DOMESTIC WASTEWATER MANAGEMENT STRATEGY 2007

CITY OF GREATER GEELONG

Domestic Wastewater Management Strategy

Final Report

August 2007

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STRUCTURE OF PLAN

Structure

The report has three parts. These are:

Part A – General

This Part is divided into seven sections. It contains information about the objectives of the plans and its methodology; a review of legislation and policy relating to wastewater, a description of the roles and responsibilities of the various agencies involved in domestic wastewater management, the outcomes of the consultation with these agencies and wastewater contractors, an audit of domestic wastewater systems and an analysis of development activity in the City.

Part B – Key Findings and Major Issues

Part B provides a summary of the findings of Parts A and a discussion on the major issues that emerge from these findings.

Part C – Management Plan

Part C contains the detailed management plan. It describes Council's domestic wastewater goals, objectives and functions and lists the key actions that Council should undertake over the next 5 to 10 years. It provides indicative costs of implementing the plan.

Preparation of Plan

The plan was prepared by ASR Research Pty Ltd (ASR) on behalf of Greater Geelong City Council in 2006. ASR was supported by Council's Environmental Health Unit. Lyndon Ray, the Team Leader of the Unit, managed the project.

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PART A – GENERAL

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Section One – Introduction

1.1 Objectives of Plan

The objectives of the Domestic Wastewater Management Plan are to:

- Review Council's wastewater management processes and practices and suggest improvements where needed.
- Identify problems with domestic wastewater treatment and disposal in the City and recommend solutions.
- Identify potential development activity in the unsewered areas of the City and discuss the implications of this activity for Council's wastewater management programs.
- Draw the findings and recommendations from the Study together into a coherent and achievable long term strategy plan.

1.2 Key Tasks/Methodology

The key tasks of the Study and the steps taken to complete these tasks are listed below.

Key tasks

- Document current wastewater management issues, arrangements, practices, problems and potential new systems in the City.
- Conduct a detailed assessment of risk/problem areas and identify potential solutions.
- Develop a domestic wastewater management strategy.

Steps

- Analysis of current and impending Government legislation and policies in relation to domestic wastewater disposal.
- Description of the roles and responsibilities of the various Government Authorities in domestic wastewater management and consultation with these Authorities on the key issues the plan should address.
- Review of Council's processes with respect to the approval and installation of domestic wastewater disposal systems.
- Inspection of properties in the unsewered townships to identify the age, condition and performance of septic tank systems.
- Inspection of drains and streams in unsewered townships to monitor pollution and nuisance conditions caused by the discharge of domestic wastewater.

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- Review of the current and projected levels of development activity in each township and discussion of the implications of this activity for wastewater management.
- Identification of vacant blocks (in each township) where future development from a wastewater perspective may be problematic.
- Review of septic tank installations in rural areas and a discussion on what should be done to ensure that the systems are operating effectively.
- Consultation with local contractors involved in the planning and installation of domestic wastewater systems about how wastewater management processes could be improved.
- Identification of the key findings that emerge from the research and suggested actions to respond to these findings.
- Development of a draft and then final strategy plan.

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Section 2 – Legislation/Policy Review

2.1 Introduction

This section provides a summary of current legislation, codes of practice and government policy relating to wastewater disposal and treatment.

2.2 Current legislation/Codes of Practice/Policies

2.2.1 Legislation

Environment Protection Act 1970 Part 1XB Section 53J-O

This legislation assigns to Greater Geelong City Council the responsibility for approving the installation and alteration of wastewater disposal system for properties which generate 5000 litres of wastewater or less per day. The important provisions of the legislation are as follows:

- Any person wishing to install a wastewater system must apply to Council for approval. This application must include a plan and the prescribed fee. The penalty for constructing a system without a permit is 300 penalty units. The penalty for non-compliance with the permit is 120 units.
- Council is required within 42 days of receiving the application, to approve the installation (with or without modifications) or refuse the permit.
- Council may refuse the permit if the site is unsuitable and/or the area available for the treatment of disposal of effluent is not sufficient. Council must refuse the permit if the septic tank system is not of a type approved by the EPA, is contrary to State Environment Protection Policies, or does not treat all sewage and is located in a specified part of the municipality which has been declared an all waste area.
- The power to approve the installation of septic tank systems can be delegated to Council officers. However, any refusal to issue a permit must be ratified by Council.
- Use of septic tank systems is prohibited until they have been inspected and approved by the Council. Once approved, the owners of the properties on which the systems are located are required to operate and maintain the systems in accordance with the permits and EPA licence requirements. Penalty for using the system without a permit to use is 120 units. Penalty for failing to maintain the system as per the permit to use conditions is 10 units.
- At the end of each financial year, Council is required to lodge an annual return with the EPA which outlines the number of permits issued, systems disconnected, systems inspected and systems in use within the municipality during the year.

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Health Act 1958

Section 29 of Health Act 1958 requires Council to seek to 'prevent disease, prolong life and promote public health through programs which control or prevent environmental health dangers and disease'.

The Act requires Council to remedy, as far as is reasonable, all nuisances which exist in the municipality. Nuisances are defined as activities which are dangerous to health or offensive. If Council is notified of a nuisance and fails to act, the person making the complaint can refer the matter to the court. If the court finds that the complaint has merit, it may order Council to pay the costs and expenses incurred by the complainant.

Local Government Act 1989

The Local Government Act empowers Council to enact local laws and set special charges for Council activities. Council may be able to use these powers to raise revenue for its wastewater management programs and develop local regulations for wastewater management - as long as these regulations are consistent with State policy and legislation.

Water Act 1987

This Act regulates the Water Industry and describes the powers and responsibilities of Water and Sewerage Authorities. The Act contains the following provisions relating to septic tank systems:

- Councils are required to refer septic tank applications to Authorities prior to approval if the property is in a sewer district or area of interest or the Authority formally requests to see all permits. The Authority has the power to specify conditions on the permits.
- Within their sewer districts, Authorities may inspect and require owners to repair or maintain their septic tank systems. If the owners fail to undertake these works, Authorities can perform the works and recover the costs from the owners
- Within their sewer districts, Authorities are able (following the adoption of a by-law) to require regular maintenance of septic tanks, the payment of fees by the owners for works carried out by the Authorities on their septic tank systems, prohibit septic tank discharge and impose penalties for breaches of septic tank provision of the Water Act.
- Authorities can require properties in sewered areas that remain on septic tanks to connect to the sewer. If the property does not connect, the Authorities can organise the connection and recover the cost from the property owner.

The Act has particular importance to Council's wastewater strategy as it provides Water Authorities with the power to inspect, repair and recover the cost of repair of septic tanks systems in their sewer districts and force connection to the sewer where available.

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Planning and Environment Act 1987 - Direction No 6 Rural Residential Development (October 1997 Guidelines)

This document provides guidelines for planning authorities preparing amendments to their planning schemes to allow rural residential development. The guidelines apply to residential use of land where the lots are larger than standard residential lots (usually at least 0.4ha). The document lists the actions that Council must take in preparing any amendments. With respect to domestic wastewater management, the document indicates that the amendment can only proceed if the land has been:

- The subject of a land capability assessment, the results of which have been submitted to the EPA and the EPA has subsequently confirmed that the land will comply with the State Environment Protection Policy (Waters of Victoria).
- Found to have satisfactory physical characteristics for on-site sewage disposal or can connect to the sewer.

Catchment and Land Protection Act 1994

This Act outlines a framework for the integrated management and protection of catchments and the encouragement of community participation in the management of land and water resources. The Act provides for the designation of special water catchment areas and the development of special area plans for these catchments. These plans can state what land in the areas can be used and for what purpose and, therefore, can regulate residential development and prescribe land use conditions. The Act is not relevant to Geelong as there are no designated water catchments.

Building Regulations 2006

Regulation 801 requires the issue of a 'report and consent' by Council before a permit is issued for any development that will involve the installation or alteration of a septic tank system. The report from Council indicates whether the block is suitable for development from a wastewater management perspective. The 'report and consent' is not required if a 'permit to install the septic tank system' has already been issued by Council.

Regulation 1003 requires the issue of 'a report and consent' by Council prior to a certificate of occupancy being provided for any building development in an unsewered area where a septic tank system has been installed. The report from Council indicates that the septic tank system has been approved and is suitable for use. The 'report and consent' is not required if a 'permit to use the septic tank system' has already been issued by Council.

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2.2.2 State Environment Protection Policies

Waters of Victoria Policy 2003

This document outlines the State Government's Policy with respect to the protection of the waterways. Clause 32 of the Policy sets out the requirements for managing domestic wastewater. It requires:

- Owners of unsewered premises to manage their wastewater systems in accordance with permit conditions and the Septic Tank Code of Practice 2003.
- Local Councils to assess the suitability of land that is proposed for development for its capacity to absorb wastewater on-site. This may include the conduct of a land capability assessment.
- Local Councils to ensure that wastewater systems installed in unsewered areas are consistent with EPA guidelines and the Septic Tank Code of Practice 2003.
- Local Councils to identify properties in unsewered areas which are discharging off-site or contaminating ground water.
- Local Councils to develop wastewater management plans to address problems relating to wastewater disposal and ensure the proper design and management of future systems.
- Local Councils to ensure that land that cannot absorb wastewater on-site is either not developed or if developed, is connected to a sewerage system.

Groundwaters of Victoria Policy 1997

This document outlines the State Government's Policy with respect to the protection of ground water. The goal of the Policy is to protect beneficial uses of groundwater throughout Victoria such as potable water supply and primary contact recreation (swimming). The policy specifies that all practicable measures must be taken to prevent the pollution of groundwater and all planning schemes must be consistent with the policy.

