

brayd consulting  
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**DOMESTIC  
WASTEWATER  
MANAGEMENT  
PLAN**

## Document Information

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## Glossary

<b>1: 40 hectare guideline</b>	Guidelines 1 of the <i>Ministerial Guidelines for Planning Permit Applications in Open Potable Water Supply Catchment Areas</i> (2012)
<b>Beneficial Use</b>	Defined by SEPP WoV as the different uses and values of water (eg potable water, irrigation water, water for plants and animals)
<b>Black water</b>	Wastewater from toilets
<b>CALP Act</b>	<i>Catchment and Land Protection Act 1994</i>
<b>Code of Practice</b>	Environment Protection Authority <i>Code of Practice – Onsite Wastewater Management</i> (February 2013)
<b>DWSC</b>	Declared Water Supply Catchment, as specified by Schedule 5 of the <i>Catchment and Land Protection Act 1994</i>
<b>DEPI</b>	Department of Environment and Primary Industries (now DELWP)
<b>DELWP</b>	Department of Environment, Land, Water and Planning
<b>EPA</b>	Environment Protection Authority
<b>GBCMA</b>	Goulburn Broken Catchment Management Authority
<b>GMW</b>	Goulburn Murray Water
<b>Grey water</b>	Water sourced from a shower, bath, hand basins, washing machine, laundry troughs or kitchen sink
<b>GVW</b>	Goulburn Valley Water
<b>Information Bulletin</b>	Information Bulletin on Land Capability Assessment for Onsite Domestic Wastewater Management, Environment Protection Authority (Publication 746.1, 2003)
<b>LPPF</b>	Local Planning Policy Framework, Strathbogie Planning Scheme
<b>MAV</b>	Municipal Association of Victoria
<b>Ministerial Guidelines</b>	<i>Ministerial Guidelines for Planning Permit Applications in Open Potable Water Supply Catchment Areas</i> (November 2012)
<b>Potable Water</b>	Treated water that is suitable for human consumption
<b>SEPP (WoV)</b>	State Environmental Protection Policy (Waters of Victoria), Environment Protection Authority 1988
<b>Sewage</b>	Combined black water and grey water
<b>SPPF</b>	State Planning Policy Framework, Strathbogie Planning Scheme
<b>SSC</b>	Strathbogie Shire Council
<b>VPPs</b>	Victoria Planning Provisions; the range of zones, overlays and local controls from which councils construct their planning scheme
<b>Whole of Water Cycle</b>	An integrated multi agency management of, and infrastructure investment in, rainwater harvesting, stormwater management, recycled water, potable water, wastewater and groundwater.

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# 1. Executive Summary

A domestic wastewater management plan (DWMP) is the key tool through which councils meet their obligations under the *Environment Protection Act 1970* and the *State Environmental Protection Policy (Waters of Victoria)*. It is also the mechanism through which water corporations can relax the density requirement of one dwelling per 40 hectares in declared water supply catchments (DWSC), allowing future growth in these areas.

By highlighting the areas at greatest risk of cumulative impacts from domestic wastewater through the analysis of potable water infrastructure, soil type, slope, unsewered dwelling density and future development potential, our risk analysis has informed the development of initiatives to focus scarce resources into the areas where the greatest public health, amenity and environmental health benefits will be gained.

The two areas of highest risk, and therefore the highest priority for action and investment by Council, GMW, GVW and the GBCMA, are Minor Catchment No. 12 Seven Creeks and Castle Creek (this area includes a declared water supply catchment and Strathbogie Township) and Minor Catchment No 22 Pranjip Creek (containing the township of Longwood).

Key initiatives for these high risk areas include the preparation of a whole of water cycle management plan for Strathbogie township, the design and development of 'community' wastewater plants in Strathbogie and Longwood townships and greater investment in stormwater infrastructure by Council, in partnership with the GBCMA, to improve water quality and better manage inundation issues.

Medium risk minor catchments and townships will be the second priority for investment, essentially focused around the extension of existing reticulated sewerage infrastructure to service existing development on the outskirts of Euroa, Nagambie, Violet Town and Avenel, in that order of priority.

There are also other initiatives to support a broader improvement in domestic wastewater management through:

- The implementation of a proactive, risk based inspection program;
- Clarification of parameters for new 'greenfield' development, infill development and the redevelopment of existing dwellings to increase connections to reticulated services (where available) and to achieve incremental upgrades of ageing systems to provide an overall cumulative benefit;
- Development and circulation of community education material to ensure people are better informed about their obligations to maintain their onsite systems and how to minimise maintenance expenditure through regular system 'health checks'; and
- Specification of standards for the preparation of land capability statements across the Shire to streamline the approvals process, better assess risk and improve the consistency in documentation.

Annual updates will be provided to stakeholders on the progress of the DWMP's implementation and an independent audit will be undertaken in Year 3, as per the Ministerial Guidelines. This plan will have a five-year life and will be reviewed in 2020.

## 2. Introduction

### 2.1 Purpose and Objectives

This Domestic Wastewater Management Plan (DWMP) is a strategic document aimed at providing a comprehensive decision making framework enabling Strathbogie Shire Council (SSC), water corporations and other stakeholders to effectively manage and mitigate cumulative impacts from wastewater on public health, the environment, catchment health and water quality.

Its objectives are to:

- **ensure SSC meets its legislative obligations** under the *Environment Protection Act 1970* and *State Environment Protection Policy Waters of Victoria (SEPP WoV)* for the management of domestic wastewater in an effective and affordable way;
- **provide certainty** to the community and investors about future development parameters in seweraged and unsewered areas;
- **enable appropriate residential development** in water supply catchments by meeting all requirements of the *Ministerial Guidelines for Planning Permit Applications in Open Potable Water Supply Catchment Areas, November 2012* (the Ministerial Guidelines) for the relaxation of the 1 dwelling per 40 hectares Guideline by water corporations;
- **work collaboratively** with water corporations and government agencies to establish a long term, multi agency approach to domestic wastewater management and infrastructure investment within Strathbogie Shire;
- **ensure existing reticulated sewerage infrastructure expands in response to residential growth** in key townships such as Euroa to minimise reliance on individual wastewater treatment systems;
- **explore opportunities to install cost effective community treatment plants** in key townships such as Strathbogie and Longwood;
- **introduce the concept of 'whole of water cycle management'** and how it can assist in wastewater management and the attainment of environmental and public health benefits;
- **identify strategic and statutory planning tools** to guide appropriate future development and effectively manage domestic wastewater within DWSCs and in areas around potable water offtake points, Lake Nagambie, Goulburn Weir and along the Goulburn River;
- **specify clear standards and requirements** for land capability assessments, permits to install an onsite wastewater management system and certificates for their use; and
- **develop an appropriate monitoring program** for the maintenance of existing onsite wastewater management systems.

### 2.2 Scope

This DWMP will outline strategies and initiatives to address the potential cumulative impacts from unmanaged domestic wastewater across Strathbogie Shire. There is a particular focus on wastewater management in areas identified as being high and medium risk, as defined by the outcomes of the risk analysis.

## 3. Our Methodology

This DWMP has been informed by the work undertaken by other municipalities in recent times, particularly the Mansfield Shire Domestic Wastewater Management Pilot Project, along with guidance from GMW, GVW, the Environment Protection Authority, our Environmental Health Officer and land capability/wastewater systems experts operating within the Shire.

### 3.1 Risk Analysis Mapping

This DWMP generally adopts the Stage 2 risk analysis methodology for sub catchments outlined in the Council adopted Mansfield Shire Domestic Wastewater Management Plan 2014<sup>1</sup>, following acceptance of this scientific work by VicWater, the EPA and the former Minister for Water. Importantly GVW, GMW and the EPA North East participated in the development of Mansfield's risk analysis methodology, which provides us with confidence that the application of the Mansfield model to Strathbogie Shire is acceptable to these agencies.

There have, however, been some modifications to the mapping methodology to suit local conditions, as agreed with GMW and GVW representatives.

Data from the GBCMA was used to divide the Shire into twenty-five (25) minor catchments based on watersheds and catchment boundaries to create a series of meaningful geographical units to analyse risk. A series of information layers were then added to the Shire's Geographical Information System (GIS) to analyse each risk factor.

Each risk factor was categorised into three risk levels; **high** (coloured red), **medium** (coloured orange) and **low** (coloured green). The shire-wide risk analysis results are discussed in detail in Section 12 of the Background Report.

The overall risk rating for each minor catchment has been used to develop initiatives to manage future development, infrastructure investment and streamline development application processes.

### 3.2 Consultation

The DWMP Background Report outlines the broad range of stakeholders that all play a part in the management of domestic wastewater. In preparing this DWMP input and information has been sought from:

- Councillors
- Strathbogie Shire Council's Environmental Health Officer, Geographical Information Systems Officer, Asset Services staff and Planning staff
- Goulburn Broken Catchment Management Authority
- Land capability assessment consultants

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<sup>1</sup> *Approaches for Risk Analysis of Development with Onsite Wastewater Disposal in Open Potable Catchments*, prepared for Mansfield Shire Council by Dr Robert Edis, April 2014, *A Discussion Paper for the Initial Work Associated with the Preparation of a Shire Domestic Wastewater Management Plan* by Larry White April 2014, *A Review for Risk Analysis of Development with Onsite Wastewater Disposal in Open Potable Water Catchments* by Dr Robert van de Graaff, Van de Graaff and Associates Pty Ltd March 2014



- Local plumbers and onsite system technicians
- Local residents and landowners.

GMW and GVW are key partners in this project. Senior Officers from these organisations have been involved in the provision of background information, the development of the risk analysis methodology, the peer review of this Background Report and the preparation of this DWMP.

In adopting this multi agency approach, Council is being consistent with a range of State Government water/catchment management related strategies. Furthermore, the *Ministerial Guidelines for Planning Permit Applications in Open, Potable Water Supply Catchment Areas (2012)* require water corporations to be involved in the preparation of any DWMP if they are to consider a relaxation of the 1:40 dwelling density guideline.

### 3.3 How Our DWMP Responds to the Ministerial Guidelines

It is important that this DWMP effectively responds to the requirements for a DWMP outlined on page 4 of Ministerial Guidelines as a means of ensuring water corporations can consider the relaxation of the 1:40ha dwelling density guideline. The way in which this DWMP meets each requirement is outlined below.

*The DWMP must be prepared or reviewed in consultation with all relevant stakeholders including other local governments with which catchment/s are shared, the EPA and local water corporations.*

- senior representatives from GMW and GVW have been heavily involved in the preparation of this DWMP and the Background Report;
- the GBCMA have provided information for the risk analysis and were invited to participate in a working group but opted to comment on the draft DWMP once completed;
- local land capability assessment experts, local plumbers and local residents/land owners were invited to participate in the process through completing an online survey;
- the EPA is supportive of the use of Mansfield Shire risk analysis model and the Authority will be invited to review and comment the draft Background Report and DWMP.

*The DWMP must comprise a strategy, including timelines and priorities, to prevent discharge of wastewater beyond property boundaries and prevent individual and cumulative impacts on groundwater and surface water beneficial uses.*

- This DWMP identifies a range of initiatives to address cumulative and individual impacts from onsite wastewater systems, with priority given to high and medium risk areas for resource allocation.

*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 [of Practice for Onsite Systems].*
  - The Action Plan outlines new inspection regimes and compliance programs developed in consultation with GMW and GVW.

