

Tarrington Structure Plan

Wastewater
Management
Guidelines

February 2014



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1.0 INTRODUCTION

The function of this document is to provide guidelines to facilitate the development and preparation of the Tarrington Structure Plan for the Southern Grampians Shire; it is not intended to be a stand-alone document for the detailed assessment and implementation of waste water infrastructure for the Tarrington Township.

Whilst the majority of the older original residences and businesses still have septic tanks with 'split systems' (a system where blackwater and greywater are treated separately) there are a number of developed lots that have individual 'stand-alone' sewerage treatment systems.

This document offers guidelines for potentially managing domestic wastewater within the future growth areas of the Tarrington Township; whilst providing options on probable existing waste water treatment improvements. This study provides guidelines for future development and expansion of the town and existing infrastructure improvements with the objective to provide a suitable level of environmental protection and public health for the township into the future.

These guidelines identify opportunities and constraints for a range of alternative infrastructure systems that incorporate natural processes and offer beneficial wastewater reuse.

To formulate these guidelines for the Tarrington Structure Plan the following methodology was implemented:

1. A detailed document assessment including:
 - Federal legislation and policy
 - State legislation and policy
 - Regional and local plans and strategies
 - Australian Standards and Codes of Practice
2. Stakeholder and community engagement to enable the identification of relevant opportunities and constraints:
 - Tarrington Structure Plan Project Steering Committee;
 - Wannon Water;
 - Environmental Protection Authority;
 - Glenelg Hopkins Catchment Management Authority; and
 - Southern Grampians Shire Council
3. A desk-top assessment of historical Land Capability Assessments (LCA) to understand the capacity of the sub-soil profile and the receiving environment to accept wastewater

2.0 TOPOGRAPHY

Tarrington Township is located approximately nine (9) kilometres from Hamilton, and has primarily developed in a linear form traversing the Hamilton Highway.

We acknowledge that Structure Plan study area does not have a specific boundary for investigation; however these wastewater management guidelines are generic in nature and would be representative of the township of Tarrington and the immediate extents beyond the current existing township zoned land.

Tarrington's urban form is bound to the north by the rear of residential properties along Walkenhorst Road facing north and to the south by the rear of properties along the Hamilton highway facing south. Primarily the town is intersected by Picnic Road and the Tarrington-Strathkellar Road to the east; which traverses north-south adjacent to the Tarrington Recreation Reserve and Thompsons Road to the west.

The Tarrington town centre (approximately at the water tower location) has a ridge at approximately RL245 metres Australian Height Datum (AHD), with fall to both the east and the west. The approximate level at Picnic Road to the east is RL240 metres, with the approximate level at Thompsons Road to the west at RL230 metres AHD.

The predominately flat nature of the land in the town centre provides insufficient grade and subsequent capacity of the road-side table drains to suitably convey stormwater (and grey water) runoff from the area.

3.0 SUB-SURFACE SOILS

In assessing the ability of land to treat and adequately dispose of wastewater the underlying sub-surface profile of the soils is fundamental.

A selection of Land Capability Assessments (LCA) for wastewater disposal applications, have been made available by Southern Grampians Shire for the purpose of completing a desk-top assessment of the sub-surface soil profile in the Tarrington Township. The reports provided include:

- Picnic Road - 2006
- Hamilton Highway – 2008, 2011 & 2013
- Walkenhorst Road – 2008, 2012 & 2013

Tarrington is located in a geological region of newer volcanics with the sub-surface soil profile generally comprising of extensive basaltic elements consistent with lava flows. The soil profiles indicated in the LCA's provided are consistent with the geological region and generally consist of:

- Fine silty topsoil overlying - Category 3 – AS 1547:2012
- Fine silty clays overlying - Category 4 – AS 1547:2012
- Stiff silty clays - Category 5 – AS 1547:2012

No basaltic rock was encountered in any of the LCA's provided.

The soil percolation rate from the LCA's provided for the individual sites ranged from 30mm/hour to 37mm/hour.

4.0 LAND CAPABILITY ASSESSMENTS (LCA)

It is imperative that a comprehensive LCA is completed in the infant phase of any land development Planning process including rezoning or subdivision. The submission of Land Capability Assessments (LCA's) at the Planning Application stage for all residential subdivisions should be mandatory. Land Capability Assessments (LCA's) shall also be provided for all septic tank applications including implementing new or altering existing wastewater managements systems.

The data collected gathered through the implementation of an LCA is important in determining the opportunities and constraints of development areas in managing wastewater onsite. The evidence and facts of the LCA will provide key information regarding the potential lot size required to ensure sustainable onsite wastewater management.

In accordance with the Code of Practice for On-site Wastewater Management the objectives of the land capability assessment process are to:

- assess the capability of the site to sustainably utilise and manage wastewater within the allotment boundaries
- assess the capability of catchments to sustainably utilise and manage wastewater within sub-catchments or specific regions

- determine high risk and sensitive areas within allotments and within catchments
- gather the relevant geographical and social information to adequately inform the process of designing the best practicable and most sustainable type of onsite wastewater treatment and effluent recycling/disposal system that should protect the health of the householders and the community and protect the local environment from pollution
- formulate a sustainable management plan (in accordance with this Code and the conditions in the treatment system CA and the Council Permit) that:
 - a) must be carried out by the property owner to ensure that impacts on the environment or public health do not occur or are minimised and
 - b) will ensure the beneficial reuse of the treated water, organic matter and nutrients (where applicable).

As outlined in the Code of Practice for On-site Wastewater Management all LCA's should be conducted and signed-off by suitably qualified, experienced and independent soil scientists and/or hydro-geologist (with suitable professional indemnity insurance) who can analyse the capacity of the land to sustainably absorb treated wastewater onsite without negatively impacting householder and public health and local environmental health e.g. land, vegetation, surface waters and groundwater.

The Council officer's role is to assess land capability assessment reports and applications for Planning and Septic Tank Permits, not do the LCAs or design the land application areas. Residential developments and new buildings in unsewered regions such as Tarrington should only proceed on land the local Council has determined, after review of the LCA report and from consideration of local knowledge, has an acceptable capability for sustainable onsite wastewater management.

It should be noted that the soil percolation (falling-head) test method is no longer allowed as it is not based on valid scientific evidence and it tends to produce data that results in the land application area being undersized.

5.0 EXISTING WASTEWATER MANAGEMENT

In accordance with the Code of Practice for On-site Wastewater Management the Tarrington Township is currently considered to be 'unsewered' i.e. there is no communal wastewater collection or treatment system.