2.2.3 EPA Codes of Practice

Septic Tanks Domestic Wastewater Management 1996

This document is essentially the manual for the design, construction, selection and installation of septic tank systems. It contains information on treatment and disposal options, the permit process, and the design and construction of septic tanks, effluent disposal systems and off-site disposal systems. Although replaced by the 2003 Code, Councils still extensively use the document when designing their local guidelines for septic tank installations.

Septic Tanks Domestic Wastewater Management 2003

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This document describes the measures that should be taken to ensure that domestic wastewater is treated and disposed of in a manner which minimises health and environmental risks. The Code sets out requirements for:

- The consideration of on-site wastewater management with the land development process.
- Designing on-site wastewater treatment systems.
- Installing on-site wastewater treatment systems.
- Operating and maintaining on-site wastewater treatment systems.

The Code provides information and material about:

- The legislative and policy framework for domestic wastewater management.
- The roles and responsibilities of State and Local Government, land assessors, building surveyors, installers of systems and householders operating the systems.
- Wastewater treatment and disposal options.
- Maintenance of treatment systems.
- The planning design and approval process for systems.
- The assessment of land capability.
- Council domestic wastewater management plans.

This Code, together with the 1996 Code, the Australian Standards for Domestic Wastewater Management and the Guidelines for Aerated On-site Wastewater Treatment Systems have informed Geelong City Council's guidelines for domestic wastewater management.

Small Wastewater Treatment Plants 1997

This Code provides design/operational guidelines for treatment plants serving less than 500 people.

2.2.4 Australian Standards and Other Requirements

There are a number of Australian standards which have relevance to the construction and design of wastewater disposal systems. These are as follows:

- AS/NZS 1547:2000 – On-site Domestic Wastewater Management.
- AS1546 – On-site Domestic Wastewater Treatment Systems.
- AS/NZS 1546.2:2000 – On-site Domestic Wastewater Treatment, Part 2 (Waterless Composting Toilets).
- AS/NZS 1546.3:2000 – On-site Domestic Wastewater Treatment, Part 3 (Aerated Wastewater Treatment Systems).

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- AS139 – Safety Signs for the Occupational Environment.
- AS2698 – Plastic Pipes and Fittings for Rural Applications.
- AS3000 – Wiring Rules, Electrical Installations, Buildings, Structures and Premises.
- AS3500 – Plumbing and Drainage Code.

The most important of these documents is AS/NZS 1547:2000. This comprehensive standard provides information on the following:

- The design, performance, operation, and installation of wastewater disposal systems.
- On-site evaluation processes and selection of systems.
- Education and training related to wastewater management.

2.2.5 EPA Policies, Guidelines and Other Relevant Publications

Re-use Options for Household Wastewater 812.1 – February 2006

This document identifies the household wastewater re-use practices that may be acceptable, outlines the approvals that are required to allow re-use, identifies the risks that are associated with re-using wastewater and suggest measures to minimise these risks.

Land Capability Assessment for On-site Domestic Wastewater Management 746 - March 2003

These guidelines expand on the section in the Code of Practice about land assessment for effluent disposal. Their aim is to ensure that appropriate attention is given to on-site wastewater management at the rezoning and subdivision stages of the planning process as well as the installation phase of the treatment system. The guidelines have significant relevance for Council planners and EHO's who are assessing the suitability of unsewered land for development.

The guidelines recommend that a comprehensive land capability assessment be undertaken prior to a permit being granted for any proposed new residential subdivision. This land assessment should identify the capability of areas for use as effluent fields and appropriate management measures for areas where on-site wastewater treatment and disposal systems are feasible. The guidelines provide material on the following:

- The overall land assessment procedure.
- The information that could be included in an assessment.
- The issues that should be covered by the assessment.
- A management program which shows how constraints and associated risks can be addressed.

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- A rating system for land which indicates suitability for development.

The guidelines recommend that Council require the owner/developer applying for residential subdivision/rezoning to provide Council with the following information:

- The land features of the site and surrounds.
- The type of wastewater treatment system proposed.
- The land capability assessment for the specific development including the potential impact to adjacent lands.
- The management program which will ensure ongoing environmental sustainability and protection of human health.
- The location of the wastewater envelopes on the proposed lots.

The guidelines recommend that this information should be produced by land capability assessors on behalf of the owner/developer.

EPA Guidelines for Domestic Wastewater Management - No 629

These guidelines outline the responsibility of Council and building surveyors with respect to the approval and installation of domestic wastewater management systems and the submission by Council of annual returns. The guidelines specify that:

- Within subdivisions created after 15/3/1988, development of allotments can only proceed if Council is satisfied that wastewater can be treated and contained on-site.
- Within subdivisions created before 15/3/1988, development of allotments can only proceed if Council is satisfied that wastewater can be treated and contained on-site or if this cannot be achieved, the wastewater is properly treated and can be discharged off-site in a manner which is consistent with the SEPP. To ascertain this consistency, the Council must apply the following assessment.
  - Which stream (which includes table drains) will receive the effluent and what is its minimum flow rate?
  - What is the current status of the stream in relation to the objectives of the relevant SEPP? If the streamwater quality exceeds policy objectives, no new waste discharge should be permitted.
  - If the quality of the stream meets the SEPP objectives, will the input from the septic tank system cause the objectives to be exceeded?
  - What is the quality of the effluent produced by the septic tank system?
  - Will the input cause the nutrient levels of the receiving waters to exceed those set out in the relevant EPA guideline?
  - Will the requirements of the regional water catchment strategy be met?
  - Has provision been made for ongoing maintenance and monitoring of the septic tank system to ensure good performance?

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- For developments on existing unsewered built allotments (such as extensions, renovations etc), Council should determine the modifications to the septic tank system on a case by case basis and may include off-site discharge.
- With respect to the installation of septic tank systems, Building Surveyors must obtain the 'consent and report' from the Council at two stages in the building approval process - before issuing the permit and before issuing an occupancy permit.

Guidelines for Aerated On-site Wastewater Treatment Systems 2002

This document outlines the design criteria, construction requirements and performance objectives that Aerated Wastewater Treatment systems must achieve to gain approval for use in domestic and small commercial situations. The document provides information on approval procedures, systems design, test criteria and renewal of application processes.

The sections of the document that are of particular interest to Council are the permit conditions and the requirements for testing. Council is expected to ensure that the systems are installed, operated maintained and tested as per the permit conditions. These conditions require the householders to ensure that the systems are regularly checked by maintenance contractors and the effluent produced by the systems is regularly tested. The results of these tests and checks are to be provided to Council.

EPA Guidelines for Planning Permit Applications in Open, Potable Water Supply Catchment Areas

These guidelines are designed to assist planning authorities in their assessment of applications for development in water catchment areas. Their purpose is to protect surface water and ground water from contamination. With respect to wastewater, the guidelines recommend that:

- The density of dwellings should be no greater than one dwelling per 40ha and each lot created in a subdivision should be at least 40ha. They state that this recommendation does not apply if a catchment management plan has been produced which allows smaller lots and land capability assessments have been undertaken which indicate that smaller lots can be appropriate.
- Dwellings must be connected to the sewer or an approved on-site disposal system. This system must be maintained correctly and where septic tanks have been installed, they should be desludged at least every 3 years.

EPA's Certificate of Approval System 748 – 2001

This bulletin explains how manufacturers of on-site wastewater treatment systems obtain approval for their package plants, systems or processes.

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Approving Household On-site Wastewater Systems 747 - 2001

This bulletin provides information to householders on their responsibilities when installing a septic tank system.

2.2.6 Council's Planning Scheme

The City's Planning Scheme outlines the permit and application requirements and decision guidelines for the rezoning and subdivision of land and the approval requirements for the construction of dwellings. With respect to domestic wastewater disposal and subdivisions/rezoning, the Scheme provides as follows:

- Permits are required for new subdivisions and proposed rezonings.
- For land zoned or proposed to be rezoned residential, all allotments must be serviced by sewer.
- For land zoned or proposed to be rezoned township and low density residential, allotments must be serviced by sewer or be capable of treating wastewater on-site. Permit applications must include a land capability assessment. A minimum lot size is not specified for the township zone. 0.4ha is specified for the low density residential zone.
- For land zoned rural living, rural and environmental rural, the allotments must be serviced by sewer or capable of treating and retaining all waste on-site. Land capability assessments are not automatically required. Minimum lot sizes of 8ha, 40ha and 80ha respectively are specified. Smaller sizes can be approved in certain circumstances.

With respect to the erection of dwellings, the Scheme provides as follows:

- In areas zoned township, permits to build are required for lots that are less than 500m2 and/or are subject to an overlay that requires a permit.
- In areas zoned low density residential, permits to build are required for a second dwelling on any lot and/or for lots that have planning overlays which require a permit.
- In areas zoned rural living, permits to build are required for a second dwelling on any lot, for lots that are less than 8ha and for lots that have planning overlays which require a permit.
- For lots zoned rural, permits to build are required for a second dwelling on any lot, for lots that are less than 40ha and for lots that have planning overlays which require a permit.
- In areas zoned environmental rural, permits to build are required for any dwelling.
- In all other cases, permits are not required.

In addition to the zonings, there are five planning overlays which need to be considered when assessing development applications from a wastewater perspective. These are

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environment significance, significant landscape, vegetation protection, land subject to inundation and wildfire management

City of Greater Geelong Health Services – Septic Tank Code of Practice

This document is an abbreviated form of the EPA Code of Practice adapted for local conditions in Geelong City. It has been designed as an easy to read document for local installers and owners of septic systems. It contains information on types of systems, effluent disposal options, the application process, conditions of installation, conditions for ongoing use, recommended vegetation for septic systems and processes for conducting soil percolation tests.