- *The results of monitoring being provided to stakeholders as agreed by the relevant stakeholders.*
  - The Monitoring and Review section of this DWMP identifies reporting requirements to Council, GMW and GVW.
- *Enforcement action where non-compliance is identified.*
  - An education first approach will be adopted by the new inspection and compliance systems. Any non-compliance will be assessed on its own merits and courses of action identified in consultation with the EPA, GMW and GVW if required.
- *A process for review and updating (if necessary) of the DWMP every 5 years.*
  - The DWMP will be reviewed in 5 years' time.
- *Independent audit by an accredited auditor (water corporation approved) of implementation of the DWMP, including of monitoring and enforcement, every 3 years; and the results of audit being provided to stakeholders as soon as possible after the relevant assessment.*
  - This Plan outlines how the auditor will be chosen, the content and timing of audit reports and the preparation of an annual progress report to key stakeholders in addition to the 3 yearly audit report.
- *Councils are required to demonstrate that suitable resourcing for implementation, including monitoring, enforcement, review and audit, is in place.*
  - Resource requirements, allocation of funding in existing Strathbogie Shire Council departmental budgets, funding and project partnerships with other corporations/authorities and other potential funding sources are outlined in the Resource Plan.

## 4. Risk Analysis Outcomes

As outlined in Section 12 of the Background Report the overall minor catchment risk rating combines the risk ratings of the five risk factors of:

- Proximity to potable water reservoir/offtake point
- Slope
- Soil type
- Unsewered dwelling density per square kilometres; and
- Infill development potential (% of developable vacant land within a minor catchment).

The risk rating for each individual factor was given the following value **Low Risk** = 1 point, **Medium Risk** = 2 points and **High Risk** = 3 points.

To calculate the overall risk rating of a minor catchment, the individual risk values for each of the five risk factors were added together to derive a total risk score, as outlined below. Please note that the unsewered dwelling density rating was multiplied by a factor of two if a minor catchment contained a large portion of a declared water supply catchment.

Table 1 Overall Risk Ratings for Minor Catchments

Minor Catchment	Waterbody / Potable Water Asset Risk Rating	Slope Risk Rating	Soil Risk Rating	Infill Development Potential Risk Rating	Unsewered Dwelling Density Risk Rating*	Overall Risk Rating
<b>Hills Minor Catchments</b>						
1. Brankeet Creek (Contains a DWSC*)	2	1	3	2	2	10
2. Burnt Creek	2	1	2	2	1	8
3. Creightons Creek	2	1	3	2	1	9
4. Deep Creek	1	2	2	2	1	8
5. Faithfulls Creek	2	1	2	2	1	8
6. Five Mile Creek	2	1	2	1	1	7
7. Godfrey Creek	2	1	3	1	1	8
8. Honeysuckle Creek (Contains a DWSC*)	2	2	2	2	2	10
9. Hughes Creek (Contains Ruffy)	2	2	3	2	1	10
10. Merton Creek	2	2	3	2	1	10
11. Pranjip Creek (Contains a DWSC* and the township of Old Longwood)	2	1	2	2	2	9
12. Seven Creeks & Castle Creek (Contains a DWSC* and the township of Strathbogie)	2	1	2	2	6	13
13. Wormangal Creek	2	1	2	2	1	8

\* DWSC means Declared Water Supply Catchment, as specified by Schedule 5 of the Catchment and Land Protection Act 1994

Plains Minor Catchments						
Minor Catchment	Waterbody / Potable Water Asset Risk Rating	Slope Risk Rating	Soil Risk Rating	Infill Development Potential Risk Rating	Unsewered Dwelling Density Risk Rating*	Overall Risk Rating
14. Broken River	1	1	2	2	1	7
15. Burnt Creek (Contains Locksley)	2	1	3	3	1	10
16. Creightons Creek	2	1	3	3	1	10
17. Faithfulls Creek	2	1	3	2	1	9
18. Goulburn River (Contains Nagambie, Kirwans Bridge, Baxters Road, Mangalore & Mitchellstown)	2	1	3	3	1	10
19. Honeysuckle Creek (Contains Violet Town)	2	1	3	3	1	10
20. Hughes Creek (Contains Avenel)	2	1	3	3	1	10
21. Major Creek (Contains Graytown)	1	1	2	2	1	7
22. Pranjip Creek (Contains Longwood)	2	1	3	3	3	12
23. Seven Creeks & Castle Creek (Contains Euroa & Miepoll)	1	1	3	3	2	10
24. Sheep Pen Creek	1	1	2	2	1	7
25. Wormangal Creek	2	1	3	2	1	9

Source: Strathbogie Shire Council Geographical Information System

## ANALYSIS

### High Risk Minor Catchments

There are two High Risk Minor Catchments; Plains Catchment No 12 Seven Creeks and Castle Creeks and Plains Catchment 22 Pranjip Creek. No. 12 has only one low risk rating (slope), with other factors being at medium risk aside from Unsewered Dwelling Density, which was high due to the Strathbogie Township and a heightened risk as this catchment is within a DWSC. No. 22 is has only one low risk rating for slope, one medium rating for proximity to potable water assets and three high-risk ratings. This catchment contains the unsewered township of Longwood, which has the highest unsewered dwelling density of all minor catchments at 58 unsewered dwellings per square kilometre.

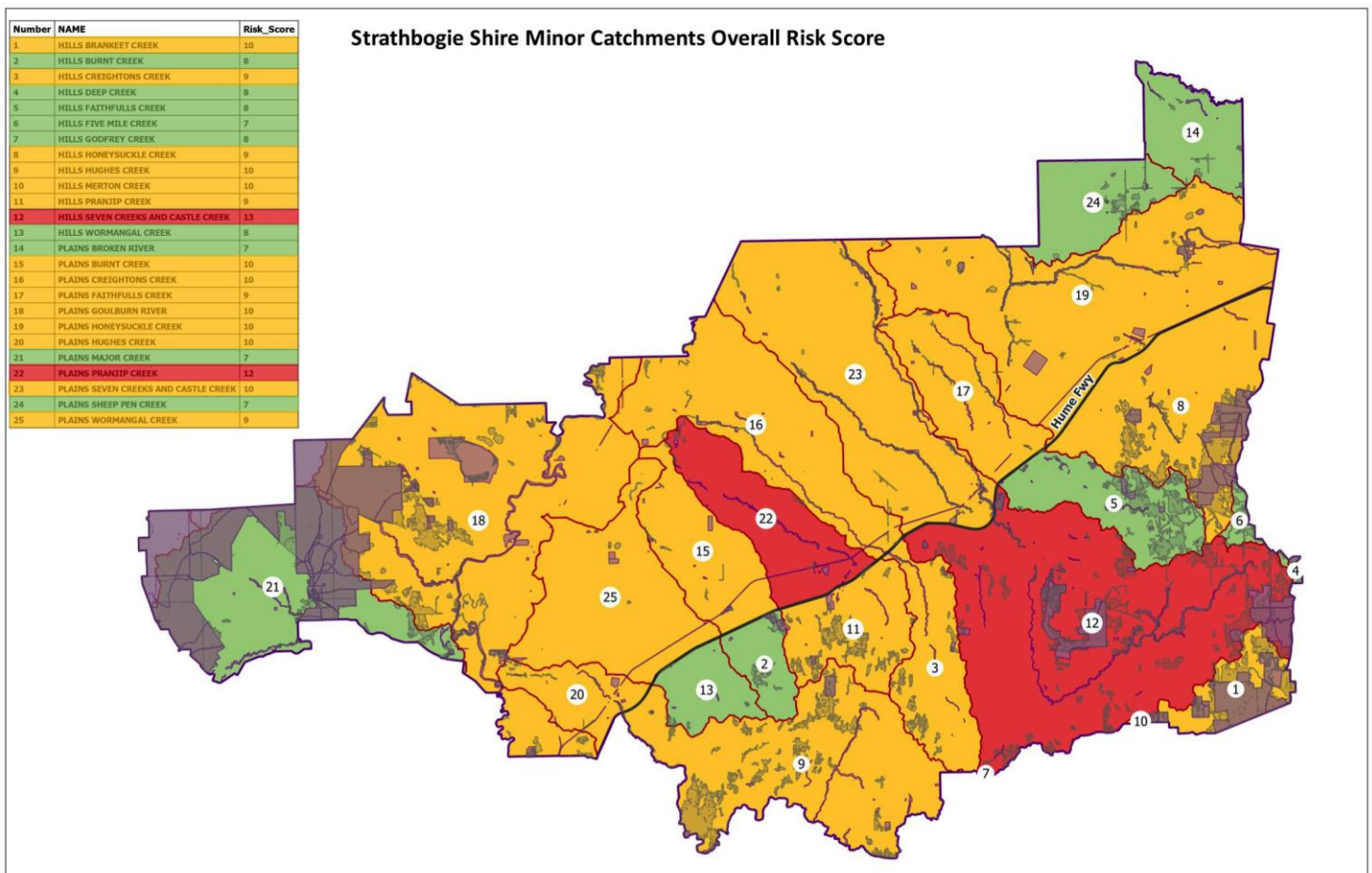
### Medium Risk Minor Catchments

There are fourteen (14) medium risk minor catchments. It is considered appropriate to focus initiatives on those containing townships given the concentration of seweraged and unseweraged dwellings and the heightened potential of cumulative risks from unmanaged domestic wastewater.

### Low Risk Minor Catchments

There are nine (9) minor catchments identified as being low risk due to good soils, low unseweraged dwelling densities and distance to potable water assets. Six (6) low risk catchments are located in the hills region. Graytown is the only small township within a low risk catchment.

Map 1 Overall Risk Rating for Minor Catchments



Disclaimer Note  
This map is a representation of the information currently held by Strathbogie Shire Council. While every effort has been made to ensure the accuracy of the data, Council disclaims all liability for any loss, cost, damage or injury, howsoever arising or connected with the use of this data. Any feedback or corrections or errors would be appreciated.  
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Map created March 2015

Source: Strathbogie Shire GIS

## 5. Strategies for the Management of Existing Onsite Systems

This section outlines general strategies for wastewater management across the Shire. It includes management strategies for seweraged and unsewered areas, redevelopment of existing dwellings, infill development and greenfield development.

### 5.1 High Risk Minor Catchments

Hills Minor Catchments: No. 12 Seven Creeks & Castle Creek (containing Strathbogie)

Plains Minor Catchments: No. 22 Pranjip Creek (containing Longwood).