There has been a variety of individual systems implemented within the township ranging from conventional septic and effluent trench disposal trench systems to complex privately owned mini treatment plants.

The vast majority of wastewater management systems are split systems with septic tanks where effluent (black-water) from the tank is disposed on-site by land application means and the discharge of grey water is off-site.

The discharge of grey-water from sites for new wastewater management systems is in contravention of the State Environment Protection Policy, Waters of Victoria (Clause 32) and the Victorian Planning Provisions.

The problems associated with the off-site discharge of grey water from existing individual wastewater management systems is further extenuated in the Tarrington township by swale and table drains not effectively draining after rainfall events.

There are a number of properties that have packaged secondary treatment systems.

The community consultation, stakeholder feedback and a visual inspection of the township area revealed a number of key findings:

- The topography of the area is generally suitable for septic systems, although soil type is not conducive due to high percolation rates
- There is a large number of old split septic tank systems
- The majority of properties with split systems are discharging grey water off-site
- Properties with secondary treatment systems are generally operating effectively
- Absorption trenches located across old subdivision title boundaries
- Grey water discharge is causing unsuitable conditions in open and road-side table drains
- The addition of new houses in the township would add to the hydraulic load on the soil and the potential for contamination of nearby water bodies.

6.0 AUTHORITY REGULATIONS & LEGISLATION

There is an extensive list of policy, legislation, Australian Standards and Codes of Practice that are relevant to the planning, construction, implementation and monitoring of on-site wastewater management systems.

In addition to the implementation and operation of approved systems these documents provide specific detail in reference to the environmental and public health matters associated with on-site waste water management. The following provides a summary for Council of the key elements associated with each of these documents:

Public Health & Wellbeing Act 2008

The function of this Act is to primarily promote and protect public health and wellbeing in Victoria.

The objective of this Act is to achieve as far as practicable the highest attainable standard of public health and wellbeing. The Act introduced in 2010 actively seeks to protect public health and preventing disease, illness, injury, disability or premature death; promoting conditions in which persons can be healthy; and reducing inequalities in the state of public health and wellbeing.

The function of a Council under this Act is to seek to protect, improve and promote public health and wellbeing within the municipal through a number of initiatives outlined in Part 3, Division 3.

Environment Protection Act 1970

The responsibility for approving the installation and/or alteration of wastewater disposal systems that generate 5,000 litres of wastewater or less a day (via permits) is the direct responsibility of Council. Council's Environmental Health Officers are permitted to enter property to investigate septic systems and subsequently serve notices requiring the repair of failing or defective systems. The property owner is responsible for undertaking corrective action.

Wastewater systems that are capable of treating over 5,000 litres of wastewater per day are required to be licensed by the Environment Protection Authority under this legislation.

Property owners are required to operate and maintain the systems in accordance with the permits and EPA licence requirements. In particular Section 39 outlines the specific requirements regarding the pollution of any waterways

Local Government Act 1989

Councils in accordance with this legislation are able to set local laws and potentially special charges schemes for Council pursuits that are generally consistent with state policy and legislation.

Water Act 1987

This legislation primarily controls the water industry and outlines the responsibilities of water and sewage authorities. The key element of the Act for Council in reference to existing amenity and future growth are that the relevant authorities are able to inspect and demand property owners to maintain their septic tank systems in a reasonable operating condition. Failure to comply with any instruction would provide justification for the authority to complete any required the works and recover the associated costs from the property owner (if suitable by-laws have been created).

Department of Planning and Community Development

Practice Note 37 - Rural Residential Development (Updated May 2012)

This Practice Note provides guidelines for Council when planning for or assessing proposals for rural residential use and/or development.

Council's Planning Scheme

Council's Planning Scheme provides the mechanism, guidelines and processes for the rezoning and/or subdivision of land. The Scheme requires that a land capability assessment is required to ensure the subject land/site is capable of satisfying all relevant Codes, Australian Standards and guidelines for the effective and efficient on-site disposal and management of wastewater.

Code of Practice - Small Wastewater Treatment Plants 1997

This Code of Practice offers design, implementation and management guidelines for treatment plants that serve less than 500 people. The Code outlines specific objectives around; meeting statutory requirements, maintenance and emergency procedures, environmental matters, reuse/recycling etc.

State Environment Protection Policies (SEPP) Waters of Victoria Policy 2003

The protection of waterways is the objective of this document. Clause 32 of this document provides Council with the guidelines for effectively assessing and managing onsite wastewater disposal. The key elements of the policy reference; suitability of the land including absorption capacity, ensuring compliance with EPA guidelines and other relevant Codes of Practice, the discharge of grey water off-site.

Code of Practice Onsite Wastewater Management – February 2013

This Code 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.

The Code offers standards and guidance to ensure the management of onsite wastewater (up to 5,000 litres/day) protects public health and the environment, and uses our resources efficiently.

This Code applies to wastewater (containing sewage) generated by a single domestic household or by multi-dwelling residential, commercial, industrial or institutional facilities. It provides guidance on:

1. the selection, approval, management and maintenance of onsite wastewater management systems which treat up to 5,000 litres (L) of wastewater per day
2. systems which treat up to 5,000 L/day of grey water to a quality fit for toilet flushing and cold water supply to clothes washing machines and/or land application
3. land capability assessment procedures and wastewater flow calculations for designing effluent recycling and disposal systems

Australian Standards

There are a number of related Australian Standards for onsite wastewater management systems; any discrepancy between an Australian Standards and codes of practice requires that the code of practice requirements take precedence. The key related Australian Standards include:

- AS/NZS 1546.1
On-site domestic wastewater treatment units, Septic tanks
- AS/NZS 1546.2
On-site domestic wastewater treatment units, Waterless composting toilets
- S/NZS 1546.3
On-site domestic wastewater treatment units, Aerated wastewater treatment systems
- AS/NZS 1547
On-site domestic wastewater management

7.0 SETBACKS

To minimise the potential of risks associated with onsite wastewater management systems must a 'buffer' or 'setback distance' to the property structures and the surrounding environment should be implemented. Required minimum setback distances from primary and secondary sewerage and grey water systems are listed in the Code of Practice for onsite wastewater management.

The responsible for protecting and managing waterways in accordance with the Water Act 1989 in the Tarrington region is with Southern Rural Water (SRW). The roles and responsibilities of SRW include; applications, licensing, management, compliance and approvals in accordance with policies, environmental sustainability and impacts on Victoria's water resources.