2.3 Impending changes to legislation, codes and policies

In January 2006 the EPA commenced a review of the legislative framework regarding re-use of wastewater which includes all forms of wastewater produced including storm water, rainwater, greywater, septic tanks and sewerage. Environmental Health Officers were invited and involved in public consultation sessions held by the EPA. The draft legislative framework is expected to simplify and streamline the regulation of wastewater re-use. Major regulatory changes are expected and may result in the way the current legislation is administered by authorities. This may or may not affect the strategies of the DMWS.

2.4 Summary and Implications

The implications of the review of legislation and policy are as follows:

- There is some uncertainty about Council's legal power to require owners of septic tank systems to modify their septic tank systems. Council has the power to order property owners to repair failing systems e.g. water surfacing from effluent lines. It also has the power to order property owners to repair or even modify their systems if the systems are causing a nuisance e.g. an effluent discharge which is causing an offensive odour. However, it appears that Council does not have the power to require a person to modify a system which is not causing a nuisance and is performing as per the conditions of its original permit e.g. an approved split system with grey water is discharging off-site but not in a manner which causes offence. If this is an accurate interpretation of Council's powers, it may diminish Council's ability in some circumstances to deal with off-site discharges of grey water.
- Council may be able to strengthen its power to deal with 'approved' off-site discharges of grey water. The Local Government Act gives Council the power to enact local laws to regulate wastewater management issues as long as these laws are consistent with State policy and legislation. State policy currently recommends that all wastewater be contained on-site. Therefore, Council may be able enact regulations which it can apply to properties with split systems.

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- The Local Government Act gives Council the power to introduce a special charge on homeowners to fund any 'genuine function if the function benefits the persons being charged'. Therefore, Council may be able to raise a charge to fund a domestic wastewater management program if it can demonstrate the 'genuineness' and benefits of the program.
- Council is required to remedy nuisance conditions 'as far as reasonable' which exist in its municipality. Therefore, Council must act if it is aware of a nuisance condition being caused by a septic tank system. However, the qualification 'as far as reasonable' provides Council with some leeway in determining what to do. In some situations, the solution may be difficult and costly or there may be no practical solution. Council may be able to say that it cannot resolve the problem.
- Water Authorities have the power to inspect septic tank systems and order owners to repair and/or properly maintain their systems within their sewer districts. They also have the power to carry out works on septic systems and impose charges for these works (if a by-law is created). These provisions appear to give Barwon Water more effective powers than Council to facilitate the repair of septic systems.
- Building Surveyors cannot legally issue a certificate of occupancy until a permit to use has been issued. It is apparent that some owners are occupying homes without a permit to use. They may be doing this with or without a certificate of occupancy. This need to be addressed.
- Council's planning scheme promotes good wastewater management practices. It requires all properties to be able to contain their wastewater on-site, specifies minimum lot sizes which are based on allowing sufficient land for wastewater disposal, provides for rigorous scrutiny of proposals in environmentally sensitive areas, requires land capability assessments in some circumstances and provides for referrals to key agencies for their input.
- The EPA is encouraging the re-use of grey water as per the guidelines it has recently developed. Geelong Council has also indicated its support to the concept of water re-use in its Stormwater Management Plan, Environmental Management Plan and Municipal Strategic Plan. Council needs to develop a policy position on grey water re-use and a process for encouraging households to adopt this practice.
- The SEPP Policy relating to groundwater requires Council to do everything in its power to protect contamination of ground water. A number of unsewered townships in the City have free draining soils and/or high water tables. Council needs to ensure that the performance of septic tank systems in these townships is optimised.
- The Code of Practice requires Council to have a compliance program in place if it is allowing properties to install treatment plants and reduce setback distances from boundaries and watercourses. Council has a basic compliance program in place where treatment plant owners are encouraged to submit maintenance reports. Council needs to enhance this program to make quarterly reporting and annual testing of effluent compulsory.

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Section 3 – Responsibilities of Authorities

3.1 Introduction

This section outlines the roles and responsibilities of the various authorities involved in domestic wastewater management.

3.2 Authorities

3.2.1 Environment Protection Authority

The EPA's responsibilities in relation to domestic wastewater disposal are as follows:

- Formulating Government policies and legislation in relation to wastewater disposal.
- Developing and reviewing the Code of Practice for domestic wastewater systems.
- Monitoring the performance of local Councils in carrying out their functions as approval authorities and acting on problems arising from the operation of septic tank systems.
- Approving the design of domestic wastewater treatment systems.
- Maintaining a database on septic tank activity in the State.
- Advocating for the provision of sewerage in unsewered areas when considered necessary.

3.2.2 Department of Sustainability and Environment (DSE)

The Department of Sustainability and Environment is responsible for the integrated management of Victoria's natural resource base, including land identification, resource development and utilisation and the protection, conservation and management of Victoria's natural environment.

The Department has ultimate responsibility for groundwater, waterways, land and coastal management and the operation of the Western Coastal Board, Corangamite Catchment Authority and Barwon Water.

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3.2.3 Greater Geelong City Council

Council has responsibility for the following functions relating to the treatment and disposal of wastewater:

- Considering wastewater management matters when approving rezonings, residential subdivisions and building construction and site plans.
- Approving septic tank/treatment plant installations.
- Ensuring that septic tank systems and treatment plants are functioning properly.
- Ensuring that any nuisance conditions arising from septic tank systems are abated.
- Submitting an annual report to the EPA on septic tank and treatment plant activity eg. number installed, number disconnected etc.
- Ensuring that septic tank sludge is collected and disposed of in an appropriate manner.

3.2.4 Corangamite Catchment Management Authority

The role of the Catchment Authority is to protect and restore land and water resources, encourage the sustainable development of natural resource based industries and conserve the natural heritage. Its region covers all or part of 9 municipalities including Geelong City. The responsibilities of the Catchment Management Authority are as follows:

- Improving the condition of waterways and maintaining them in a healthy condition to meet community expectations.
- Minimising flood risks.
- Reducing the sedimentation of waterways, lakes and water storages.
- Reducing the incidence of algal blooms in waterways.

The Authority is a referral agency for planning applications for properties that are located near watercourses. The Authority considers wastewater management issues when reviewing these applications and can require conditions to be included in the permit.

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3.2.5 Barwon Water

Barwon Water is responsible for the provision of reticulated water and sewerage in the Barwon Region. Its region extends from Little River in the north, Bellarine Peninsula in the east, Meredith and Cressy in the north to Apollo Bay on the south west coast. All of Geelong City is located in the region. The Authority is a referral agency for planning applications for properties that are located in sewer districts, water catchment areas or near watercourses. The Authority considers wastewater management issues when reviewing these applications and can require conditions to be included in the permit.

3.2.6 Western and Central Coastal Boards

The Western and Central Coastal Boards are responsible for the protection and conservation of the Central and Western Victorian coastlines. They oversee strategic coastal and marine planning issues for the region which extends from Westernport Bay to the South West Border. They are required to develop a regional coastal strategy and implement the recommendations of the State and National coastal protection policies and strategies. One of their critical roles is to ensure that the coastline and estuaries in their regions are not damaged by the discharge of poorly treated wastewater and inappropriate development.

3.2.7 Municipal Association of Victoria

The Association is the peak body for local government in Victoria. In recent years, it has become active in wastewater management and is coordinating the Country Towns Water Supply and Sewerage Program with DSE.

3.3 Implications

The review of the role of Council and other agencies indicates that other local and regional agencies have an important role to play in the wastewater management. The Council needs to work closely with these bodies and keep them fully informed of any actions it is taking which may have relevance to their operations.

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Section Four – Wastewater Management Processes

4.1 Introduction

The purpose of the section is to review the planning, permit and approval processes for domestic wastewater management in the City of Geelong.

4.2 Planning Applications

4.2.1 Referral process

The Planning Unit seeks the advice of the Environmental Health Unit on domestic wastewater management with respect to the following planning/permit matters:

- Subdivision applications in areas zoned low density residential and township.
- Rezoning applications in unsewered areas – from rural living to low density residential or low density residential to township.
- Approval of the construction or extension of dwellings on townships and low density residential land.
- Local structure planning processes where Council is considering the rezoning of rural living or rural land to low density residential or low density residential land to township.

It should be noted that not all the applications that fit into the above categories are referred to the Environmental Health Unit. In cases where the property sizes to be created by the subdivision or the block sizes for the new dwellings are larger than 4000sqms, the application may not be referred.

The processes involved in the referral of these matters to the Environmental Health Unit are as follows:

New Subdivisions

- The property owner seeks advice from the Planning Unit on the potential to subdivide his/her land. The Planning Unit advises the property owner that the allotments must have the capability to treat and dispose of wastewater on-site.
- If considered necessary to confirm this capability, the owner is advised that a land capability assessment must be submitted with the application. If clarification is required on these matters, the Environmental Health Unit may be requested to be involved in the discussions.
- The property owner submits an application. The application includes a plan showing the proposed lot layout and the location of building and disposal

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envelopes. The application is referred to the Environmental Health Unit for comment about the ability of the sites to contain wastewater on-site.

- The Environmental Health Unit will inspect the site and provide its comments on the application. The site inspections and land capability assessments may indicate some instances where disposal is problematic. In these cases, the proposed lot layout may have to be modified.
- For applications where modifications have been requested, the property owners will submit amended plans. This information will be referred to the Environmental Health Unit for further comment. The Unit will assess the information and make a final determination. This determination will be communicated to the Planning Unit.

Rezoning of land

Land owners wishing to rezone their land have to demonstrate that the land, if it was rezoned, would be able to contain wastewater on-site. The process is the same as described above for new subdivisions.