#### STRATEGIES:

- 5.1.1 Highest priority for the provision of reticulated community wastewater services.
- 5.1.2 Highest priority for proactive inspections with all systems to be inspected by the end of Year 2 commencing with pre 2005 systems and those in areas subject to the Urban Floodway Zone or Land Subject to Inundation Overlay.
- 5.1.3 All proposed developments require an LCA developed in accordance with the best practice 12-step process in the EPA's *Code of Practice – Onsite Wastewater Management 2013*, extensive onsite testing and the calculation of the Edis Algorithm to determine the overall risk rating for the site.
- 5.1.4 Provision of a land capability assessment template to submit with any planning permit application or application for a Permit to Install an onsite system.
- 5.1.5 Preparation and adoption of a whole of water cycle management plan for the Strathbogie Township by Council, GMW, GVW and the GBCMA.
- 5.1.6 Preparation and exhibition of an amendment to the Strathbogie Planning Scheme for the application of an Environmental Significance Overlay over declared water supply catchments and around potable water offtake points, with amendments made to the Municipal Strategic Statement to reference the adopted DWMP and reinforce its key objectives.
- 5.1.7 Preparation of a new Memorandum of Understanding to identify referral requirements for development in declared water supply catchments and high risk areas.
- 5.1.8 Development and roll out of an onsite wastewater system education campaign for residents and landowners to improve system maintenance standards and permit compliance, including an annual information forum about onsite wastewater systems in partnership with GMW.
- 5.1.9 Instigation of an annual information/training session for local LCA consultants and plumbers to improve assessment standards and permit compliance in partnership with GMW.
- 5.1.10 Development of a strategic plan with GVW to clarify the possibilities for reticulated sewer extensions in Euroa, Avenel, Violet Town and Nagambie.
- 5.1.11 Investigate the need to apply an Environmental Significance Overlay to buffer areas around GVW operated municipal wastewater treatment plants in partnership with GVW.

## 5.2 Medium Risk Minor Catchments

- Hills Minor Catchments: No. 11 Pranjip Creek (containing Old Lockwood)
- Plains Minor Catchments: No. 15 Burnt Creek (containing Locksley)  
 No. 18 Goulburn River (containing Nagambie, Kirwans Bridge, Baxters Road, Mangalore and Mitchellstown)  
 No. Honeysuckle Creek (containing Violet Town)  
 No. 20 Hughes Creek (containing Avenel)  
 No. 23 Seven Creeks and Castle Creek (containing Euroa and Miepoll)

### STRATEGIES:

- 5.2.1 Ensure all new development is connected to reticulated sewerage networks within the towns of Avenel, Euroa, Nagambie and Violet Town in consultation with GVW.
- 5.2.2 Priorities for extensions to existing reticulated sewerage services are Euroa, Nagambie, Violet Town and Avenel, in that order of priority.
- 5.2.3 Implementation of the strategic plan created by Council and GVW for extensions to existing reticulated sewerage networks.
- 5.2.4 All proposed developments requiring Council approval must have an LCA developed in accordance with the best practice 12-step process in the EPA's *Code of Practice – Onsite Wastewater Management 2013*.
- 5.2.5 Provision of a land capability assessment template to submit with any planning permit application or application for a Permit to Install an onsite system.
- 5.2.6 Second priority for the proactive inspection program.
- 5.2.7 Preparation of an amendment to the Strathbogie Planning Scheme to reflect existing development patterns on the fringes of townships in accordance with the recommendations of the *2004 Strathbogie Shire Rural Residential Strategy*.
- 5.2.8 Investigation into appropriate planning scheme provisions and infrastructure strategies for the unsewered, unplanned settlements of Kirwans Bridge and Baxters Road to avoid adverse cumulative impacts on the adjacent Nagambie Waterway.
- 5.2.9 Roll out of an onsite wastewater system education campaign for residents and landowners, including an annual information forum in partnership with GMW and the EPA.
- 5.2.10 Exhibition and adoption of an amendment to the Strathbogie Planning Scheme for the application of an Environmental Significance Overlay over declared water supply catchments and buffer areas around potable water offtake points.
- 5.2.11 Annual information/training session for local LCA consultants and plumbers in partnership with GVW.

### 5.3 Low Risk Minor Catchments

Hills Minor Catchments:	No. 2 Burnt Creek	No. 4 Deep Creek
	No. 5 Faithfulls Creek	No. 6 Five Miles Creek
	No. 7 Godfreys Creek	No. 13 Wormangal Creek
Plains Minor Catchments:	No. 14 Broken River	No. 21 Major Creek
	No. 24 Sheep Pen Creek	

#### STRATEGIES:

- 5.3.1 Third priority for the proactive inspection program.
- 5.3.2 Roll out of an onsite wastewater system education campaign for residents and landowners, including an annual information forum in partnership with GMW and the EPA.
- 5.3.3 Annual information/training session for local LCA consultants and plumbers.
- 5.3.4 Provision of a template for the assessment of a site's capacity to treat and retain domestic wastewater within site boundaries.

### 5.4 Greenfield Development and Rezoning Proposals in All Areas

Greenfield development means land that is either subject to an amendment to the Strathbogie Planning Scheme to rezone land for residential purposes, or land that is subject to a large-scale subdivision proposal or other form of large-scale residential development.

#### STRATEGIES:

- 5.4.1 All new greenfield development in unsewered areas must meet all aspects of the EPA's *Code of Practice – Onsite Wastewater Management 2013*. This includes setback distances for primary and secondary treatment plants and disposal/irrigation areas from waterways and drainage lines.
- 5.4.2 All greenfield development in sewerred townships must connect to reticulated sewerage infrastructure in accordance with GVW requirements and future service provision planning.
- 5.4.3 Development of a strategic document identifying future wastewater infrastructure service provision for vacant land identified by the 2004 *Strathbogie Shire Rural Residential Strategy* as being appropriate for rezoning from Farming Zone to a residential zone be jointly developed by Council and GVW.

### 5.5 Infill Development in All Areas

Infill development is defined as being proposals to construct a dwelling on existing, subdivided vacant lots in established townships and settlements.

#### STRATEGIES:

- 5.5.1 In principle, all infill development must be designed to meet all EPA *Code of Practice – Onsite Wastewater Management 2013* standards.



5.5.2 Any variance to EPA Code of Practice standards will only be considered where:

- The land capability assessment has been undertaken in accordance with the requirements of this DWMP (ie in accordance with the risk rating of the minor catchment within which the site is located); and
- The LCA has been reviewed and approved by Council's Environmental Health Officer and, where appropriate, GMW and GVW; and
- The LCA contains mitigation measures to ensure that the reduction of the Code of Practice standard does not pose an unacceptable cumulative risk.

## 5.6 Redevelopment/Extensions of Existing Unsewered Dwellings in All Areas

While a key aspect of this DWMP is to commence the process for the provision of community wastewater systems in the highest risk townships and ensure GVW's future plans for extensions to existing reticulated networks enable the decommissioning of onsite systems, both initiatives will take time to plan and implement.

There are also settlements and townships such as Ruffy, Old Longwood, Locksley, Mangalore, Mitchellstown, Miepoll and Graytown that are not identified as high priority areas for infrastructure investment given lower development pressures and fewer environmental constraints.

These areas, along with other onsite systems on rural properties scattered across the Shire, will be managed through the proactive inspection program outlined in this document and through increased community knowledge about the importance of maintaining their onsite system.

There are also other settlements such as Kirwans Bridge and Baxters Road where there is a growing trend of redeveloping ageing holiday homes for permanent residences. Given these areas' proximity to the Nagambie Waterway further discussion and planning between GVW and Council is required to ensure that the most suitable, long-term option to service these areas is explored.

Such measures are to be supported by seeking improvements to individual onsite systems, which will lead to overall cumulative public health and environmental benefit as redevelopment of existing housing stock occurs. Council's Environmental Health Officer currently makes an assessment, when redevelopment is proposed, as to whether or not the environmental and public health impacts are such that a complete system upgrade is required or whether alterations to the existing system will suffice.

It must be acknowledged, however, that a number of redevelopment sites will not be able to meet all EPA Code of Practice standards given many will be far less than the 2 hectare minimum lot size identified by Dr Robert Edis as being capable of retaining wastewater within site boundaries (see Section 7 below).

## STRATEGIES:

Following discussions with GMW and GVW the following approach is to be applied to the redevelopment of existing, unsewered dwellings:

- 5.6.1 If the redevelopment site is located in an unsewered dwelling within the township boundaries of Avenel, Euroa, Nagambie or Violet Town discussions must be held with GVW about connection to reticulated sewer prior to the submission of any application to Council for either a planning permit or a Permit to Install/Alter an onsite domestic wastewater system. The objective is to maximise connections to reticulated sewer.
- 5.6.2 Should Council and GVW agree that connection to reticulated sewer is not feasible in the short term (ie up to 2 years), a land capability assessment must be submitted to Council for review that meets the requirements of this DWMP.
- 5.6.3 Redevelopment sites outside of GVW serviced areas must meet the requirements outlined in dot point 4 below to ensure a public health and environmental cumulative benefit is gained through the proposed redevelopment.
- 5.6.4 Consideration to varying one or more standards in the EPA Code of Practice will only be considered:
  - where the LCA identifies maintenance, land management requirements and/or system upgrades to ensure as many EPA standards are met as possible; and
  - where the LCA concludes that if this work is undertaken there will be no cumulative risk posed by the proposed redevelopment; and
  - Measures are included in the LCA, permit to install and certificate to use the onsite system to improve the quality of any grey water being discharged from the site (if the existing system treats black water only).
- 5.6.5 If the redevelopment site is located in either Strathbogie or Longwood townships the upgrade of any existing system, or design of a new system, should ensure compatibility with connection to a future community wastewater system. Discussions with Council's Environmental Health Unit and GVW will be required to identify design requirements.

Adopting the above approach means that over time cumulative benefits relating to amenity, public health and environmental health will be gained and connection to reticulated service maximised.

Council is also being mindful of the fact that some households will be unable to afford to upgrade to new sophisticated treatment systems in order to meet all Code of Practice standards. This approach is consistent with the parameters set by the Essential Services Commission, which caps the levels of contribution made by residents when connecting to newly constructed reticulated infrastructure.

It is felt that while the upgrade to new, compliant systems should be the default position, many sites and households will be unable to meet this objective and thus flexibility may need to be applied.

## 6. Management Strategies for Townships in High and Medium Risk Minor Catchments

This section outlines key data, environmental issues and actions to address the particular domestic wastewater management challenges and opportunities faced in each township.

### 6.1 Strathbogie Township – High Risk

#### Summary:

- Unsewered township.
- Located in the Seven Creeks Declared Water Supply Catchment.
- 53 known onsite wastewater management systems within township boundaries.
- Spring Creek runs through the township directly into Seven Creeks to the south.
- Around 30 vacant lots within the Township Zone.
- Township located within an Erosion Management Overlay.
- High annual rainfall area with an average rainfall of 827mm (2001 – 2014), highest 1458 mm (2010) and lowest 431 mm (2006).

Map 2 Vacant Land – Strathbogie Township



STRATHBOGIE  
Date created: May 2015



Disclaimer Note  
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Vacant land mapped at parcel level using aerial photography captured in November 2013

Source: Strathbogie Shire Geographical Information System (GIS)

## **ACTIONS:**

### **SHORT TERM (1 – 2 YEARS):**

1. Highest priority within the Shire for the provision of a reticulated domestic wastewater system.
2. Proactive inspection of all existing systems, focusing initially on pre 2005 systems.
3. Preparation of a business case/scoping document for the preparation of a whole of water cycle plan to support subsequent funding applications.
4. Seek funding contributions from GMW, GBCMA, GVW and the State Government for the preparation of a whole of water cycle management plan to investigate opportunities for the management of domestic wastewater through a community system, improved stormwater infrastructure and management, water recycling opportunities for the football ground and Strathbogie Golf Course and efficient use of potable water.
5. Completion of the whole of water cycle management plan for Strathbogie township in partnership with GMW, GVW and the GBCMA.
6. Allocation of funds by Strathbogie Council to improve stormwater management infrastructure to implement the Strathbogie Shire *Stormwater Management Plan*.
7. Commencement of the preparation of an Environmental Significance Overlay for the Seven Creeks/Mountain Hut Declared Water Supply Catchment in consultation with GVW and GMW.