A key consideration of SRW is the potential for migrating wastewater to contaminate groundwater systems. Consequently the provision of sufficient setback distance of a wastewater disposal site in reference to a bore location is of prime importance; the setback distances range from 20 metres to 50 metres depending on the disinfection characteristics, as outlined in the Code of Practice for onsite wastewater management.

8.0 LOT SIZE

Whilst the principles of reducing wastewater production should be applied when considering the options for all onsite wastewater management, it is especially critical for small lots in unsewered areas. With reference to the EPA Code of Practice, lot sizes less than 4,000m² are considered 'small' where principles of efficient design, water reduction and efficient use and disposal practices are required to ensure wastewater is effectively and efficiently managed on site.

Considering the potential inability to effectively manage and minimize future health, social and environmental impacts lots sizes less than 2,000m² are not generally considered in current day planning unless reticulated sewer infrastructure is available.

Whilst the current Code of Practice for Onsite wastewater management is based on maximum peak daily flow (5,000 litres/day), the Septic Tanks Domestic Wastewater Management Code of Practice previously provided minimum lot area as a guiding principle. The specified minimum lot area of 10,000m² whilst not a mandatory requirement provided guidance for risk associated with smaller lot sizes. This guiding principle was primarily predicated on the ability of this lot size to contain and manage waste water without detrimental effects to the natural environment and pollute watercourses and/or other properties.

Whilst it is generally preferred from a wastewater management strategy that lot sizes are greater than 10,000m² to provide landowners with the best opportunity to provide an efficient and effective on-site treatment of wastewater a variety and diverse range of lot sizes is often a key consideration when considering the future growth of a Township.

Consequently consideration of lot sizes between 4,000m² -10,000m² may be assessed and considered acceptable with rigorous substantiation through (as a minimum) and subsequent approval of a comprehensive Land Capability Assessment and waste water management program.

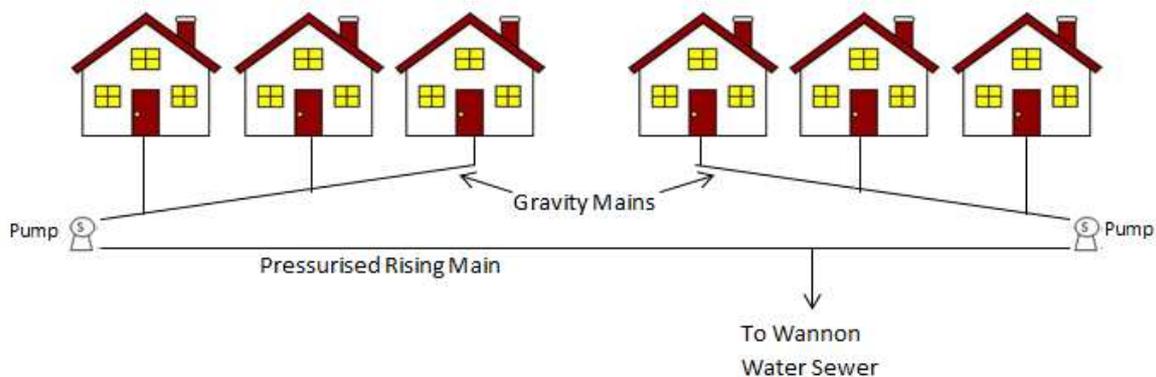
9.0 POTENTIAL OPTIONS

When considering the potential options for wastewater treatment and disposal for potential growth and the amenity of the existing township a number of key elements need to be considered:

- Topography and in particular surface gradients
- Sub soil profile and permeability capacity
- Age of existing wastewater systems
- Construction, implementation and maintenance
- The ability of 'split systems' to provide effective on-site treatment for individual lots
- The quantity and quality of 'off-site' secondary (and potentially tertiary) treatment systems
- Financial cost

Option No.1 - Reticulated Sewer – pumped to existing infrastructure

Conventional infrastructure system incorporating gravity mains, pump stations and rising mains servicing all lots (existing and proposed) and conveying raw sewage to existing Wannan Water infrastructure in Petschels Lane to the west.



Characteristics:

- Septic tank systems are redundant
- A common single service for grey and black water
- Underground gravity pipe network
- Two (2) individual pump stations at the eastern and western boundaries of the Township
- A rising main of approximately 4,500metres

Advantages:

- Replacement of all existing septic tank systems
- No landowner compliance and/or maintenance issues
- No septic tank systems required for new development
- Smaller lot sizes are a viable option
- Meets all relevant guidelines
- An authority (Wannan Water) owned asset

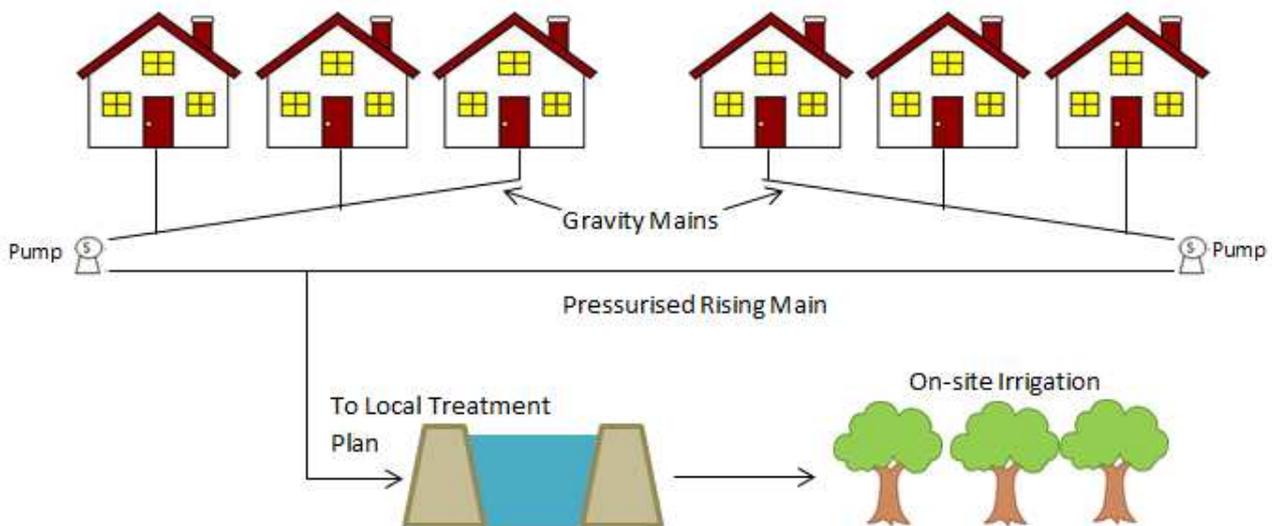
Disadvantages:

- High capital infrastructure costs
- High financial contribution from landholders
- Pump stations require additional infrastructure such as electrical supply, potentially with generator 'back-up' supply
- Not generally suitable for low-density development
- High maintenance requirement and costs associated with pump stations
- Landholders with 'self-sufficient' treatment systems; redundant systems

Preliminary Concept Capital Expenditure Budget Estimate:
\$3.2 - \$3.7 Million

Option No.2 – Reticulated sewer - local treatment

An underground pipe infrastructure system collecting and transporting via gravity both black and grey water discharge to a common treatment and disposal system.