Erection or extension of a dwelling on township and low density residential land where a permit is required

The owner submits the permit application indicating the proposed method of wastewater treatment and disposal. If the application is straight forward - that is, there is no doubt that the property can treat and contain wastewater on-site, the Environmental Health Unit will indicate its approval and specify the need for the applicant to apply for a permit to install a septic system, before any Building Permit is issued.

If the proposal is complicated or there are concerns about the ability to treat and dispose of effluent on-site, the applicant may be asked to provide a land capability assessment (LCA) to support the application. If it is apparent from the LCA and or an inspection of the site that wastewater cannot be treated and retained on-site, the Environmental Health Unit may recommend that the application be modified or refused.

Local Structure Plans/Framework Development Plans

The Environmental Health Unit is asked to provide input on wastewater management matters for local structure/framework development planning processes that involve unsewered townships or townships which have unsewered fringes. This input normally relates to the capacity of the land in the towns to absorb wastewater and the nomination of minimum lot sizes.

Number of referrals

Table 1 - Septic tank assessments at the planning stage

2001/2	2002/3	2003/4	2004/5	2005/6

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6	15	20	25	50

Around 25-50 applications are referred to the Environmental Health Unit each year. This is very low number compared to other Western District Councils that have less development activity in their unsewered areas than Geelong. For example in Colac Otway Shire, Moyne Shire and Surfcoast Shire, **all** planning applications relating to unsewered land are referred to the Environmental Health Units. This includes houses on large acreages, subdivisions creating 8ha lots, swimming pools in township zones, excisions for farm houses on rural lots etc. This blanket referral is done to ensure that all matters relating to the site are fully considered prior to the permit being issued. In many cases, the Environmental Health Units do not need to inspect the property and can draw on their knowledge of the areas but in some cases inspections are needed (Surfcoast tries to inspect all sites).

4.2.2 Suitability of Processes

Council's planning and environmental health staff were asked to comment on the effectiveness of the above processes and make suggestions for improvements. They said that the processes were effective and efficient for the applications that were referred. The environmental health staff made the following comments:

- In many cases, town planning permits are not required for extension to dwellings. In some cases, private building surveyors may issue a building permit for a dwelling or extension without reference to the Environmental Health Unit. This may complicate the issuing of a septic tank permit if there is insufficient land for disposal or may compromise the existing system if the extension is located over the top of the septic tank or drains.
- The range of applications that is referred to the Environmental Health Unit needs to be expanded. It does not need to be all applications but the current range is too limited (the recent practice of forwarding a list of current planning applications to the Unit has helped but still relevant applications may be missed or might be old by the time the Unit is made aware of them).

4.3 Septic Tank Approvals

4.3.1 Approval and Inspection Process

Geelong City's approval and inspection process for septic tanks is documented in a works instruction entitled Wastewater (Septic Tanks) Administration. A summary is provided below:

- Private Building Surveyor submits a 'report and consent' form through Council's Building Dept to the Environmental Health Unit requesting advice on whether the block is suitable for a septic tank system. If the 'report and consent' relates to

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redevelopment of an existing dwelling, the Unit will collect all relevant information about the property (file and plan of existing septic tank system) and make a judgment on whether any upgrade of the system is needed.

- The Unit inspects the block (if not already inspected at town planning stage) and responds to the Building Dept within 7 days. It advises on the suitability or otherwise of the block and may indicate what type of systems could be installed. The Unit creates a licence number and file for the property.
- Prior to installing the system, the owner (or the drainer/plumber on behalf of the owner) lodges an application on the prescribed form to install the septic system. The application includes a plan of the proposed system and the permit fee.
- The Unit assesses the application against Council's permit guidelines. It ensures that the application is completed in full. It considers legislative, planning, the State Environment Protection Policy requirements and site characteristics. An inspection of the site is conducted. If the Unit has concerns about the site, a land capability assessment may be requested.
- The permit with or without conditions is approved. Although refusal to install a septic system generally occurs at the planning permit stage there may be instances where a refusal will occur at the time of installing the septic system. Council ratifies the refusal by Council's Environmental Health Unit. The permit is forwarded to the applicant and the owner. The permit includes all relevant information – stamped plans, EPA certificates of approval, extra permit conditions and information on suitable vegetation.
- Installation occurs. Inspection occurs during installation - normally just prior to backfilling.
- A final inspection is conducted to ensure that the system has been installed properly. This inspection is conducted when the Unit is notified that installation has been completed.
- A copy of the Plumbers Guarantee for plumbing works upstream of the septic tank or package plant is submitted to the Unit. An amended septic tank plan is also submitted if the location and components of the final system vary from the original plan.
- Following the final inspection and submission of further material, an approval to use the system is issued. This approval is sent to owners only and refers to the conditions on the original permit.
- Information on the inspections and copies of the permits – to install and use - are entered on the Pathways database. Copies of permits, plans and inspection notes are forwarded to the Building Department and then scanned on to the Dataworks database.
- In cases where permits to install have been issued and no inspections have been requested within 30 days, the Unit will enquire about the status of the installation. If installation has occurred without inspection, the Unit will attempt to verify that the system is functional and complete. If verified, a special permit to use will be issued when an indemnity letter is signed by the owner. If installation is not complete or functional, rectification works will be required.

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4.3.2 Number of systems

Table 2 provides data on the number of permits that have issued since July 2001. The data indicates that around 300 systems plants are approved each year. 54% are treatment plants and 38% sand filters. The data also indicates that the number of on-site absorption systems, the most popular systems in the 1980s and early 90s, is declining to the extent that they are nearly phased out. The high proportion of treatment plants and sand filters is attributed to owners wanting to conserve potable water and re-use their wastewater and Council wanting to improve the quality of wastewater prior to absorbing on-site.

Table 2– Septic tanks permits

Year	Septic tank/ Trenches	Treatment Plant	Septic Tank/ Sand Filter	Compost	Other	Total
2001/2	30	150	120	0	0	**300**
2002/3	25	160	115	0	0	**300**
2003/4	20	160	120	1	0	**301**
2004/5	15	170	115	0	2	**302**
2005/6	10	180	110	2	0	**302**
Total	**100**	**820**	**580**	**3**	**2**	**1505**

Table 3 provides a breakdown by township/district of the septic tank permits issued in the period 2002 to 2005. The data shows the majority of activity occurred on the fringes of the major sewered townships on the Bellarine Peninsula, the environs of Lara and Anakie and the rural areas. There was little activity in Breamlea, Fyansford, Batesford and Ceres.

Table 3 – Types of Systems by Township

Town/District	Types of system 2002/2005					
	Sep. tank/ Trenches	AWTS/ Surface	AWTS/ Subsurface	Sand filter/ Surface	Sand filter/ Subsurface	Other
Towns						
Avalon Beach	0	0	0	0	0	0
Anakie	2	10	20	5	10	0
Batesford	0	5	10	2	2	0
Breamlea	0	5	5	0	0	0
Fyansford	0	2	0	0	0	0
Ceres	0	2	2	2	2	0
Lara	10	30	20	10	20	0
Moolap	0	5	10	2	2	30

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Town/District	Types of system 2002/2005					
	Sep. tank/ Trenches	AWTS/ Surface	AWTS/ Subsurface	Sand filter/ Surface	Sand filter/ Subsurface	Other
Towns						
Barwon Heads	0	5	5	10	5	5
Clifton Springs	0	5	5	10	20	0
Drysdale	5	15	15	10	20	0
Portarlington	2	10	10	5	20	0
St Leonards	0	10	10	5	10	0
Subtotal	**29**	**144**	**132**	**71**	**131**	**35**
Rural areas	**20**	**50**	**70**	**20**	**80**	**0**
Total	**49**	**194**	**202**	**91**	**211**	**35**

Refusal of permits

No permits for the installation of septic systems have been refused over the past five years. This is because unsuitable development proposals are modified at the planning stage. Modifications may include reducing the number of bedrooms, increasing available free land for effluent disposal fields and/or increasing the degree of effluent purification.

4.3.3 Records System

The record system for septic tank application/permits is as follows:

- Application and permits are electronically registered in the Pathways database. Details of the type of system, the permit conditions, the issue dates and the inspection dates are kept on the database.
- Hard copies of active files are kept by the Environmental Health Unit.
- Completed files (plans, permits and inspections notes) are scanned onto the Dataworks database. Since amalgamation and prior to Dataworks, hard copies were kept on the property files.
- Old files (pre-amalgamation) have been archived. Their accessibility in terms of ease of retrieval depends on the Council that issued the permit (eg Corio's can be readily retrieved whereas Bellarine's are very difficult).

The Environmental Health Unit was asked to comment on its level of satisfaction with the record systems. The Unit indicated that the systems generally worked well. It said that Pathways was sometimes difficult to manipulate and producing a non-standard report could be time consuming. It indicated that it would be ideal if old files could be easily retrieved but the resources required to make this possible could not be justified.

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4.4 Education and monitoring activities

No education activities are currently undertaken other than attempting to meet the owner of the newly installed septic tank system on-site to talk about the how the system operates and how it should be maintained.

Monitoring and maintenance of septic tank systems is undertaken when systems are inspected, as a result of a complaint or as part of special investigation undertaken see below in response to environmental or public health concerns or a State Government program.

With respect to treatment plants systems (where installers and later owners are required to submit maintenance reports and the results of effluent tests to Council), the Environmental Health Unit generates a list on a quarterly basis of the systems which require maintenance and water tests. The Unit then looks at the reports that have been sent in and matches the reports to the list. It reads the reports and then files them. It currently does not chase up householders that do not send in their reports or test results.