### **MEDIUM TERM (3 – 5 YEARS):**

8. Commencement of the implementation of the whole of water cycle management plan's recommendations.
9. Continued partnership with GVW to further the provision of a community wastewater system.

### **LONG TERM (> 5 YEARS):**

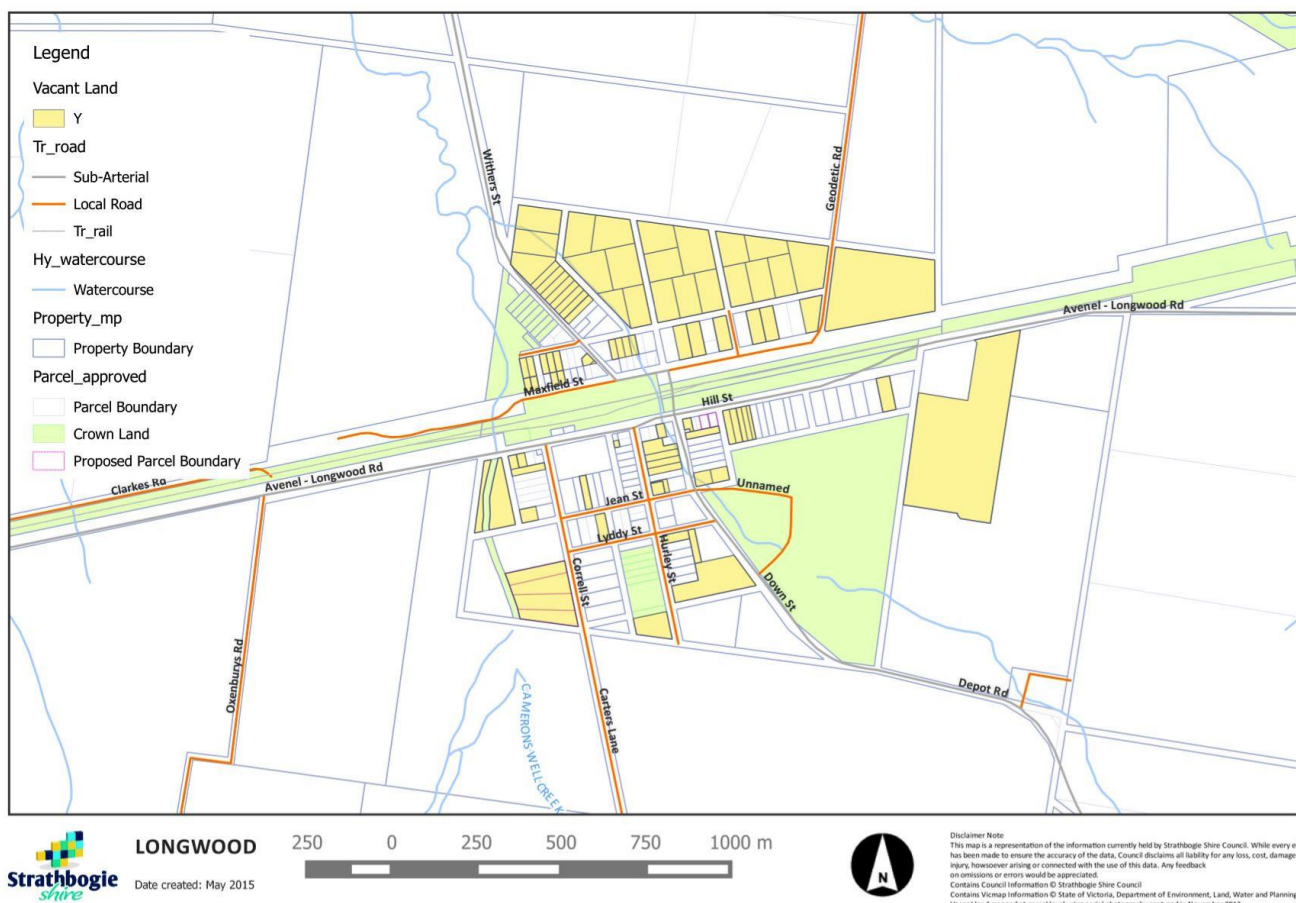
10. Implementation of the whole of water cycle management plan's recommendations.
11. Continued partnership with GVW to further the provision of a community wastewater system.

## 6.2 Longwood – High Risk

### Summary:

- Unsewered township.
- 101 known onsite wastewater management systems within township boundaries.
- Two watercourses run through the township, including Camerons Well Creek.
- Land in the north west and western section of the township is subject to a Land Subject to Inundation Overlay.
- Around 90 vacant lots within the Township Zone and Low Density Residential Zone.
- High annual rainfall area with 90<sup>th</sup> percentile rainfall of 867mm (1913 – 2014), highest 1221mm (1973), lowest 297mm (1972).

Map 3 Vacant Land – Longwood



Source: Strathbogie Shire Geographical Information System (GIS)

### ACTIONS:

#### SHORT TERM (1 – 2 YEARS):

1. Equal highest priority for proactive inspections of all existing systems, focusing on pre 2005 systems and those located within the Land Subject to Inundation Overlay initially.
2. Allocation of funds by Strathbogie Council to improve stormwater management infrastructure to implement the Strathbogie Shire Stormwater Management Plan.

**MEDIUM TERM (3 – 5 YEARS):**

3. Commencement of discussions with GVW and the GBCMA about the investigation and design of a community wastewater management system.
4. Implementation of the Stormwater Management Plan for the township by Strathbogie Shire for the township as per of the whole of water cycle management philosophy.

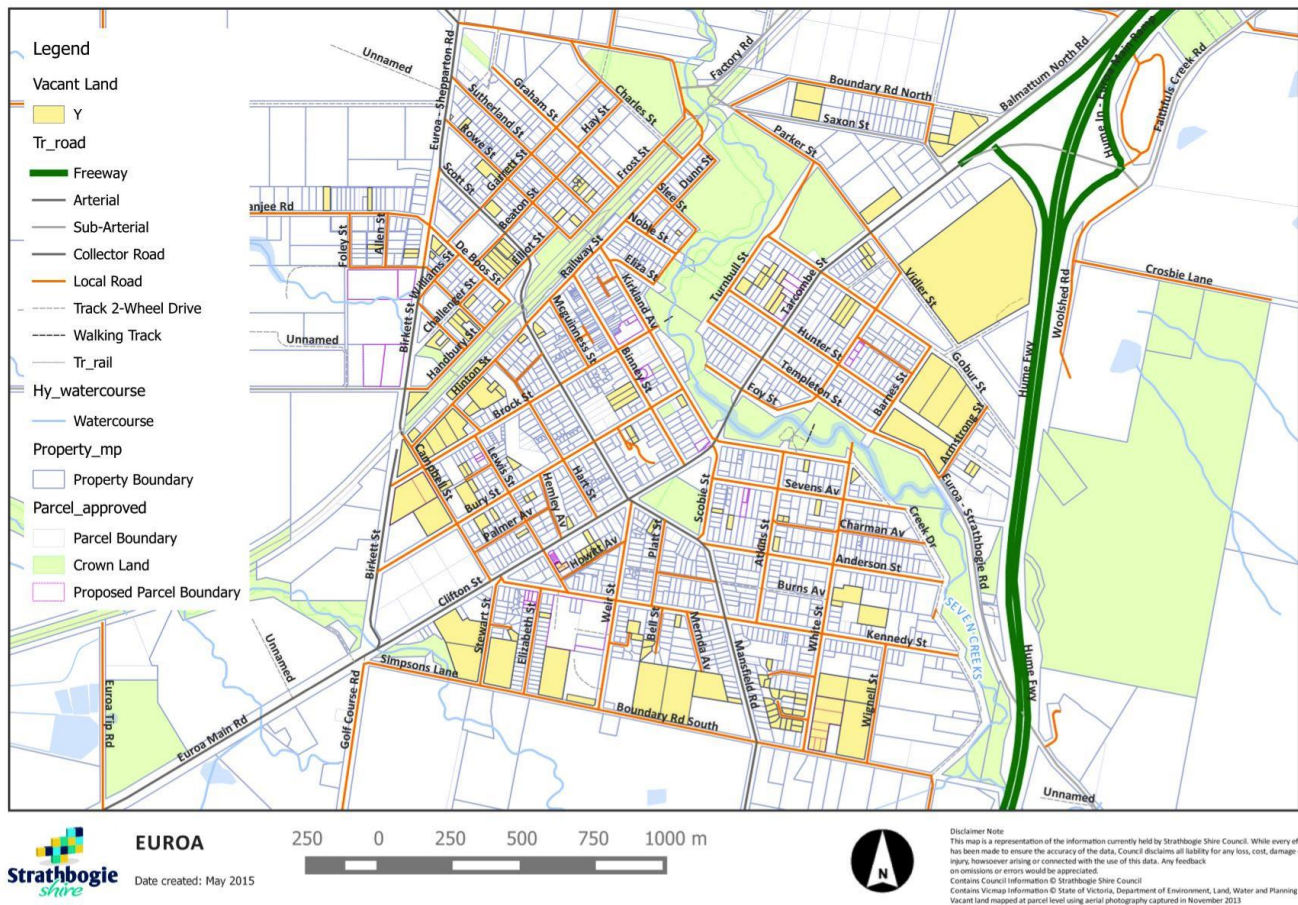
**LONG TERM (> 5 YEARS):**

5. Second highest priority for the provision of a community domestic wastewater management system.
6. Continued partnership with GVW to further the provision of a community wastewater system.
7. Upgrade of stormwater infrastructure by Strathbogie Shire.

### 6.3 Euroa – Medium Risk

- Partially sewered township.
- 77 known onsite wastewater management systems within township boundaries.
- A high proportion of GVW areas for future investment are developed but are not connected to reticulated sewer (averaging around 80% developed).
- Euroa is in the top 10 GVW Growth Areas (2013/14 Annual Report) and is identified in the *Hume Regional Growth Plan* as a moderate growth location.
- The township is expanding into the surrounding Farming Zone through incremental rural residential development.
- GVW has identified the need for an additional 292 connections to cater for future residential growth.
- Dwellings are connected to reticulated water, increasing onsite wastewater volumes.
- The Seven Creeks and other tributaries run through the township.
- A high proportion of lots are in a Floodway or the Land Subject to Inundation Overlay.
- Greater than 70 vacant properties within a General Residential or Rural Living 1 Zone.
- High annual rainfall area with 90<sup>th</sup> percentile rainfall of 873 mm (1883 – 2014), highest of 1119mm (1973), lowest of 286mm (2006).

Map 4 Vacant Land – Euroa



Source: Strathbogie Shire Geographical Information System (GIS)

## **ACTIONS:**

### **SHORT TERM (1 – 2 YEARS):**

1. Highest priority for extensions to GVW's existing reticulated network given inundation issues and subsequent cumulative environmental impacts.
2. GVW's nominated Development Areas R6 and R7 are the highest priorities given these areas are significantly developed (> 80% of lots contain a dwelling) and there are a number of non-compliant onsite systems present.
3. Second priority for proactive inspection of existing systems, initially focusing on pre 2005 systems and those located within the Land Subject to Inundation Overlay.
4. Allocation of funds by Strathbogie Council and the GBCMA to improve stormwater management infrastructure to implement the *Strathbogie Shire Stormwater Management Plan*.