Characteristics:

- Septic tank systems are redundant
- A common single service for grey and black water
- Underground gravity pipe network
- Common treatment plant
- A large area is required for wastewater disposal

Advantages:

- Replacement of all existing septic tank systems
- No landowner compliance and/or maintenance issues
- No septic tank systems required for new development
- Smaller lot sizes are a viable option
- Opportunity for recycled water re-use throughout the Township
- Meets all relevant guidelines
- An authority (Wannon Water) owned asset

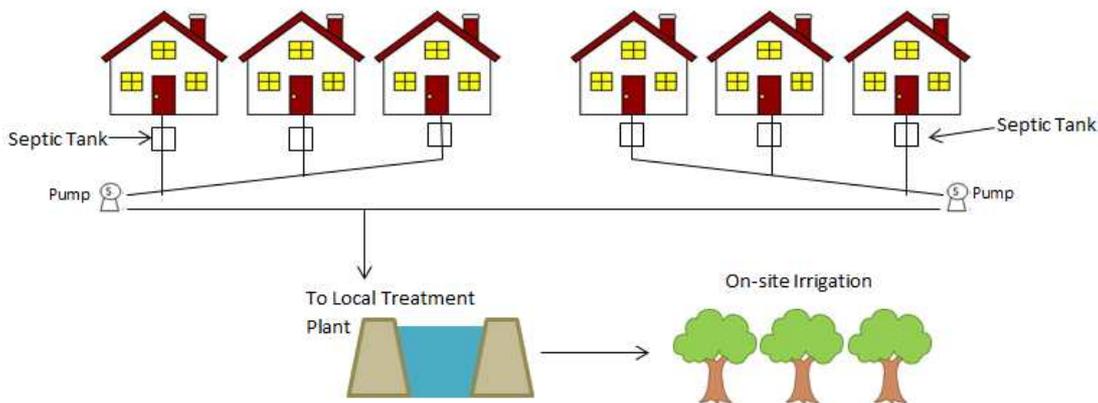
Disadvantages:

- High capital, operational and maintenance costs
- High financial contribution from landholders
- Disposal area requires sufficient soil retention and Evapo-transpiration capacity
- High maintenance requirement
- Landholders with 'self-sufficient' treatment systems; redundant systems
- Requires EPA approval; generally only provided to Water authorities

Preliminary Concept Capital Expenditure Budget Estimate:
\$3.9 - \$4.4 Million

Option No. 3 – Septic Tank Effluent Disposal (STED)

This system is similar to Option No.2 where an underground pipe infrastructure system collects and transports via gravity off-site septic effluent discharge to holding tanks for potential sub-surface disposal, re-use and/or irrigation.



Characteristics:

- Existing septic tank disposal systems remain
- Requires replacement/upgrade of existing septic tank disposal systems
- Underground gravity pipe network for effluent
- A large area is required for effluent disposal

Advantages:

- Removes septic effluent discharge to the stormwater system
- Opportunity for recycled water re-use throughout the Township
- Potential improvement for on-property effluent disposal
- An authority (Wannon Water) owned asset
- Generally requires EPA approval; generally only provided to Water authorities

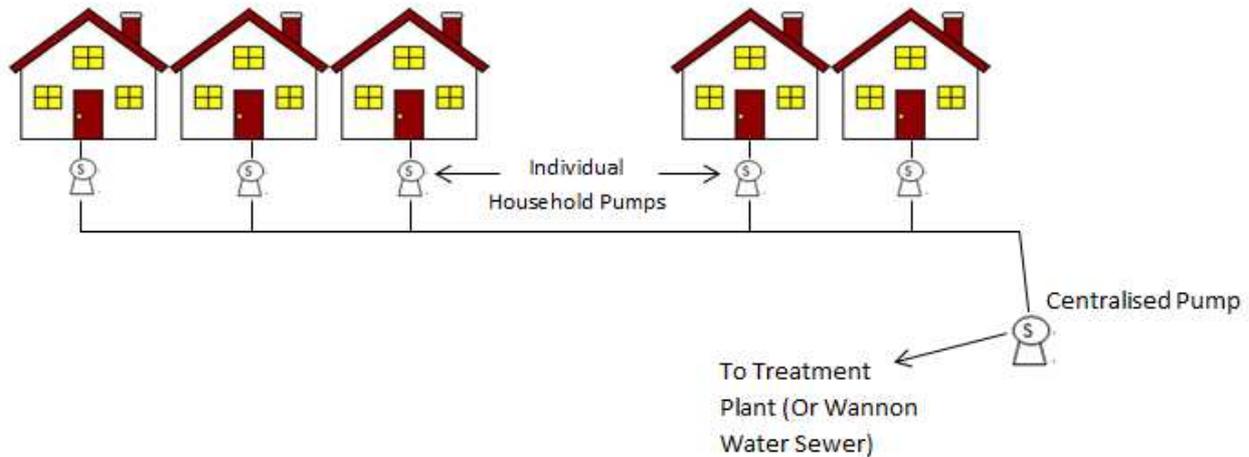
Disadvantages:

- Septic tanks not generally an authority owned asset
- High capital, operational and maintenance costs
- High landholder costs for septic tank disposal system compliance
- Potentially some existing development still unable to achieve compliance for septic tank disposal system
- Potential landholder contributions could be used for improved on-property compliance
- Landholders with 'self-sufficient' treatment systems; redundant systems

Preliminary Concept Capital Expenditure Budget Estimate:
\$3.4 - \$3.9 Million

Option No.4 - Low pressure system

A Wannan Water owned asset of a common rising main and pump station system incorporating individual lot 'grinder pumps' conveying raw sewage to existing Wannan Water infrastructure in Petschels Lane to the west.