Council recognises that it needs to improve this monitoring program and intends to do so in the near future. There are more than 1000 treatment plants in the municipality discharging a substantial volume of effluent, much of which might currently not comply with the 20/30 standard. Council is also allowing setback distances to be reduced at properties that install treatment plants. Council recognises that this is a breach of the Code of Practice as Council does not have a comprehensive monitoring program in place.

4.5 Summary

The key findings of the review of wastewater management practices are as follows:

- The processing of planning applications that are forwarded to the Environmental Health Unit is handled effectively. Sites are visited and the capacity of the proposed sites to treat and dispose of wastewater in a manner which is safe to public health and the environment is given paramount importance in the assessment. Permits are refused, modified or approved with conditions if there are problems with wastewater disposal.
- However, the range of applications that are referred to the Unit is limited compared to neighbouring Councils (for example farmhouses that are being excised from large properties are not referred even though there is a possibility the septic tank systems may extend beyond the excised block). The types and range of applications that should be referred needs to be reviewed and a protocol established.
- The septic tank approval and inspection processes work effectively and efficiently. Applications are thoroughly examined and detailed inspections are

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carried out. Comprehensive material including information about appropriate vegetation is provided to the owner. Ageing permits to install are followed up and action is taken if systems are installed without inspections being called.

- The record system for septic tanks appears to be working reasonably well. The information is stored on Council's electronic database and standard reports can be readily produced. Non-standard reports such as the information about numbers and types of systems requested for this study was sometimes difficult and time consuming to retrieve. The Unit should investigate how the 'user friendliness of the system' could be improved.
- Copies of plans, permits and inspection notes are now being scanned on to an electronic property database. This is an excellent initiative and will make the retrieval of information more speedy.
- Old septic tank files (pre-amalgamation) have been archived. Their accessibility depends on the original Council issuing the permit. The Health Unit has investigated the merits of trying to improve the accessibility of the files but had decided that it would not be cost effective.
- Council does not conduct education activities other than meeting the owner on-site when the septic system is being installed. Council does not undertake regular and routine monitoring of septic tanks. It inspects systems as a result of complaints, if asked by the homeowner or as part of special investigations.
- Council does not closely monitor the operation of treatment plants. It processes a list of properties that should be submitting reports and matches the reports received to the list. It does not, however, follow up reports that have not been submitted or insist that annual tests are performed on the effluent discharged from the plants. Council is aware that it needs to significant enhance this program.
- Council is also not requiring owners of septic tanks to routinely desludge their tanks. Council should give consideration to enforcing this requirement.

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Section Five – Audit of Wastewater Systems

5.1 Introduction

This section provides information on the findings of the recently conducted audit of septic tank systems in Geelong City unsewered townships and rural areas.

5.2 Unsewered Townships

Reticulated sewerage is provided to most of the urban areas and major townships in Geelong City. The rural areas, some smaller townships and the fringe areas of larger townships are not sewered. It is estimated that there are around 10000 properties in the City on septic systems. Of these, an estimated 1260 are in unsewered townships and the fringes of sewered townships.

Table 4 – Breakdown of unsewered township properties

Township (includes environs)	**No of septic tanks system***
Avalon Beach	32
Anakie	70
Batesford	60
Breamlea	122
Ceres	65
Fyansford	130
Moolap	580
Fringe areas	
Barwon Heads	32
Clifton Springs	10
Drysdale	10
Indented Heads	5
Lara	10
Norlane	1
Portarlington	120
St Leonards	5
South Geelong	10
Subtotal	**203**
Rural areas#	**8738**
Total	**10000**

Note:
*** - Systems include residential, commercial and industrial**
 # - this is an estimate of the number of systems in rural areas

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5.3 Types of Septic Tank Systems

Early disposal methods were split systems with drop toilets, wastewater wells and pan closets with grey water discharging to the surface. These were superseded in the 1940s and 50s by split septic systems where black water (toilet waste) was treated and retained on-site normally in an 1800 litre tank and absorption drains and soakage pits and grey water (kitchen, bathroom and laundry waste) was contained on-site or discharged off-site to a stormwater drainage system, land or surface water.

Split systems were superseded in the early 1980s by all waste septic systems with effluent retained on-site in absorption drains or soakage pits or given secondary treatment and then retained on-site or discharged off-site. Normally one 3200 litre or two 1800 litre tanks in series were installed. The effluent was then discharged into 60m of reln drain or 90m of slotted PVC. Properties that could not retain waste on-site installed all waste sand filters or package treatment plants. Off-site discharge ceased in 1999 due to EPA guidelines and changes to Statewide planning controls. All new systems now retain wastewater on-site.

5.4 Township Audits

5.4.1 Audit/Inspection process

The audit process involved the following steps:

- A walk around the towns to note topographical features, property sizes, age of houses and other buildings, properties that were discharging off-site, locations where wastewater was pooling, offensive conditions etc.
- Inspections of properties in each township to note the:
  - Size of the block and the type of building.
  - Type of wastewater system and the method of treatment and disposal of effluent.
  - Condition and age of the system.
  - The owner's awareness of where the system was located and how it operates.
  - The date when the tank was last desludged.
- Discussion with Council's environmental health and planning staff about recent development activity and the development potential of the townships.
- Discussions with Council staff about septic tank systems in rural areas – what types of systems have been installed and do they have any concerns about their operation.

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5.4.2 Audit findings from township inspections

Introduction

333 systems were inspected during the period from January to March. The inspections were limited to properties that were lass than 4000sqms and where the owner was home or the system could be observed from the street (if the owner was not home). Septic tank and pump lids were not removed unless there was an obvious problem and the owner gave permission. Time did not allow for any probing of drains or the tracing of effluent discharge.

The outcomes of the audit are recorded in Table 10 on page 45. An analysis of the table and more qualitative information is provided below.

Types of systems

Table 5 provides data on the types of systems that have been installed in the townships. The data indicates that:

- The predominant system type across the townships is all waste septic tank/on-site absorption systems (42% of all systems). This is followed by split systems with on-site disposal (37%).
- Sand filters and treatment plants account for only 17% of systems in the townships. This reflects the age of the townships with most development occurring more than 20 years ago.
- 95% of properties contain their wastewater on-site. This is a very high proportion – similar to Surfcoast but much higher than other Western District municipalities. This reflects the preference of Councils to contain on-site, the draining capacity of the soils in some of the townships and the size of blocks.
- Only 5% of the properties discharge off-site. The discharge is grey water that is largely untreated.
- The predominant system type in the townships varies. The most common system in Ceres, Batesford, Moolap, Barwon Heads and Port Arlington are all waste/absorption drains whereas split systems are the predominant systems in the other townships.

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Table 5 – Audit of systems in unsewered townships

Township	No of houses inspected	Types of systems %					
		Treatment plant with on-site discharge	ST/Sand filter with on-site discharge	ST/on-site absorption	Split system with sullage on -site	Split system with sullage off-site	Other Compost toilets etc
Ceres	34	26	18	44	9	3	0
Breamlea	96	6	7	42	43	0	2
Batesford	21	4	17	52	26	0	0
Fyansford	22	5	0	27	59	9	0
Anakie	27	7	0	22	59	11	0
Avalon Beach	21	0	0	19	76	0	5
Moolap	35	3	11	64	17	6	0
Barwon Heads	18	28	28	44	0	0	0
Portarlington	47	2	11	53	32	2	0
Lara	12	0	0	8	58	33	0
	333	**8**	**9**	**42**	**37**	**4**	**1**

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Age of Septic Tank Systems

The age of a septic tank system affects its performance. A standard all waste on-site system (3 bedroom house, 900 litres a day, 155m of effluent drain, 1 metre wide) with suitable site characteristics, normal water use and proper maintenance, could function effectively for 20-25 years before the effluent field would need renewal. This life span would be shortened if the tank was not regularly desludged or the effluent field was flooded or disturbed by tree roots, physical developments such as pathways, stock etc. The life span of an all waste system with shorter lengths of drain may be considerably less.

Packaged treatment plants and sand filters have an estimated life of 20 years. However, their proper functioning is heavily dependent on their standard of maintenance. It is probable that the treatment plant is has not been maintained properly and is and some sand filters not performing optimally because the filters have been built over, the sand is blocked by tree roots, weeds or scum or.

Split systems which contain waste on-site have varying lifespans which depend greatly on the level of maintenance and use. The WC disposal systems can function effectively for 20-30 years if the length of drain is suitable, the tank is regularly desludged, the drains are not disturbed by tree roots or the ground above them is not compacted. The life of the grey water system depends on the type of treatment. Systems discharging above ground can function indefinitely if the disposal field is rotated. Systems discharging below ground will clog up if the kitchen waste is not adequately filtered.

Table 6 below provides a breakdown by age of the systems in the unsewered townships. An estimate of the age was made during the audit inspections and was based on information from the homeowner, the style/design of the dwelling, the material used for the septic tank systems and type of systems constructed.

The data shows that 49% of the systems inspected were at least 25 years old and could be nearing the end of their serviceability. A further 39% will reach this state over the next 10 years. The data also showed that the oldest systems were in Lara, Avalon Beach, Fyansford, Port Arlington and Breamlea and the youngest systems wee in Barwon Heads and Ceres.

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Table 6 – Age of Septic Systems by unsewered township

District /Township	Years			
	>10	10-19	20-29	30+
	%	%	%	%
Ceres	40	24	21	15
Breamlea	7	15	21	52
Batesford	4	22	83	43
Fyansford	5	9	32	68
Anakie	4	11	48	37
Avalon Beach	0	0	19	81
Moolap	3	6	47	44
Barwon Heads	44	22	33	0
Portarlington	2	11	23	64
Lara	0	8	0	92
Overall	**10**	**13**	**28**	**49**

Condition and performance of systems

The condition of the septic tank systems was noted during the audit inspections. The audit found a low number of defects. There were some inaccessible tanks and broken lids and a few systems had been built over but there was little evidence of failing drains or failing sand filters (note the audit was conducted during summer, the findings may have been different if conducted in winter).