### **MEDIUM TERM (3 – 5 YEARS):**

5. Completion of inspections of all existing onsite systems.
6. Commencement of works by Strathbogie Council and the GBCMA to improve stormwater management infrastructure to implement the *Strathbogie Shire Stormwater Management Plan*.
7. Investment by GVW to extend reticulated sewer networks.

### **LONG TERM (> 5 YEARS):**

8. Completion of extensions to reticulated sewerage network to ensure all lots within the township boundaries are provided the ability to connect to reticulated sewer.
9. Upgrade of stormwater infrastructure by Strathbogie Shire and the GBCMA.





## **ACTIONS:**

### **SHORT TERM (1 – 2 YEARS):**

1. Second highest priority for extensions to GVW's existing reticulated network given the township's location on the Nagambie waterway and potential for cumulative impacts.
2. Discuss the need to include existing unsewered development in Park Street (to the far south east corner of the township which is 75% developed) and existing dwellings on the southern side of Racecourse Road (which is 70% developed) in GVW's future investment strategy.
3. Development of a strategic document by GVW and Council to develop infrastructure service plans for land identified as suitable for residential development by the 2004 *Strathbogie Shire Rural Residential Strategy*, given incremental development of these areas is already occurring.
4. Preparation and adoption of an amendment to the Strathbogie Planning Scheme to reflect existing development patterns and to implement the recommendations of the 2004 *Strathbogie Shire Rural Residential Strategy*.
5. Third priority for proactive inspection of existing systems.
6. Investigation as to whether investment is required to improve stormwater management infrastructure in the eastern area of the township as a means of implementing the *Strathbogie Shire Stormwater Management Plan* in consultation with GMW and the GBCMA.
7. Investigate the need to apply a Land Subject to Inundation Overlay to eastern parts of the town, around the Tablik Depression, in consultation with the GBCMA.

### **MEDIUM TERM (3 – 5 YEARS):**

8. Completion of inspections of all existing onsite systems.
9. Allocation of funds and commencement of works for any required stormwater management infrastructure as per the outcomes of the findings of the investigation undertaken in Years 1 – 2.
10. Investment by GVW to extend reticulated sewer networks, including inclusion of land rezoned to residential development referred to in the action above.

### **LONG TERM (> 5 YEARS):**

11. Completion of extensions to reticulated sewerage network to ensure all lots within the township boundaries and residentially zoned land around the Nagambie Waterway are provided the ability to connect to reticulated sewer.
12. Upgrade of stormwater infrastructure by Strathbogie Shire and the CMA, where appropriate.

### 6.5 Violet Town – Medium Risk

- Partially sewered township.
- 56 known onsite wastewater management systems within township boundaries.
- GVW has identified the need for an additional 377 connections to cater for future residential growth.
- Honeysuckle Creek runs through the northern section of the town.
- Dwellings are connected to reticulated water increasing onsite wastewater volumes.
- Extensive areas of the township are in a Floodway or Land Subject to Inundation Overlay.
- The town and surrounding areas have experienced relatively high levels of growth (9% population growth and 17% increase in the number of dwellings between 2001 – 11).
- High annual rainfall area, with 90<sup>th</sup> percentile rainfall of 868mm (1883 – 2014), highest 1128mm(1956), lowest 256mm(1982).

Map 6 Vacant Land – Violet Town



**VIOLET TOWN** 250 0 250 500 750 1000 m  
 Date created: May 2015



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 Vacant land mapped at parcel level using aerial photography captured in November 2013

Source: Strathbogie Shire Geographical Information System (GIS)

#### ACTIONS:

#### SHORT TERM (1 – 2 YEARS):

1. Development of a strategic document by GVW and Council to develop infrastructure service plans for land identified as suitable for residential development by the 2004 Strathbogie Shire Rural Residential Strategy, given incremental development of these areas is already occurring.

2. Preparation and adoption of an amendment to the Strathbogie Planning Scheme to reflect existing development patterns and to implement the recommendations of the 2004 *Strathbogie Shire Rural Residential Strategy*.

**MEDIUM TERM (3 – 5 YEARS):**

3. Third highest priority for extensions to GVW's existing reticulated network.
4. Fourth priority for proactive inspection of existing systems.
5. Investigation as to whether investment is required to improve stormwater management infrastructure in the eastern area of the township as a means of implementing the *Strathbogie Shire Stormwater Management Plan* in consultation with the GBCMA.

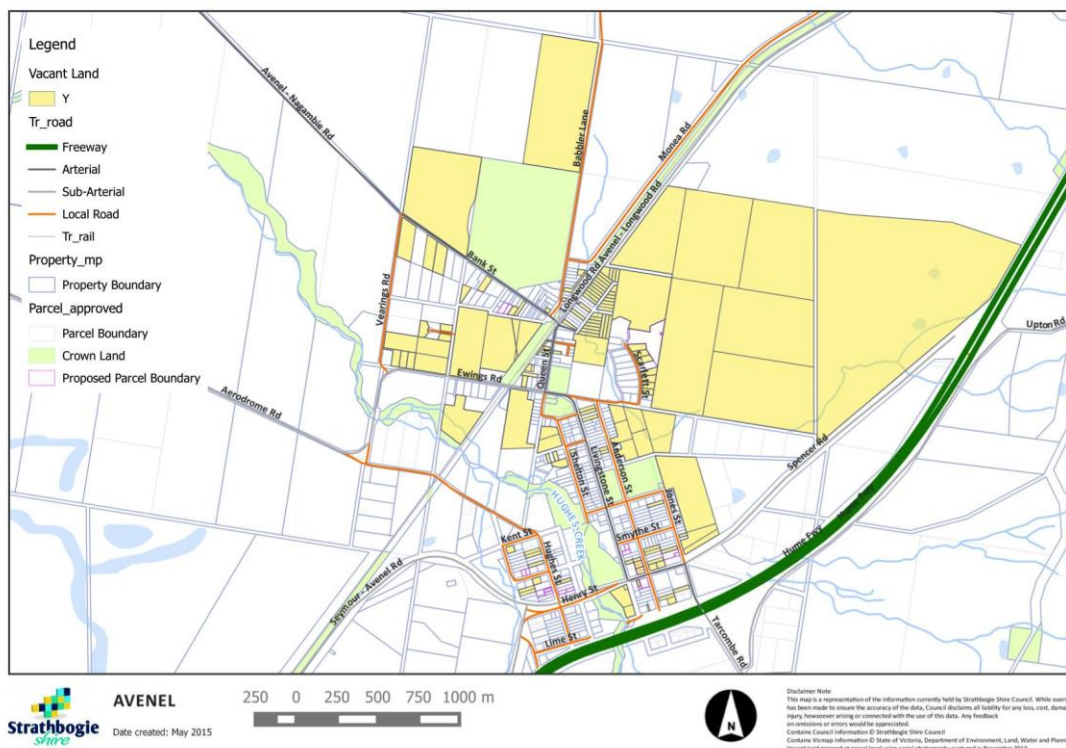
**LONG TERM (> 5 YEARS):**

6. Completion of extensions to reticulated sewerage network to ensure all lots within the township boundaries are provided the ability to connect to reticulated sewer.
7. Allocation of funds and commencement of works for any required stormwater management infrastructure.

## 6.6 Avenel – Medium Risk

- Partially sewered township.
- 38 known onsite wastewater management systems within township boundaries.
- Avenel is in the top 10 GVW Growth Areas (2013/14 Annual Report).
- GVW has identified the need for an additional 564 connections to cater for future residential growth.
- The town and surrounding areas have experienced relatively high levels of growth (10% population growth and 5% increase in the number of dwellings between 2001 – 11).
- Greater than 70 vacant properties within the General Residential Zone and Rural Living 1 Zone.
- Several properties in the west of town are within either a Floodway Overlay or Land Subject to Inundation Overlay.
- High annual rainfall area, with 90<sup>th</sup> percentile rainfall of 838 mm (1909 – 2014), highest 1034mm (1973), lowest 260mm (1982).

Map 7 Vacant Land – Avenel



Source: Strathbogie Shire Geographical Information System (GIS)

### ACTIONS:

#### SHORT TERM (1 – 2 YEARS):

1. Development of a strategic document by GVW and Council to develop infrastructure service plans for land identified as suitable for residential development by the 2004 Strathbogie Shire Rural Residential Strategy, given incremental development of these areas is already occurring.

### MEDIUM TERM (3 – 5 YEARS):

2. Fourth highest priority for extensions to GVW's existing reticulated network as properties closest to waterways are sewered and much of the vacant land is Rural Living 1 (ie a minimum 2ha lot size);
3. Investigation as to whether investment is required to improve stormwater management infrastructure in the eastern area of the township as a means of implementing the Strathbogie Shire *Stormwater Management Plan*, in consultation with the GBCMA.
4. Preparation and adoption of an amendment to the Strathbogie Planning Scheme to reflect existing development patterns and to implement the recommendations of the 2004 *Strathbogie Shire Rural Residential Strategy*.
5. Fifth priority for proactive inspection of existing systems.

### LONG TERM (> 5 YEARS):

6. Completion of extensions to the reticulated sewerage network to ensure all lots within the township boundaries are provided the ability to connect to reticulated sewer.
7. Allocation of funds and commencement of works for any required stormwater management infrastructure.

## **6.7 Kirwans Bridge and Baxters Road Settlements - Medium Risk**

- The Kirwans Bridge consists of over 70 unsewered dwellings on small lots on the shores of Lake Nagambie.
- The settlement is supplied with reticulated water by GVW.
- Up to 30 onsite wastewater systems at Kirwans Bridge would be located within 150 metres of the high water mark of the Lake.
- Baxters Road consists of over thirty unsewered dwellings on small lots on the shores of Lake Nagambie, some within 100 metres of Goulburn Weir.
- Around 90% of onsite systems at Baxters Road would be within 150 metres of the high water mark of the lake.
- Both settlements are located in a Farming Zone.
- Both are located on the shores of Lake Nagambie/Goulburn Weir and therefore have a high degree of environmental sensitivity, yet are not subject to any of the planning scheme controls applied to lakeside development to the south of Lake Nagambie.

### ACTIONS:

#### SHORT TERM (1 – 2 YEARS):

1. Investigation into whether existing planning provisions for Kirwans Bridge and Baxters Road appropriately reflects current development patterns, growth pressures and infrastructure needs as part of the implementation of the 2004 *Rural Living Strategy*.

#### MEDIUM TERM (3 – 5 YEARS):

2. Implementation of recommendations from investigations into appropriate zoning and infrastructure planning undertaken under the actions listed above, including amendments to the Strathbogie Planning Scheme to ensure planning scheme provisions adequately control unsewered future development in these environmentally sensitive areas.
3. Commencement of discussions with GVW as to the possibility of investigating the feasibility and design of a community wastewater system at Kirwans Bridge given the size of the

settlement, the increasing number of permanent residents and the environmental sensitivity of the settlement's location.

4. Sixth priority for proactive inspection of existing systems.
5. Investigation as to whether investment is required to improve stormwater management infrastructure in the eastern area of the township as a means of implementing the Strathbogie Shire *Stormwater Management Plan* in consultation with GMW.