Characteristics:

- Septic tank systems are redundant
- A common single service for grey and black water
- Underground rising main pipeline network; approximately 3,500metres
- Individual 'grinder pumps' for each landholder
- A single individual pump station at the western boundary of the Township

Advantages:

- Flexible location for authority owned pump station
- Septic tank systems and greywater disposal are redundant
- Smaller lot sizes are a viable option
- Meets all required guidelines
- An authority (Wannan Water) owned asset
- Reasonably low landholder maintenance
- Flexible for future growth
- Shallow pipe infrastructure

Disadvantages:

- High capital infrastructure costs
- High financial contribution from landholders
- High operational and maintenance costs associated with pump stations
- Landholders with 'self-sufficient' treatment systems; redundant systems

Preliminary Concept Capital Expenditure Budget Estimate Range:
\$1.8 - \$2.4 Million & \$10,000 - \$12,000 per landowner

Note: A 'blend' of the options 1-4 as outlined above is also probable.

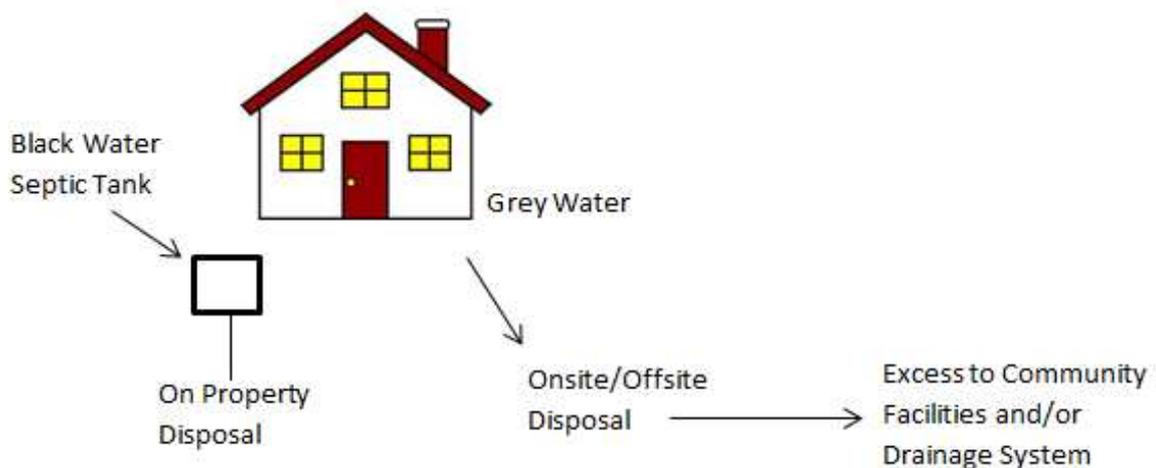
Option No.5 – Upgrade (Existing) & Improved Guidelines (growth)

For current land holders it requires the potential upgrading or replacement of existing septic systems with suitable treatment systems to achieve current standards and guidelines. It is anticipated that such initiatives would be considered at a very 'local' (individual site specific) level.

The upgrade of existing systems may introduce a combination of on-property and off-property disposal/irrigation for grey water. The use of dispersal drains and/or mounds located on-site or within road reserves and/or selected acquired parcels of land could be considered. Opportunities to support the irrigation of community grounds, sporting and landscape areas could be considered as a key component of grey water re-use from existing (and future) developments.

To further improve the overall amenity and reduce the potential health risks associated through human contact; areas where localized ponding of stormwater occurs in table and catch drains (where there is also grey water discharge) consideration to the installation of underground stormwater infrastructure should be given.

For future growth, consideration of introducing new guidelines to more readily control on-site wastewater management for a range of potential lot sizes.



Characteristics:

- A comprehensive audit of all existing on-property wastewater systems
- Replacement or upgrading existing on-site systems
- Regular inspections and assessment to ensure adequate compliance
- Provision of underground stormwater infrastructure in key areas for greywater discharge
- Opportunities for on-site and off-site grey water dispersal and/or re-use
- Assessment of land capability for land disposal methods
- Increased education of landholders on operation, compliance and maintenance
- Improved guidelines for future growth

Advantages:

- No major infrastructure works
- Landholders with compliant and 'self-sufficient' treatment systems are unaffected
- Efficiency of delivery
- Structured future growth

Disadvantages:

- Potentially high financial costs for non-compliant landholders
- High Council resources required
- Financial contribution from Council for minor infrastructure
- May not resolve compliance on existing small lot sizes
- Limits future growth land sizes

Preliminary Concept Capital Expenditure Budget Estimate Range:
\$12,000 - \$15,000 per landowner

10.0 OPTIONS ANALYSIS

Considering the current and future expected demand the current Wannan Water Water Plan does not have provision for an authority initiated reticulated waste water collection, treatment and disposal system for the Township.

In addition future Water Plans within the 'life' of this Structure Plan will not include the provision and implementation of a sustainable efficient and authority owned waste water treatment plant system.

Stakeholder engagement and feedback revealed that external funding for any of the options outlined in Section 9.0 is problematic; Council under the Local Government Act can potentially create local by-laws provided they are consistent with State policy and legislation to regulate waste water management or introduce a 'special charge' scheme to fund infrastructure if the function can be substantiated to benefit those persons being charged.

Consequently each of the individual options outlined in Section 9.0 are required to be entirely 'self-funded' by the end user/s.

Considering the viability of each individual option, involved an assessment of the following key elements:

- Financial – Capital and Operational costs
- Environmental and Health risk
- Legislation compliance
- Stakeholder feedback

Whilst Section 9.0 provides a number of potential options for consideration each of the Options 1 to 4 inclusive in particular are considered to have a high capital and/or ongoing operational and maintenance expenditure components. Whilst assessment of the options was not solely a financial consideration the assessment of the options available concluded that none of these options for the township could be justified on the basis of current and expected land values, current population, probable population growth or potential development activity.

