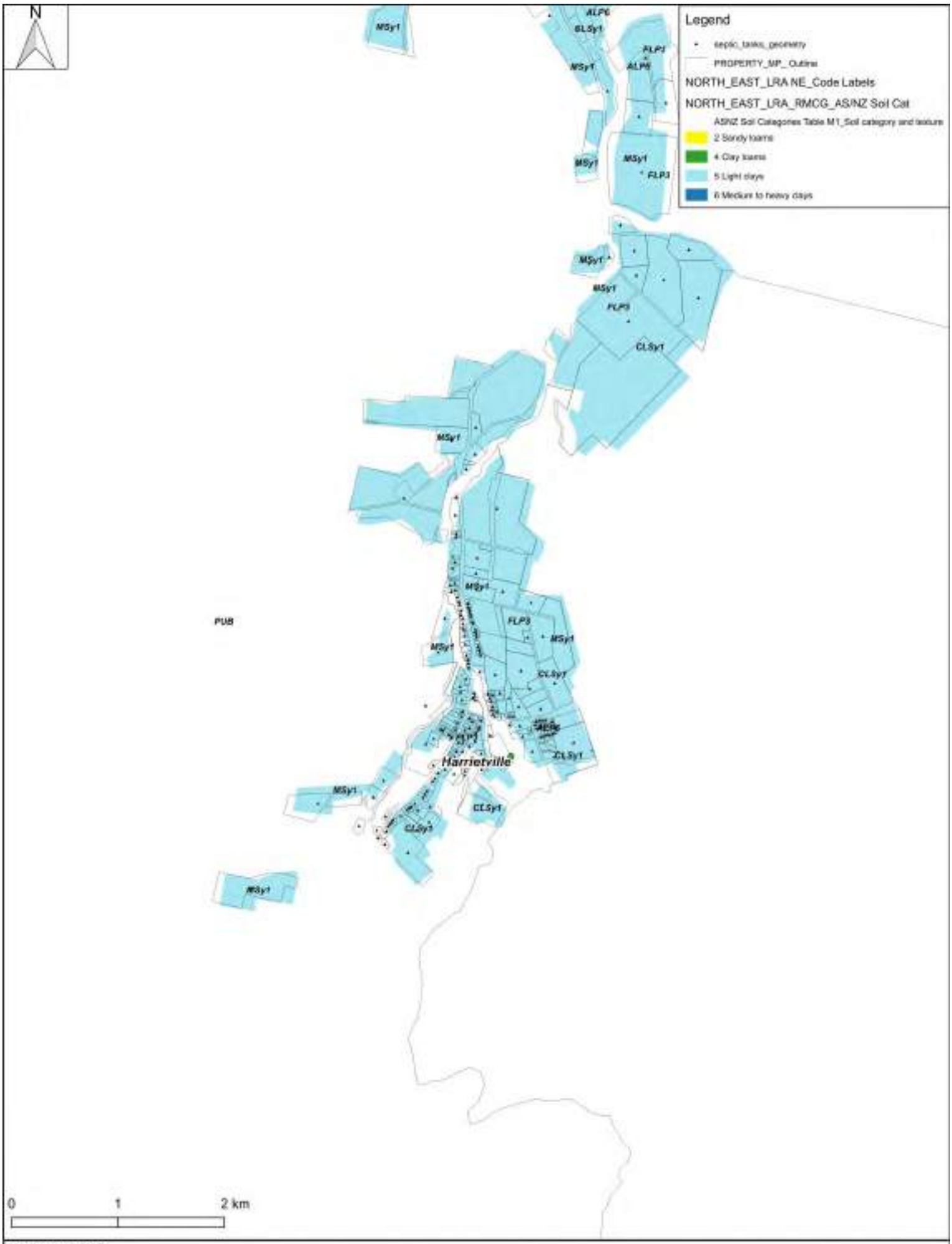
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:43pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Water supply data
Harrietville

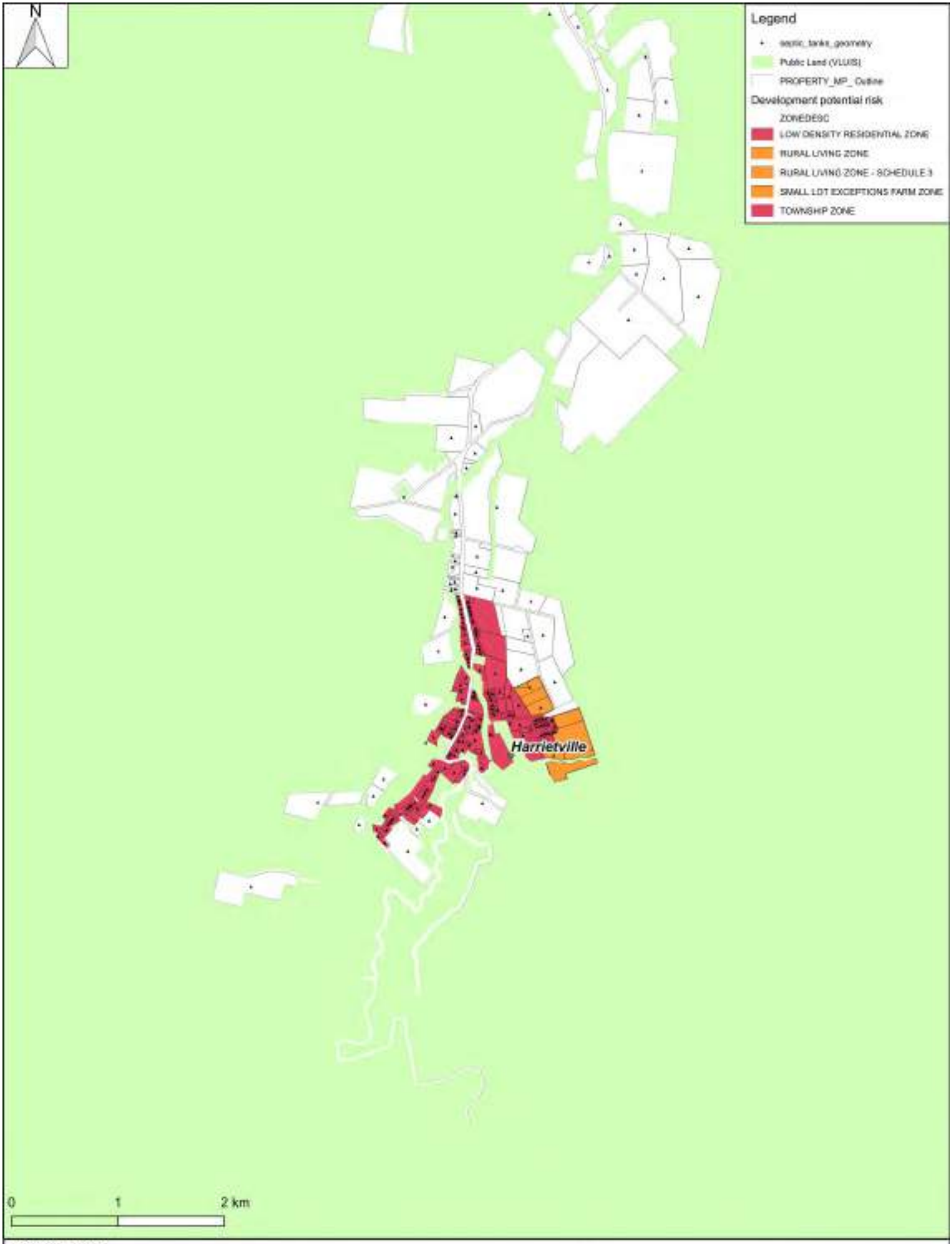
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:54pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Soils data
Harrietville

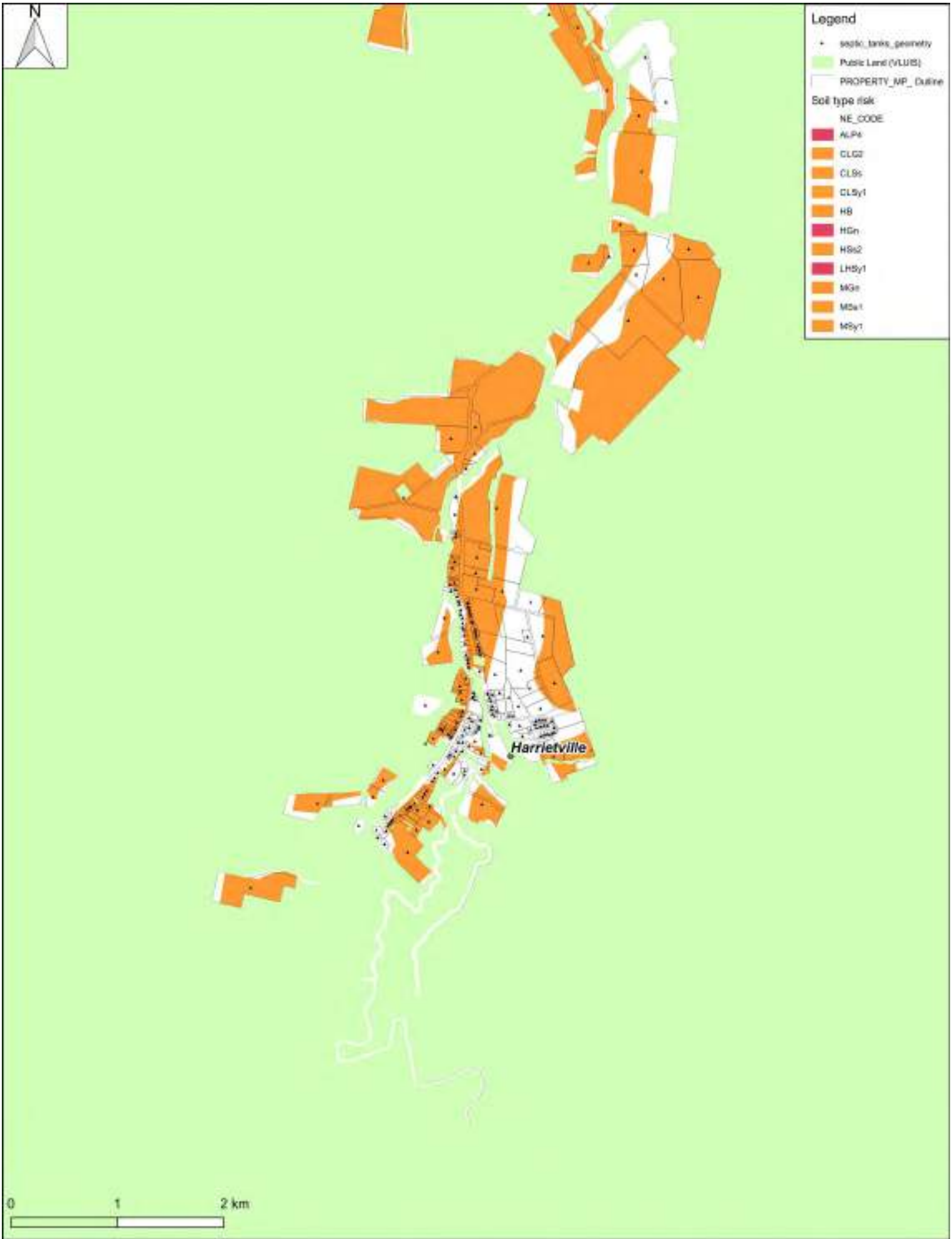
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:46pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Development risk
Harrietville

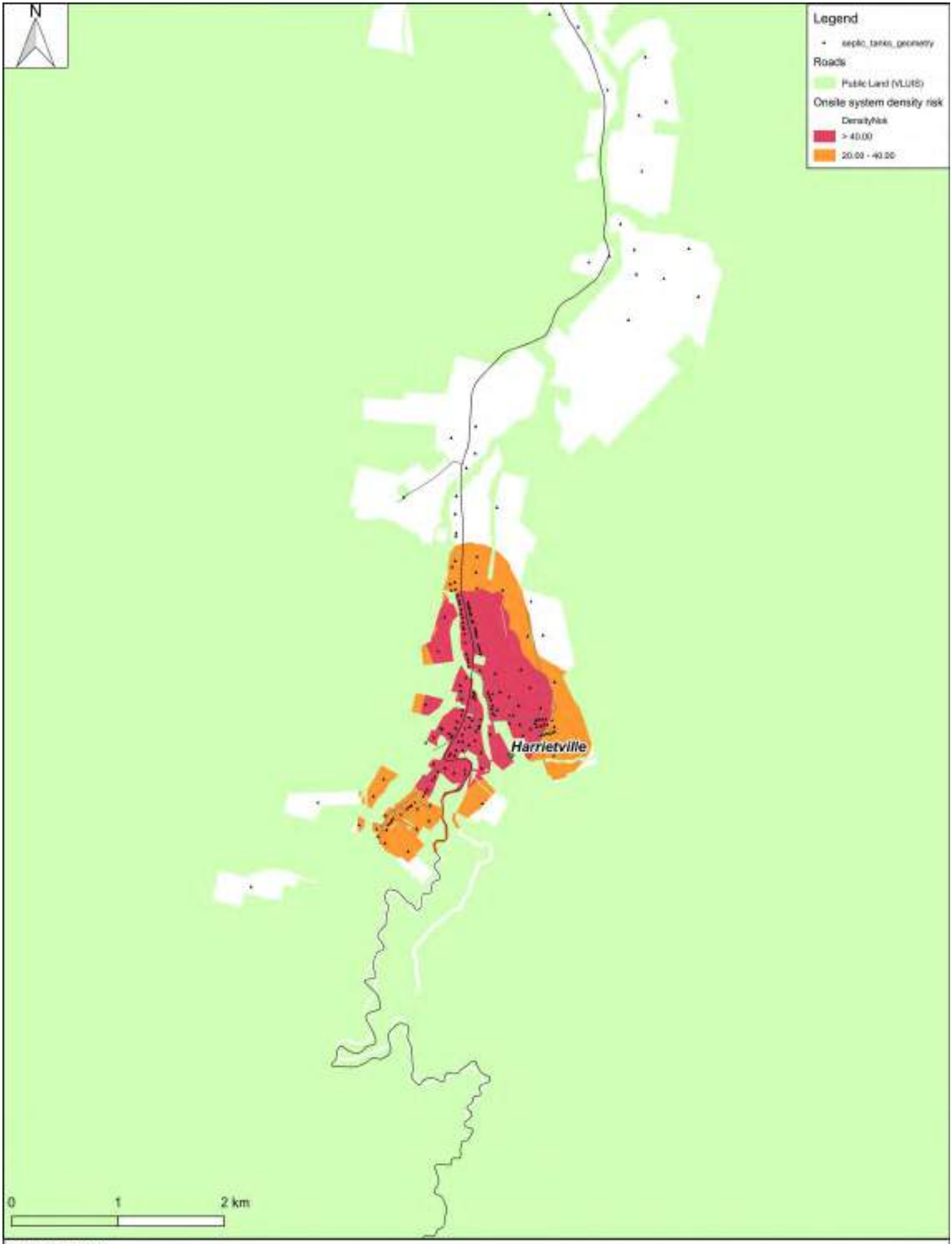
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:35pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Soil type risk
Harrietville

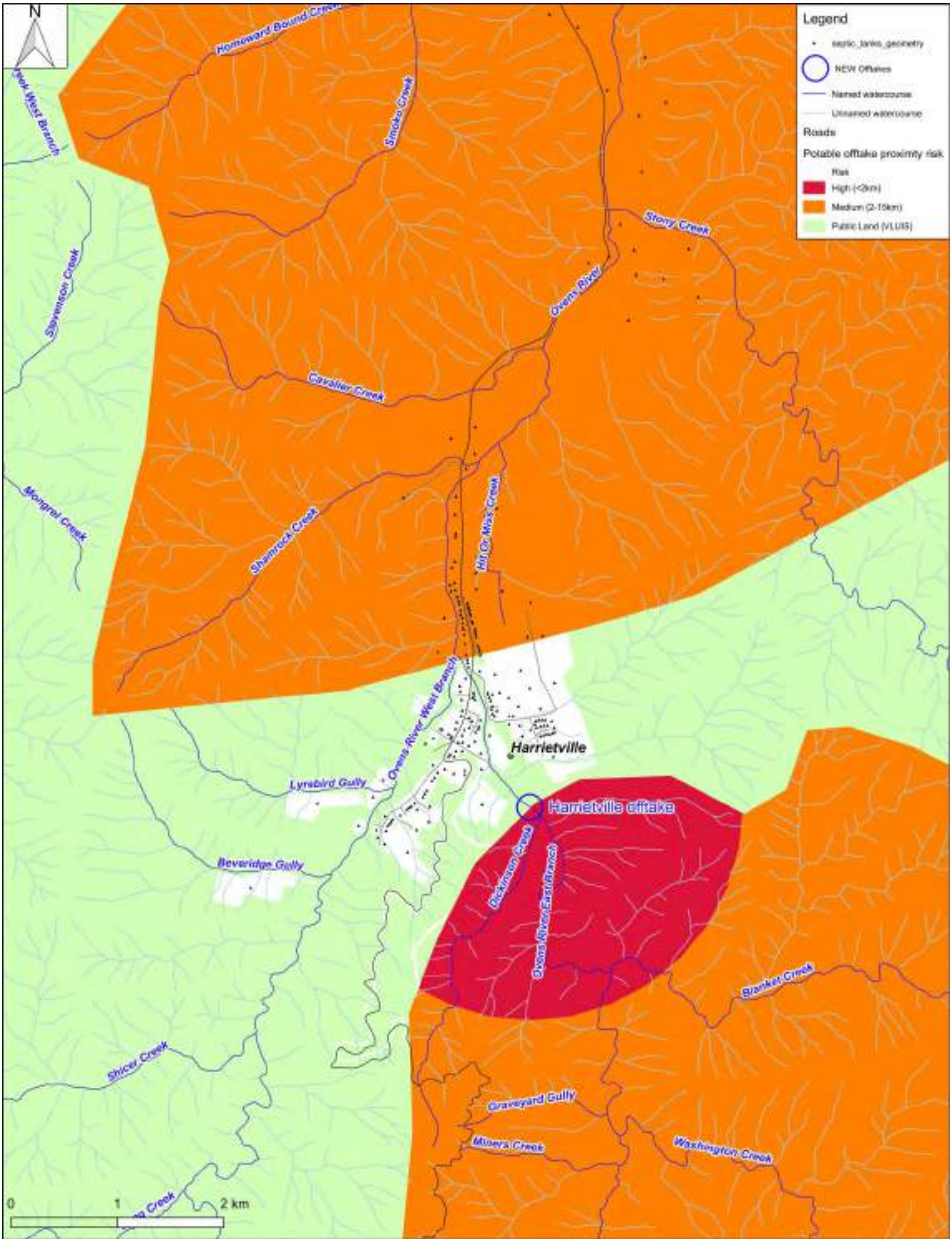
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:21pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Density of onsite systems risk
Harrietville

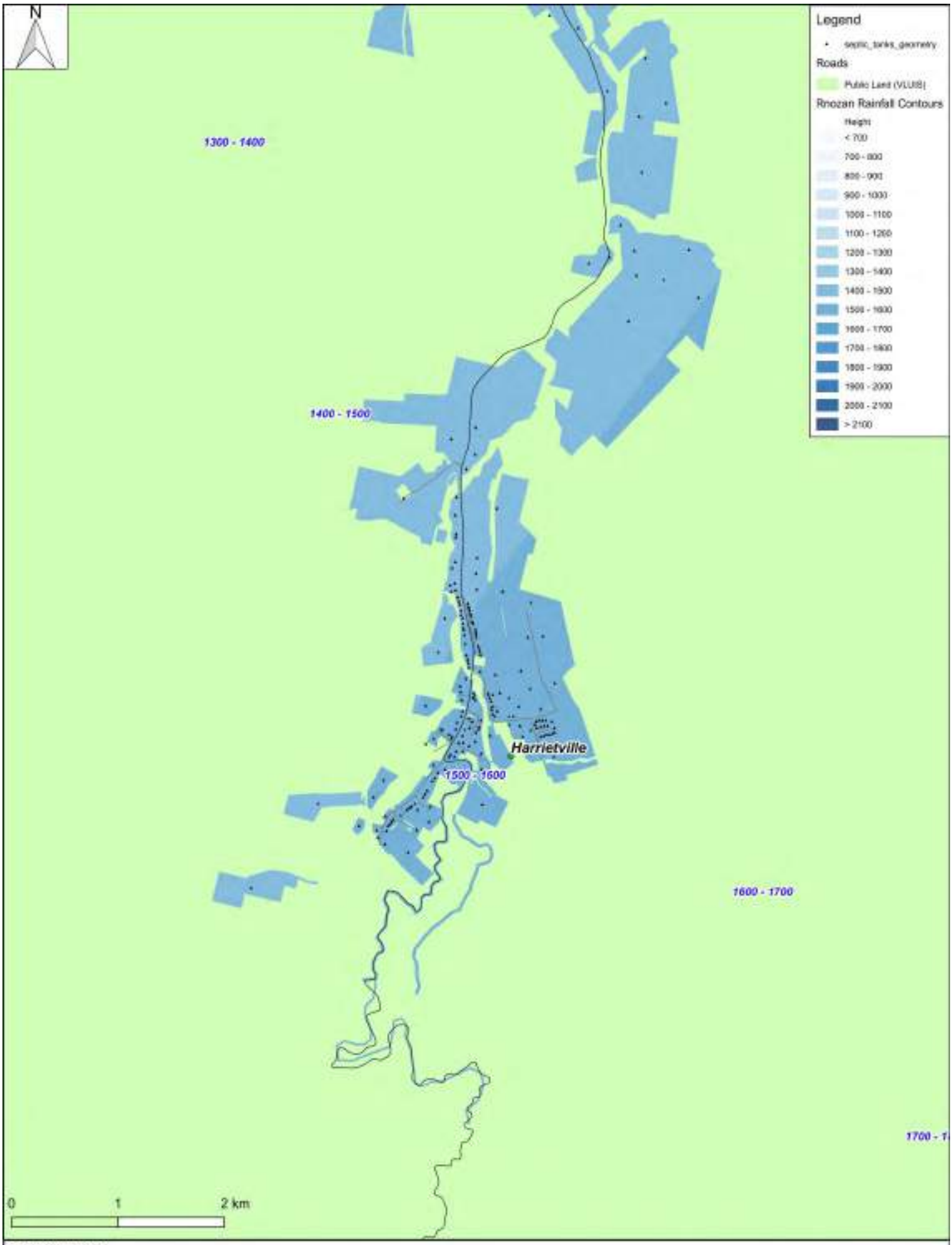
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:13pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Potable offtakes risk
Harrietville

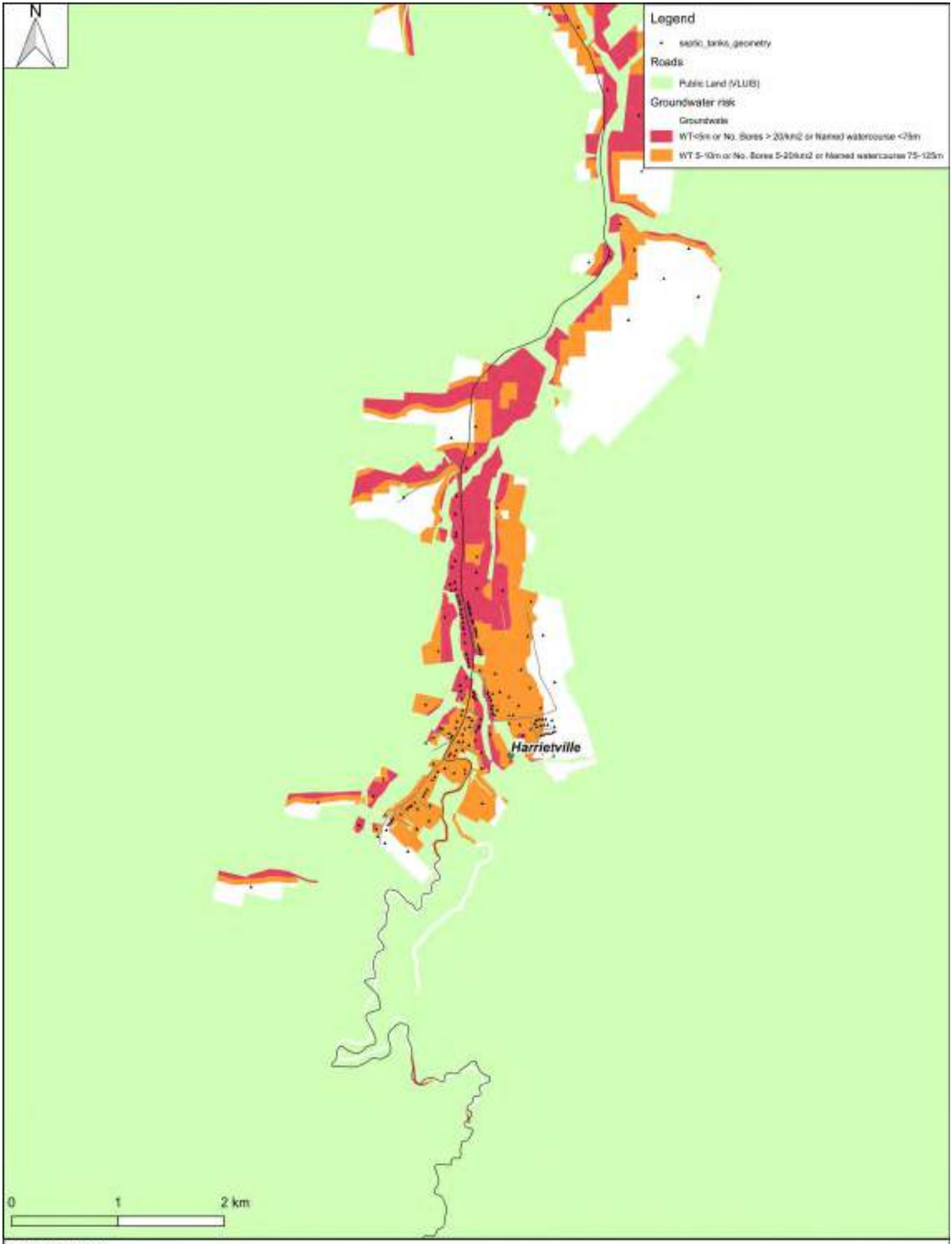
RMCG



Prepared by: RMCG
Friday 16/06/2017, 12:51pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Rainfall risk
Harrietville

RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:22pm
Job number: 29-A-02
Projection: MGA94 Zone 55

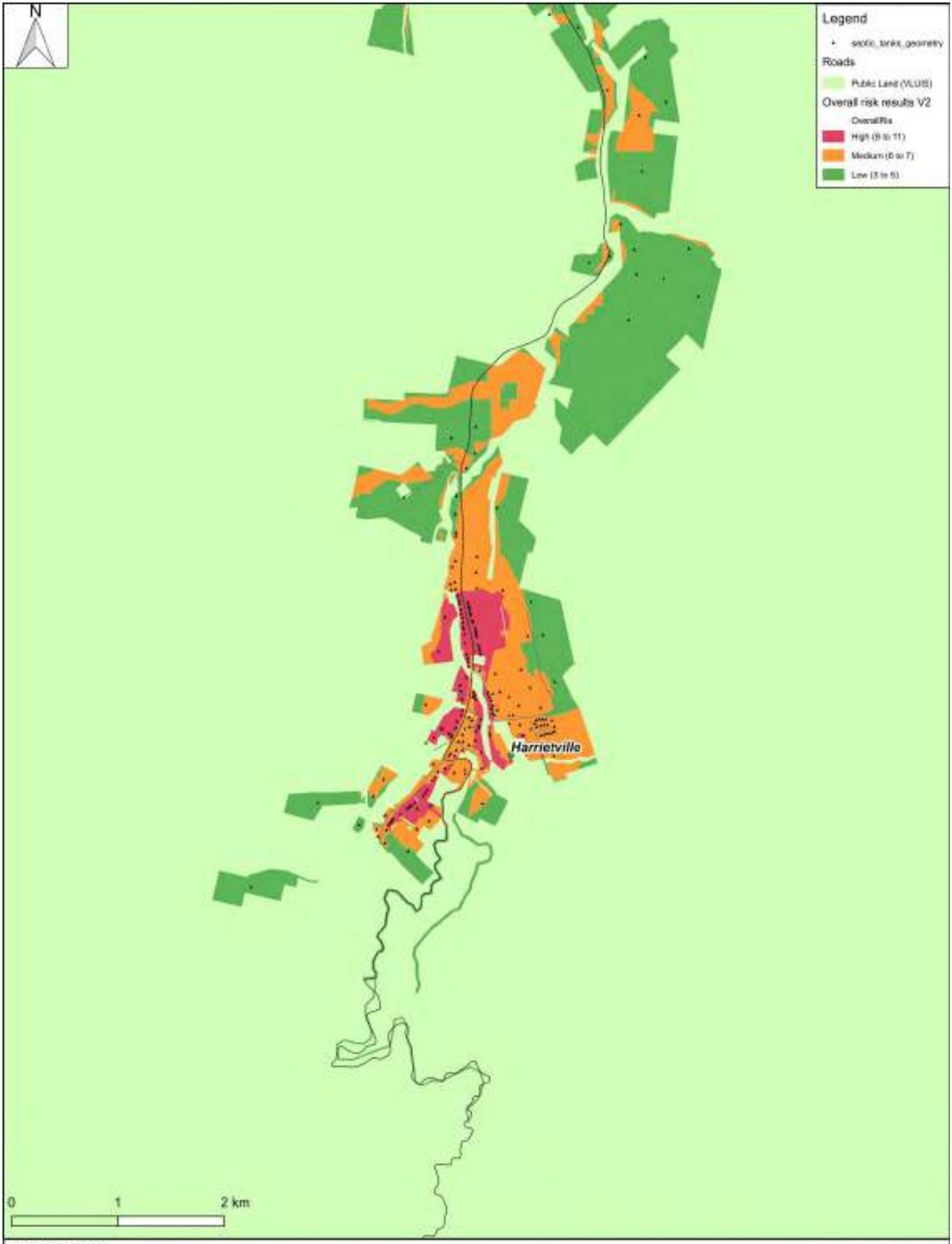
Alpine Shire DWMP - Groundwater risk
Harrietville

RMCG

Prepared by: RMCG
Friday 16/06/2017, 11:21am
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Slope risk
Harrietville

RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:30pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Overall Risk
Harrietville

RMCG

Prepared by: RMCG
Thursday 15/06/2017, 10:55pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Small Lot Development Potential Harrietville

RMCG

3.3 MYRTLEFORD, OVENS AND BUFFALO CREEK

The map series on the following pages presents the data and risk assessment for the Myrtleford area.

Map 1 Aerial – urban Myrtleford is located near the confluence of some major streams. In east Myrtleford, there is an area of high-intensity onsite systems. Away from Myrtleford, unsewered houses tend to be located along the edge of the forested areas, the main concentration being along the road to Merriang South.

Map 2 Planning zones – the general residential zone in Myrtleford is sewered. Away from this, there are very few areas to the north that are zoned for residential development, but to the south quite large areas reserved for rural living exist near Merriang South, Buffalo Creek and Ovens.

Map 3 Sewerage data – Myrtleford has sewerage, except for an area in east Myrtleford (Nil Gully Road area).

Map 4 Water data – potable water is available to all parts of the sewered area and to many houses in the unsewered areas.

Map 5 Soils data – a mix of soils exist and vary across the landscape. The riverine soils are more permeable with clay loam (Category 4) and light clay (Category 5) subsoils. Moving up in elevation, the low hills are less permeable due to medium to heavy clay subsoils (Category 6).

Map 6 Development risk – three areas zoned low density residential are mapped red meaning high development risk: 1) in east Myrtleford (Nil Gully Road area), most of the land has already been developed with onsite systems, 2) between Myrtleford and Ovens a strip of land which has sewerage so is actually little risk, and 3) a crescent-shaped area (Fingerboard Hill Road) south of the Ovens River near Buffalo Creek. Additionally, four larger areas reserved for rural living near Merriang South, Buffalo Creek and Ovens show as medium development risk.

Map 7 Soils risk – the Category 6 soils are high risk due to medium to heavy clay subsoils with limited permeability. Some of the Category 5 soils (those with moderate to weak soil structure) are mapped as medium risk

Map 8 Onsite density – the concentration of onsite systems is highest near Fingerboard Hill Road and east Myrtleford (Nil Gully Road area).

Map 9 Potable offtakes risk – Myrtleford's water supply is drawn from the upper Buffalo Creek, upstream and off the map.

Map 10 Rainfall risk – all of Alpine is high rainfall and high risk. This map shows the rainfall is between 900 and 1200 mm/year.

Map 11 Groundwater risk – there is a high concentration of bores along the Ovens River near Myrtleford, when combined with the shallow water tables and watercourses results in significant areas of high groundwater risk.

Map 12 Slope – areas of high slope risk exist in the Merriang South and Buffalo Creek area.

Map 13 Overall risk – the areas of high and moderate overall risk are in the east Myrtleford (Nil Gully Road area), Merriang South and Buffalo Creek area.

Map 14 Small lot risk – there are very few undeveloped small lots (red and brown on the map without onsite systems). Medium sized vacant lots (0.4 to 1 ha) exist in Fingerboard Hill Road and Ovens.

CONCLUSIONS – MYRTLEFORD, OVENS, BUFFALO CREEK

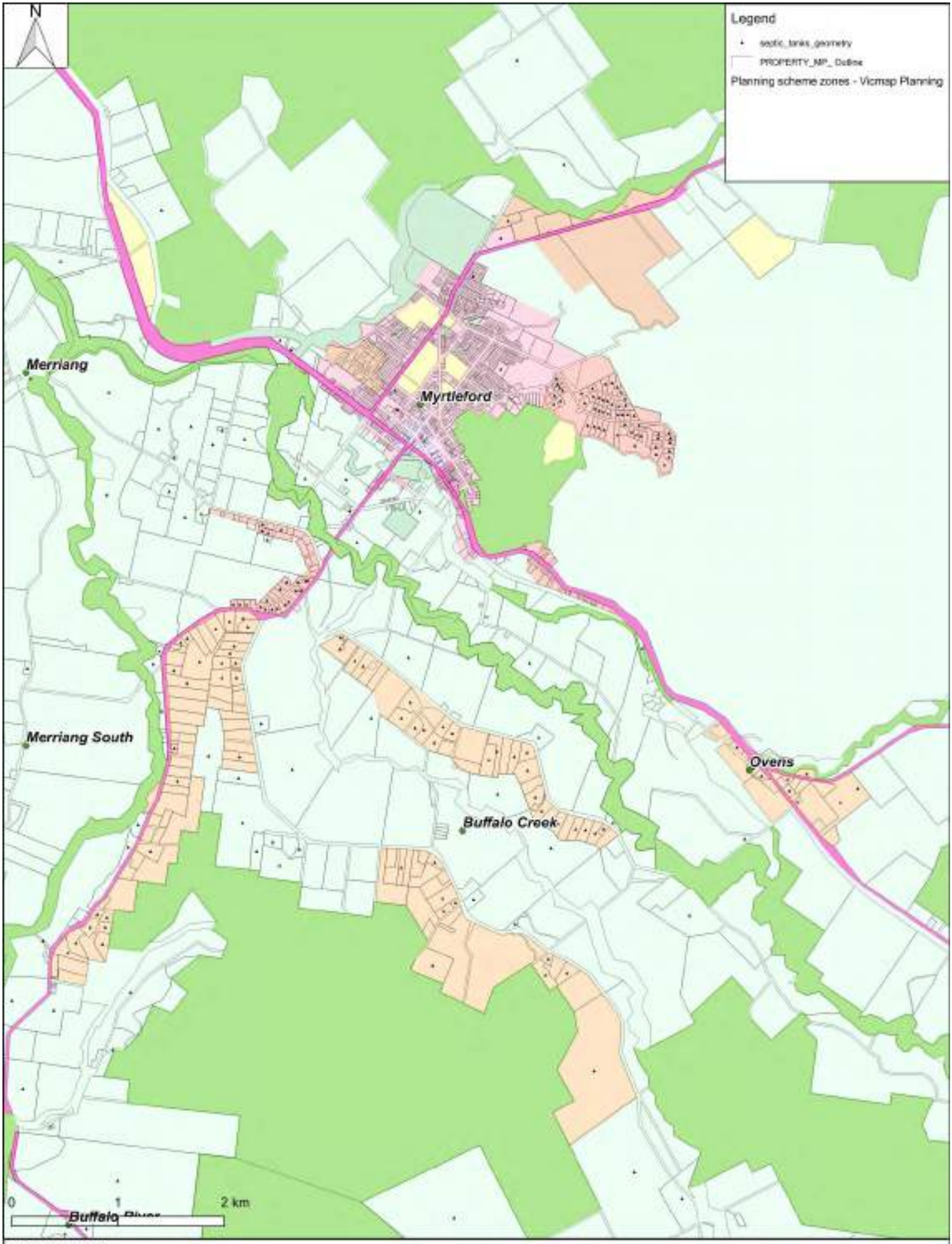
Based on the discussion above and the risk maps, the following conclusions are drawn:

- The auditing program developed as part of the DWMP should include focus on the areas mapped as high risk – i.e. in the Nil Gully Road area, and the Merriang South and Buffalo Creek areas.
- Further subdivision in the Nil Gully Road area is not recommended unless the area can be connected to sewerage.
- Maintain the minimum lot size of 2.0 ha in the rural living zoned areas in the Merriang South and Buffalo Creek area.
- Detailed land capability assessments are required for the areas mapped as Category 6 soils, including soil permeability testing. Where heavy clay subsoils are identified the preferred method for wastewater reuse/disposal is subsurface irrigation.

Prepared by: RMCG
Wednesday 21/06/2017, 11:28am
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Aerial overview
Myrtleford, Ovens and Buffalo Creek

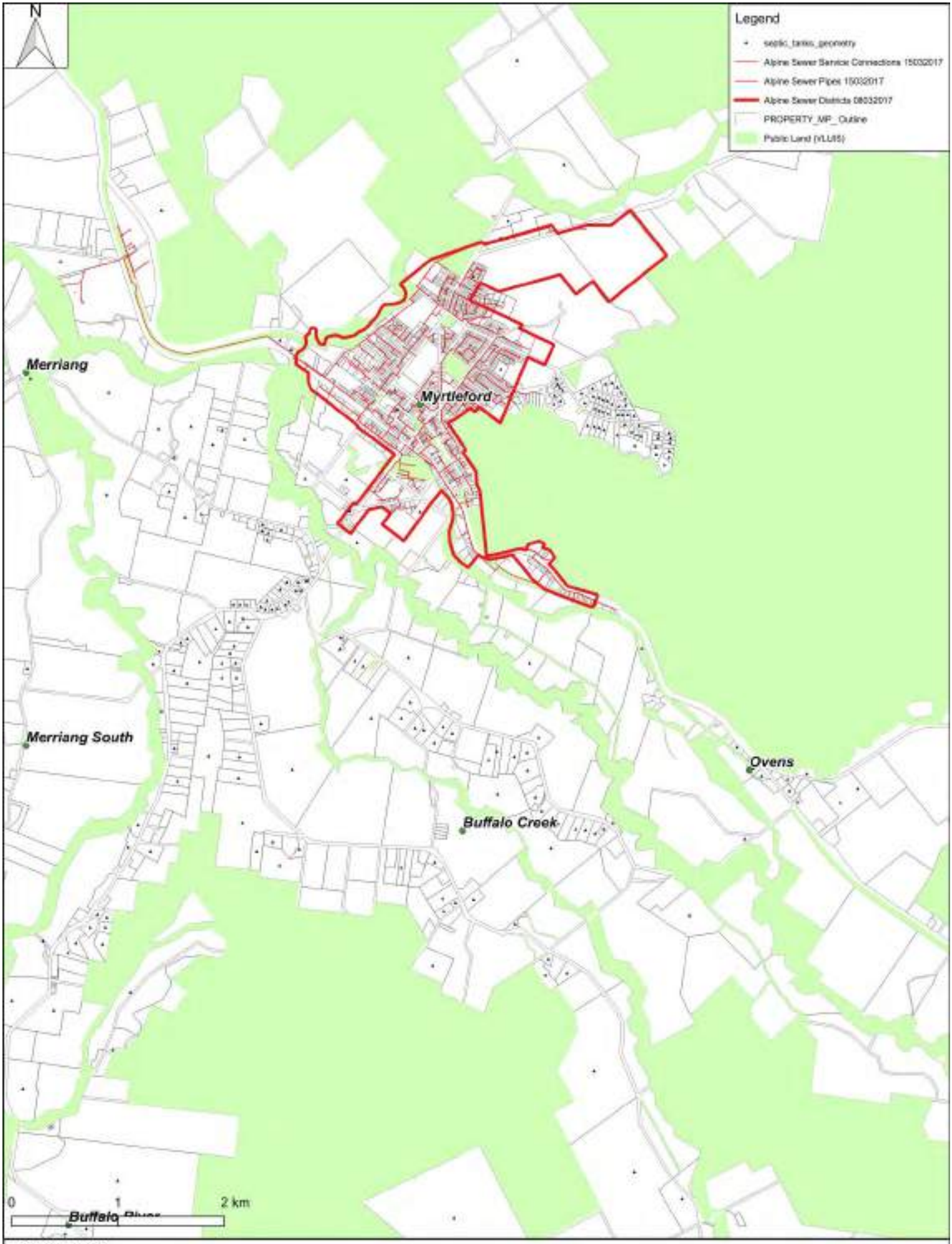
RMCG



Prepared by: RMCG
Friday 16/06/2017, 03:37pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Planning zone data
Myrtleford, Ovens and Buffalo Creek

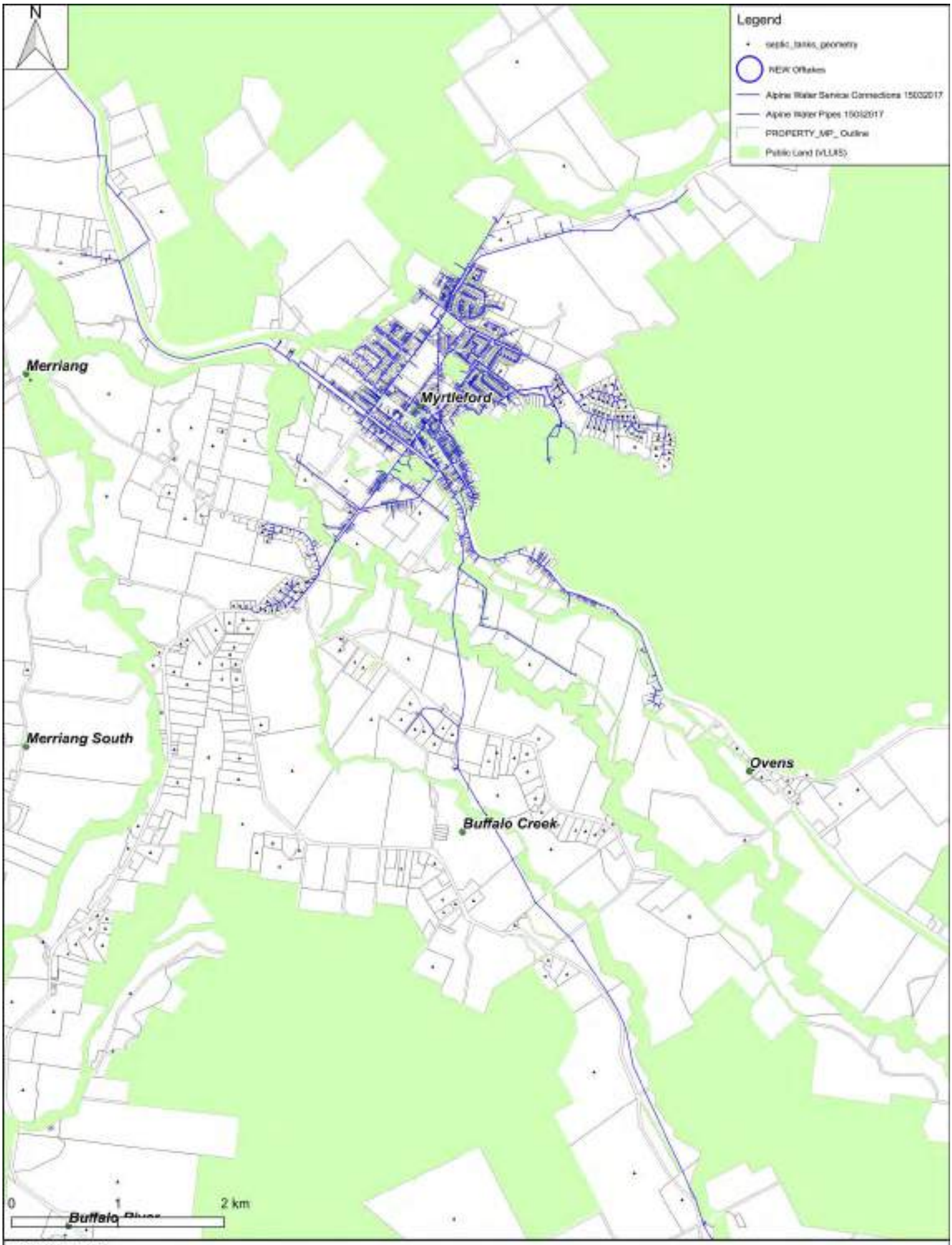
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:40pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Sewerage data
Myrtleford, Ovens and Buffalo Creek

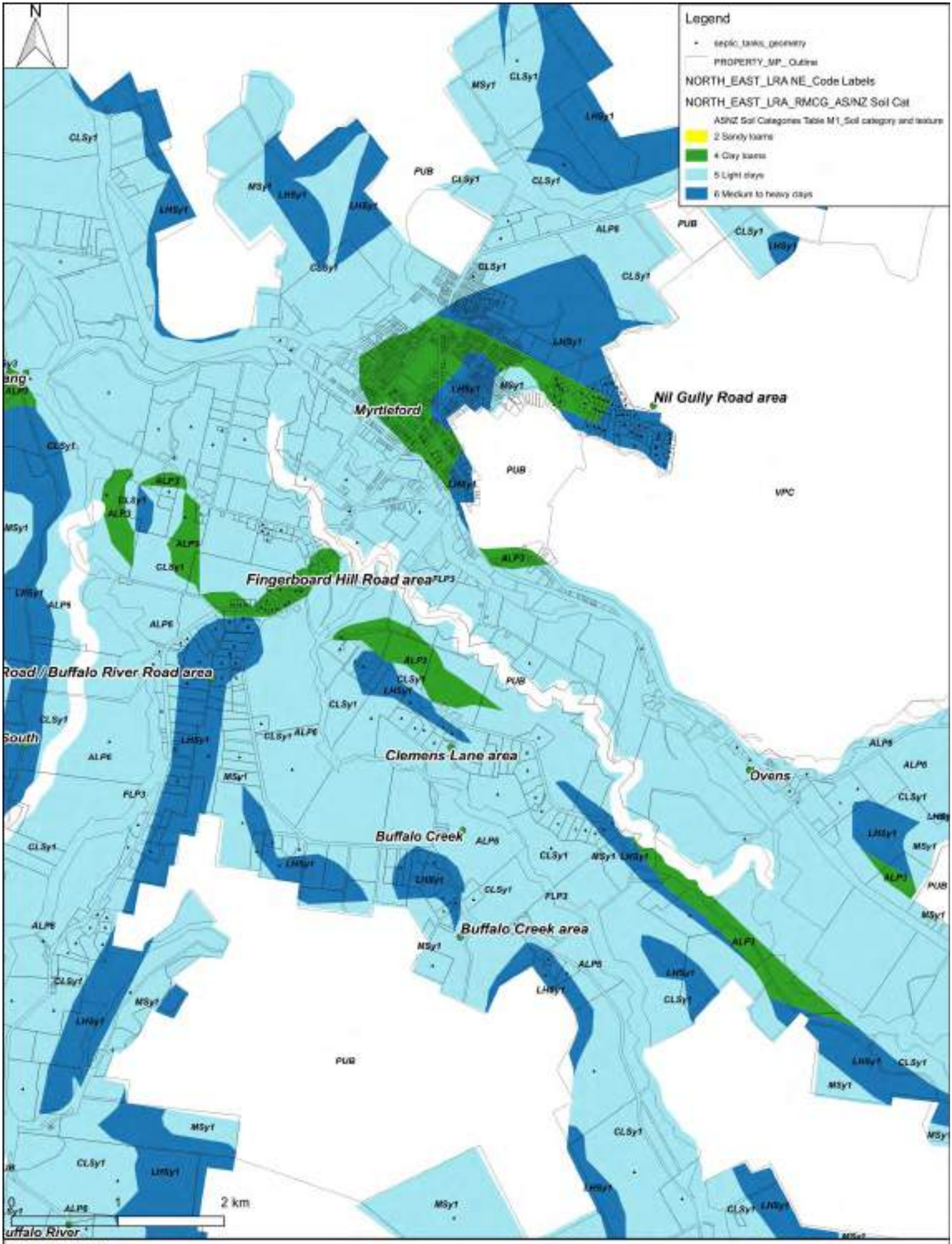
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:43pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Water supply data
Myrtleford, Ovens and Buffalo Creek

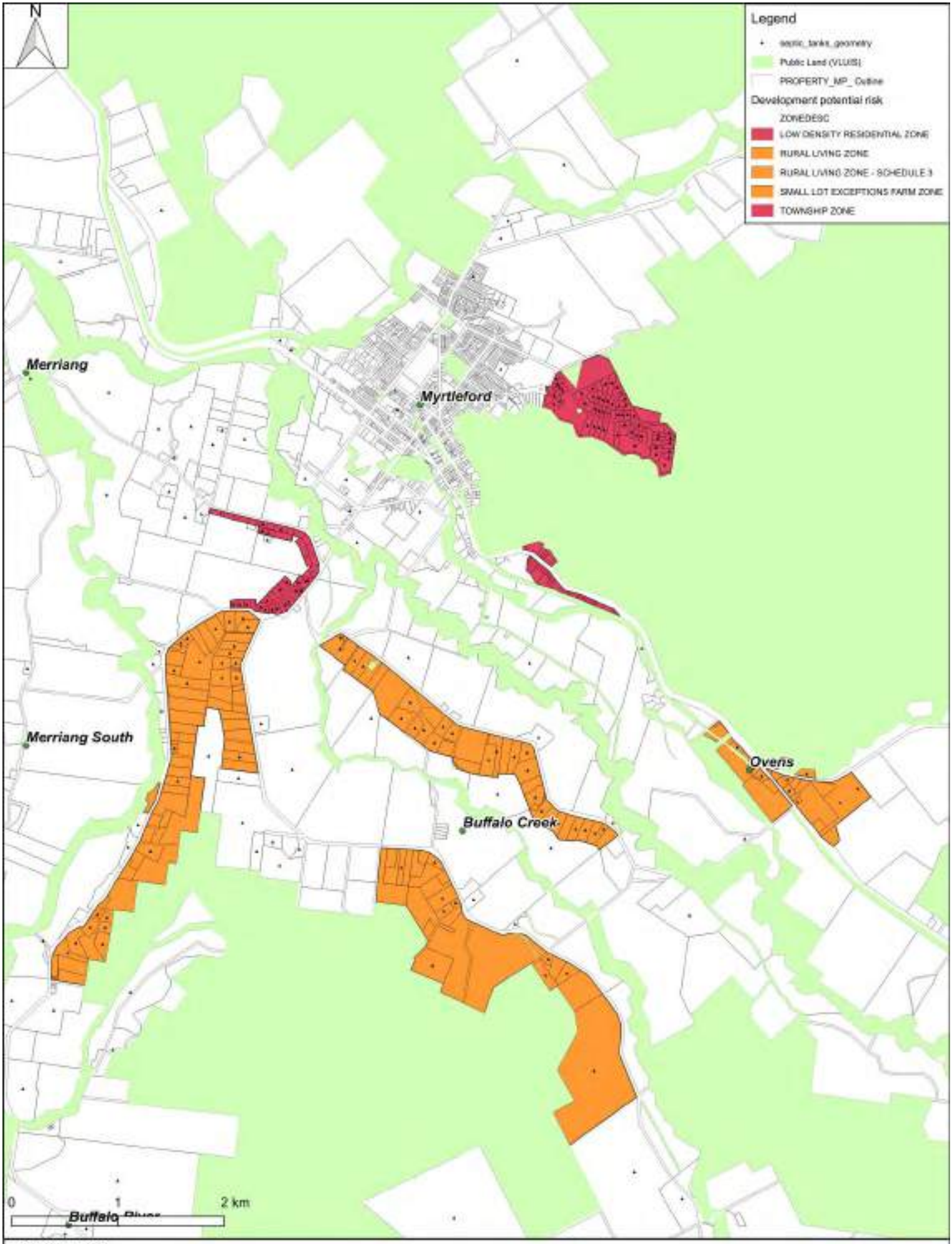
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:54pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Soils data
Myrtleford, Ovens and Buffalo Creek