#### **LONG TERM (> 5 YEARS):**

6. Allocation of funds and commencement of works for any required stormwater management infrastructure.

### **6.8 Other Settlements – Medium Risk**

- Unsewered townships and settlements such as Old Longwood, Locksley, Mitchellstown, Miepoll, Graytown and Mangalore are experiencing low levels of growth.

#### **ACTIONS:**

##### **SHORT TERM (1 – 2 YEARS):**

1. Investigation into whether existing planning provisions appropriately reflect current development patterns, growth pressures and infrastructure needs as part of the implementation of the 2004 *Rural Living Strategy*.

##### **MEDIUM TERM (3 – 5 YEARS):**

2. Implementation of recommendations from investigations into appropriate zoning and infrastructure planning undertaken under the actions listed above, including amendments to the Strathbogie Planning Scheme to ensure planning scheme provisions.

##### **LONG TERM (> 5 YEARS):**

3. Seventh priority for the proactive inspection of existing systems.

## 7. Land Capability Assessments

The land capability assessment (LCA) is the key risk analysis tool used to identify whether a site is capable of meeting the requirements of SEPP WoV and the EPA's Code of Practice in terms of containing all wastewater within site boundaries. It is also the primary means through which the assessor outlines management programs to maximise system efficiency.

LCAs must be submitted with any planning permit application for a residence or building that generates wastewater (ie it has a shower, toilet or sink), when an application for a Permit to Install an onsite system. A comprehensive LCA is required for any development site located in a DWSC.

Section 3.6.1 of the EPA's *Code of Practice – Onsite Wastewater Management 2013* outlines best practice standards for the preparation of an LCA. The EPA *Information Bulletin on Land Capability Assessment for Onsite Domestic Wastewater Management (Publication 746.1, 2003)* also identifies various site factors that could be assessed when preparing an LCA.

The Information Bulletin also stresses the need for Councils to be clear about the level of detail required for an LCA to ensure consistency and also to streamline the approvals process.

The purpose of this section is to do just that; Council wants to ensure all stakeholders are clear about the level of assessment required when a subdivision, development or installation of a new onsite system is proposed.

Greater clarity, the provision of additional online information and templates for land capability experts were all measures that gained support from LCA experts who participated in our DWMP online survey.

### 7.1 Risk Analysis Ratings to be used in all Land Capability Assessments

The Information Bulletin aims to provide a consistent mechanism to assess various risk factors that can either promote or retard onsite wastewater processing and retention. Factors include soil type, slope, rainfall, evapotranspiration rates, proximity to waterways and the like.

Strathbogie Shire Council wishes to adopt a consistent risk rating system for all assessments. This section outlines how the rating system is to be applied and how the overall risk rating influences the type of system to be installed, land management practices and ongoing maintenance.

Each individual risk factor is to be awarded a rating of 1 – 3, where 1 represents a low environmental risk or very good performance for an individual factor and a rating of limiting represents a very high environmental risk or very poor performance.

A set of LCA templates for high, medium and low risk areas will be developed by Council as a means of clarifying how the ratings work.



Once individual factors have been rated, an overall risk rating for the site is to be specified in accordance with the following:

**Overall rating of 1 (Low Risk - ie most factors have a 1 rating): the effluent envelope is suitable for onsite septic tank discharge and environmental hazards are very slight.** Standard requirements for the design, installation and ongoing management should provide sufficient to manage risk.

**Overall rating of 2 (Medium Risk - ie most factors have a 2 rating): the site is generally suitable for effluent disposal but there may be slight to moderate environmental hazard always present.** One or more land limitations are present and therefore careful siting, preparation and specialised design may be required to respond to site constraints. An ongoing management plan should be submitted to Council with the development application and prior to works commencing. A conventional trench system may not be appropriate and so a higher level of treatment and ongoing monitoring may be required.

**Overall rating of 3 (High Risk - ie most factors have 3 rating with one or more limiting factors): parts of the site have poor land capability and there is a high environmental risk.** Significant difficulties are expected in siting, installation and daily operation. Conventional trench systems are not suitable. A very high level of engineering and design is essential and close supervision is required to avoid environmental impacts when works are being undertaken.

Treatment systems suitable for this rating are those that produce high quality secondary effluent (eg an aerated wastewater treatment system). A comprehensive ongoing land management, maintenance and monitoring program is essential.

If several factors have a limiting rating reticulated sewer may well be the only viable option to enable development, which may mean that development cannot occur if there is no reticulated service in the locality.

## **7.2 Calculating the Combined Risk Rating for an Individual Site Using the Edis Algorithm for Land within a High Risk Minor Catchment or Declared Water Supply Catchment**

Dr Robert Edis was commissioned by Mansfield Shire Council to assist with the preparation of a comprehensive risk analysis model as part of their DWMP Pilot Project.

Since the acceptance of Dr Edis' approach to analysing the risk posed by an individual onsite wastewater system by the EPA, VicWater and the former DEPI (now DELWP), Goulburn Murray Water have applied the algorithm Dr Edis developed to calculate overall risk for an individual site within Mansfield Shire and other local government areas within their jurisdiction (eg Pyrenees Shire).

Strathbogie Shire believes that calculating the overall risk posed by an individual site, which considers factors over and above the EPA's model, is a sound approach that **should be applied when a land capability assessment has been prepared in a high risk minor catchment or for any site within a declared water supply catchment** listed in Schedule 5 of the *Catchment and Land Protection Act 1994*.

Table 2 Land Capability Risk Factors and Ratings – Edis Algorithm

Factor	Land Capability Risk Rating		
	Low Risk	Medium Risk	High Risk
Distance to potable reservoir	> 15 km	2 – 15 km	< 2 km
Soil type rating *	1	2	3
Distance to river	> 80 m	40 – 80 m	< 40 m
Distance to stream	> 80 m	40 – 80 m	< 40 m
Distance to drain	> 40 m	10 – 40 m	< 10 m
Lot size	> 10ha	2 – 10 ha	< 2 ha
Density (houses/km <sup>2</sup> )	< 20 dwellings / km <sup>2</sup>	20 – 40 dwellings / km <sup>2</sup>	> 40 dwellings / km <sup>2</sup>
LCA rating	1	2	3
System fail rate **	< 5%	5 – 10%	> 10%

Source: *Approaches for Risk Analysis of Development with On-Site Wastewater Disposal in Open, Potable Water Catchments* (Dr Robert Edis April 2014)

\* Attachment 1 identifies the risk ratings to be applied to various soil types for the purpose of this algorithm, based on Table 3 from *Approaches for Risk Analysis of Development with On-Site Wastewater Disposal in Open, Potable Water Catchments* (Dr Robert Edis April 2014).

\*\* System fail rates will be based on the LCA expert and Council's Environmental Health Officers' experience and local knowledge.

Each risk factor is to be awarded a value based on the following: **Low Risk** = 1 point, **Medium Risk** = 2 points and **High Risk** = 3 points. To derive the **Combined Risk Rating** for a site the following algorithm must be used after the LCA has been prepared:

$$R_n = ((R_{Res} + R_{Soil}) \times (R_{Riv} + R_{Str} + R_{Drain} + R_{Lot}) + (2 \times R_{LCA}) + (3 \times R_{Fail} \times R_{Den}))/10$$

where

$R_n$  = combined risk number

$R_{Res}$  = distance to reservoir risk rating

$R_{Soil}$  = soil (or Land-Soil) risk rating

$R_{Riv}$  = distance to river risk rating

$R_{Str}$  = distance to stream risk rating

$R_{Drain}$  = distance to drain risk rating

$R_{Lot}$  = lot size risk rating

$R_{LCA}$  = land capability assessment risk rating

$R_{Fail}$  = system fail rate risk rating

$R_{Dens}$  = density of development risk rating

The LCA and Edis calculation will then be forwarded to GMW and GVW for their review and comment where required by the Strathbogie Planning Scheme.

### 7.3 Land Capability Assessment Requirements for High Risk Areas or Land in a Declared Water Supply Catchment

All sites located within the **high risk** catchments of Hills Minor Catchment 12 Seven Creeks and Castle Creek and Plains Minor Catchment 22 Pranjip Creek or land within a Declared Water Supply Catchment **must have a land capability assessment** prepared in accordance with the following:

1. The LCA must be a design document that includes all of the twelve stages outlined in Section 3.6.1 of the *EPA's Code of Practice – Onsite Wastewater Management, February 2013*; and
2. Must include:
  - an in situ permeability test
  - a water/nutrient balance
  - a feature survey which identifies surface flows and relevant soil horizons
  - an assessment of any required soil amelioration.
3. An overall risk for the site must be calculated using the Edis Algorithm when the LCA has been prepared.

A template for use by land capability assessment experts will be provided by Council.

### 7.4 Land Capability Assessment Requirements for Land in a Medium Risk Minor Catchment

Due to the potential for cumulative impacts from domestic wastewater on public health and water quality, all sites located in a **medium risk** minor catchment and outside of a declared water supply catchment must have a LCA prepared in accordance with all of the twelve stages outlined in Section 3.6.1 of the *EPA's Code of Practice – Onsite Wastewater Management, 2013*.

A template for use by land capability assessment experts will be provided by Council.

### 7.5 Assessment Guidelines for Land within a Low Risk Minor Catchment

Council's Environmental Health Officer will provide direction as to what type of analysis is required to be submitted with applications for any subdivision, development or Permit to Install an onsite system application for sites within a **low risk** minor catchment. This will be based on their local knowledge and on local geological and environmental constraints.

A template for use by land capability assessment experts will be provided by Council.

## 8. Monitoring and Compliance of Onsite Systems

Council currently undertakes proactive inspections where a Permit to Install an onsite system has been issued but there is no record of a Certificate to Use the system (ie when an inspection has been undertaken by Council to ensure the system has been installed correctly and therefore can be used).

It is acknowledged that this proactive program can be widened and Council is mindful that compliance with Section 173 Agreements is an area where increased vigilance is required.

There is certainly support from land capability experts and the local plumber who participated in the DWMP online survey for increased inspection and compliance activities by Council to ensure landowners and residents comply with permit conditions around system maintenance.

We also know old systems are the most likely to fail, increasing the potential for cumulative impacts on public health and local waterways.

Accordingly, the following priorities will be adopted around the inspection of installed systems and monitoring of permit condition compliance:

1. The majority of resources will be focused on high risk minor catchments and medium risk minor catchments containing townships;
2. The **first phase** of the inspection and compliance program will be within the high risk minor catchments;
3. The first phase will also include an inspection of all sites affected by a Section 173 Agreement relating to onsite wastewater management;
4. The **second phase** of the inspection program (ie when Phase 1 is complete) will focus on systems within townships in medium risk minor catchments;
5. The **third phase** of the inspection program (ie when Phase 2 is complete) will consist of inspections of systems in the remaining medium risk minor catchments that do not contain a township.

It is considered that Phases 1 and 2 can be completed within the five-year life of this DWMP.

Should Council receive a complaint from a land owner regarding a system which they believe poses a public health risk or is adversely impacting on local amenity, regardless of the risk rating of the minor catchment within which the site lies, this complaint will be considered by Council as a high priority in terms of an inspection and compliance action.

### Inspection and Compliance Program Philosophy

Moorabool Shire Council has had considerable success with its proactive inspection program over the past four years. It is a program based on the philosophy of educating the community and landowners about their system and how to maintain it in the future.