Option	Comments
Option No.1 Reticulated Sewer	<ul style="list-style-type: none"> • High capital cost • High operating and maintenance cost • Comprehensive legislative requirements and approvals • Self-funded by end users • Low environmental and health risks • Potential for expansion if significant growth occurs • Addresses current issues with 'small lots'
Option No.2 Reticulated sewer - local treatment	<ul style="list-style-type: none"> • High capital cost • High maintenance cost • Comprehensive legislative requirements and approvals • Self-funded by end users • Moderate environmental and health risks • Addresses current issues with 'small lots'
Option No. 3 Septic Tank Effluent Disposal (STED)	<ul style="list-style-type: none"> • High capital cost • High maintenance cost • Comprehensive legislative requirements and approvals • Self-funded by end users • Moderate environmental and health risks • Addresses current issues with 'small lots'
Option No.4 Low pressure system	<ul style="list-style-type: none"> • Moderate-High capital cost • High operating and maintenance cost • Comprehensive legislative requirements and approvals • Self-funded by end users • Potential for expansion if significant growth occurs • Addresses current issues with 'small lots'
Option No.5 Upgrade (Existing) & Improved Guidelines (growth)	<ul style="list-style-type: none"> • Moderate-Low capital cost • High Council compliance/management required • Self-funded by end users • Continued environmental and health risks with existing systems • Doesn't address current issues with 'small lots'

11.0 RECOMMENDATIONS

Considering the key factors of potential low population growth and the need for 'self-funding' of the capital expenditure associated with the implementation of an authority owned, operated and maintained infrastructure asset, Options 1 to 4 inclusive are not likely to receive widespread community support, without significant external funding.

Whilst Option 5 is considered to be the most financial viable from a user's perspective and thus likely to receive wider support from the existing community it will ultimately require extensive Council resources and cost to be effectively implemented and managed. Community feedback indicates a preparedness to assist with improving the amenity and reducing public health risks due to insufficient/unsuitable existing wastewater treatment systems; however the issue of achieving suitable treatment for small lot sizes (generally below 4,000m²) would remain unresolved in implementing Option 5.

On balance whilst there are short-comings with Option 5 the individual landholder financial contribution to the capital costs associated with either Option 1 to 4 inclusive is considered to be untenable and sustainable.

In addition to the obligations of landowners the current Code of Practice for Onsite Waste Water Management for the treatment of up to 5,000 litres of waste water per day specifies that the legal responsibility for assessment, compliance and enforcement is the local Council. Consequently on balance Council should establish and implement a rigorous process to ensure early assessment and consideration of waste water management including cumulative effects, monitoring, compliance and maintenance.

It is recommended that Council complete a comprehensive audit of the waste water management systems currently used on all existing properties to effectively facilitate, implement and manage this process.

Any upgrades, repairs or replacements should be documented, with systems and process endorsed to effectively implement these works. In addition a comprehensive grey water discharge monitoring program should be instigated to determine and review water quality and potentially 'build a case' for future funding initiatives.

A detailed and comprehensive community education program focusing on proper maintenance of all systems and advice on appropriate actions to take when systems fail should be of high priority.

In considering future growth and development of Tarrington, Council should contemplate a review and potential amendment to the existing Planning Scheme to integrate the provision of waste water management initiatives for a suite of lot sizes in potential residential areas in unsewered Townships.

The parameters may include:

- Lot sizes greater than 10,000m² are encouraged with a comprehensive Land Capability Assessment to be provided to demonstrate the property can contain and manage waste water without detrimental effects to the natural environment and pollute watercourses and/or other properties
- Lots between 4,000m² -10,000m² may be acceptable with the approval of a comprehensive Land Capability Assessment and waste water management program

The waste water management program should as a minimum include:

- A feasible maintenance and monitoring regime
- Assessment and attention to the levels of risk to the natural environment, watercourses and other properties

Recommendation	Actions	Priority
Existing System Audit	<ul style="list-style-type: none"> Comprehensive audit, analysis and assessment of existing wastewater management systems within the township 	High
Corrective Implementation	<ul style="list-style-type: none"> Implement key findings of the audit in consultation with landholders 	High
Community Education	<ul style="list-style-type: none"> Progress and execute an education program on the implementation, management and maintenance of wastewater systems within the township 	Medium
Planning	<ul style="list-style-type: none"> Develop and instigate amendments to the Planning Scheme to incorporate minimum lot sizes for the township (and potentially other unsewered townships) 	High
Policy	<ul style="list-style-type: none"> Advance and implement a uniform approach to the submission of a comprehensive wastewater management plan and program for land and building development 	Medium
Monitoring	<ul style="list-style-type: none"> Implement procedures for the regular monitoring of water quality and legislation compliance within the township 	Medium

12.0 PICNIC ROAD SUBDIVISION MASTER PLAN

The Picnic Road precinct was selected as a genuine growth opportunity in close proximity to the centre of the town. It is anticipated that the principles of wastewater management proposed for this area potentially could be further assessed and analysed for other parcels of developable land elsewhere within the Tarrington Township. A copy of the potential Picnic Road Subdivision Master Plan options is attached as Appendix A for reference.

It would be anticipated for the proposed lots between 4,000m² and 10,000m² in Master Plan Option 2 that a conventional on-site septic tank with absorption trenches could potentially be adopted for the treatment of black water, depending on peak daily flow generated by the size and occupancy of the proposed dwelling. The specific detail, subsequent approval and implementation of a conventional black water septic and effluent disposal system would be conditional on the submission of a comprehensive Land Capability Assessment and accompanying wastewater management plan and program for the proposed development of the lot at the time application.

Whilst the re-use of grey water can readily be substantiated during the summer months, particular in the region of the proposed landscape setback, further consideration to the appropriate treatment and discharge of grey water during the winter months needs assessment.

In particular when considering Master Plan Option 1, with the close proximity of existing water bodies and a registered waterway on the east side of Picnic Road it would be proposed to provide a 'common' (body corporate owned and operated) secondary grey water treatment facility for those lots less than 4,000m² i.e. lots 1 -6 inclusive.

A reticulated sewerage system comprising a secondary treatment plant or similar enhanced treatment system would be located in (south-east corner) or immediately downstream of Lot 6. Provision of a grey water diversion pit/valve would be located in each lot which would connect to an underground pipe network located in an easement (body corporate owned) to discharge any excess grey water from each lot to the treatment plant/system.

Further treated grey water would then discharge to the adjacent Picnic Road table drain. This reticulated system including the discharge would require regulatory authority approval including the EPA. This system could also potentially be implemented for Master Plan Option 2 if the anticipated future development of dwellings may be compromised by the provision of on-site wastewater management systems.