The positive findings of the audit were as follows:

- A high proportion of owners knew the location of their septic tank systems and many (mainly people with young families) had desludged their tanks in the past five years.
- A high proportion of owners were aware of the importance of desludging their tanks, not building over the septic systems, not disturbing the effluent drains and not planting inappropriate vegetation.
- Considering the age of the houses in many of the townships, a relatively low proportion had failing WC effluent drains and a high proportion of owners indicated that they had little problem with their systems.
- A number of properties were successfully re-using their grey water through controlled irrigation systems.

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The negative findings of the audit were as follows (not large numbers):

- Failing septic tank effluent drains.
- Septic tanks system with broken lids, vents, distribution pits etc.
- Systems that are being constantly driven over or parked on by vehicles.
- Systems that are virtually inaccessible and have not been desludged for many years.
- Septic tank systems being modified without reference to Council.
- Septic tank tapped into open drain.
- WC effluent drain suspected to be tapped into stormwater drain.
- Houses, which are set to the front of large blocks and where fall is attainable to the rear of the property, discharging their grey water virtually untreated to barrel drains at the front (it should be noted however that the original permits approved this type of disposal).
- Small blocks discharging grey water off-site with no capacity to contain on-site.
- Many treatment plants not being checked on a quarterly basis. Almost all are not having their effluent sampled on an annual basis.

Townships

A summary of the findings for the individual townships is as follows:

Table 7 – Township Findings

Townships	Findings
Ceres	Some grey water discharging off-site Effluent draining through topsoil layer and the flowing along limestone and surfacing Regular complaints about odours from wastewater Vacant blocks where development could be problematic from a wastewater perspective Wastewater ponding in table drain at front 545 Barrabool Rd Small blocks where renewal of systems could be problematic
Breamlea	Groundwater contamination leading to contamination of Thompsons Creek Growing popularity and interest in redeveloping houses – existing septic systems no longer suitable Small blocks with ageing systems with no space for renewal of systems
Batesford	Some failing systems in winter Ageing systems Potential contamination of river
Fyansford	Effluent discharging off-site from some houses

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Townships	Findings
	Some failing systems in winter Small blocks with ageing systems with no space for renewal of systems Potential contamination of river
Anakie	Ageing systems Grey water discharge in main street. Ponding near bus stop Some small blocks with no space for renewal of systems Failing systems in winter
Avalon Beach	Ageing systems Free draining soils Potential contamination of groundwater and marshland
Moolap	Grey water discharge from shops Grey water discharge from some houses Flat land which is saturated in winter Land subject to flooding Failing systems in winter Contamination of ground water and marshland
Barwon Head (fringes)	Contamination of groundwater
Port Arlington (fringes)	Ageing systems Contamination of ground water
Lara	Ageing systems Grey water discharge to barrel drain Failing systems in winter

Off-site discharge/Water Quality

A relatively small number of properties in the City are discharging off-site. In some cases, this effluent may lie in the drain and cause offensive conditions or flow to nearby gullies and watercourses via open or underground barrel drains. At the time of the audit, there were only a few instances of offensive conditions and no visible evidence of wastewater flowing to watercourses. However, it needs to be noted that the audit was conducted during a dry summer in a very dry year. In a wet year, the situation might be different.

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Water samples have been taken in the past for general investigation purposes from open or barrel drains which receive wastewater and from streams/rivers that flow through or near unsewered townships. It is recommended that a sampling program be conducted for a year to gain an indication of the level of the environmental and health risk associated with septic tank systems. Suggested sampling points are listed in Table 8.

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Table 8 - Recommended Sampling Points

Township	Recommended sampling points
Ceres	From open drain at western edge of township
Breamlea	Thompson's Creek upstream and downstream of township
Batesford	Moorabool River upstream and downstream of township
Fyansford	Moorabool River upstream and downstream of township
Moolap	Large open drain upstream and downstream of residential areas
Avalon Beach	Salt marsh at rear of properties

5.5 Development potential

5.5.1 Capacity and potential

The townships have varying degrees of development potential. Some are nearly built out and have no subdivision capacity and other have a number of vacant blocks and the potential for subdivision.

The development capacity and potential of the townships is analysed in Table 9. The table indicates that:

- Anakie has the most potential for development.
- Breamlea in undergoing housing renewal
- Fyansford has development capacity with respect to new housing but most of this is in areas that will be sewered.
- Batesford has little development capacity.
- Avalon Beach has no development capacity.
- The fringe areas of sewered townships have some vacant block but no subdivision capacity.

Table 9 – Development capacity/potential

Township	Potential capacity
Ceres	5 vacant blocks in township area 1 block could be subdivided
Breamlea	8 vacant blocks Cannot be further subdivided Popularity of areas is growing. People buying houses and redeveloping

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Township	Potential capacity
Batesford	7 vacant blocks in township area No further subdivision potential. Township covered by land subject to inundation overlay
Fyansford	More than 50 vacant blocks. Most in eastern section of town and will be connected to sewer. 2 blocks in eastern section capable of further subdivision
Anakie	15 vacant blocks. 6 could be further subdivided. Local structure plan provides for development on southern end of township
Avalon Beach	No further development is permitted
Moolap	26 vacant blocks No scope for further subdivision
Barwon Head (fringes)	9 vacant blocks No opportunities for further subdivision
Port Arlington Fringes	10 vacant blocks No opportunities for further subdivision
Lara	No development potential

5.5.2 Problematic blocks

Nearly all the townships have vacant blocks but not all, because of their size slope, soil type, proximity to watercourses etc, will be immediately suitable for development. A mapping exercise should be undertaken where blocks that may be problematic for developed are identified. The following properties should be mapped:

- Blocks that are smaller than 1000m2 or ¼ of acre.
- Blocks that have a slope greater than 20%.
- Blocks that are within the prescribed setback distances from watercourses.
- Blocks that are subject to planning overlays that have implications for domestic wastewater treatment e.g. land subject to inundation.

Other information such as soil types, vegetation and important environmental features should also be included in the maps.

Council may wish to go further with the mapping process and identify those properties that **cannot** be developed for wastewater reasons (if any) using conventional treatment systems. It may then wish to propose solutions (if feasible) to allow development such as consolidating blocks or encouraging the installation of common treatment plants.

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5.6 Rural areas

There are 6700 septic tank systems in the rural areas on the municipality. The majority are all waste/on-site absorption systems but more recently treatment plants and sand filters have been installed. Traditionally, the level of interest or concern about the condition and performance of these systems has not been as high as for systems in township areas - if they fail, they only cause problems for the owner, there is plenty of land for more trenches, there is plenty of land for discharging above ground etc.

However, a failing or poorly designed septic tank system can produce health risks wherever it is and environmental risks if close to streams. A poorly functioning treatment plant on a farm property can produce effluent that if sprayed or ingested by the owner or his/her children could be harmful. Effluent surfacing from absorption drains or backing up through the distribution pit can cause similar problems. Also owners, whether they are in a town or at a farm, do not want their systems to continually block up and fail. They do not want the problem of having to extend drains, pump out pits etc. Therefore, it is important that Council include rural properties in any education programs and extend its monitoring program to the rural areas.

5.7 Implications for wastewater management

The key findings of the audit of wastewater systems are as follows:

- There are around 10000 septic tank systems in the City.
- The predominant system type across the unsewered townships is all waste septic tank/on-site absorption systems (42% of all systems). This is followed by split systems with on-site disposal (37%).
- Sand filters and treatment plants account for only 17% of systems in the townships. This reflects the age of the townships with most development occurring more than 20 years ago.
- 95% of properties contain their wastewater on-site. This is a very high proportion – similar to Surfcoast but much higher than other Western District municipalities. This reflects the preference of Council to contain on-site, the draining capacity of the soils in some of the townships and the size of blocks.
- Only 5% of the properties discharge off-site. The discharge is grey water that is largely untreated. At the time of the audit the discharge was not causing offensive conditions or environmental damage.
- The predominant system type in the townships varies. The most common system in Ceres, Batesford, Moolap, Barwon Heads and Port Arlington are all waste/absorption drains whereas split systems are the predominant systems in the other townships.
- 49% of the systems inspected were at least 25 years old and could be nearing the end of their serviceability. A further 39% will reach this state over the next 10 years. The oldest systems were in Lara, Avalon Beach, Fyansford,

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Portarlington and Breamlea and the youngest systems were in Barwon Heads and Ceres.

- The audit found that only a small proportion of houses had defects with their septic tank systems. There were some failing systems and broken pits.
- A small proportion of properties were discharging grey water off-site. This discharge was not causing offensive conditions at the time of the audit. One property was discharging septic tank effluent. Action should be taken to address these discharges.
- At the time of the audit, there was no visible evidence that wastewater was discharging to any watercourses. However, it may occur and Council should undertake routine water sampling of streams in the unsewered townships to monitor pollution and take action if it is evident that wastewater is flowing to the streams.
- There are specific problems in each township. These need to be specifically addressed. There are a handful of blocks in the unsewered townships that could be unsuitable for development. Consideration needs to be given to identifying and mapping these blocks and proposing innovative solutions which may allow development to occur.