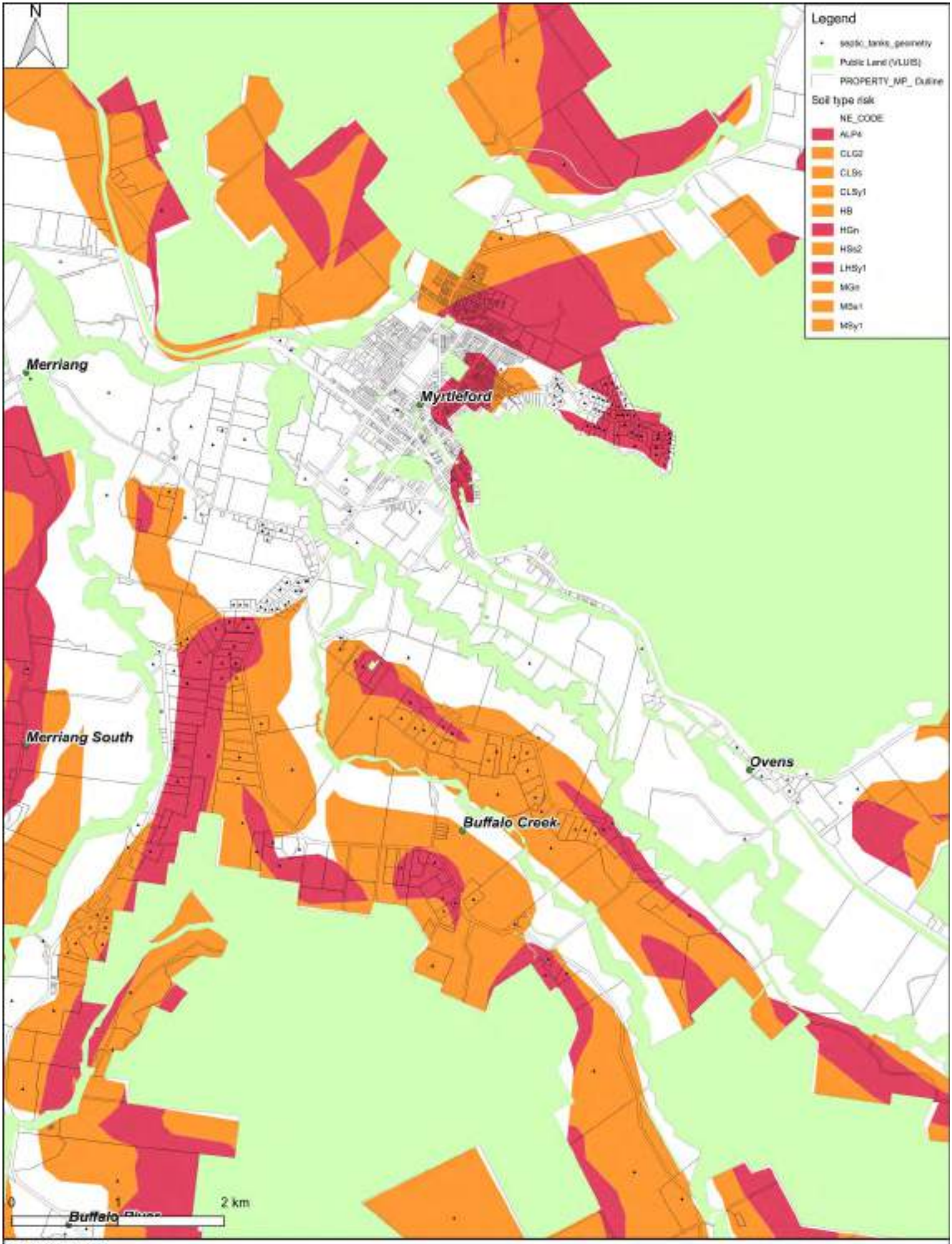
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:46pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Development risk
Myrtleford, Ovens and Buffalo Creek

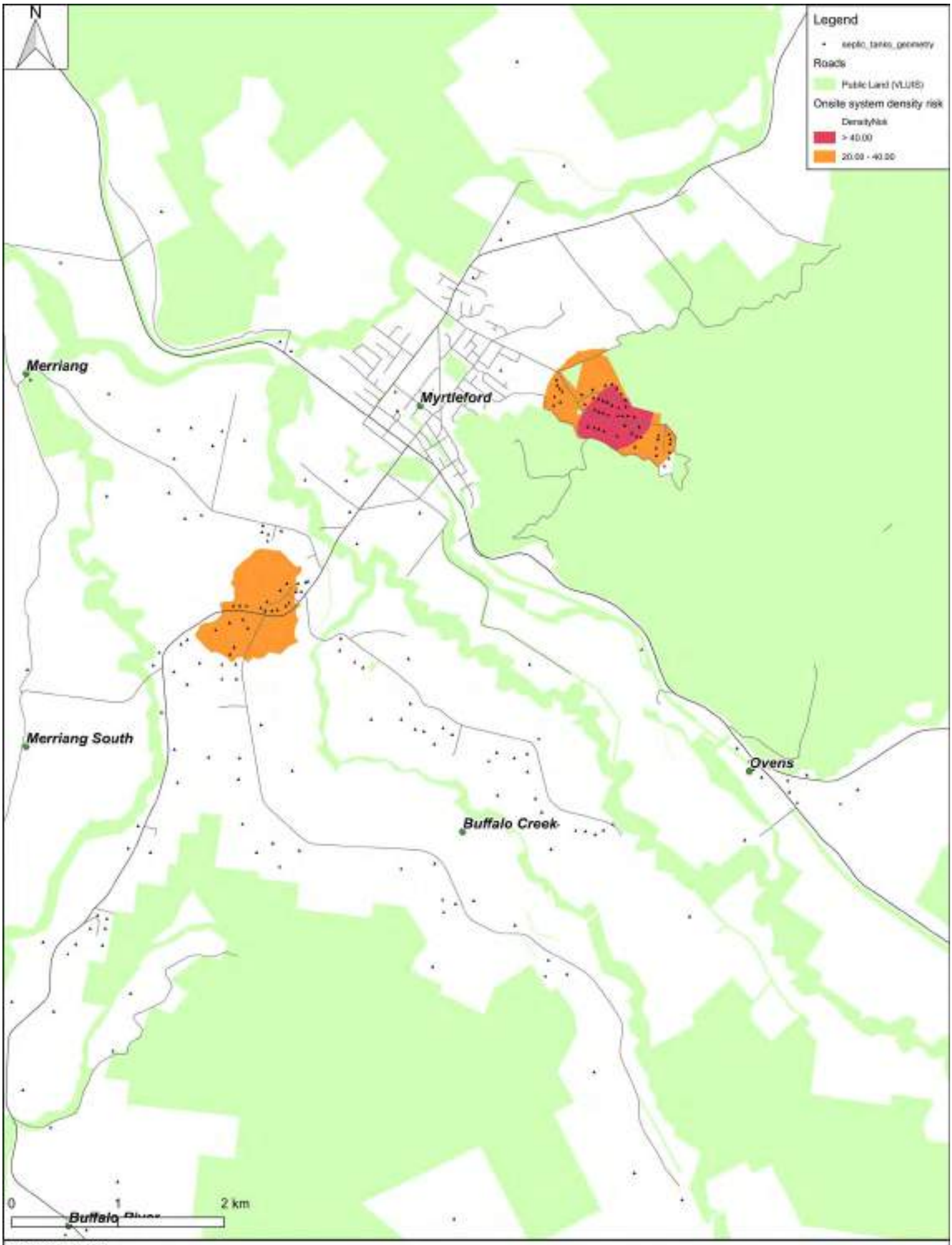
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:35pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Soil type risk
Myrtleford, Ovens and Buffalo Creek

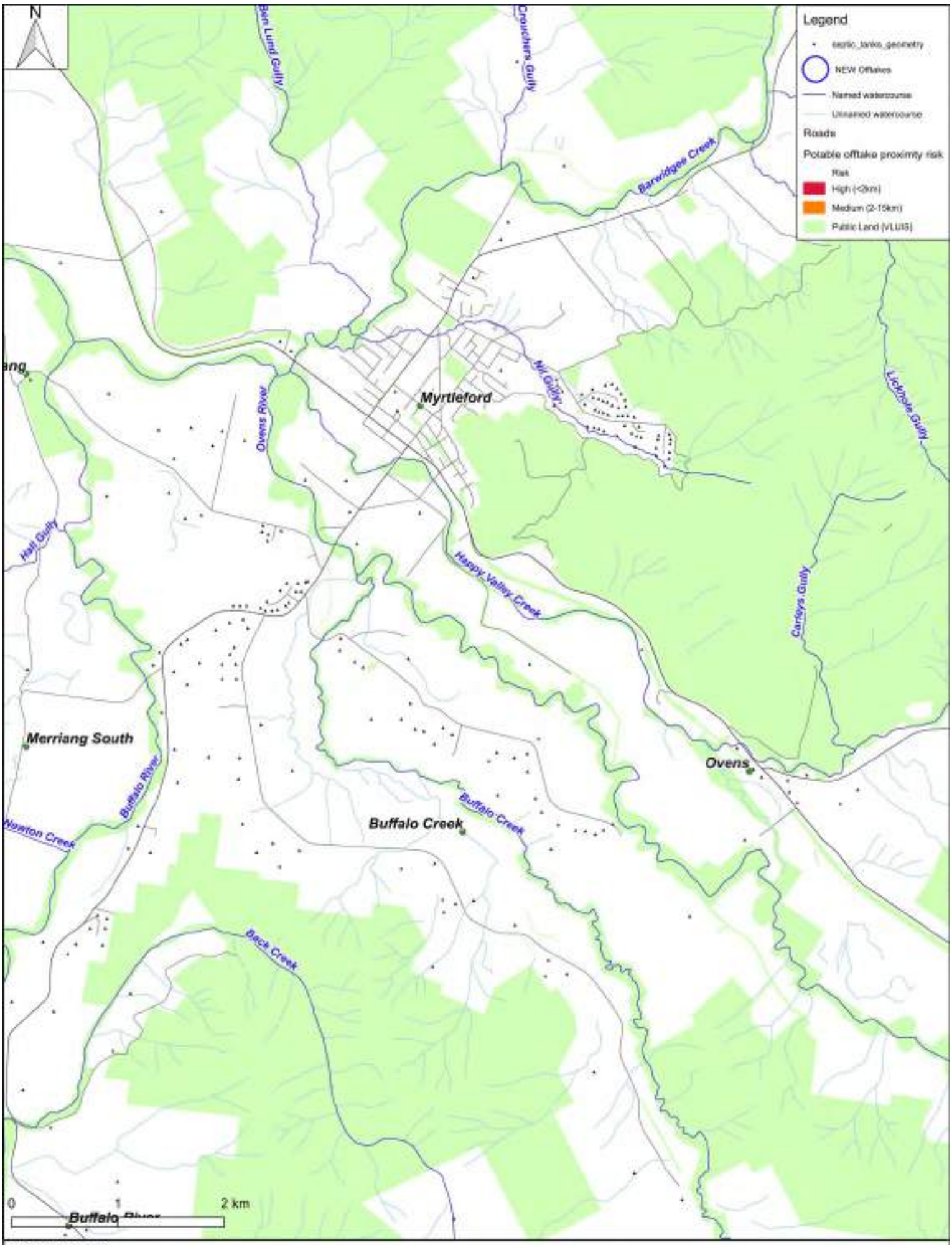
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:21pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Density of onsite systems risk
Myrtleford, Ovens and Buffalo Creek

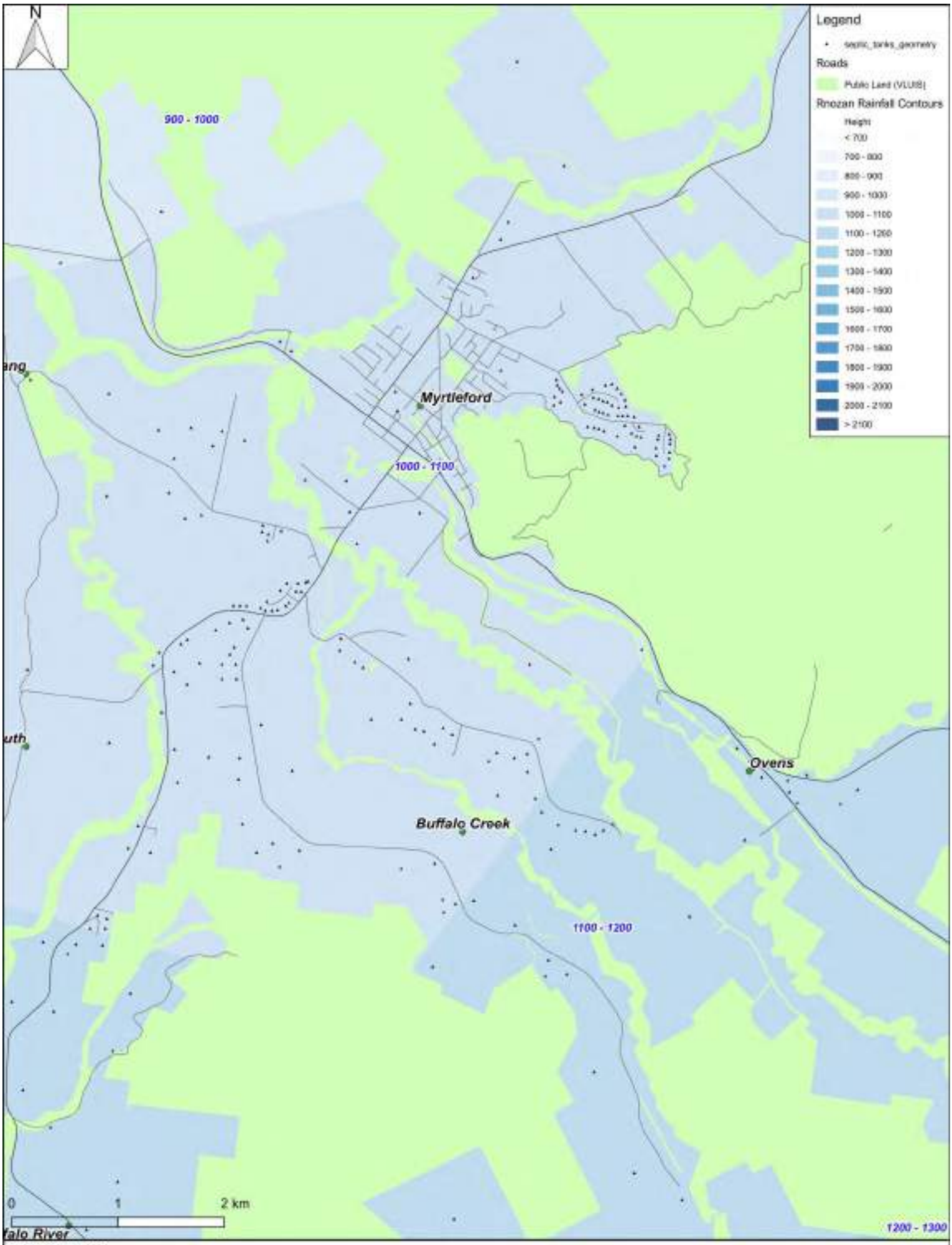
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:13pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Potable offtakes risk
Myrtleford, Ovens and Buffalo Creek

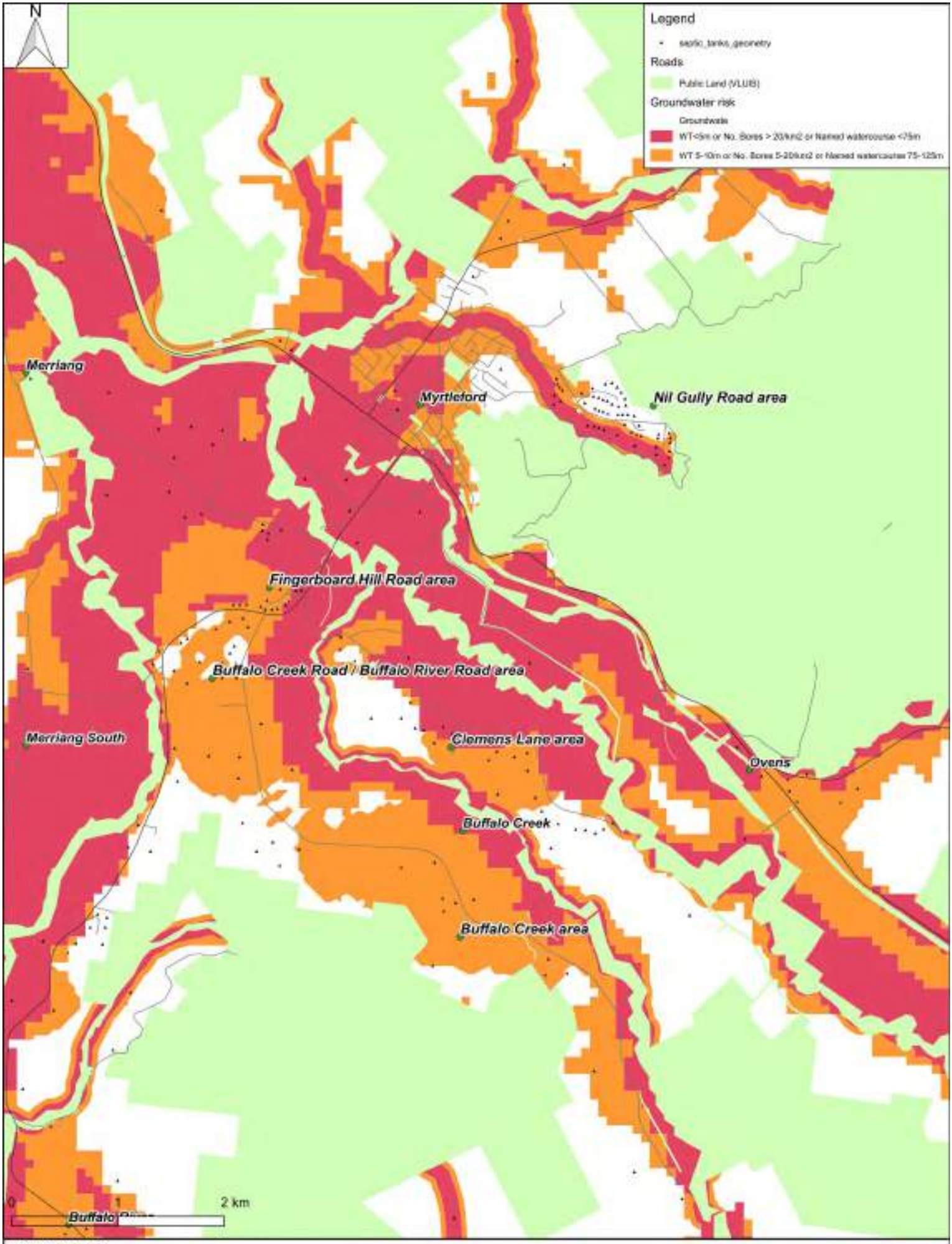
RMCG



Prepared by: RMCG
Friday 16/06/2017, 12:51pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Rainfall risk
Myrtleford, Ovens and Buffalo Creek

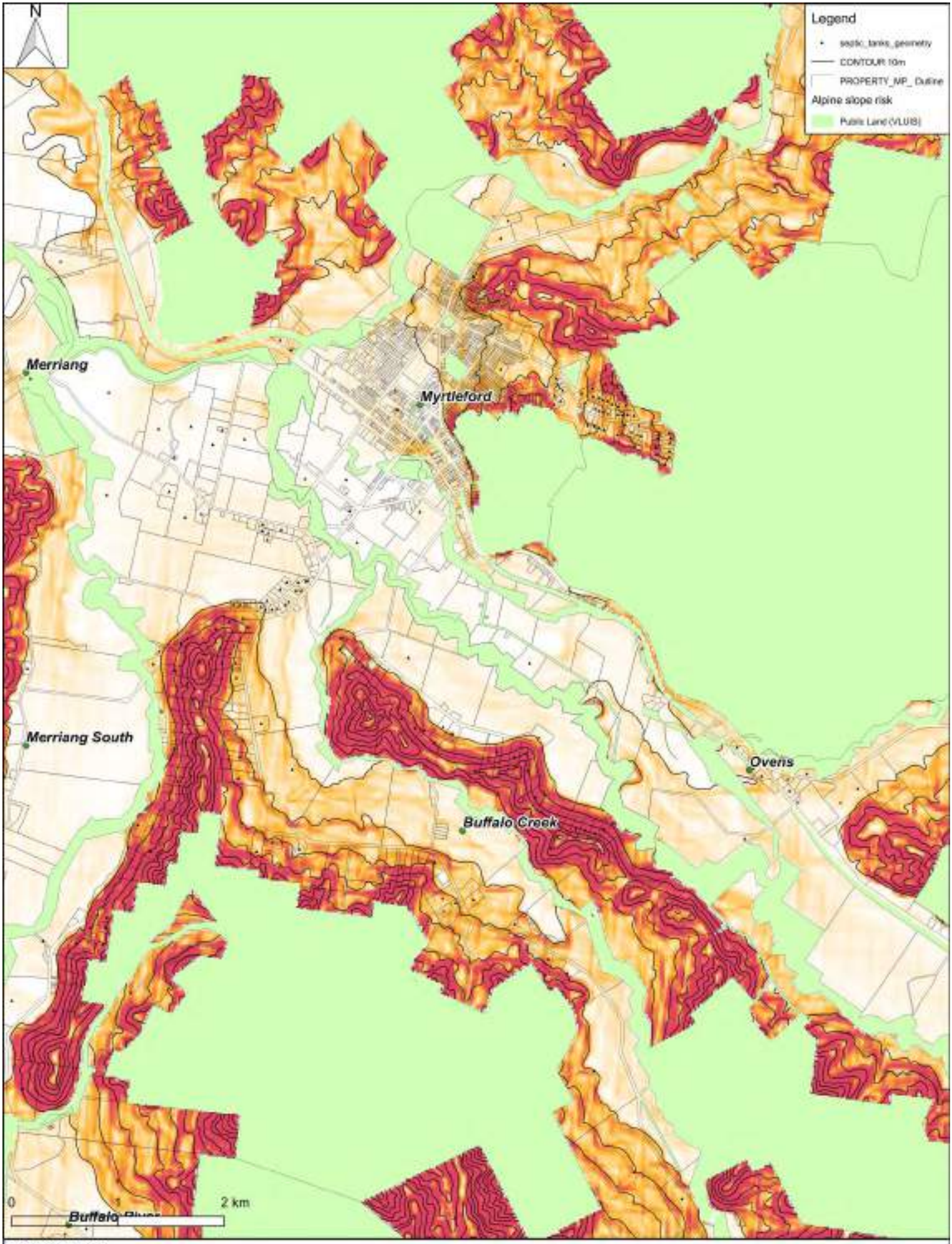
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:22pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Groundwater risk
Myrtleford, Ovens and Buffalo Creek