It would be recommended that Council develop and implement in conjunction with the relevant Catchment Management Authority a robust, ongoing monitoring program of the water quality being discharged from the grey water treatment system to the Picnic Road table drain.

Whilst lots less than 4,000m² with a compliant Land Capability Assessment and wastewater management plan may also be able to function adequately within the parameters of the above system, to further minimise/mitigate potential risks a common (body corporate owned) sewerage treatment plant for those lots less than 4,000m² may be considered and implemented.

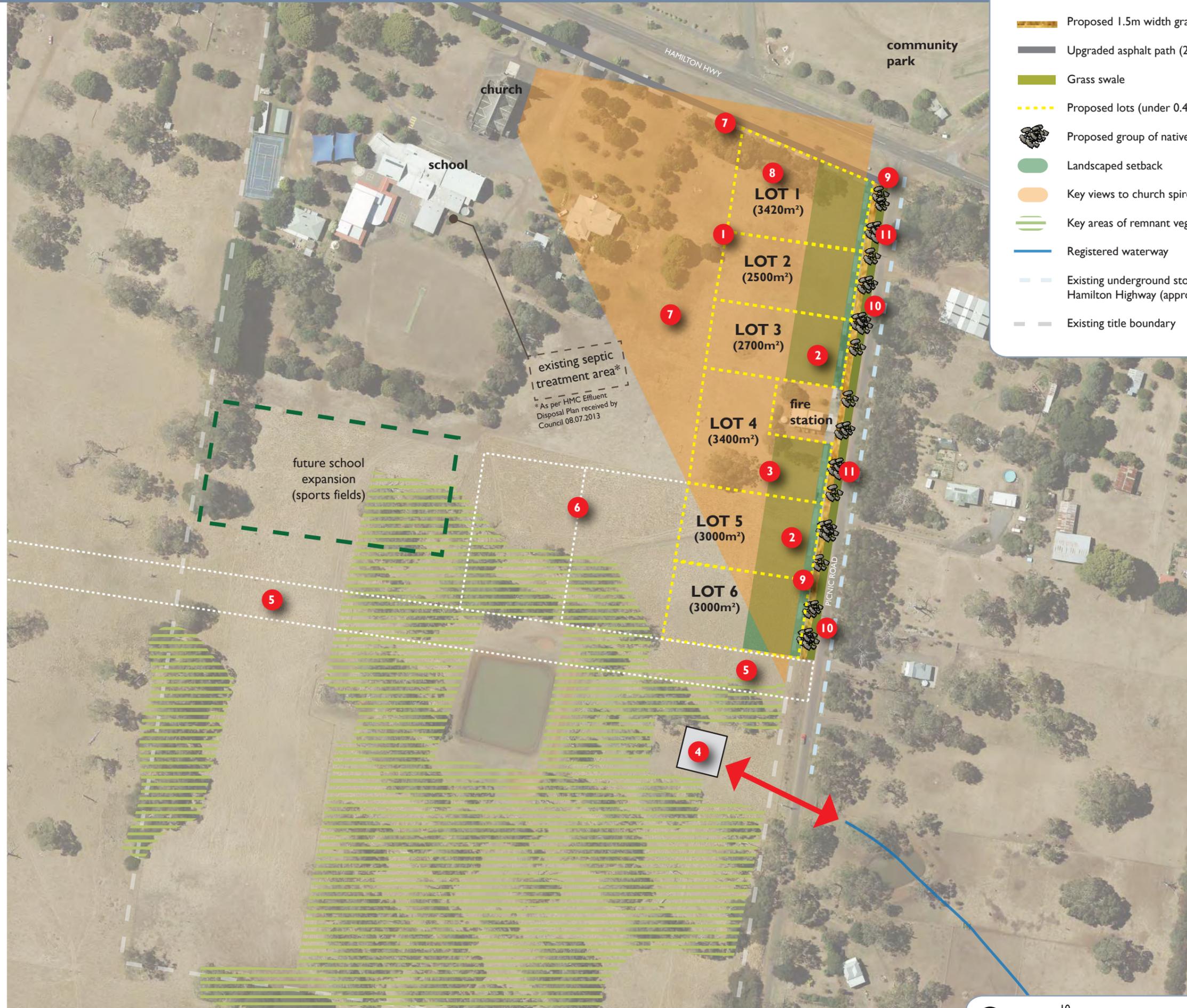
In specific reference to Master Plan Option 2 the provision of Lots 7 and 8 are of sufficient land area (exceeding 2 Hectares) to adequately support a conventional septic and effluent disposal system. The approval and subsequent implementation of conventional septic and effluent disposal water would be conditional on the submission of a comprehensive Land Capability Assessment and accompanying wastewater management plan and program.

Appendix A **– Picnic Road Subdivision Master Plan Option 1**
 – Picnic Road Subdivision Master Plan Option 2

PICNIC ROAD SUBDIVISION MASTERPLAN option 1

LEGEND

-  Proposed 1.5m width gravel path
-  Upgraded asphalt path (2m width)
-  Grass swale
-  Proposed lots (under 0.4ha)
-  Proposed group of native trees
-  Landscaped setback
-  Key views to church spire
-  Key areas of remnant vegetation
-  Registered waterway
-  Existing underground stormwater from Hamilton Highway (approx. location)
-  Existing title boundary



- 1** Six lots are created on the west side of Picnic Road. Each lot is less than 4000m² in size, therefore requiring Council and EPA approval prior to implementation. May include a combination of on-site and off-site treatments.
- 2** Existing character of Picnic Road maintained by buildings being set back 30m from road.
- 3** Larger lot size for Lot 4 allows retention of existing stand of vegetation.
- 4** Potential location for shared waste treatment facility for school, church and subdivision. Due to proximity of waterway secondary treatment may be required to produce adequate water quality. Opportunities for water outputs to be used on school or park oval.
- 5** This subdivision pattern does not prevent a potential future road reserve (nom. 20m wide) to the rear of the school, potentially joining with the existing road reserve beside the cafe. Growth and community sentiment currently do not support this link.
- 6** Potential future residential opportunities in case of implementation of road reserve (see '5').
- 7** The views to the church spire are an important part of the character of the town, and buildings and landscape should be sited and designed to avoid significantly impeding these views.
- 8** Additional size of Lot 1 allows the retention of existing vegetation along the Hamilton Highway frontage.
- 9** Connect existing footpath along Hamilton Highway with new gravel path on west side of Picnic Road.
- 10** Construct grassed swale between footpath and existing road to provide drainage from road.
- 11** Plant small groups of native trees along edge of swale next to footpath, to create a visual transition from rural to township.