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Table 10 – Audit Findings

Township	Location	Topography	Soil type	Surface and ground waters	Properties	Built Environment	Future development potential	Audit findings						Issues//Concerns	Recommendations
								No insp	Type* and No		Age of systems Years				
									Type	No	>10	10-19	20-29	>30		
Ceres	Barrabool Rd 15kms south west of City Centre	Located on a plateau Most blocks are reasonably flat or have a gentle fall.	Loamy topsoil over limestone	Nil	59 properties 5 around 1000sqms 54 >1000sqms	54 developed blocks Barrabool Rd is sealed Local roads are unsealed Network of underground drain discharging on southern edge of township No reticulated water supply	5 vacant blocks in township area 1 block could be subdivided	34	**TP** **SF** **AWOS** **SpOnS** **SpOffS** **Other**	**9** **6** **15** **3** **1** **0**	8 4 2	1 1 6	 1 6 -	 1 3 1 -	Some grey water discharging off site Effluent draining to limestone and the flowing along limestone and surfacing Regular complaints about odours from wastewater Vacant blocks where development could be problematic from a wastewater perspective Wastewater pomading in table drain at front 545 Barrabool Rd Small blocks where renewal of systems as they age could be problematic	Identify sources of wastewater discharge are attempt to contain on site or improve treatment Upgrade old systems to treatment plants when opportunities arise Determine the development capacity of vacant blocks. Nominate system type. Regularly clear and flush open drains. Monitor systems in winter Require maintenance checks and effluent tests on treatment plants and sandfilters Provide education pack to householders specific to their systems
Breamlea	Breamlea Rd 30kms south of City Centre	Located on the slopes on undulating sand dunes. Long narrow town about 100 to 300metres from the coast. Town drains to marshland and Thompson Creek	Gravelly sand	Thompson Creek on northern side of town High water table	127 properties 121 around 1000sqms 6>1000sqms	122 developed blocks Horwood Drive is sealed Local roads are unsealed No underground drains Reticulated water supply	8 vacant blocks Cannot be further subdivided Popularity of areas is growing. People buying houses and redeveloping	96	**TP** **SF** **AWOS** **SpOnS** **SpOffS** **Other**	**6** **7** **40** **41** **0** **2**	6 - 1	 7 9	 - 16 7	 - 14 34	Groundwater contamination leading to contamination of Thompsons Creek Growing popularity and interest in redeveloping houses – existing septic systems no longer suitable Small blocks with ageing systems with no space for renewal of systems	Stipulate that only treatment plants are to be installed at new houses Upgrade old systems to treatment plants when opportunities arise Monitor water quality in Thompsons Creek Require maintenance checks and effluent tests on treatment plants and sandfilters Provide education pack to householders specific to their systems
Batesford	Ballarat Rd 12kms north west of City Centre	Located on the slopes and flats of a river valley. Terrain is mostly flat and drains to Moorabool River	Loamy topsoil over heavy clays	Moorabool River flows along western edge of town	38 properties All larger than 100sqms	22 developed blocks Ballarat Rd is sealed Local roads are unsealed No underground drains Reticulated water supply	7 vacant blocks in township area No further subdivision potential. Township covered by land subject to inundation overlay	23	**TP** **SF** **AWOS** **SpOnS** **SpOffS** **Other**	**1** **4** **12** **6** **0** **0**	1	 4 1	 7	 4 6	Some failing systems in winter Ageing systems Potential contamination of river	Stipulate that only treatment plants are to be installed at new houses Upgrade old systems to treatment plants when opportunities arise Monitor water quality in River Require maintenance checks and effluent tests on treatment plants and sandfilters Provide education pack to householders specific to their systems
Fyansford	Hamilton Hwy 15kms west of City Centre	Located on the slopes and flats of a river valley. Terrain is mostly flat and drains to Moorabool River	Loamy topsoil over heavy clays	Moorabool River dissects the town	87 properties 36 around 1000sqms 55>1000sqms	36 developed blocks All roads are sealed Underground drains along Hwy in eastern section of town and at rear of houses on Hwy and De Goldis Rd at western end of town. Reticulated water supply	More than 50 vacant blocks. Most in eastern section of town and will be connected to sewer. 2 blocks in eastern section capable of further subdivision	22	**TP** **SF** **AWOS** **SpOnS** **SpOffS** **Other**	**1** **0** **6** **13** **2** **0**	1	 2	 4	 13 2	Effluent discharging off site from some houses Some failing systems in winter Small blocks with ageing systems with no space for renewal of systems Potential contamination of river	Stipulate that only treatment plants are to be installed at new houses Upgrade old systems to treatment plants when opportunities arise Monitor water quality in River Require maintenance checks and effluent tests on treatment plants Provide education pack to householders specific to their systems
Anakie	Geelong-Ballan Rd 30kms north of City Centre	Southern section of town is relatively flat. Northern section has a gentle slope	Loamy topsoil over gravelly clay	Nil	65 properties 9 around 1000sqms 54>1000sqms	47 developed blocks Roads are sealed	15 vacant blocks. 6 could be further subdivided. Local structure plan provides for development on southern end of township	27	**TP** **SF** **AWOS** **SpOnS** **SpOffS** **Other**	**2** **0** **6** **16** **3** **0**	1	1 2	 4 9	 7 3	Ageing systems Grey water discharge in main street Some small blocks with no space for renewal of systems Failing systems in winter	Provide education pack to householders specific to their systems Attempt to contain grey water on site. If not feasible ensure better treatment Upgrade systems when opportunities arise Require maintenance checks and effluent tests on treatment plants
Avalon Beach	Avalon Rd 20km drive north west	Flat land which drains to marshland at rear	Gravelly sand	Marshland at rear and sea at front	33 properties All around	32 developed blocks Unsealed road	No further development is	21	**TP** **SF**						Ageing systems Free draining soils	Provide education pack to householders specific to their systems

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Township	Location	Topography	Soil type	Surface and ground waters	Properties	Built Environment	Future development potential	Audit findings							Issues//Concerns	Recommendations
								No insp	Type* and No		Age of systems Years					
									Type	No	>10	10-19	20-29	>30		
	of City Centre			High water table	1000sqms	Tank water	permitted		AWOS	4			4		Potential contamination of groundwater and marshland	
									SpOnS	16				16		
									SpOffS							
									Other	1				1		
Moolap	Geelong-Port Arlington Rd 7kms west of City centre	Flat land which drains to marshland	Loamy topsoil over heavy clay	Marshland Large open drain High water table	115 residential properties 9 around 1000sqms 106 >1000	89 developed blocks Sealed road Underground drainage network in area bounded by open drain High St, June St and Cooney St Reticulated water supply	26 vacant blocks No scope for further subdivision	35	TP	1	1				Grey water discharge from shops Grey water discharge from some houses Flat land which is saturated in winter Land subject to flooding and Failing systems in winter Contamination of ground water and marshland	Investigate feasibility of connecting to sewer Provide education pack to householders specific to their systems Attempt to contain all grey water on site. If not feasible ensure better treatment Upgrade systems to treatment plants when opportunities arise (if sewer not an option) Require maintenance checks and effluent tests on treatment plants
									SF	4		2	2			
									AWOS	23			15	8		
									SpOnS	6				6		
									SpOffS	2				2		
									Other							
Barwon Head (fringes)	Stephens Pde Saratoga Ave 30km south east of City Centre	Blocks gently slope to golf course at rear	Gravelly sand	100-200metres from coast High water table	37 properties 9 around 1000sqms 32 around 2000sqms	28 developed blocks Road sealed No underground drains Reticulated water supply	9 vacant blocks No opportunities for further subdivision	18	TP	5	4	1			Contamination of groundwater	Investigate feasibility of connecting to sewer Provide education pack to householders specific to their systems Upgrade systems to treatment plants when opportunities arise (if sewer not an option) Require maintenance checks and effluent tests on treatment plants
									SF	5	4	1				
									AWOS	8		2	6			
									SpOnS	0						
									SpOffS	0						
									Other	0						
Port Arlington Fringes	Ramblers Rd	Relatively flat land with predominantly gentle slope to the sea	Gravelly sand	30-60 metres to beach	82 properties	72 developed Road sealed 2 small lengths of underground drains Reticulated water supply	10 vacant blocks No opportunities for further subdivision	**47**	TP	1	1				Contamination of ground water	Investigate feasibility of connecting to sewer Provide education pack to householders specific to their systems Upgrade systems to treatment plants when opportunities arise (if sewer not an option) Require maintenance checks and effluent tests on treatment plants and sandfilters
									SF	5		1	4			
									AWOS	25		4	7	14		
									SpOnS	15				15		
									SpOffS	1				1		
									Other							
Lara	Mill Rd 20km north of Geelong	Relatively flat land on northern edge of town. Gentle slope to front and back on some properties	Shallow topsoil over a gravelly clay	Nil	14 properties 9 around 1000sqms 5>1000sqms	All developed Sealed road with underground drain Reticulated water supply	No development potential	12	TP	0					Ageing systems Grey water discharge to barrel drain	Investigate feasibility of connecting to sewer Provide education pack to householders specific to their systems Upgrade systems to treatment plants when opportunities arise (if sewer not an option)
									SF	0						
									AWOS	1		1				
									SpOnS	7				7		
									SpOffS	4				4		
									Other							

* Legend: TP – Treatment Plant, SF – Sand filter, AWOS – Septic tank/on site, SpOnS –Split system on site, SpOffS – Slip system off site, Other – Compost toilets etc

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Section 6 – Consultation Outcomes

6.1 Introduction

This section provides the outcomes of the consultation with local key stakeholders directly involved or having an interest in domestic wastewater management. These stakeholders include Council staff, the agencies listed in Section Three of this Part and local contractors such as private building surveyors and town planners, plumbers, treatment plant maintenance contractors and septic tank waste removal contractors.