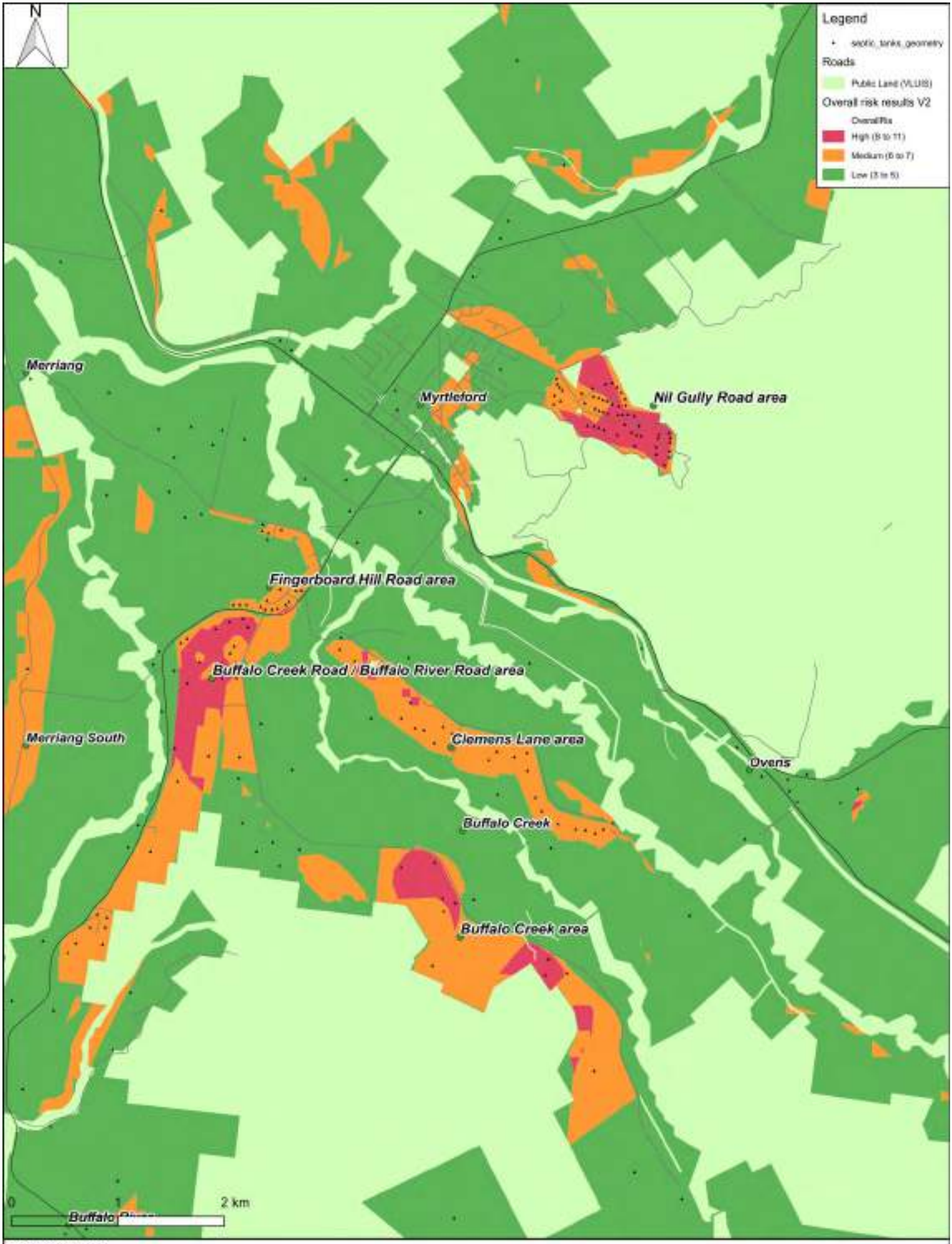
RMCG



Prepared by: RMCG
Friday 16/06/2017, 11:21am
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Slope risk
Myrtleford, Ovens and Buffalo Creek

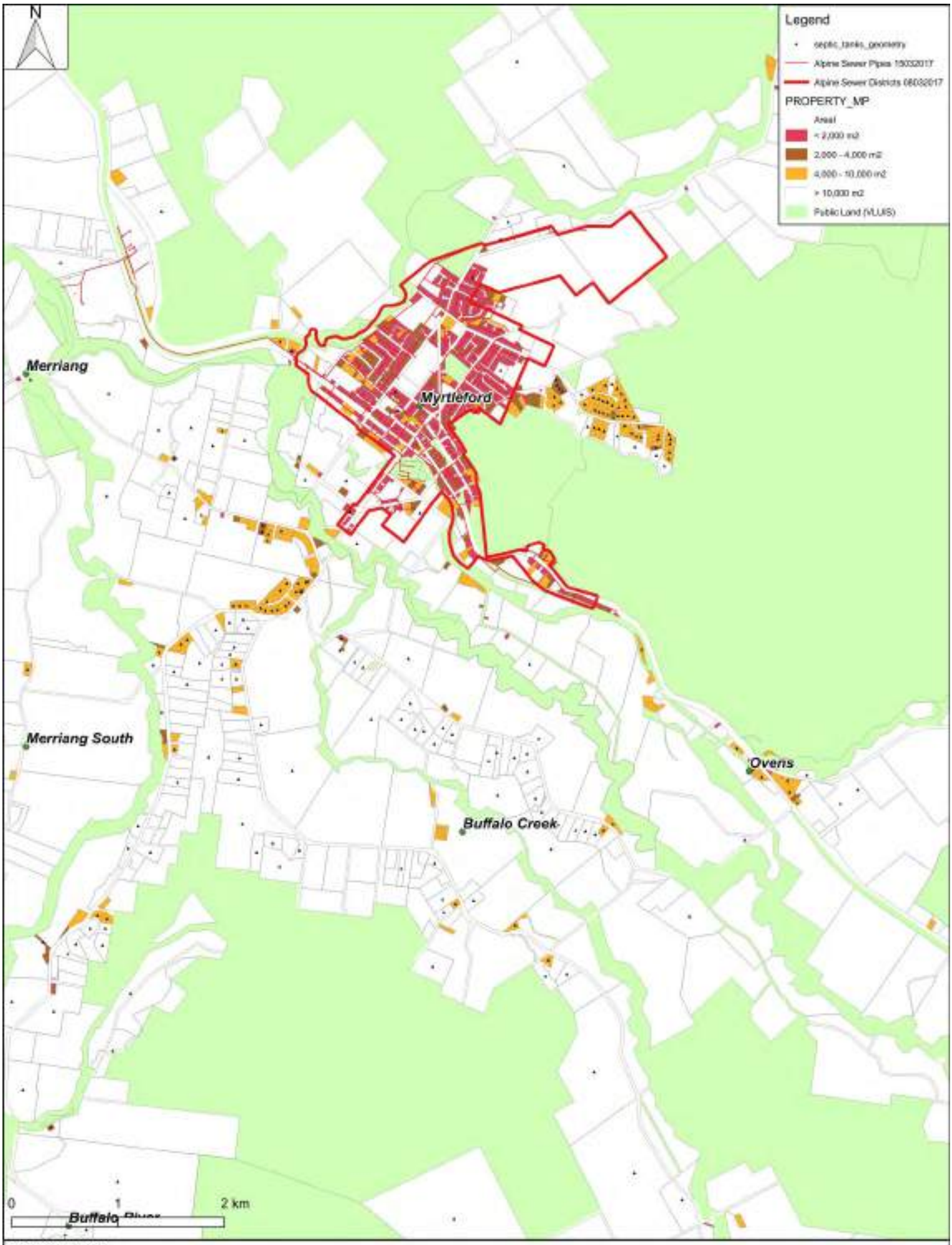
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:30pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Overall Risk
Myrtleford, Ovens and Buffalo Creek

RMCG



Prepared by: RMCG
Thursday 15/06/2017, 10:55pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Small Lot Development Potential
Myrtleford, Ovens and Buffalo Creek

RMCG

3.4 POREPUNKAH AND BRIGHT

The map series (Maps 1 to 14) on the following pages presents data and risk assessment for the Porepunkah and western Bright area.

Map 1 Aerial – the built-up part of Porepunkah and Bright are surrounded by forest logging and farm land.

Map 2 Planning zones – the valley is generally farm zone (blue). Porepunkah itself is predominantly township zone (dark pink).

Map 3 Sewerage data – Porepunkah and Bright are within sewerage districts. The sewage treatment plant is located between the towns.

Map 4 Water data – reticulated town water is available to the towns and a pipeline runs south towards Brookside.

Map 5 Soils data – the subsoils are generally Category 5 – light clays.

Map 6 Development risk – township zone and rural living zones show up as high and medium risk respectively.

Map 7 Soils risk –there are no high-risk soil types in this area, but medium risk land dominates the area due to the moderately to weakly structured light clay subsoils (Category 5b & c).

Map 8 Onsite density – central Porepunkah has some remaining onsite systems within the sewered area, but these might actually now be connected. An intense but isolated development exists adjacent to the Buckland River approximately 5km south west of Porepunkah.

Map 9 Potable offtakes risk – the offtake for Bright and Porepunkah is upstream of the towns so there is no potable water offtake risk in the area.

Map 10 Rainfall risk – all of Alpine is high rainfall and high risk. This map shows the rainfall is between 1100 and 1400 mm/year.

Map 11 Groundwater risk – a high density of bores in central Porepunkah, combined with shallow water tables along the valley floors result in some areas of high risk and extensive areas of medium groundwater risk.

Map 12 Slope – the topography of the valleys is such that the steeper land is located along the edge of the private land, where it abuts the public land / forests.

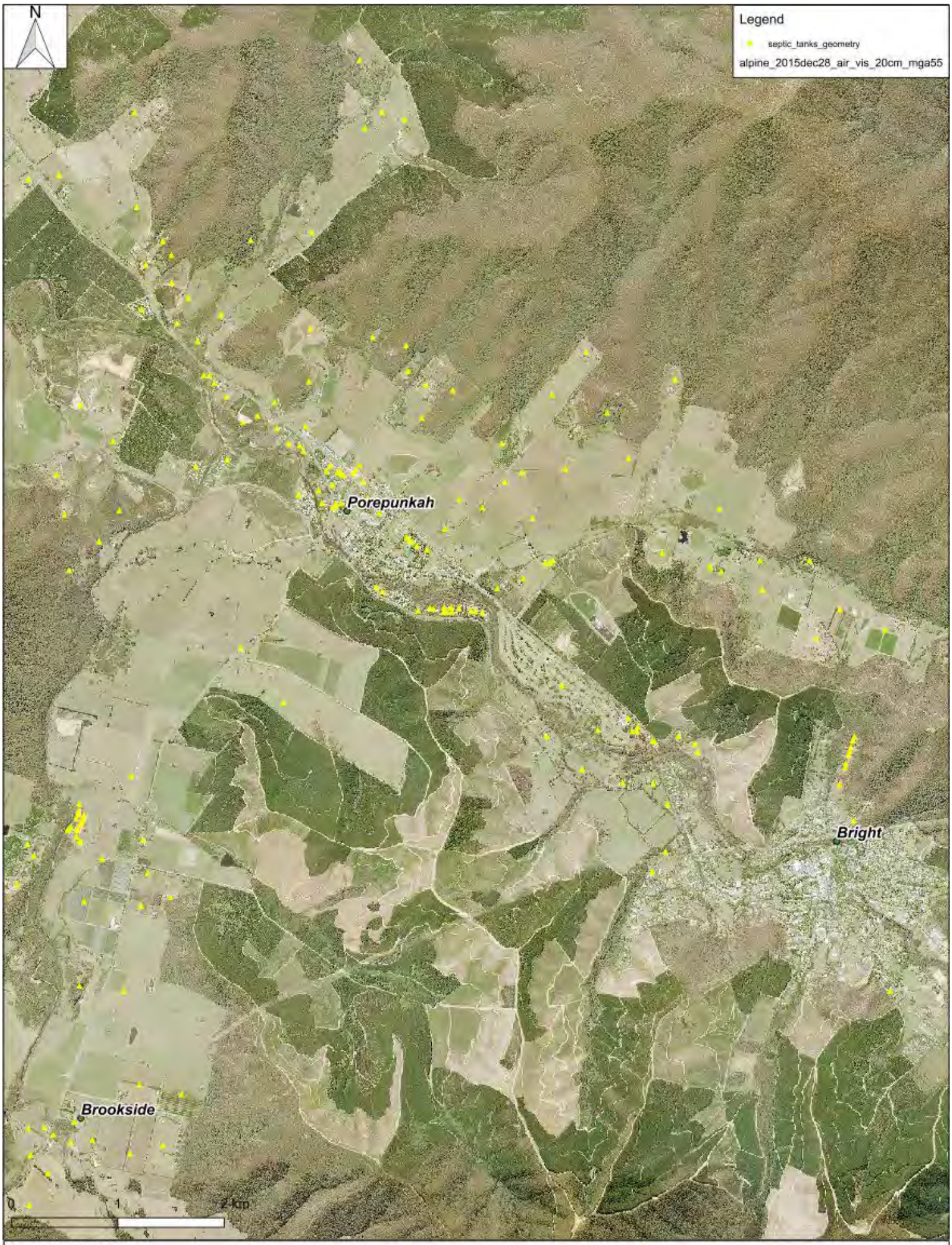
Map 13 Overall risk – when the various risk factors are combined, central Porepunkah maps as a medium risk area, but with sewerage available this is not consequential.

Map 14 Small lot risk – there are very few vacant small lots outside the Porepunkah and Bright sewerage districts.

CONCLUSIONS – POREPUNKAH

Porepunkah has been recently sewered. Beyond this sewered area there is very little domestic wastewater risk. It is farming zone with limited existing dwelling density and minimal development pressure. There are areas of medium risk for individual parameters – e.g. groundwater risk in proximity to the Ovens River, slope risk at higher elevations, and soil risk related to clay based subsoils – however, these areas tend not to overlap so overall risk is low.

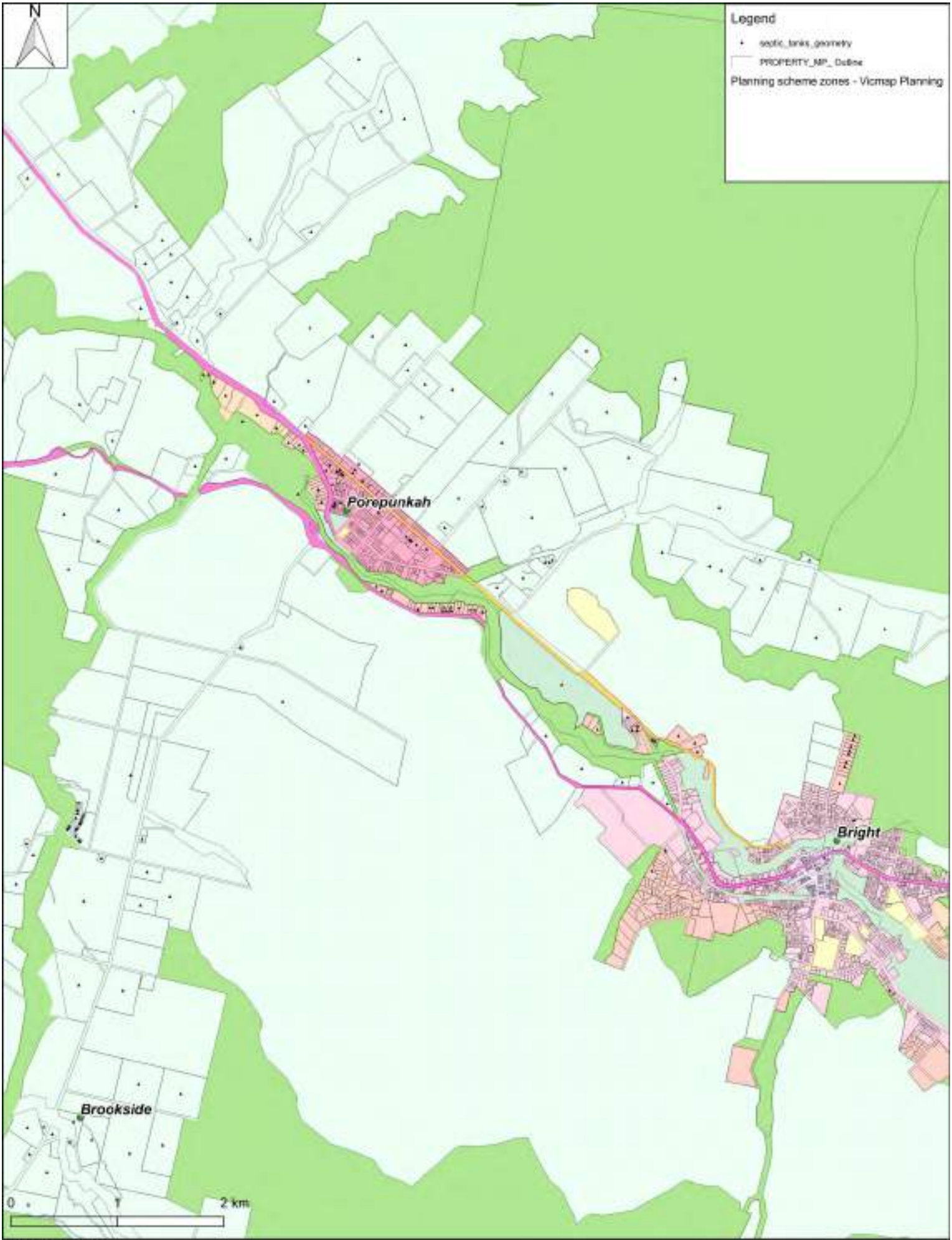
Risk associated with the Porepunkah focus area is low by comparison to other focus areas. No specific actions are identified for this area.



Prepared by: RMCG
Wednesday 21/06/2017, 11:28am
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Aerial overview
Porepunkah and Bright

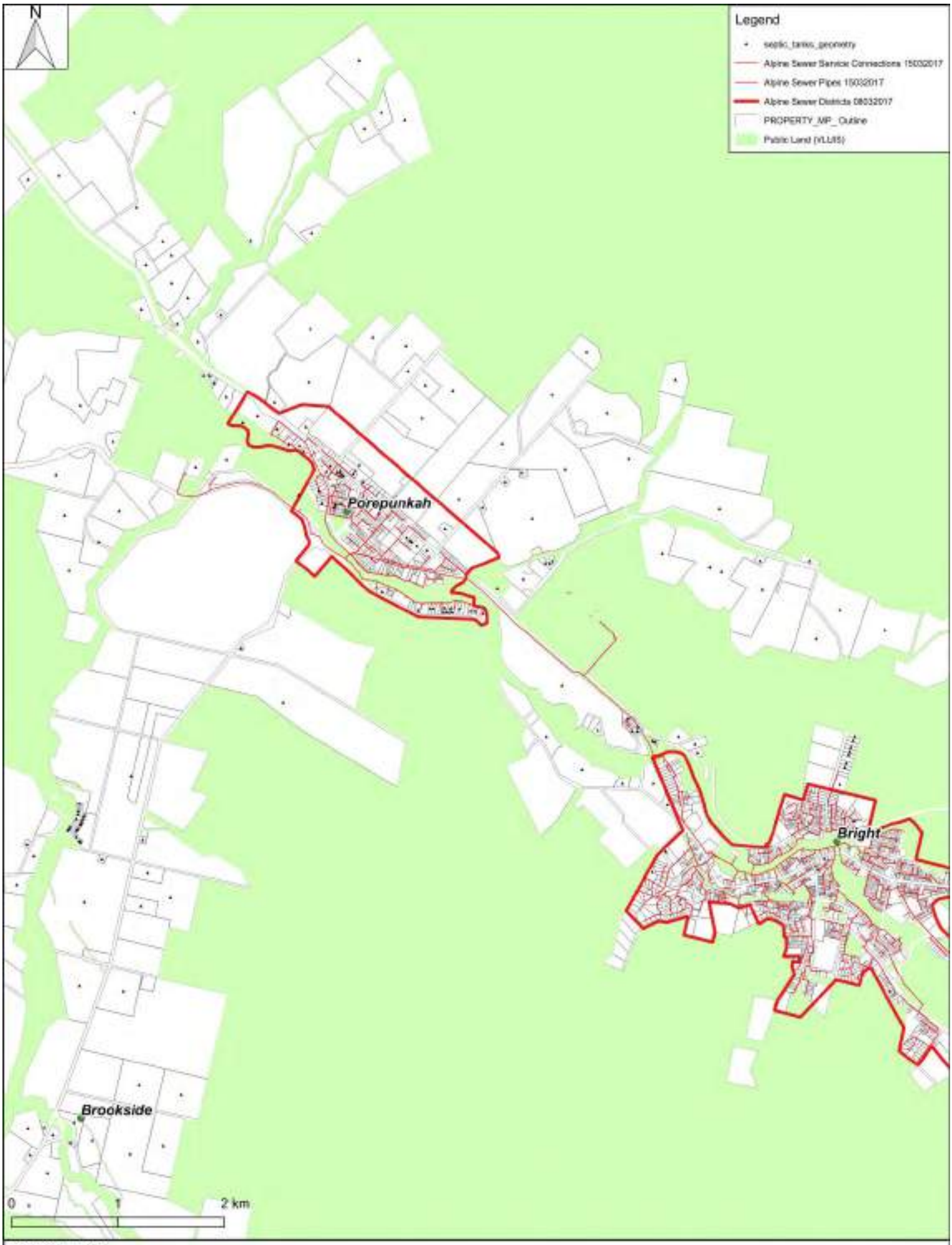
RMCG



Prepared by: RMCG
Friday 16/06/2017, 03:37pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Planning zone data
Porepunkah and Bright

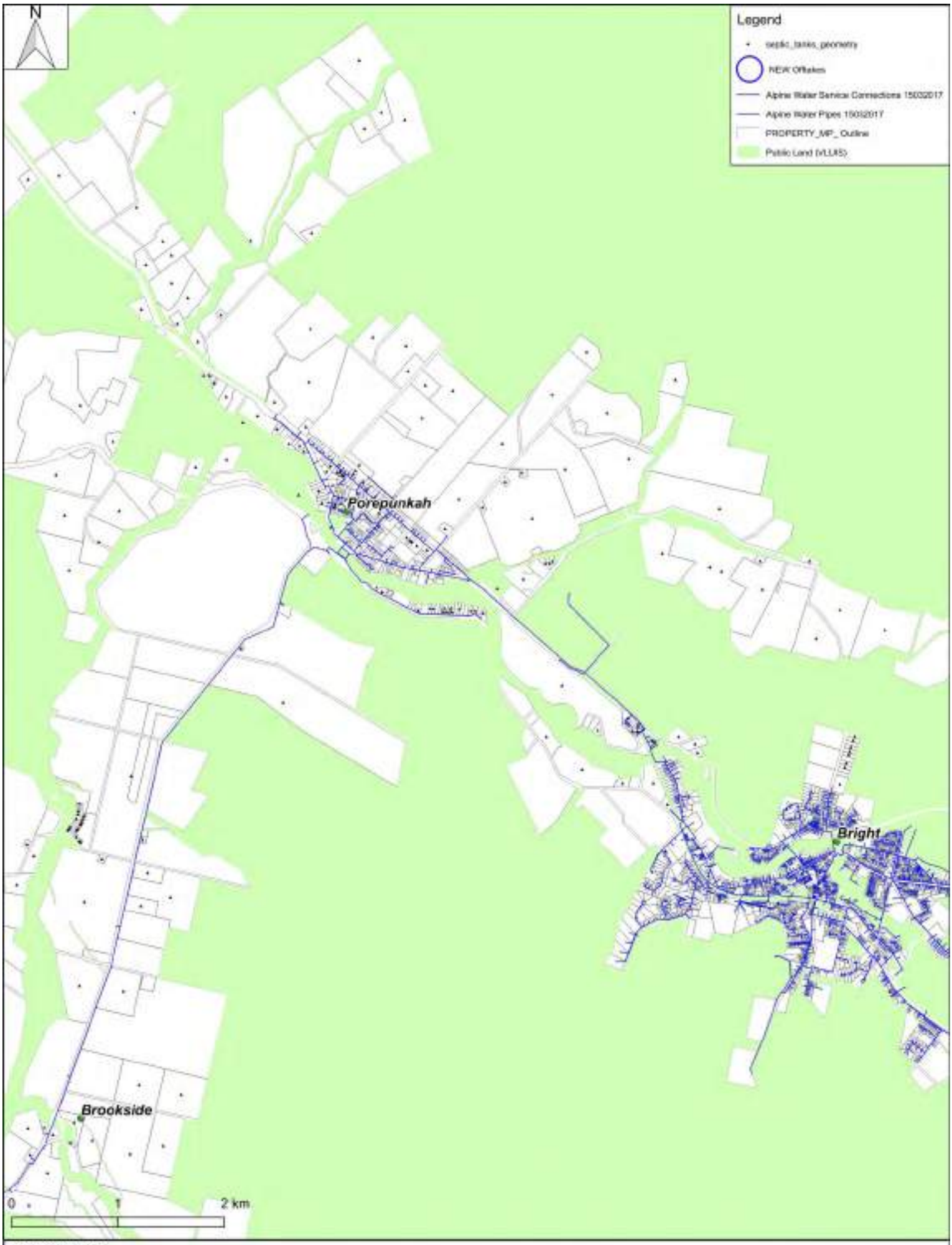
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:40pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Sewerage data
Porepunkah and Bright

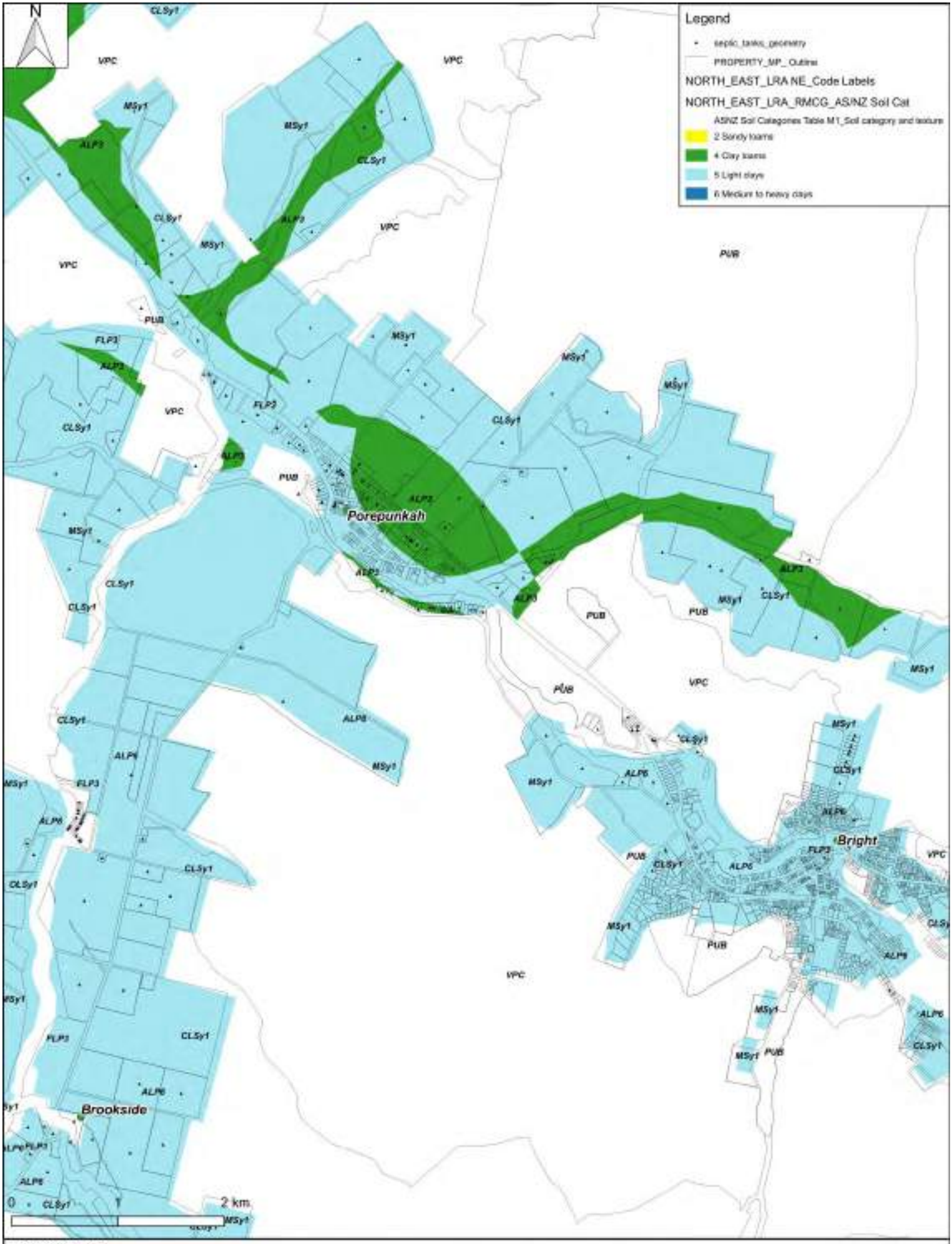
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:43pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Water supply data
Porepunkah and Bright