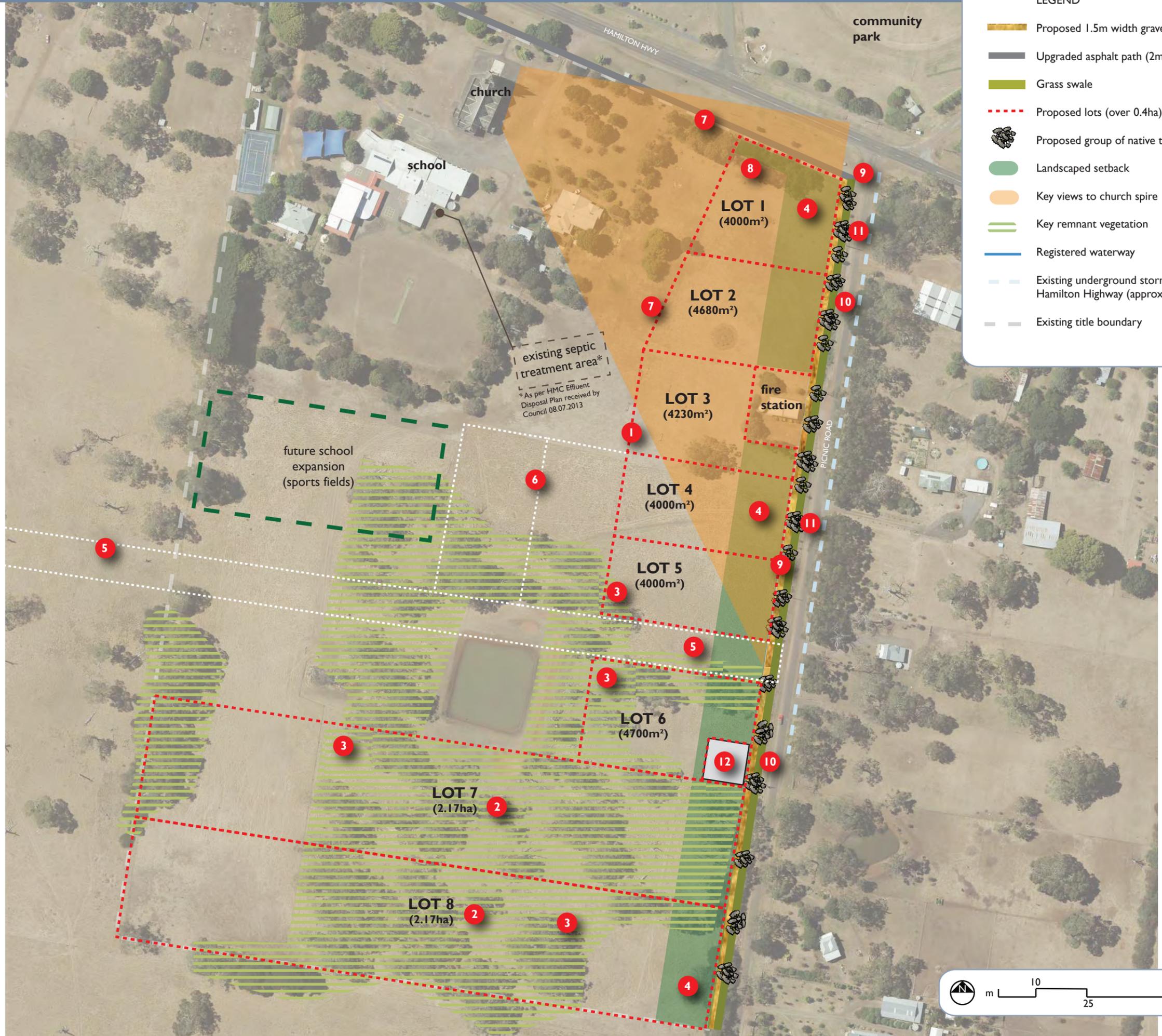
existing septic treatment area*
 *As per HMC Effluent Disposal Plan received by Council 08.07.2013

future school expansion (sports fields)

PICNIC ROAD SUBDIVISION MASTERPLAN option 2

LEGEND

-  Proposed 1.5m width gravel path
-  Upgraded asphalt path (2m width)
-  Grass swale
-  Proposed lots (over 0.4ha)
-  Proposed group of native trees
-  Landscaped setback
-  Key views to church spire
-  Key remnant vegetation
-  Registered waterway
-  Existing underground stormwater from Hamilton Highway (approx. location)
-  Existing title boundary



- 1** Eight lots are created on the west side of Picnic Road. Each lot is more than 4000m² in size, meaning waste water can potentially be treated on-site with a Council approved wastewater management strategy.
- 2** Lot 7 and Lot 8 are more than two hectares in size, with a significant coverage of remnant vegetation. The size of the lots allows scope for siting buildings while retaining the vegetation.
- 3** Some lots intersect with areas of remnant vegetation. Building siting to be designed to protect remnant vegetation on Lots 5,6,7 and 8.
- 4** Existing character of Picnic Road maintained by buildings being set back 30m from road.
- 5** This subdivision pattern does not prevent a potential future road reserve (nom. 20m wide) to the rear of the school, potentially joining with the existing road reserve beside the cafe. Growth and community sentiment currently do not support this link.
- 6** Potential future residential opportunities in case of implementation of road reserve (see '5').
- 7** The views to the church spire are an important part of the character of the town, and buildings and landscape should be sited and designed to avoid significantly impeding these views.
- 8** Retention of existing vegetation along the Hamilton Highway frontage to Lot 1.
- 9** Connect footpath along Hamilton Highway with new gravel path on west side of Picnic Road.
- 10** Construct grassed swale between footpath and existing road to provide drainage from road.
- 11** Plant small groups of native trees along edge of swale next to footpath, to create a visual transition from rural to township.
- 12** Shared grey-water treatment plant for Lots 1-6.

existing septic treatment area*
 *As per HMC Effluent Disposal Plan received by Council 08.07.2013

future school expansion (sports fields)

church

school

community park

LOT 1 (4000m²)

LOT 2 (4680m²)

LOT 3 (4230m²)

LOT 4 (4000m²)

LOT 5 (4000m²)

LOT 6 (4700m²)

LOT 7 (2.17ha)

LOT 8 (2.17ha)

fire station

HAMILTON HWY

PICNIC ROAD