This 'education first' approach is in keeping with the handful of online survey responses from local experts and local land owners in that:

- Some land owners don't know what type of onsite system they have;
- Some don't know where their system is located;

- Many do not know what their obligations are in terms of de-sludging septic tanks and maintaining their onsite system; and
- There is an overall low level of knowledge about onsite systems and what day-to-day practices should be adopted to ensure systems work effectively.

Moorabool's inspection program was also based on the premise that small, inexpensive maintenance tasks was the best way to achieve cumulative benefits, rather than requiring all land owners to upgrade an entire system to comply with current standards, which often requires an investment of several thousand dollars.

Key components of the inspection program should be:

1. Notifying communities that inspections will be undertaken prior to commencement.
2. Supplying a device that allows the inspector to record the exact GPS location of the onsite system so that a map can be provided to the resident/landowner for future reference and the coordinates entered into the Shire's GIS system.
3. Sending a follow up letter to the resident/landowner either congratulating them on their efforts to maintain an effective system or to identify the maintenance issues that require attention.
4. Providing a three-month timeframe for the resident/landowner to attend to maintenance requirements before a follow up inspection is undertaken.
5. Reviewing compliance action options, in consultation with the Manager, Governance and Statutory Services, should the resident/landowner not have undertaken the required maintenance.

## 9. Whole of Water Cycle Initiatives

'Whole of Water Cycle' can be defined as integrated multi agency management of, and infrastructure investment in, rainwater harvesting, stormwater management, recycled water, potable water, wastewater and groundwater.

Section 11.6 of the Background Report outlines whole of water cycle initiatives implemented by Strathbogie Shire and GVW in recent years. The Strathbogie Planning Scheme also provides a sound basis for whole of water cycle initiatives to be supported by Council through planning permit decisions, as well as when making decisions on amendments to the planning scheme.

Existing actions around the reuse of processed wastewater by GVW, stormwater upgrades by Council and the application of environmental standards for future development around the Lake Nagambie should be augmented by the following actions:

- the preparation of whole of water cycle plan for the Strathbogie Township to address existing environmental and public health challenges and facilitate a coordinated effort between Council, GVW, GMW and the GBCMA to improve the township's ability to adapt to long term changes in rainfall and temperature patterns, secure future water supplies and maximise the implementation of water sensitive design technologies (for instance there are good opportunities to reuse recycled wastewater from a communal system to water the local football ground, golf course or to store it for fire fighting purposes);
- use of permit applications for the redevelopment of existing dwellings to improve domestic wastewater outcomes, whether it be installation of water saving devices, connection to reticulated sewerage, upgrades of systems or improvements in the quality of grey water discharged from the property;
- implementation of Council's stormwater management plan, with high risk townships being priority areas for investment in the short term. Improved coordination of decisions around stormwater, floodplain and wastewater infrastructure investment supports the achievement of whole of water cycle objectives;
- integrating stormwater and wastewater strategies to provide a broader decision making context for Council, GVW and the GBCMA, particularly in townships subject to inundation; and
- highlighting the importance of whole of water cycle management measures in the forthcoming Council Plan review for 2016/17 and future Council Plans.

## 10. DWMP Resource Plan

It is essential that the actions outlined in the sections above are implemented in a sensible manner and with appropriate resources. The resource plan is designed to reflect all stakeholders' limited resources.

There are opportunities for Council, water corporations and the CMA to collaborate and contribute resources to derive mutual benefit in achieving their respective corporate aims and legal responsibilities. Wherever possible learnings and resources from other councils will also be used so that Strathbogie's efforts are not diverted into 'reinventing the wheel'. By adopting this approach, again the DWMP is trying to reinforce the need for a collegiate approach to wastewater management to derive the maximum benefit from minimal resources.

Table 3 DWMP Resource Plan

Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
<b>Year 1</b>				
1.1 Complete proactive inspections of all systems in Strathbogie, Longwood and outlying areas in high risk minor catchments (around 150 known onsite systems within township boundaries).	Existing funding in the 2015/16 Budget	0.5 EFT additional resource, including administration	Recurrent	
1.2 Development of a business case to support grant applications for a whole of water cycle management plan for Strathbogie Township. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Existing funding in the 2015/16 Budget	< \$10,000	One off expenditure	Potential for GMW and GVW to make a small contribution

Year 1 (cont'd)				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
1.3 Preparation of grant applications for the Strathbogie Township whole of water cycle plan. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Existing funding in the 2015/16 Budget	Officer time required \$10 – 20,000 Council contribution may be required (ie contingency)	One off expenditure	It is expected some form of State Government grant program will be available, pending detail of the 2015/16 State budget.
1.4 Development and circulation of community education material to improve maintenance standards and permit compliance.	Existing funding in the 2015/16 Budget	< \$1,000	Recurrent	Potential for GMW and GVW to make a small contribution and to cobrand material
1.5 Delivery of an annual workshop for landowners / residents.	Existing funding in the 2015/16 Budget	< \$5,000 Officer time required	Recurrent	Potential for GMW and GVW to make a small contribution, including co-branding of material
1.6 Preparation of land capability assessment templates to help streamline approvals processes and improve the quality and consistency of assessments.	Existing funding in the 2015/16 Budget	< \$5000	One off expenditure	
1.7 Gauge the level of interest in a regional initiative for an annual workshop targeting local LCA experts and Plumbers to improve the quality of assessments, maintenance standards and compliance with permit requirements.	Existing funding in the 2015/16 Budget	< \$5,000 Officer time required	Recurrent	Potential for GMW and GVW to make a small contribution, including co-branding of material



Year 1 (cont'd)				
<b>Actions Based on Level of Priority &amp; Policy Drivers</b>	<b>Primary Funding Source</b>	<b>Estimated level resources and effort</b>	<b>Nature of Funding</b>	<b>Potential Partnerships &amp; External Funding Opportunities / Comments</b>
1.8 Preparation of a Memorandum of Understanding with GMW and GVW.	Existing funding in the 2015/16 Budget	SSC officer time required Up to \$1000 in legal costs	One off expenditure	Adaptation of existing MOUs would minimise costs.
1.9 Preparation of an amendment to the Strathbogie Planning Scheme to: <ul style="list-style-type: none"> <li>• apply an Environmental Significance Overlay to declared water supply catchments and buffer areas around potable water offtake points; and</li> <li>• insert policy statements relating to the DWMP in the Municipal Strategic Statement.</li> </ul>	Task to be included in work program using existing resources	SSC officer time required	One off expenditure	
1.10 Meet with GVW to discuss the need to apply an Environmental Significance Overlay to buffer areas around municipal wastewater treatment plants in accordance with EPA requirements.	Task to be included in work program using existing resources	SSC officer time required	One off expenditure	GVW has stated its intentions to cover the costs of any subsequent request to amend the Strathbogie Planning Scheme to introduce an overlay.

Year 1 (cont'd)				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
1.11 Development of a strategic plan by Council and GVW to clarify the possibilities for reticulated sewer extensions in Euroa, Nagambie, Violet Town and Avenel.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Task to be included in work program using existing resources	SSC officer time required	One off expenditure	GVW to contribute through the dedication of officer time.  Growth areas R6 and R7 in Euroa and Park Street, Nagambie to be high priorities.
1.12 Review of the efficacy of the LCA templates in light of feedback received from use in the field over 12 months.	Task to be included in work program using existing resources	SSC officer time required  Potential to discuss any changes with local consultants at annual training session.	One off expenditure	Potential to inform local consultants about any changes to the templates via the annual training session organised in partnership with GMW.
Year 2				
2.1 Exhibition and adoption of the amendment created by Action 1.7.	Task to be included in work program using existing resources	SSC officer time required  Exhibition costs of around \$2000  Potential for the need to fund an Independent Panel to hear unresolved objections.	One off expenditure	Potential for sharing costs of any Planning Panel with GMW and GVW.
2.2 Completion of the development of a whole of water cycle plan for Strathbogie Township.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	State Government grant	SSC officer time required	One off expenditure	It may be that any State Government grant will require matching funding from Council. Potential for GMW and GVW contributions.

Year 2 (cont'd)				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
2.3 Preparation, exhibition and adoption of the amendment created by Action 1.9.	Task to be included in work program using existing resources	SSC officer time required Exhibition costs of around \$2000 Potential for the need for an Independent Panel to hear unresolved objections, which may cost several thousand dollars.	One off expenditure	GVW has stated its intentions to cover the costs of any subsequent request to amend the Strathbogie Planning Scheme to introduce an overlay.
2.4 Preparation of strategic justification to support an amendment to the Strathbogie Planning Scheme to rezone land in the Farming Zone to other residential zones to reflect settlement patterns and implement the recommendations of the 2004 <i>Rural Residential Strategy</i> and to identify infrastructure needs. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Task to be included in work program using existing resources	SSC officer time required	One off expenditure	Appropriate zoning and overlay controls for Kirwans Bridge and Baxters Road must be reviewed as part of this work
2.5 Complete proactive inspections of all systems in high risk minor catchments, sites where a Section 173 Agreement relates to wastewater management and commence inspections in Euroa and Nagambie.		0.5 EFT additional resource, including administration	Recurrent	
Year 2 (cont'd)				
Actions Based on Level of Priority &	Primary	Estimated level resources	Nature of	Potential Partnerships &

Policy Drivers	Funding Source	and effort	Funding	External Funding Opportunities / Comments
2.6 Reassess the need to deliver an annual workshop for landowners / residents and local LCA experts and Plumbers in partnership with GVW and GMW.		< \$5,000 SSC officer time required	Recurrent	Potential for GMW and GVW to make a small contribution, including co-branding of material
2.7 Allocation of funds for stormwater management improvement works in accordance with Council's Stormwater Management Plan for priority areas such as Strathbogie and Longwood.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Resources to be allocated in future budgets	To be identified	Mixture of one off and recurrent expenditure	Potential for partnerships with the GBCMA and GMW (around the Nagambie Waterway)  Allocation to works in Strathbogie as per the whole of water cycle management plan is a priority
2.8 Explore the need for the introduction of a Land Subject to Inundation Overlay on the eastern side of Nagambie Township with the GBCMA.	Task to be included in work program using existing resources	SSC officer time required An amendment to the Strathbogie Planning Scheme may need to be funded	One off expenditure	Potential for shared costs of any amendment with the GBCMA
2.9 Progression of the strategic plan created under Action 1.9 for reticulated sewer extension planning and work in priority areas.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.		SSC officer time required		GVW resource allocation required

Year 3				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
3.1 Exhibition and adoption of an amendment to the Strathbogie Planning Scheme to rezone land in the Farming Zone to other residential zones to reflect settlement patterns and implement the recommendations of the 2004 <i>Rural Residential Strategy</i> .	Task to be included in work program using existing resources	SSC officer time required  Potential for the need for an Independent Panel to hear unresolved objections, which may cost several thousand dollars	One off expenditure	
3.2 Investigation into appropriate infrastructure strategies for Kirwans Bridge and Baxters Road in consultation with GMW and GVW.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Task to be included in work program using existing resources	SSC officer time required	One off expenditure	
3.3 Complete proactive inspections of all systems in Euroa and Nagambie, with commencement of inspections at Violet Town and Avenel.		0.5 EFT additional resource, including administration	Recurrent	
3.4 Completion of the tri-annual audit of the DWMP's implementation in partnership with GMW and GVW.		< \$5,000 SSC officer time required	Tri-annual recurrent	