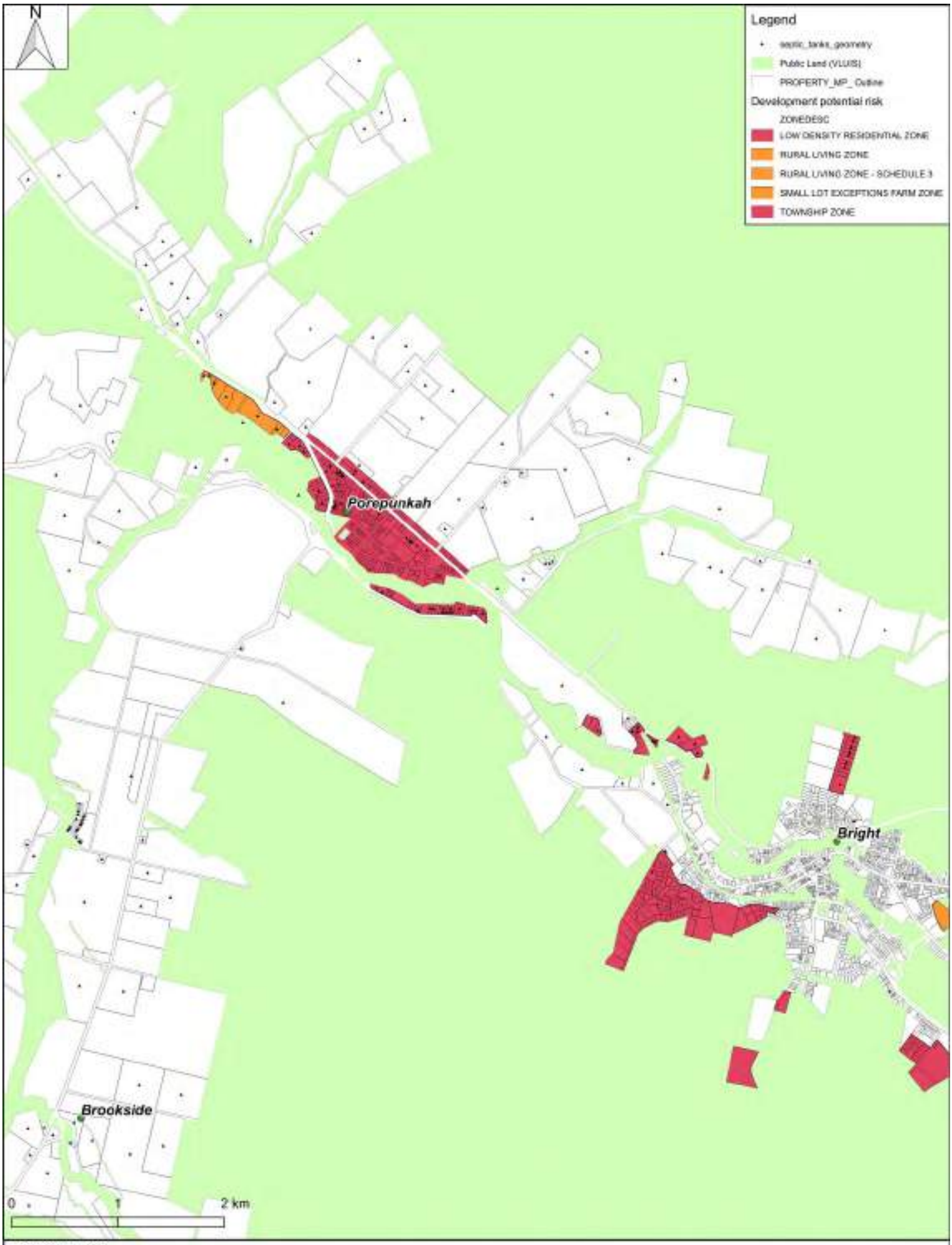
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:54pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Soils data
Porepunkah and Bright

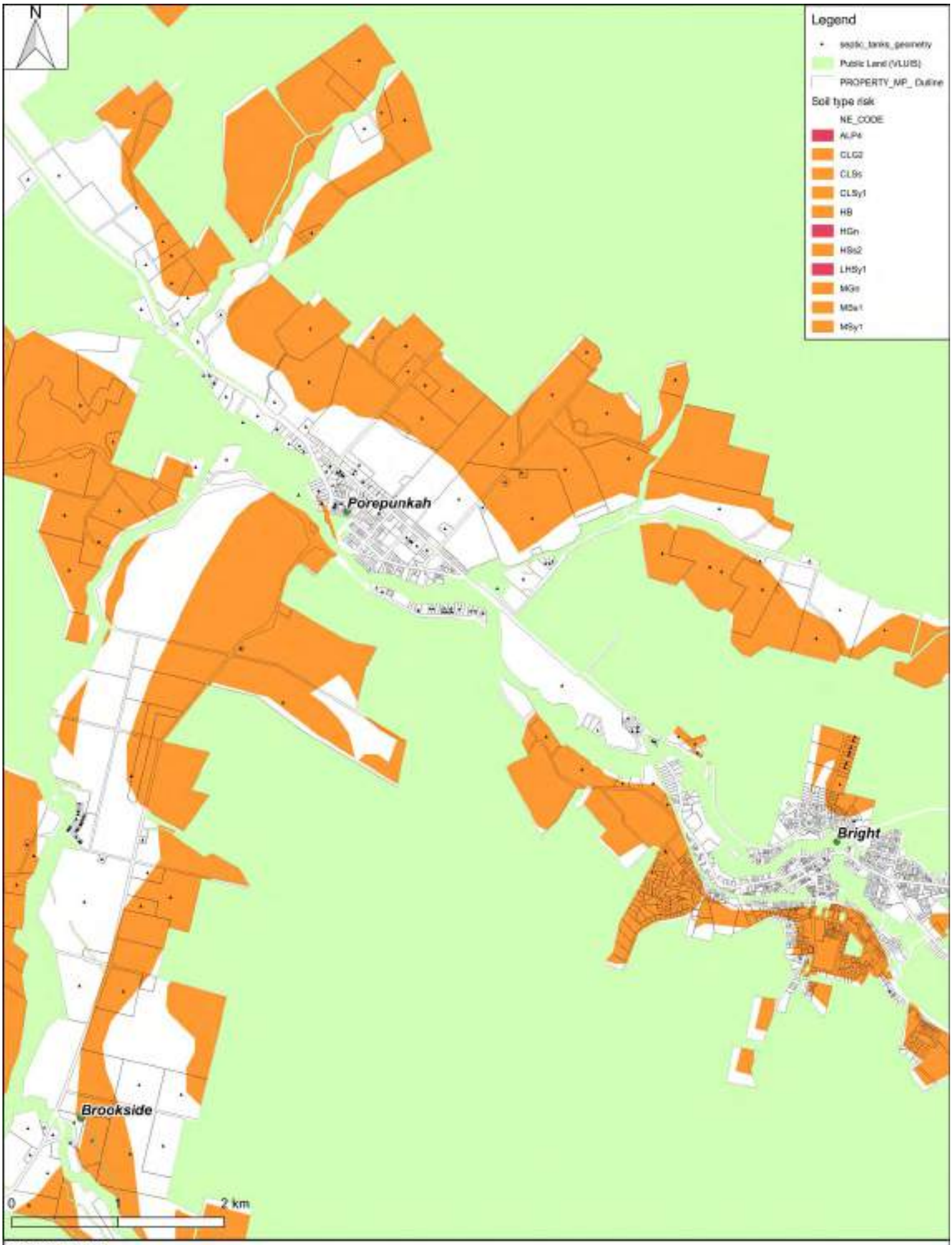
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:46pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Development risk
Porepunkah and Bright

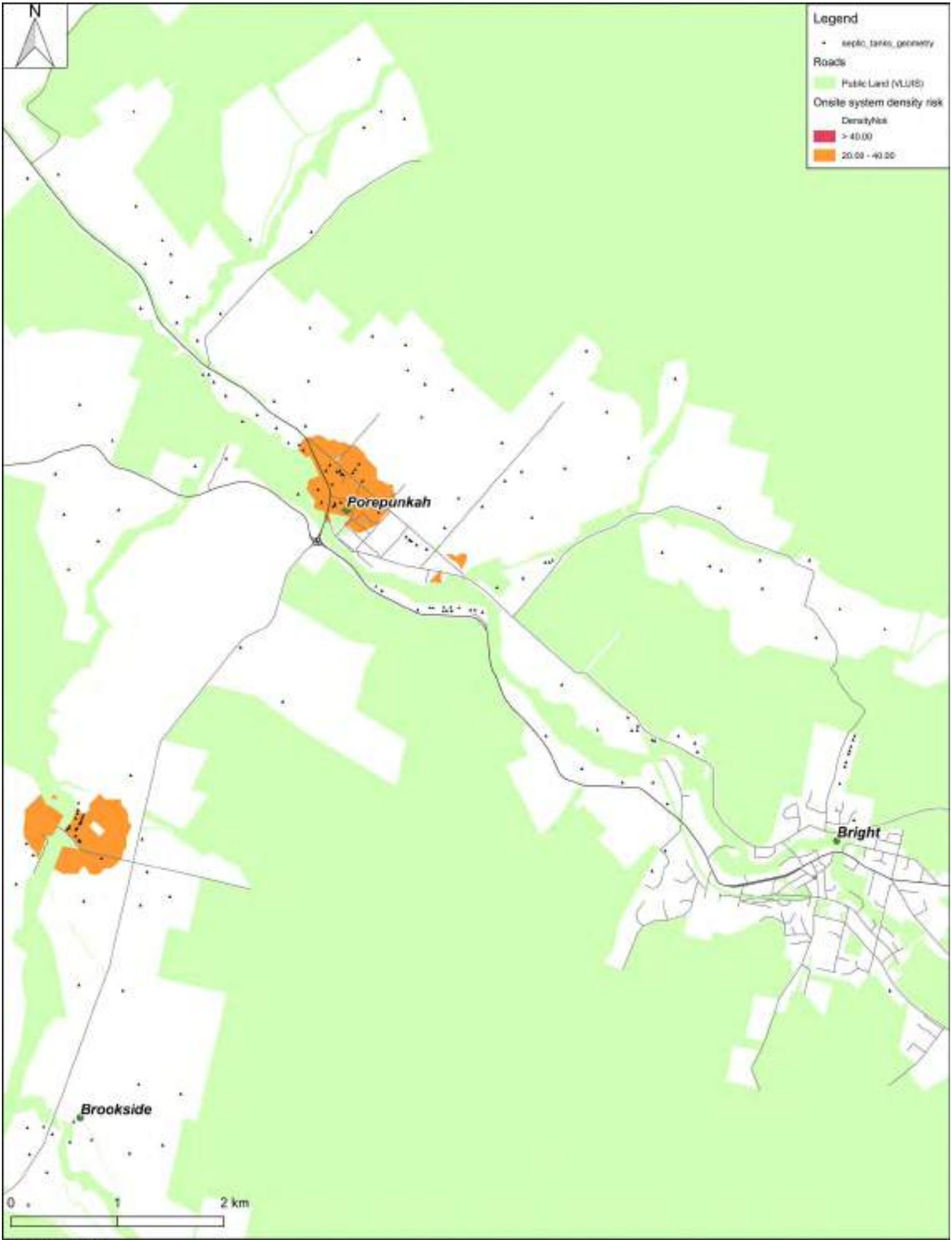
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:35pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Soil type risk
Porepunkah and Bright

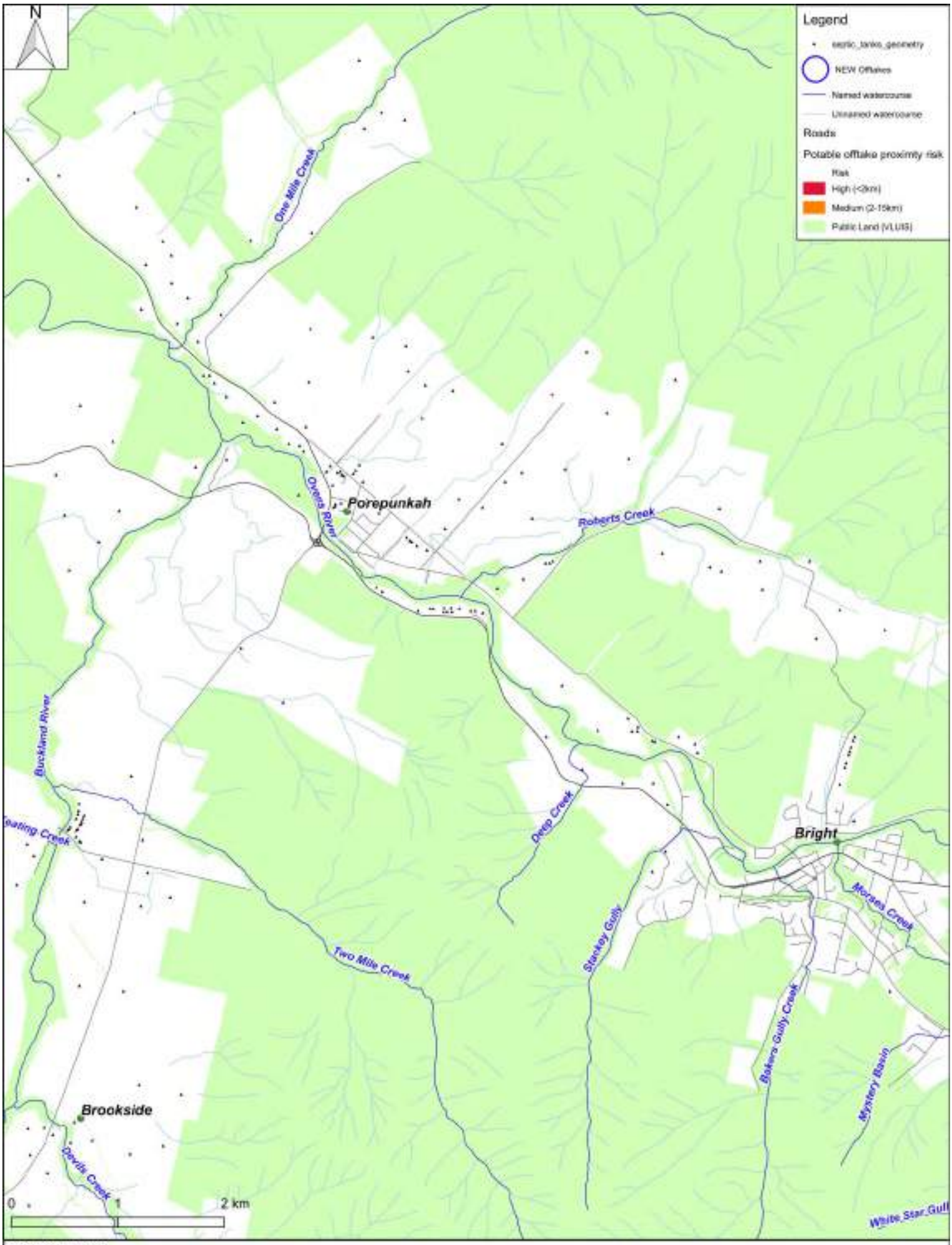
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:21pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Density of onsite systems risk
Porepunkah and Bright

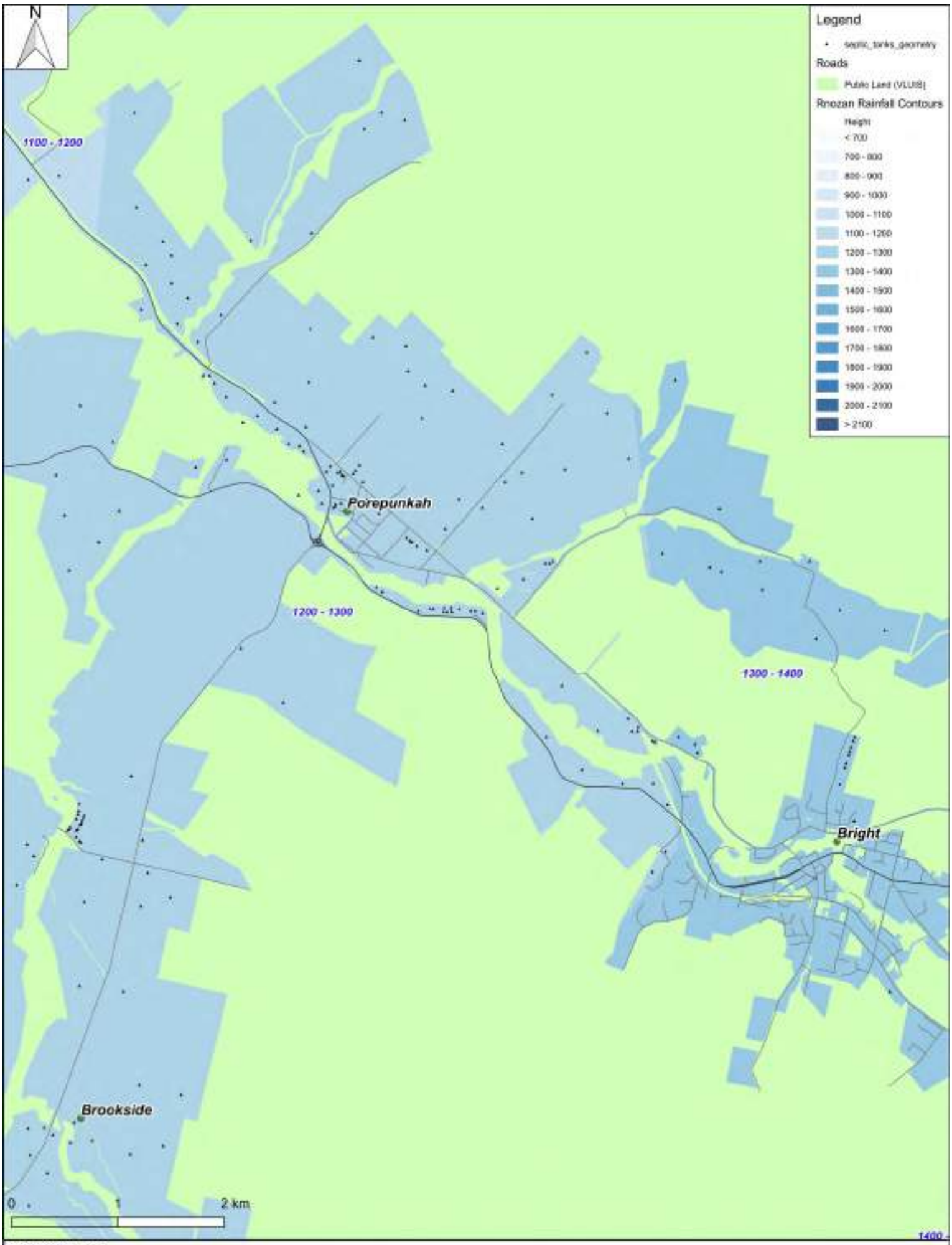
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:13pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Potable offtakes risk
Porepunkah and Bright

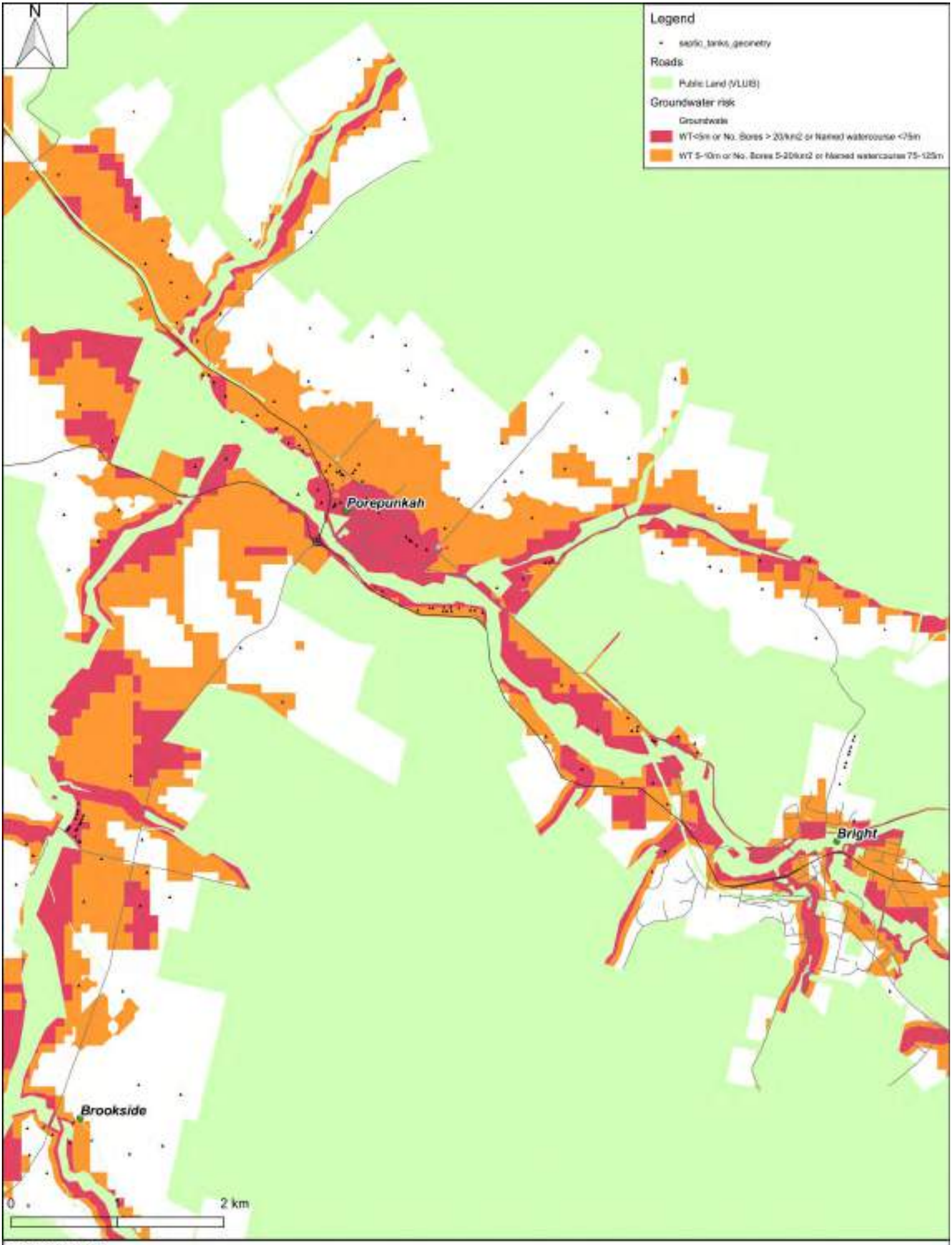
RMCG



Prepared by: RMCG
Friday 16/06/2017, 12:51pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Rainfall risk
Porepunkah and Bright

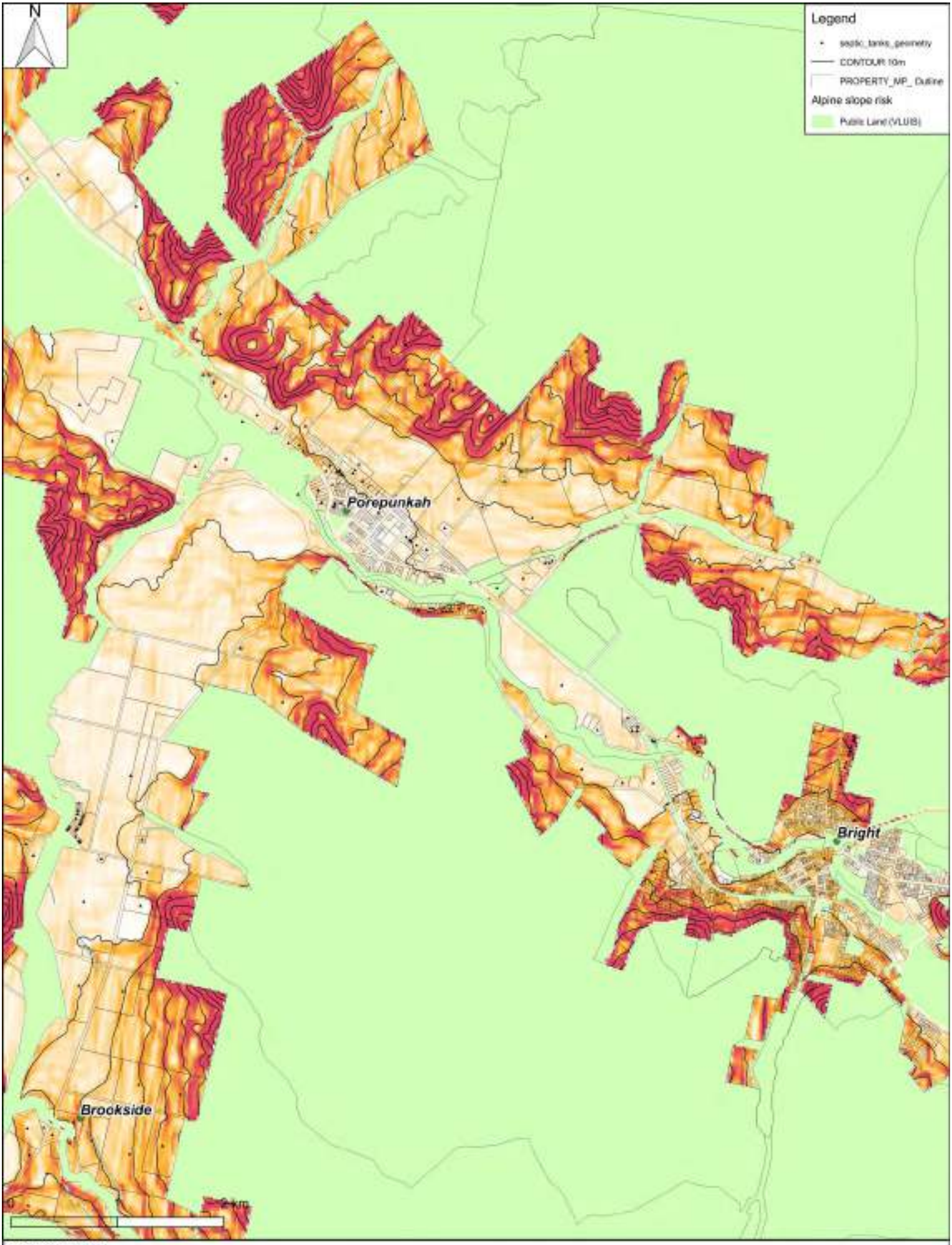
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:22pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Groundwater risk
Porepunkah and Bright

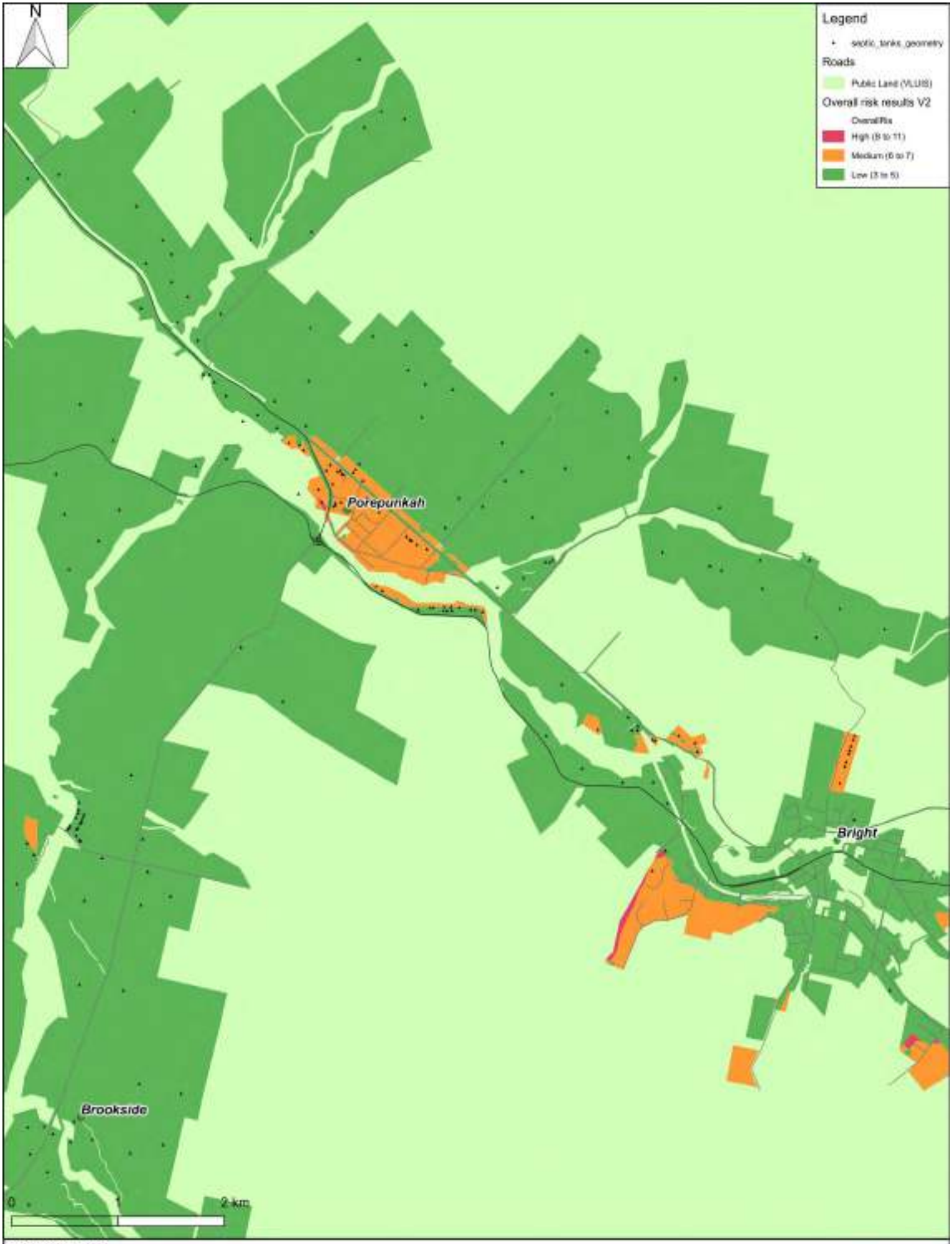
RMCG



Prepared by: RMCG
Friday 16/06/2017, 11:21am
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Slope risk
Porepunkah and Bright

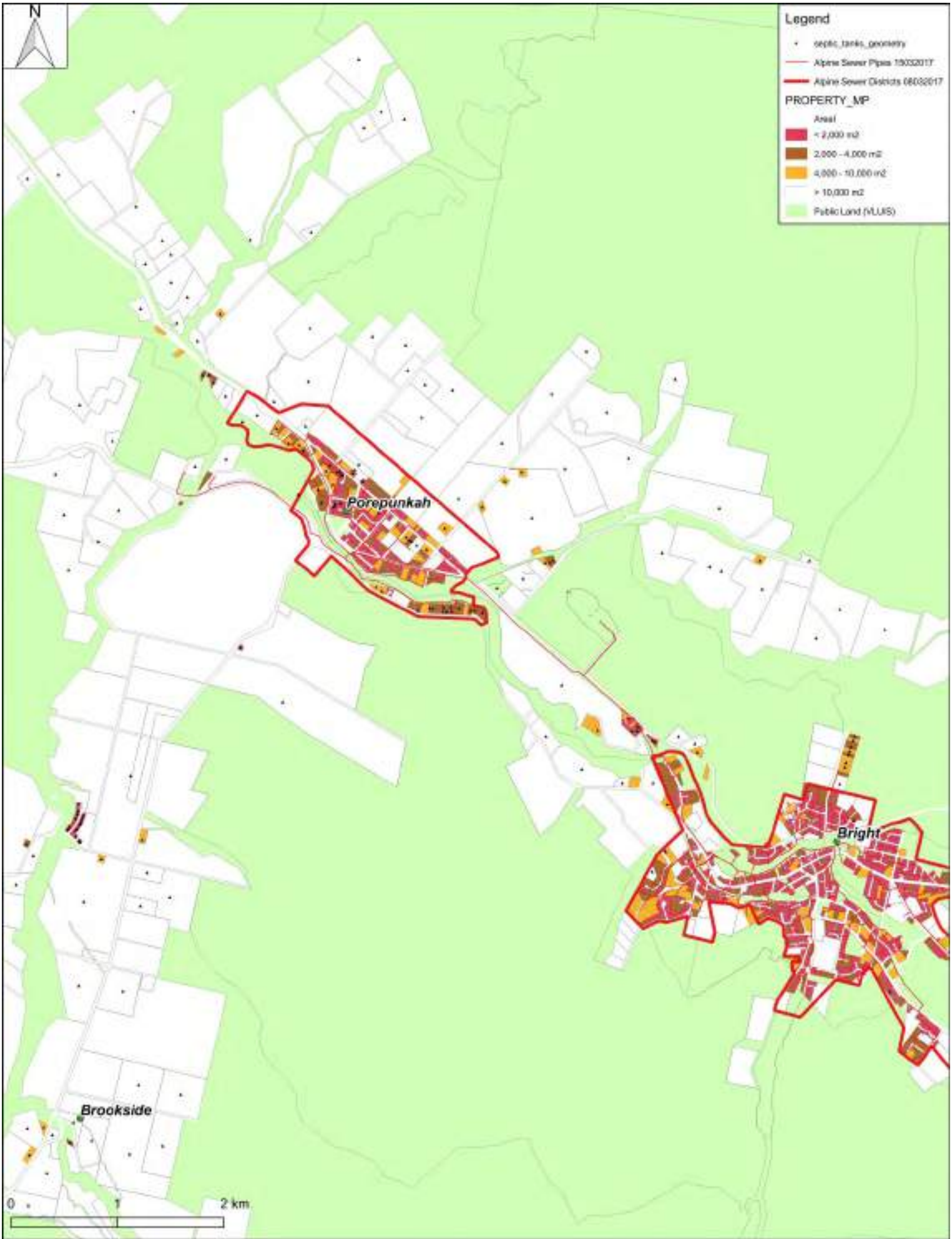
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:30pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Overall Risk
Porepunkah and Bright

RMCG



Prepared by: RMCG
Thursday 15/06/2017, 10:55pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Small Lot Development Potential Porepunkah and Bright

RMCG

3.5 TAWONGA, TAWONGA SOUTH AND MOUNT BEAUTY

The map series on the following pages presents data and risk assessment for the Tawonga area.

Map 1 Aerial – the area is constrained by forest to the west, south and east. The town of Mount Beauty can be seen adjacent to the hydro-pondage. Dense onsite systems are located at Tawonga (Cooper Street / Charles Street area) and south west of Mount Beauty in Simmonds Creek Road / Glenbourn Drive area.

Map 2 Planning zones – aside from Tawonga South and Mount Beauty, the most significant areas of land zoned for residential development are located at Tawonga, west of Tawonga South, and south west of Mount Beauty.

Map 3 Sewerage data – sewerage exists in Mount Beauty, Tawonga South and to the southern part of Tawonga. The mapped sewerage district includes an area that is not sewered (Glenbourn Drive) and doesn't include an area that is sewered (Mount Beauty).

Map 4 Water data – reticulated water is available to all the major residential areas.

Map 5 Soils data – a range of soil types exist, including large areas with colluvial soils that potentially include Category 6 subsoils of medium to heavy clay.

Map 6 Development risk – considerable area of township and low density residential zoned land exists in the area and is rated as high risk.

Map 7 Soils risk – large areas of moderate risk soil types exist across the area. There are also some small patches of high risk soils, but these are removed from existing/likely development areas.

Map 8 Onsite density – Tawonga has a very high concentration of existing onsite systems. The Simmonds Creek area also has a high concentration of existing onsite systems.

Map 9 Potable offtakes risk – the offtakes are upstream of the town.

Map 10 Rainfall risk – all of Alpine is high rainfall and high risk. This map shows the rainfall is between 1300 and 1500 mm/year.

Map 11 Groundwater risk – there are very few bores in the area, but shallow groundwater and waterways result in significant areas of high and medium groundwater risk.

Map 12 Slope – there are areas of steep slope at the edges of the valley, adjacent to public land and forests.

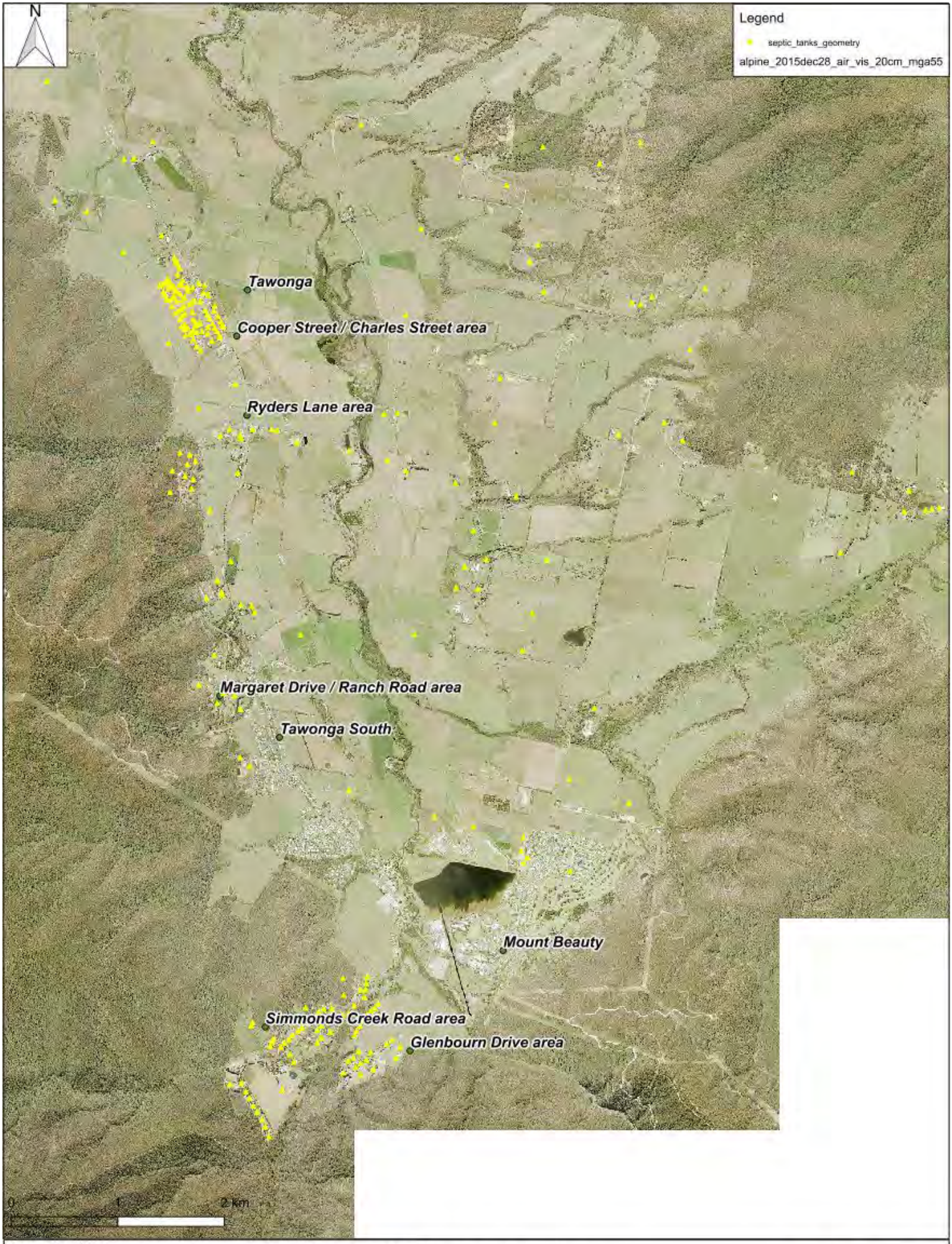
Map 13 Overall risk – Tawonga (Cooper Street / Charles Street area) and Simmonds Creek Road area are rated as high overall risk. Low density residential areas near Tawonga South are medium risk.

Map 14 Small lot risk – there are a number of small lots in the Tawonga area, but these are already developed. There are few vacant small lots in the area. The exception is around Ryders Lane / Kiewa Valley Highway.

CONCLUSIONS – TAWONGA

Based on the discussion above and the risk maps, the following conclusions are drawn:

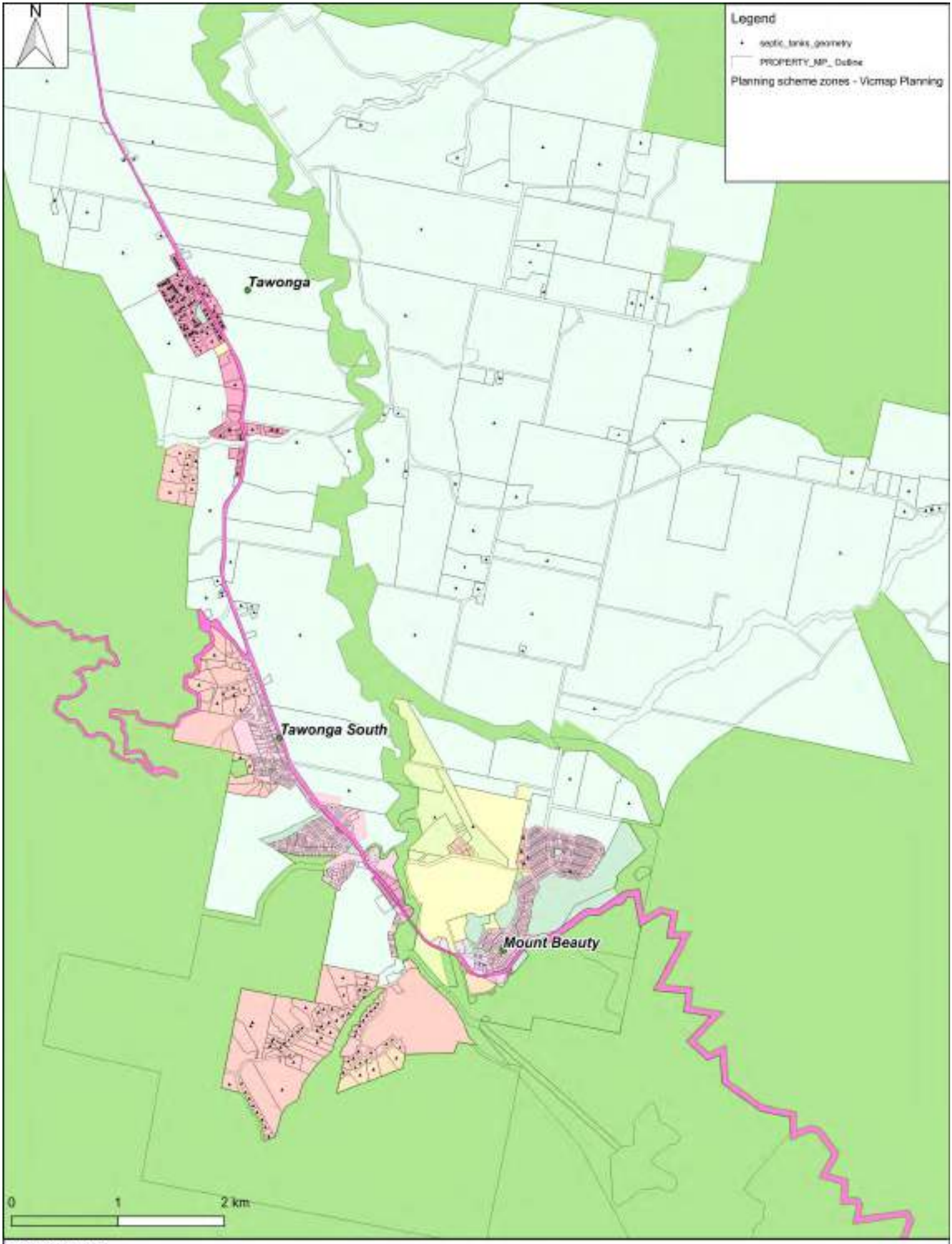
- Consideration should be given to new development in the Glenbourn Drive area being connected to sewer. This area is mapped as being within the sewer district. If sewerage is planned for this area, it would be appropriate to focus future development here.
- The existing LDRZ and TZ areas should be reviewed to ensure that, if not to be sewered, planning controls are consistent with the onsite effluent limitations.
- The sewer district should be updated to align with actual areas sewered including Mount Beauty and part of Tawonga. The Glenbourn Drive area may need to be removed.
- Tawonga (Cooper Street / Charles Street area) has a very high density of onsite systems. An audit of these systems should be carried out to assess their performance. This should include monitoring of stormwater quality as it is suspected that offsite wastewater discharge may be occurring from some of the smaller lots. If onsite systems in this area prove through audit or environmental monitoring to be causing significant health or environmental risk, a centralised wastewater management approach may be required. This could range from retention of onsite systems with downstream stormwater treatment, to more traditional sewerage.
- Confirm if sewerage is available to any new houses on small lots in the Ryders Lane / Kiewa Valley Highway area.



Prepared by: RMCG
Wednesday 21/06/2017, 11:28am
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Aerial overview
Tawonga, Tawonga South and Mount Beauty

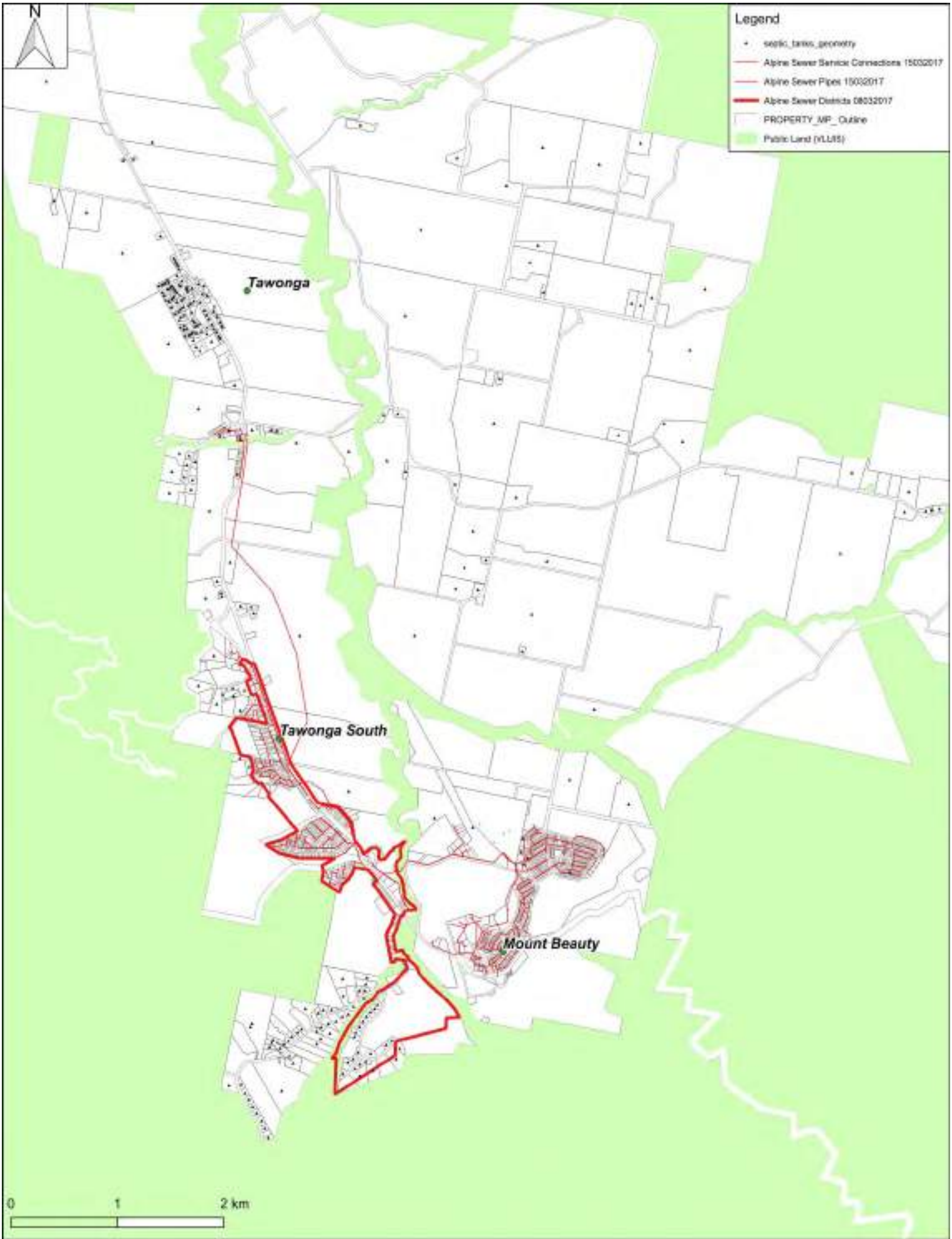
RMCG



Prepared by: RMCG
Friday 16/06/2017, 03:37pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Planning zone data
Tawonga, Tawonga South and Mount Beauty