Year 3 (cont'd)				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
3.5 Pending the outcome of the review under Action 2.6, deliver an annual workshop for landowners / residents and local LCA experts and Plumbers.		< \$5,000 SSC officer time required	Recurrent	Potential for GMW and GVW to make a small contribution, including co-branding of material
3.6 Commencement of discussions with GVW about the provision of a community system for Longwood township. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Task to be included in work program using existing resources	SSC officer time required	One off expenditure	
3.7 Development of a stormwater strategy for Longwood in consultation with GVW and the GBCMA. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Task to be included in work program using existing resources  Funds will need to be allocated to any identified capital works in future years pending the findings of this work	SSC officer time required	One off expenditure	

Year 3 (cont'd)				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
3.8 Implementation of the Strathbogie township whole of water cycle management plan. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Resources to be allocated in future budgets	To be identified	Mixture of one off and recurrent expenditure	Capital expenditure also required from GVW and GMW
3.9 Commencement of stormwater infrastructure improvements in priority townships (eg Strathbogie, Longwood and Euroa). <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Funds will need to be allocated to any identified capital works in future years pending the findings of this work	To be identified	Mixture of one off and recurrent	
3.10 Progression of the strategic plan created under Action 1.9 for reticulated sewer extension planning and work in priority areas. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.		SSC officer time required		GVW resource allocation required

Year 4				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
<p>4.1 Development of a stormwater strategy for Violet Town in consultation with GVW and the GBCMA.</p> <p><b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.</p>	<p>Task to be included in work program using existing resources</p> <p>Funds will need to be allocated to any identified capital works in future years pending the findings of this work</p>	SSC officer time required	One off expenditure	
<p>4.2 Pending the outcome of the review under Action 2.6, deliver an annual workshop for landowners / residents and local LCA experts and Plumbers.</p>		<p>&lt; \$5,000</p> <p>SSC officer time required</p>	Recurrent	Potential for GMW and GVW to make a small contribution, including co-branding of material
<p>4.3 Complete proactive inspections of all systems in Violet Town and Avenel, commencement of inspections Kirwans Bridge, Baxters Road and other small settlements in medium risk minor catchments.</p>		0.5 EFT additional resource, including administration	Recurrent	



Year 4 (cont'd)				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
4.4 Progression of planning and provision of community wastewater systems at Strathbogie and Longwood. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Potential resource allocation from Council to support connections	To be identified	Mixture of one off and recurrent expenditure	GVW resource allocation required
4.5 Implementation of the Strathbogie township whole of water cycle management plan. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Resources to be allocated in future budgets	To be identified	Mixture of one off and recurrent expenditure	Capital expenditure also required from GVW and GMW
4.6 Commencement of stormwater infrastructure improvements in priority townships (eg Strathbogie, Longwood and Euroa). <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Funds will need to be allocated to any identified capital works in future years pending the findings of this work	To be identified	Mixture of one off and recurrent	

Year 4 (cont'd)				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
4.7 Progression of the strategic plan created under Action 1.9 for reticulated sewer extension planning and work in priority areas.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.		SSC officer time required		GVW resource allocation required
Year 5				
5.1 Pending the outcome of the review under Action 2.6, deliver an annual workshop for landowners / residents and local LCA experts and Plumbers.		< \$5,000 SSC officer time required	Recurrent	Potential for GMW and GVW to make a small contribution, including co-branding of material
5.2 Complete proactive inspections of all systems in settlements within medium risk minor catchments.		0.5 EFT additional resource, including administration	Recurrent	
5.3 Implementation of the whole of Strathbogie water cycle management plan.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Resources to be allocated in future budgets	To be identified	Mixture of one off and recurrent expenditure	Capital expenditure also required from GVW and GMW

Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
<b>Year 5 (cont'd)</b>				
5.4 Progression of the strategic plan created under Action 1.9 for reticulated sewer extension planning and work in priority areas.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.		SSC officer time required		GVW resource allocation required
5.5 Progression of planning and provision of community wastewater systems at Strathbogie and Longwood.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Potential resource allocation from Council to support connections	To be identified	Mixture of one off and recurrent expenditure	GVW resource allocation required
5.6 Progression of discussions about future infrastructure provisions at Kirwans Bridge and Baxters Road with GMW, GBCMA and GVW.  <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.		SSC officer time required	One off expenditure	

Year 5 (cont'd)				
Actions Based on Level of Priority & Policy Drivers	Primary Funding Source	Estimated level resources and effort	Nature of Funding	Potential Partnerships & External Funding Opportunities / Comments
5.7 Progression of reticulated sewer extension planning and work in priority areas. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.		SSC officer time required		GVW resource allocation required
5.8 Stormwater management improvement works in priority townships. <b>Council Plan Action:</b> 6.5.4 Continue to design and seek funding for drainage / sewerage schemes.	Resources to be allocated in future budgets	To be identified	Mixture of one off and recurrent expenditure	
5.9 Commencement and completion of a review of the DWMP in partnership with GVW and GMW.	Resources to be allocated in future budgets	SSC officer time required	One off expenditure	

## 11. Auditing and Reviewing Our DWMP

Mechanisms must be put into place to track the progress of the implementation of this DWMP, not only from Council's own business plan and Council Plan, but also to ensure joint initiatives with our project partners maintain impetus. The Ministerial Guidelines also require a three yearly audit to be provided to local water corporations, along with a five yearly review of the DWMP.

### 11.1 Monitoring the Progress of the DWMP's Implementation

It is proposed that the following program of updates be adopted:

- Provision of an annual report and review process to be undertaken with Council, GMW and GVW to determine the status of actions, whether or not actions need to be carried over into the year ahead and whether amended/new actions are required to deliver an initiative included in this DMWP;
- Project Partners are to contribute data to the annual updates.

### 11.2 Independent Audits of the DWMP's Implementation

As mentioned above, the Ministerial Guidelines require a three yearly, independent audit of the DWMP's implementation.

Three month's prior to the three year anniversary of the DWMP's adoption, Council will circulate the name of a suitably qualified auditor to GMW and GVW for their approval.

The brief for the independent auditor should require:

- Data from Council, GMW and GVW to demonstrate actions have been implemented;
- Evidence of past/current expenditure and future years' budgets for initiatives (from all parties) to demonstrate that there is an ongoing commitment to implement the DWMP; and
- The provision of a written report to Council, GMW and GVW.

### 11.3 Reviewing and Updating this DWMP

In addition to annual reviews, a more comprehensive review of this DWMP, informed by a public consultation phase, should be undertaken in time for a new DWMP to be adopted prior to the fifth anniversary of this DWMP's adoption by Council.

This review should be undertaken in partnership with GMW, GVW, the GBCMA and the EPA.

## 12. Attachments

### ATTACHMENT 1

#### Risk Ratings for Various Soil Types

*An Extract from Approaches for Risk Analysis for Development with On-site Wastewater Disposal in Open, Potable Water Supply Catchments (Table 3), Dr Robert Edis, April 2014*

Soil Order	Description and Comments
Anthosols	Soil with properties dominated by human activity. Highly variable. Usually avoided for septic tank placement. <b>Rating 3.</b>
Organosols	Soil in which more than half of the surface horizon is organic matter (by volume). Unlikely to be encountered. Understanding of transport of nutrients and organisms poorly understood, consequently low density and large setbacks suggested. <b>Rating 3.</b>
Podosols	Very sandy soils with a diagnostic, often thin layer in which there is an accumulation of organic-iron and/or organic-aluminium complexes. High hydraulic conductivity, low PBI. The very sandy nature of these soils means that material can be transferred quickly and efficiently to groundwater, with little sorption or transformation, therefore a high risk soil. Not common in the area. <b>Rating 3.</b>
Vertosols	Soils dominated by reactive clays (shrink-swell soils). High capacity to adsorb nutrients, generally low hydraulic conductivity but without a significantly impeding layer that would lead to a perched watertable. Moderate PBI. Low to moderate risk provided systems are appropriately designed to cater for the low hydraulic conductivity. Not common in the area. <b>Rating 2.</b>
Hydrosols	Soils which are regularly inundated, typically with a shallow watertable. The shallow watertable enhances the transfer of organisms and nutrients to the water resources, hence this is regarded as a high risk soil. Not common in the area. <b>Rating 3.</b>
Kurosols	Duplex soil with an acidic subsoil of greater clay content than the topsoil. Moderate capacity to adsorb phosphate. The lower hydraulic conductivity of the subsoil can lead to interflow, however if design of absorption field is on the basis of subsoil hydraulic properties (as is normally the case), this is a moderate risk soil. Moderately common, in the north. <b>Rating 2.</b>

Soil Order	Description and Comments
Sodosols	<p>Duplex soil with sodic subsoil with a higher clay content than the topsoil. The sodic nature of these soils makes them prone to erosion, as well as enhanced interflow. Moderate PBI. Quite common, particularly around Lake Eildon. Regarded as a high risk soil due to erosion risk and perched water table potential. Treatment of the sodicity is strongly recommended.</p> <p><b>If well managed and ameliorated, Rating 2, otherwise Rating 3.</b></p>
Chromosols	<p>Duplex soil in which the subsoil of greater clay content than the topsoil is neither acidic or sodic. Moderate capacity to adsorb phosphate. The lower hydraulic conductivity of the subsoil can lead to interflow, however if design of absorption field is on the basis of subsoil hydraulic properties (as is normally the case), this is a low risk soil. Because these soils are not sodic the subsoil typically has a higher hydraulic conductivity than Sodosols, and are more stable. Very common.</p> <p><b>Rating 1</b></p>
Calcarosols	<p>Soils with calcium carbonate throughout the solum. Variable PBI and hydraulic conductivity. Require site characterisation. Sometimes occur associated with limestone and dolomite. Very uncommon in the Shire.</p> <p><b>Rating 3.</b></p>
Ferrosols	<p>Well structured clay-loam to clay soils with high concentrations of iron oxide, and are therefore typically red or red brown. Extremely high potential to adsorb nutrients, very high PBI, and well drained with no water table perching or interflow. Low risk soils. Not common.</p> <p><b>Rating 1.</b></p>
Dermosols	<p>Well structured soils typically with moderate to high potential to adsorb nutrients, moderate PBI, and well drained with no water table perching or interflow. Low risk soils. Low risk soils. Not common.</p> <p><b>Rating 1.</b></p>
Kandosols	<p>Poorly structured soils with at least 15% clay in part of the profile, and do not fit descriptions above. Quite variable soil properties requiring local evaluation, medium to low risk provided adequate depth. Very common.</p> <p><b>Rating 2.</b></p>
Rudosols	<p>Soils with little pedogenic development, typically loam and clay loam soils, common on alluvial plains. Low-medium risk provided adequate depth to groundwater and not located on a flood plain.</p> <p><b>Rating 2.</b></p>
Tenosols	<p>Tenosol soils are diverse in nature, typically low in clay content and poorly structured. In the Mansfield regions the Tenosols are mostly Leptic Tenosols, which are underlain within 0.5 m of the surface by hard material such as unweathered rock or saprolite. The shallowness of these soils reduces potential for soil-effluent interaction, and the variability requires further site characterisation. High risk soils. Quite common.</p> <p><b>Rating 3.</b></p>