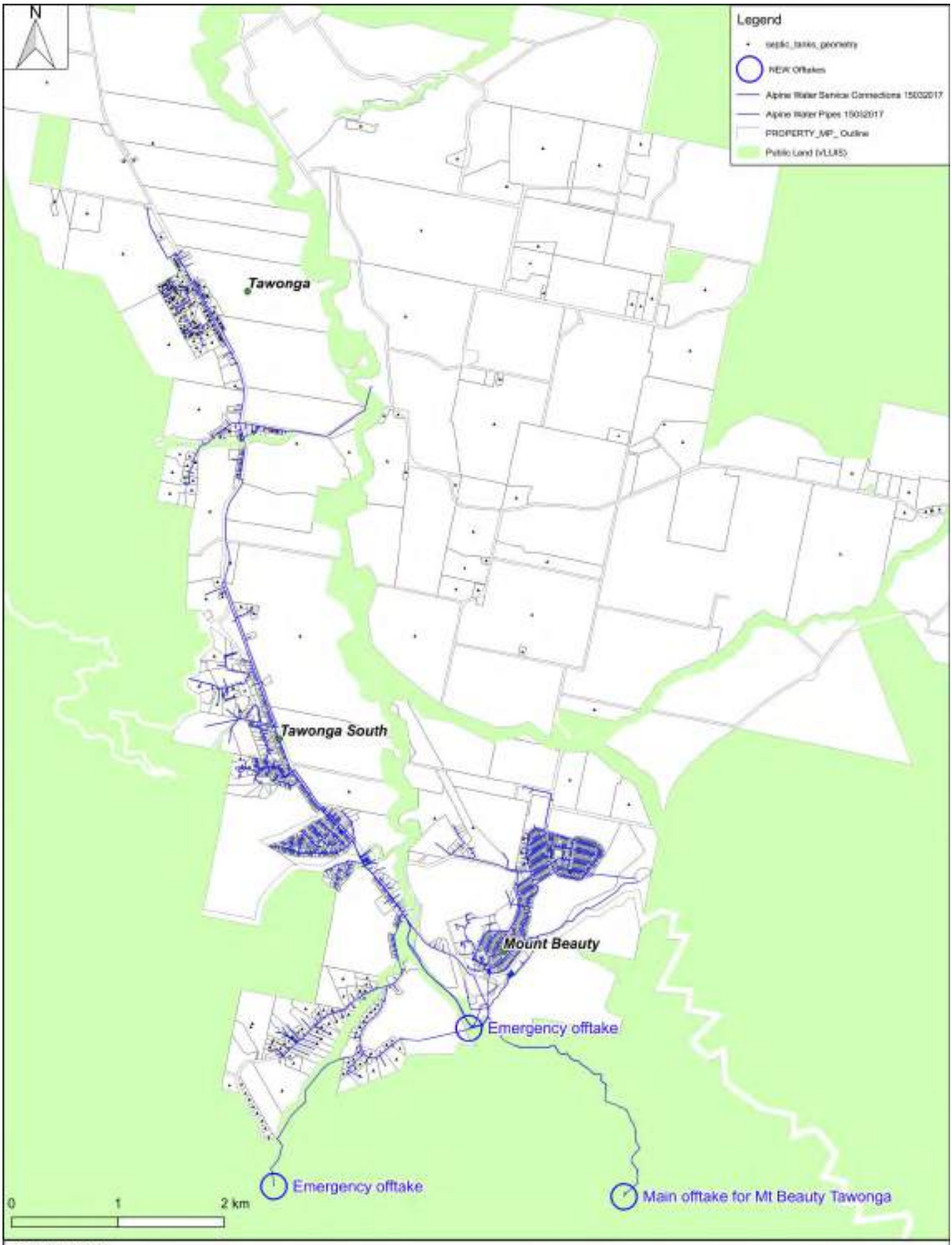
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:41pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of: Alpine Shire and data.vic

Alpine Shire DWMP - Sewerage data
Tawonga, Tawonga South and Mount Beauty

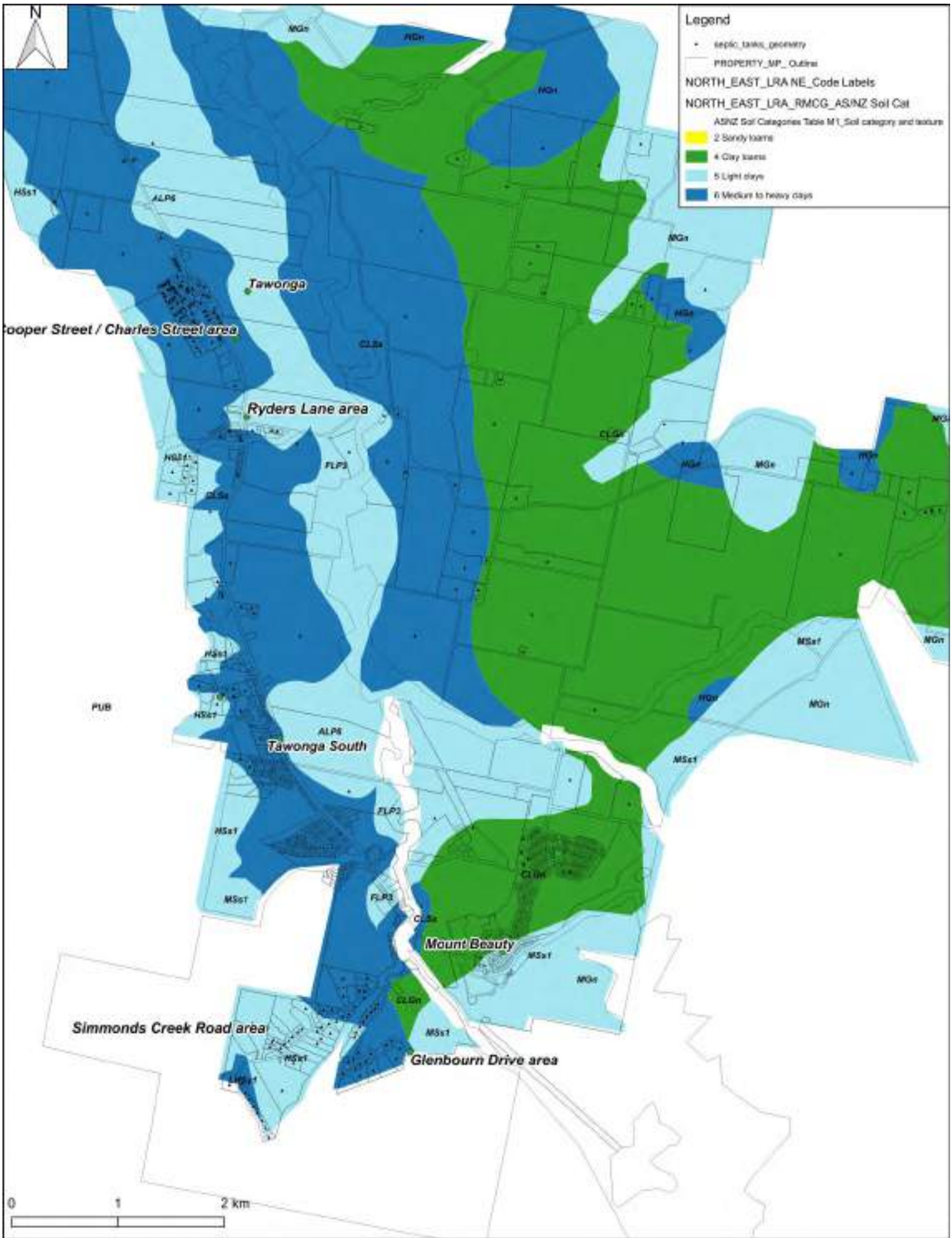
RMCG



Prepared by: RMCG
Friday 16/06/2017, 02:43pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Water supply data
Tawonga, Tawonga South and Mount Beauty

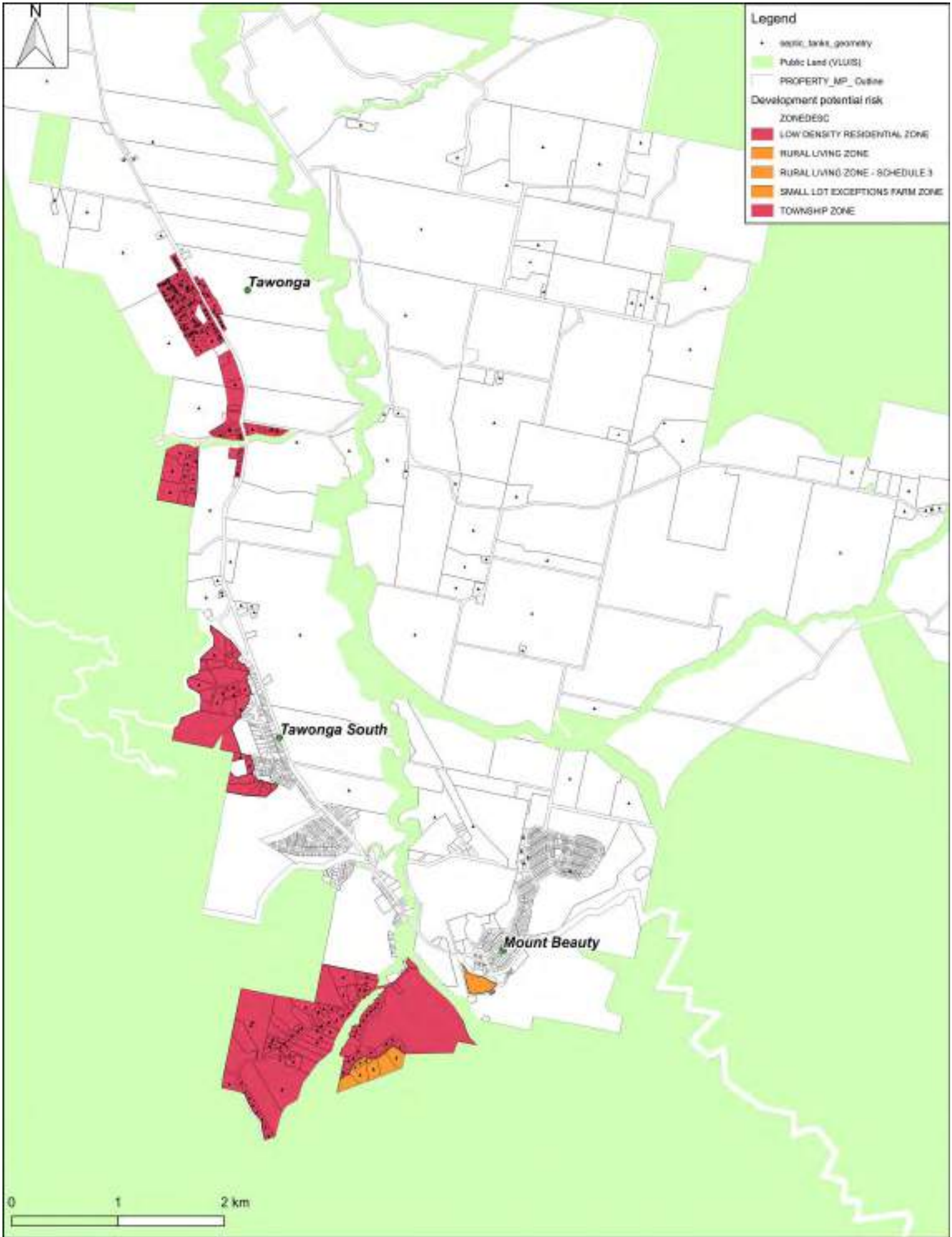
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:54pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Soils data
Tawonga, Tawonga South and Mount Beauty

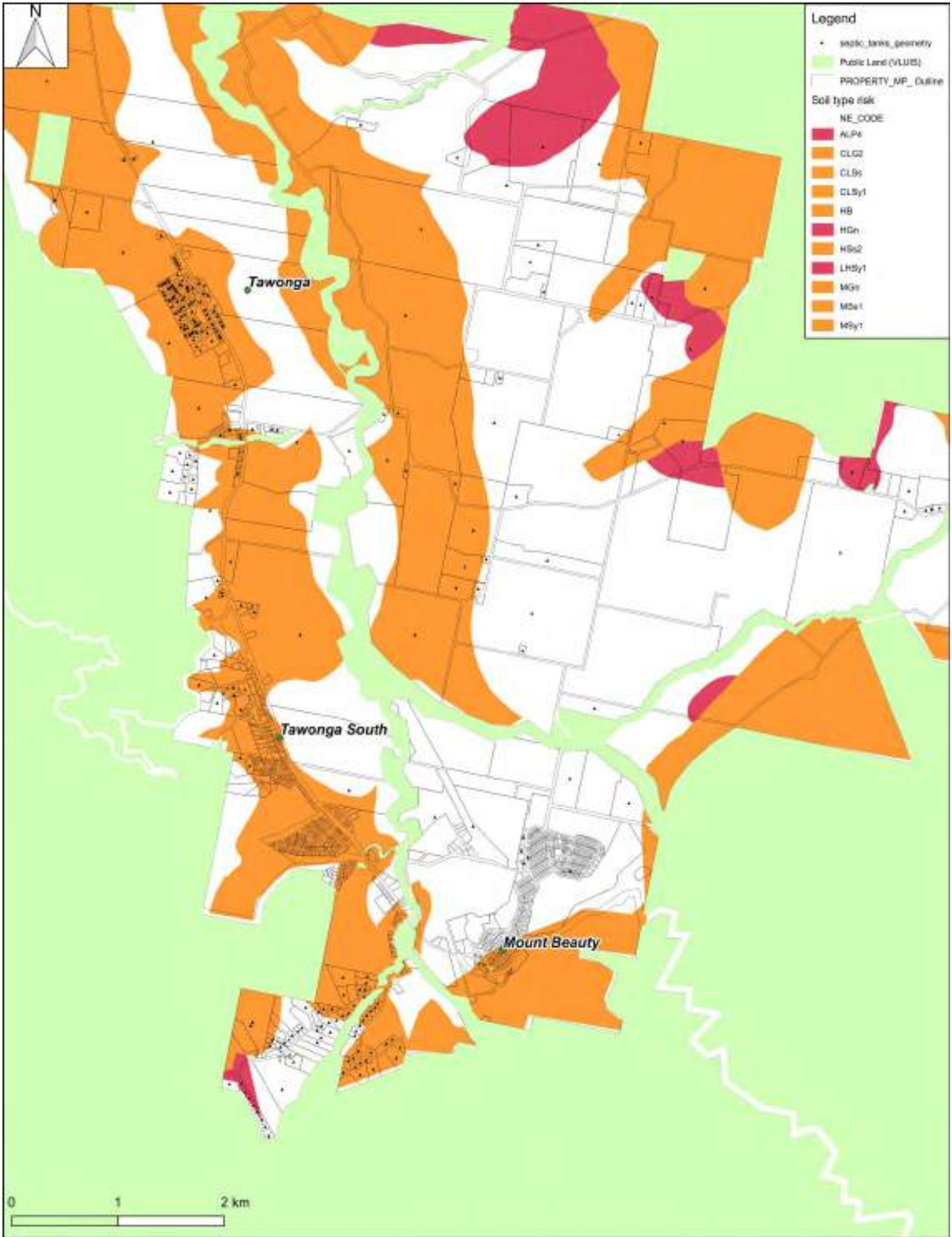
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:46pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Development risk
Tawonga, Tawonga South and Mount Beauty

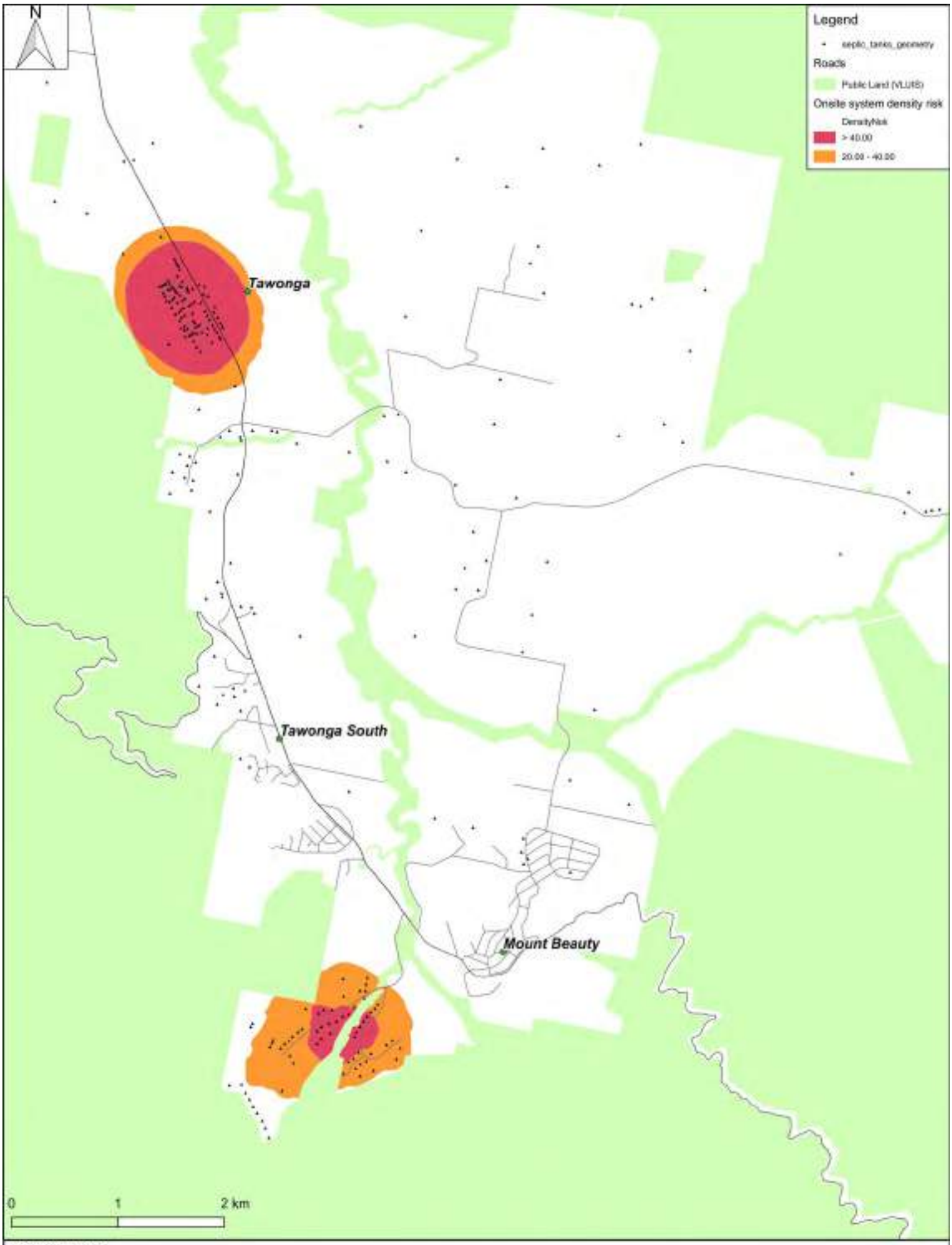
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:35pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Soil type risk
Tawonga, Tawonga South and Mount Beauty

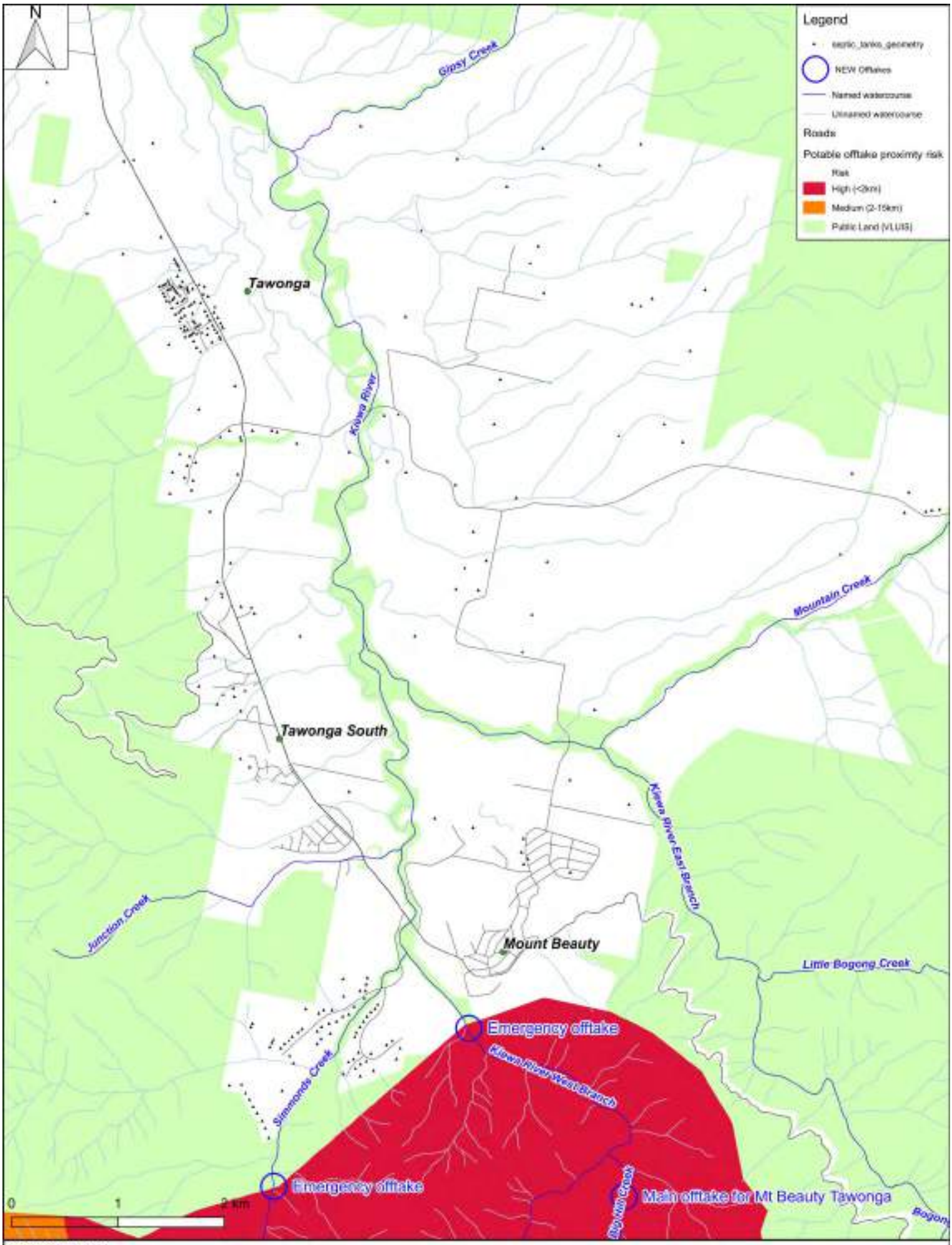
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:21pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Density of onsite systems risk
Tawonga, Tawonga South and Mount Beauty

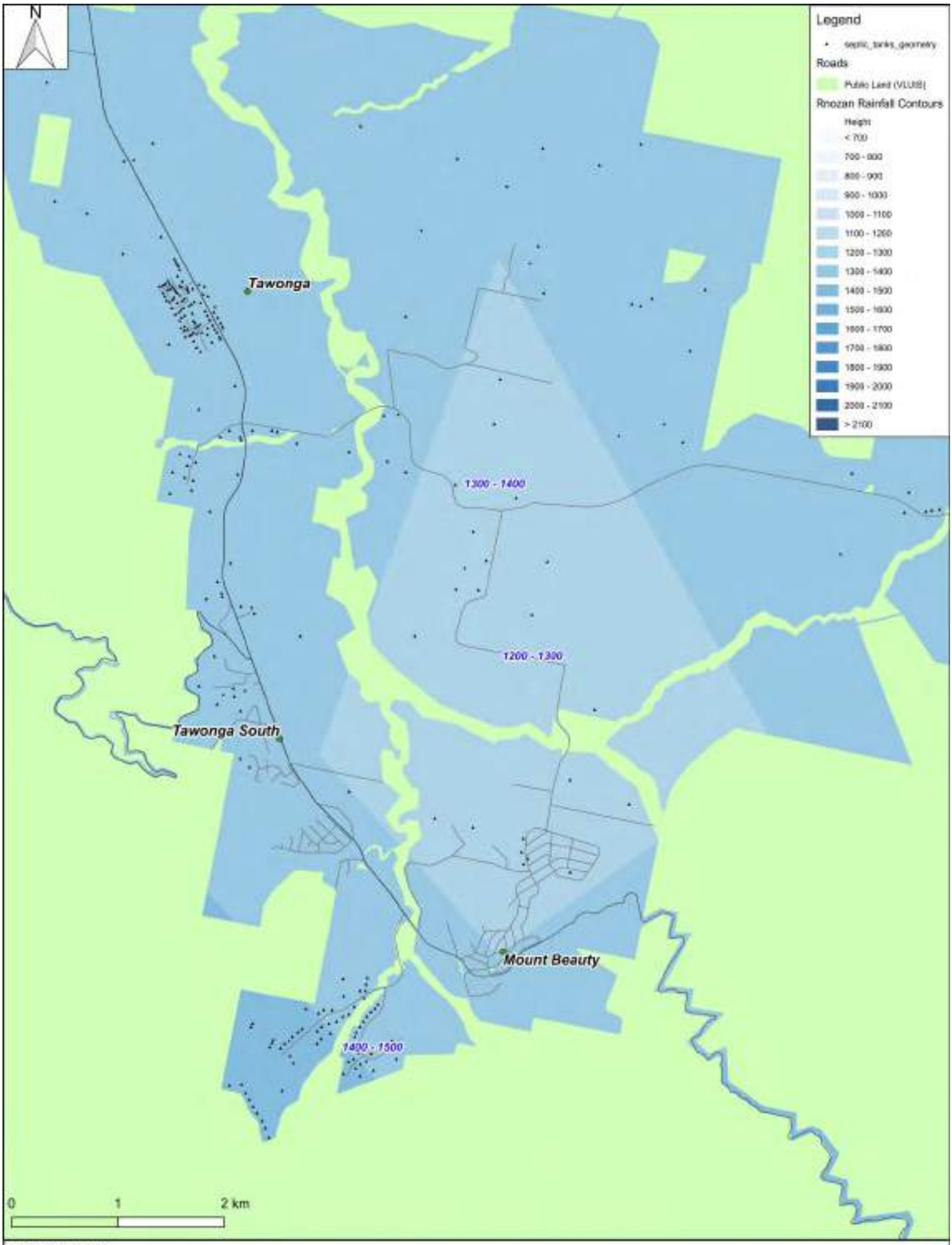
RMCG



Prepared by: RMCG
Friday 16/06/2017, 01:13pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Potable offtakes risk
Tawonga, Tawonga South and Mount Beauty

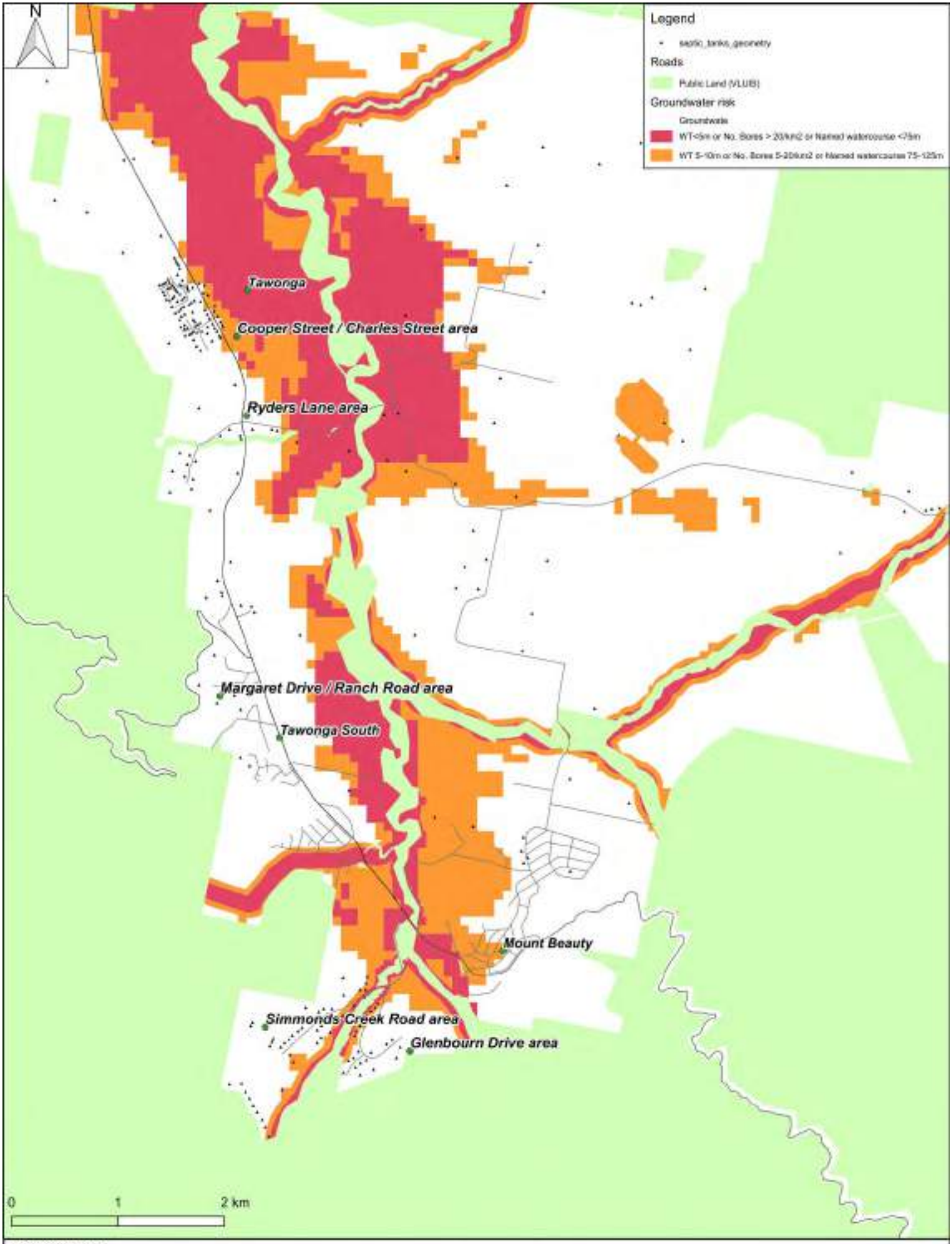
RMCG



Prepared by: RMCG
Friday 16/06/2017, 12:51pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Rainfall risk
Tawonga, Tawonga South and Mount Beauty

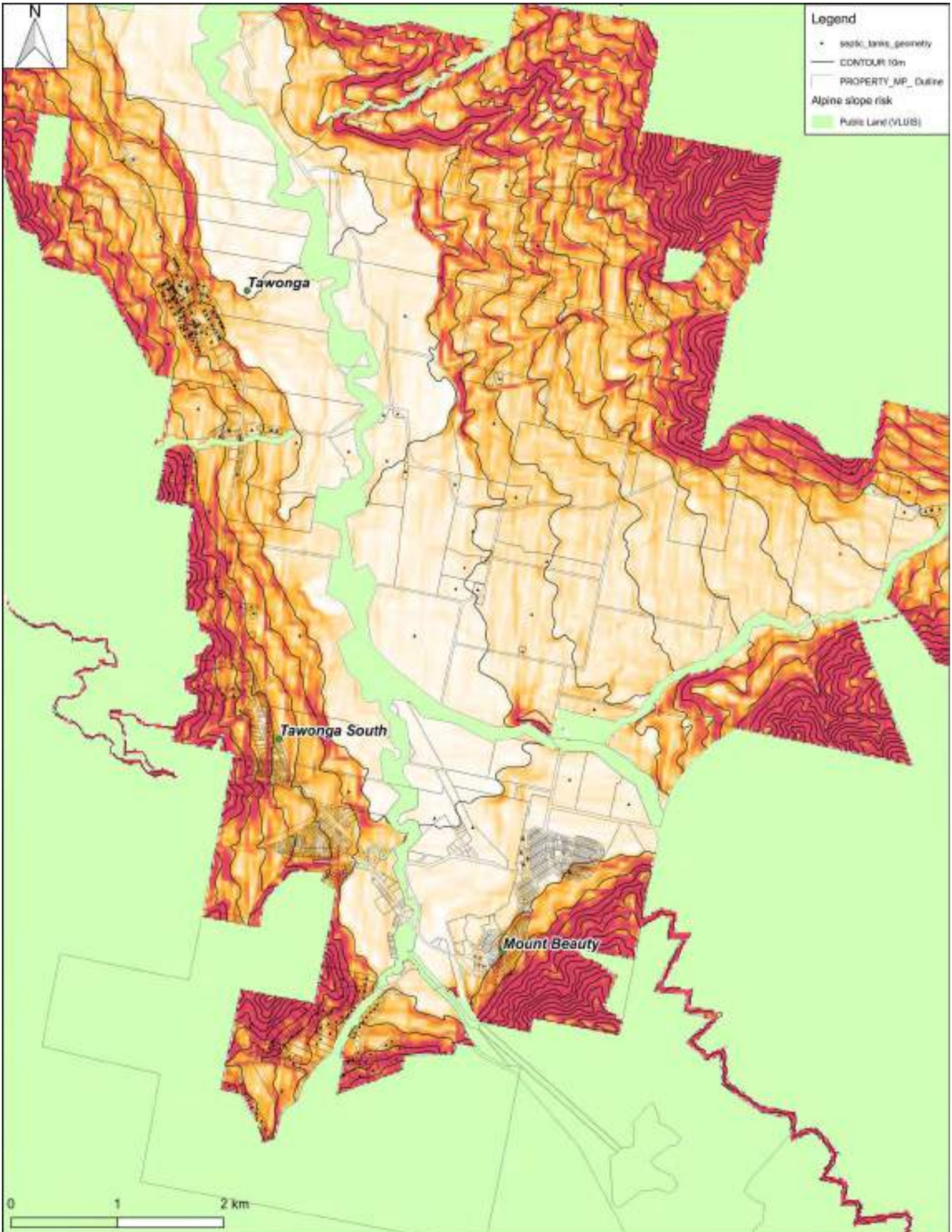
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:22pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Groundwater risk
Tawonga, Tawonga South and Mount Beauty

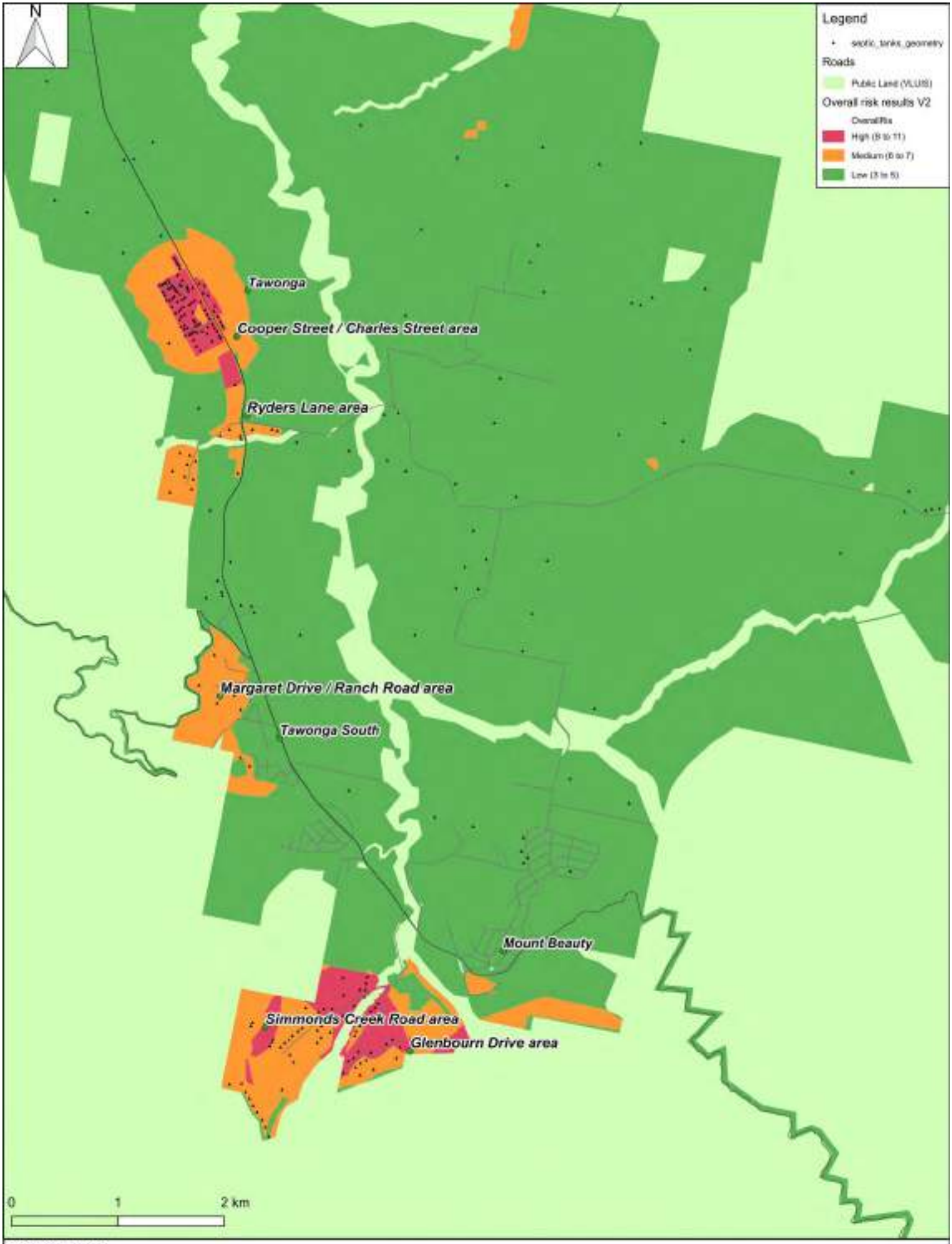
RMCG



Prepared by: RMCG
Friday 16/06/2017, 11:21am
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of:
Alpine Shire and data.vic

Alpine Shire DWMP - Slope risk
Tawonga, Tawonga South and Mount Beauty

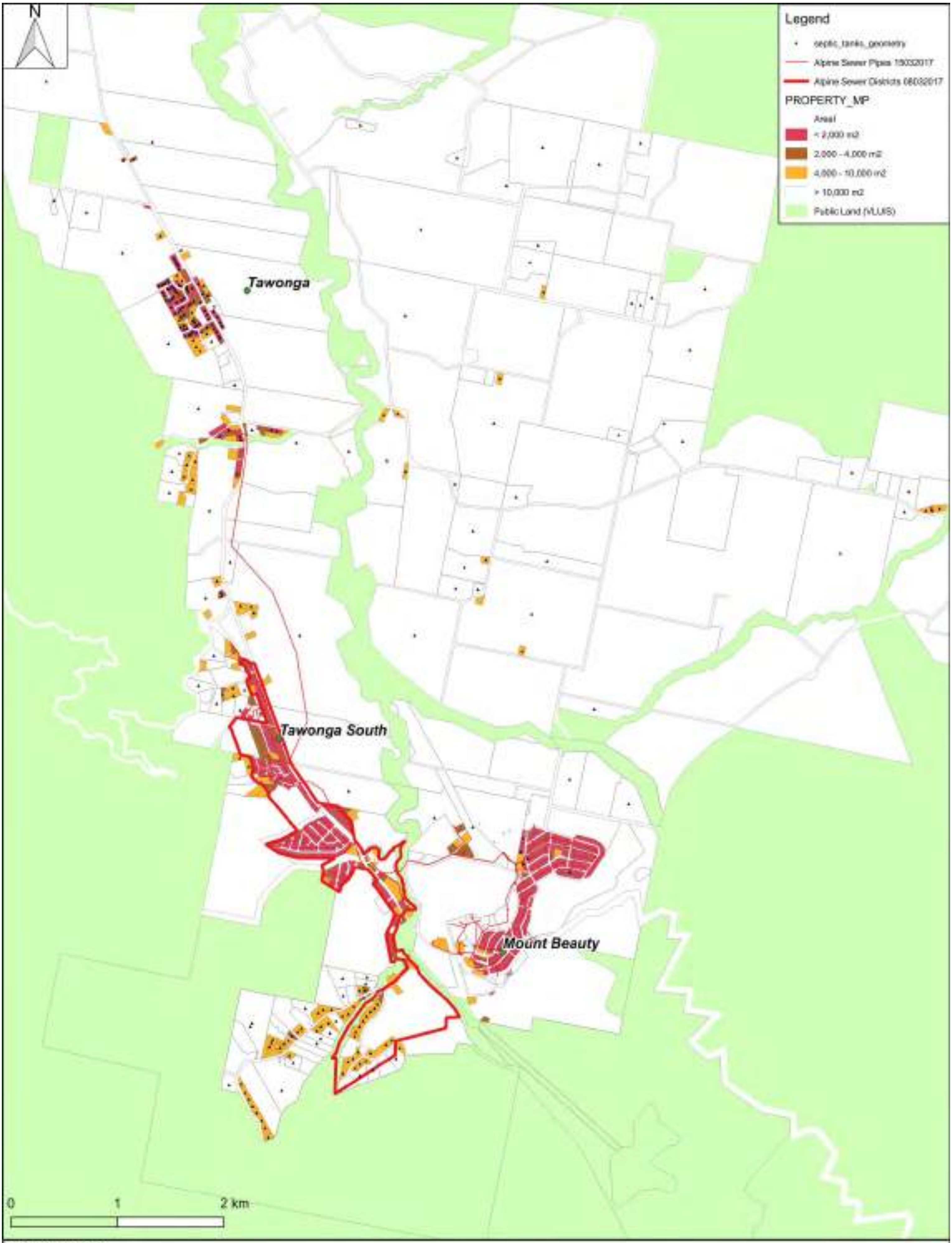
RMCG



Prepared by: RMCG
Friday 20/10/2017, 01:30pm
Job number: 29-A-02
Projection: MGA94 Zone 55

Alpine Shire DWMP - Overall Risk
Tawonga, Tawonga South and Mount Beauty

RMCG



Prepared by: RMCG
Thursday 15/06/2017, 10:55pm
Job number: 29-A-02
Projection: MGA94 Zone 55
© Imagery remains property of: Alpine Shire and data.vic

Alpine Shire DWMP - Small Lot Development Potential
Tawonga, Tawonga South and Mount Beauty

RMCG

4 Conclusions and specific observations

This report sets out the results of a spatial risk assessment of the Alpine Shire. There are three existing sewerage systems (Myrtleford, Bright-Porepunkah and Tawonga South-Mount Beauty). Outside the sewered areas, there are approximately 1500 onsite systems for domestic wastewater management in the Shire.

The spatial accuracy of the *septic_tanks_geometry.shp* GIS layer was found to be quite good for the purposes of the spatial risk assessment.

The key risk for the Shire as a whole is high rainfall. The supporting DWMP report on design considerations includes recommendations for management of onsite wastewater in high rainfall areas. These include minimising wastewater volume produced and enlarging land application areas to compensate for reduced evapotranspiration.

While most the Shire is within Special Water Supply Catchment areas, actual offtake points for potable water supply are generally high in the catchments, upstream of the towns and associated with public land, or are a long way downstream of the Alpine Shire boundaries (e.g. on the Ovens at Wangaratta). The main exception to this is the offtake for Bright – there are several existing onsite systems in and around Freeburgh that are within 2 km of this offtake, and Harrietville is 15 km upstream.

The key locations with existing onsite systems at high density are Wandiligong, Tawonga and Harrietville. There are also small areas east of Myrtleford and at the southern edge of Tawonga South. These areas are generally associated with development potential risk as well.

Based on existing bore locations, groundwater use is common along the Ovens Valley. Density of bores means this risk is generally moderate, but because the groundwater is of high quality (<500 mg/L TDS) and the water table is shallow along most valley floors, there are significant areas of high groundwater risk.

Risk associated with soil capability and slope are generally spatially aligned. Most the non-public land is rated at moderate risk for both aspects. Risk is low at the base of the narrow river valleys where there are moderately well drained alluvial soils. There are some high-risk areas at higher elevations and further distance from the rivers, where dwelling development is not likely to occur.

In order to mine gold, dredging occurred on soils in the Ovens valleys. This resulted in the upper soil layers being washed away, leaving gravels. As a result, these areas are now Category 1, highly permeable soil. Given their proximity to waterways and the interconnected shallow groundwater the risk associated with onsite wastewater management is High. Development of these areas needs careful planning and design. Although the extent of the old workings is not accurately mapped, development on these soils should be subject to a full land capability assessment.

Audits of a sample of onsite systems is recommended to confirm whether the existing systems are performing well or not. The following higher-risk towns are recommended for the audit program:

- Wandiligong, Freeburgh and Harrietville
- Tawonga (Cooper Street / Charles Street area) and Tawonga South (Simmonds Creek Road / Glenbourn Drive area)

Other town-specific actions for consideration include:

- Given the existing density of development and small lot sizes in central Wandiligong, Harrietville and Tawonga (Cooper / Charles Streets), it is recommended that further assessment is undertaken in relation to water quality impacts to streams and connected shallow water table.
- Future development in the areas mapped as medium and high risk in Harrietville, Wandiligong and Freeburgh should be subject to detailed land capability assessment prior to proceeding. Use of secondary treatment (potentially with disinfection and nutrient removal) is preferred to minimise risk to downstream water quality. For smaller lots (<0.4 ha) consideration needs to be given to minimising wastewater volumes (e.g. use of dry composting toilets) to reduce required land application areas.
- Detailed land capability assessments are also required for the areas mapped as Category 6 soils, including soil permeability testing. Where heavy clay subsoils are identified the preferred method for wastewater reuse/disposal is subsurface irrigation.
- Consideration should be given to new development in the Glenbourn Drive area south-west of Mount Beauty, being connected to sewer. This area is mapped as being within the sewer district. If sewerage is planned for this area, it would be appropriate to focus future development here.
- Tawonga (Cooper Street / Charles Street area) has a very high density of onsite systems. An audit of these systems should be carried out to assess their performance. This should include monitoring of stormwater quality as it is suspected that offsite wastewater discharge may be occurring from some of the smaller lots. If onsite systems in this area prove through audit or environmental monitoring to be causing significant health or environmental risk, a centralised wastewater management approach may be required. This could range from retention of onsite systems with downstream stormwater treatment, to more traditional sewerage.

Appendix 1: Soil types and ratings

NE_CODE	Unit Description	ASC_DESC	Mansfield Risk [3]	Topsoil Texture [4]	Subsoil Texture [3]	Internal Drainage [3]	Soil Category [5]
ALF1	Alluvial fan – type 1	Red Sodosol	Medium	Fine sandy loam	Light medium clay	Moderately well	5b
ALF2	Alluvial fan – type 2	Grey Sodosol	High	Fine sandy loam	Light medium clay	N/A	6c
ALP1	Alluvial plain – type 1	Red Chromosol	High	Sandy loam	Medium heavy clay	Imperfectly	6b
ALP2	Alluvial plain – type 2	Brown Sodosol	High	Fine sandy clay loam	Medium heavy clay	Poorly	6b
ALP3	Alluvial plain – type 3	Brown Dermosol	Low	Fine sandy clay loam	Sandy clay loam	Moderately well	4b
ALP4	Alluvial plain – type 4	Grey Chromosol	High	Silty loam	Medium heavy clay	Very poor	6b
ALP6	Alluvial plain – type 6	Black Dermosol	Low	Loam, fine sandy	Light clay	Well	5b
CLG2	Colluvium derived from granite – Type 2	Yellow Chromosol	Medium	Sandy loam	Medium clay	Imperfectly	5c
CLGn	Colluvium derived from metamorphic gneiss	Red Dermosol	Low	Coarse loamy sand	Clay loam	Moderate	4b
CLSs	Colluvium derived from schist	Red Dermosol	Medium	Sandy clay loam	Sandy clay loam	Well	6a
CLSy1	Colluvial footslopes and valleys derived from Ordovician sediments – Type 1	Brown Kandosol	Medium	Loam	Clay loam	N/A	5a
CLV	Colluvial footslopes derived from Devonian rhyolite and rhyodacite	Red Kurosol	Low	Coarse sandy loam	Coarse sandy clay loam	N/A	4b
FLP2	Flood plain – type 2	Red Dermosol	Low	Fine sandy clay loam	Fine sandy clay	N/A	4b
FLP3	Flood plain – type 3	Brown Dermosols	Low	Clay loam	Light medium clay	Imperfect	5b
HB	Hills basaltic	Red Ferrosol	Medium	Silty loam	Medium clay	Well	6a
HG1	Hills on Devonian granite – Type 1	Red Chromosol	Medium	KSL	Sandy clay loam	Rapidly	5c
HGn	Hills on gneiss	Brown Kurosol	High	Fine sandy loam	Light medium clay	Imperfect - poorly	6b
HSs1	Hills on metamorphic schist – Type 1	Red Dermosol	Low	Fine sandy loam	Light clay	Well	5b
HSs2	Hills on metamorphic schist – Type 2	Brown Chromosol	Medium	Loam, fine sandy	Medium clay	Imperfect	6a
HSy3	Hills on Ordovician sediments – Type 1	Red Dermosol	Low	Loam	Light clay	Well drained	5b

[3] Linked to ASC_DESC which is the Australian Soil Classification. Both major and minor soil components considered.
[4] For the major soil component.
[5] Based on AS/NZS 1547 and soil texture. Both major and minor soil components have been considered. With the rating based on the "worst" of these – i.e. a conservative approach.

NE_CODE	Unit Description	ASC_DESC	Mansfield Risk [3]	Topsoil Texture [4]	Subsoil Texture [3]	Internal Drainage [3]	Soil Category [5]
LHG2	Low hills on granite – Type 2	Red Chromosol	Low	Coarse sandy loam	Light medium clay	Moderate	5a
LHSy1	Low hills on Ordovician sediments – Type 1	Red Kandosol	High	Clay loam	Light clay	Moderate	6c
LHSy2	Low hills on Ordovician sediments – Type 2	Red Chromosol	High	Loam	Light medium clay	Moderately well	6c
LHSy3	Low hills on Ordovician sediments – Type 3	Yellow Chromosol	High	Loam	Medium clay	Imperfectly	6b
LHSy4	Low hills on Ordovician sediments – Type 4	Brown Sodosol	High	Sandy loam	Light medium clay	N/A	6b
MG	Mountains on granite	Brown Dermosol	Low	Loam, fine sandy	Sandy clay	Well drained	5a
MGn	Mountains on gneiss	Red Kurosol	Medium	Clay loam	Light clay	Moderately	5b
MSs1	Mountains on Ordovician schist – Type 1	Yellow Kurosol	Medium	Loamy sand	Sandy clay loam	Rapid	5b
MSy1	Mountains on sedimentary rock – Type 1	Red Dermosol	Medium	Sandy clay loam	Fine sandy clay	Moderately-well	5c
MV2	Mountains on rhyolite and rhyodacite – Type 2	Red Dermosol	Medium	Clay loam	Medium clay	Moderately well	5c
PHB	Plateaux on basalt hills	Red Chromosol	Low	Loam	Medium clay	Well	5a
PHSy	Plateaux on sedimentary hills	Red Dermosol	Low	Loam	Light clay	Well drained	5b
PMB	Plateaux associated with mountains (<1220m, tertiary basalt)	Red Ferrosol	Low	Silty loam	Medium clay	Moderately well	5b
PMSy	Plateaux associated with Carboniferous mountains						
PMV	Plateaux on Devonian rhyolite and rhyodacite mountains	Red Dermosol	Low	Silty loam	Clay loam	Moderately well	4b

This report has been prepared by:

RM Consulting Group Pty Ltd trading as RMCG

135 Mollison Street, Bendigo, Victoria 3550

(03) 5441 4821 — rmcg.com.au — ABN 73 613 135 247

Offices in Bendigo, Melbourne, Torquay and Penguin (Tasmania)

Key Project Contact

Duncan Wallis

0429 145 169 - duncanw@rmcg.com.au

Document review and authorisation

Job Number: 29-A-02

Doc Version	Final/Draft	Date	Author	Reviewed by	Quality checked	Release approved by	Issued to
2.0	Draft	30 May 2017	D Wallis	A Kelliher	--	--	C Cowdery
3.0	Revised draft	19 June 2017	D Wallis	A Kelliher	--	--	C Cowdery
4.0	Revised draft	5 July 2017	D Wallis	A Kelliher	P. Mawson	A Kelliher	C Cowdery
5.0	Final	20 October 2017	D Wallis	A Kelliher	P Mawson	A Kelliher	C Cowdery