6.2 Outcomes

6.2.1 Council

Council staff were asked to indicate what special issues the plan should address. Their comments were as follows:

- Identifying deficiencies in Council's current wastewater approval and records processes and making recommendations for improvement.
- Ensuring that all developed properties that are serviced by reticulated sewerage are connected to the sewer.
- Identifying a process for encouraging properties that are located close to reticulated sewerage to connect to the sewer.
- Identifying the unsewered townships or areas within these townships that in the long term cannot support on-site absorption of wastewater and make recommendations about future wastewater management practices in these areas.
- Recommending a process for identifying and controlling development on already subdivided vacant blocks where development from a wastewater disposal perspective may be problematic.
- Ensuring that individual blocks created by future subdivisions and the whole subdivided area have the long term capacity to successfully contain their wastewater on-site (areas for replacement absorption fields, capacity to cater for the combined water load from all the house in the subdivision etc)
- Recommending a process for controlling the redevelopment of already developed blocks (e.g. extensions, outbuildings, driveways, swimming, complete rebuild of houses) where this development from a wastewater perspective may be problematic.
- Introducing processes which ensure that damage to the environment by wastewater discharge is minimised – protection of surface waters, ground waters, vegetation, soil etc
- Developing a management plan which ensures that the public health risks associated with wastewater disposal are mimimised (water catchment areas,

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odour, effluent ponding in open drains, effluent surfacing on properties, inappropriate surface irrigation etc)
- Identifying a mechanism for dealing with septic tank systems which do not satisfy current standards but are operating as per their original permit (e.g. split systems with grey water discharge off-site).
- Recommending a process/policy for encouraging greater wastewater re-use in the sewered and unsewered areas of the municipality.
- Identifying the most effective way of ensuring that treatment plants are being properly maintained and are producing a high quality of effluent.
- Identifying the most effective way of ensuring that septic tanks are being regularly desludged.
- Investigating the best method of informing prospective purchasers of unsewered properties of the ramifications of the block being unsewered.
- Ensuring that occupancy certificates are not issued prior to septic tank permits to use being issued.
- Identify the resources needed to implement the wastewater plan and investigate potential funding sources.

6.2.2 Key agencies

The key agencies were asked to identify what special issues the plan should address. Their comments were as follows:

Barwon Water

- Ensuring EPA guidelines are followed and effluent is kept within title boundaries.
- Ensuring correct setback distances are applied, especially to water courses.
- Speedily repairing defective septic tank systems.
- Advising prospective purchasers of unsewered properties of the unsewered status of the block and the implications of this from a septic tank/installation and future development perspective.
- Ensuring all planning/septic tank applications for properties in water catchment areas are referred to the authority.

Corangamite Catchment Management Authority

- Increasing the levels of wastewater reuse across the region.
- Ensuring that all new developments contain their wastewater on-site.
- Encouraging, where feasible, owners of houses that currently discharge off-site to contain wastewater on their properties.
- Ensuring that when houses are extended or redeveloped their septic tanks, where necessary, are upgraded.
- Enhancing the monitoring and maintenance regimes for systems located near surface water or in areas with high water tables.

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Western and Central Coastal Boards

- Protecting the health of estuaries and other coastal waters from any detrimental effects from wastewater discharge.
- Protecting coastal vegetation from any detrimental effects from wastewater discharge.
- Ensuring that wastewater management plan is integrated with estuary coastal action plans.
- Ensuring appropriate development of the coastal areas from a wastewater disposal perspective.

EPA and DSE

- Ensuring that all wastewater is kept within the title boundaries and does not pollute the environment.
- Enforcing EPA guidelines for domestic wastewater management.
- Identifying failing systems and requiring these systems to be upgraded where possible.
- Identifying environmental damage caused by wastewater disposal and taking action to remedy or minimise the damage.
- Identifying area where potential environmental damage may occur as systems age and developing a strategy to avert this damage.
- Ensuring that septic systems do not pollute rivers and ground water supplies.

6.2.3 Local contractors involved in wastewater industry

Local contractors involved in wastewater activities were asked to comment on the wastewater management practices of Council and to make suggestions about how these practices could be improved. They were also asked to generally comment on any matters of concern they had about wastewater management. The contractors included private town planners, companies undertaking land capability assessments, building surveyors, treatment plant manufacturers, plumbers, maintenance contractors and septic tank waste removal contractors. Their comments were as follows:

- All were reasonably satisfied with the level of service and quality of advice they get from Council. They described Council's EHOs as competent, cooperative and enthusiastic and in the main very knowledgeable about septic tank systems.
- The Private Building Surveyors were critical of the fees charged for 'report and consent' requests. They indicated that no other Council has this charge and that it is effectively double dipping as owners will later pay the septic tank permit. The Surveyors also were concerned about the time it took for a response to be received. Again the time was much longer than that taken by other Councils.

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- The treatment plant installers and contractors confirmed that many treatment plants were not being checked after the first year of operation and admitted concerns about the long term performance of the poorly maintained plants. They recommended that Council strictly enforce the maintenance and testing requirements.
- The waste removal contractors confirmed that only a small proportion have their tanks routinely emptied. They said that property owners should be required to more regularly empty their tanks. The frequency would depend on the type of system, the number of tanks, and the size of the household. 5 years was suggested as the average time.

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6.3 Implications

A summary of the key outcomes of the consultation with stakeholders and the implications of these outcomes for wastewater management in Geelong City are as follows:

- The issues raised by the key stakeholders should be considered and, where feasible, addressed by this study.
- Contractors involved in the approval of building permits and the installation and maintenance of septic tank systems are highly satisfied with the service they get from Council. It is important that this level of service continues.
- It is apparent that some treatment plants are not maintained properly and are probably discharging poor quality effluent. Council needs to introduce a more rigorous monitoring regime for these systems.
- It is also apparent that very few people routinely have their septic tank desludged and normally wait until a problem occurs. Consideration needs to be given to introducing a compulsory desludging program.
- The agencies responsible for environment protection, potable water supply and river health want the incidence of off-site discharge to be reduced. Council needs to give consideration to introducing a strategy to achieve this objective.

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Section 7 – Good Practice Domestic Wastewater Management

7.1 Introduction

This section provides an assessment of wastewater management practices in Geelong against what regarded to be good practice in wastewater management.

7.2 Findings of assessment

Table 11 on pages 53-56 provides the findings of the assessment. The findings indicate that the Geelong area performs very well, with the exception of the following areas:

- Building Surveyors submitting 'report and consent forms' for all relevant building projects in unsewered areas.
- Developers having a good understanding of wastewater management and submitting realistic development proposals.
- Plumbers/owners fully completing septic tank application forms.
- Plumbers giving reasonable notice for inspections (only a few incidences).
- Plumbers/owners calling for final inspections.
- Owners of treatment plants submitting quarterly reports.
- Routine monitoring of septic systems.
- Septic tanks being regularly desludged.
- Owners being aware of the location of their septic tanks.
- Identification and special monitoring of septic tanks systems that discharge off-site or are located near watercourses.
- Identification of blocks which could be problematic for development from a wastewater perspective.
- Monitoring of pollution of streams by wastewater.
- Submission of annual report to EPA.

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Table 11 – Good practice benchmarking

Item	Importance (out of 5 with 5 being very important)	Score 1 – poor , 5 very good					Comments
		1	2	3	4	5	
Building permit 'Report and Consent' process							
The process is simple and clearly understood by local building surveyors	5					5	
A reasonable fee is charged by Council	3		2				A fee is charged by Building Dept which Building Surveyors consider to be unreasonable.
Building surveyors submit forms for all relevant applications	5				4		Form are not being submitted for house extensions
All relevant information is examined by EHO about each site	5					5	
EHO has knowledge of/or inspects all sites	5					5	Council inspects all sites
EHO responds in a reasonable timeframe	5					5	
EHO provides a clear and meaningful response	5					5	
Council responds to building surveyor in a reasonable timeframe	5			3			Report can take up to 2 weeks to complete
Copy of form is kept on appropriate file and referred to when septic tank application is submitted	3					5	
Town planning process							
Developers, buildings etc have sufficient knowledge and information about planning	5			3			

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Item	Importance (out of 5 with 5 being very important)	Score 1 – poor , 5 very good					Comments
		1	2	3	4	5	
rules and wastewater management to submit appropriate applications							
EHO is available to provide information to planning applicants prior to submitting application	3					5	
All relevant planning applications are referred to EHO	5			3			Some relevant applications have not been forwarded to EHO
EHO is provided with sufficient information to make informed decision	5					5	
EHO inspects or has sufficient knowledge of the referred site	5					5	
Referrals are processed by EHO in a reasonable time frame	5					5	
EHO gives clear and concise information to planners	5					5	
Planners act on advice	5					5	
Information and application forms							
Council has a short, specific code of practice and clear guidelines	4					5	
Council application form requests the appropriate information and is easy to complete	4					5	
Council charges a reasonable fee	4				4		Fee is slightly higher than nearby Councils

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Item	Importance (out of 5 with 5 being very important)	Score 1 – poor , 5 very good					Comments
		1	2	3	4	5	
Approval and application process							
Plumbers/owners understand the process	5					5	
EHO is available to provide information to/meet with plumbers/owners prior to submitting application	5					5	
Applications are properly filled in by applicant	4			3			Sometimes the EHO will have to chase up information or ask for better plans
Applications are checked thoroughly to ensure they are filled in properly	4					5	
Sites are inspected (if needed)	5					5	
Application is processed is a reasonable timeframe	5					5	
Permit outlining all conditions is forwarded to applicant and owner if not applicant	5					5	
Inspection process							
Plumbers/owners understand the process	5					5	
Plumbers give reasonable notice for inspections	5				4		Odd plumbers do not give proper notice
EHO inspects all installations prior to backfill	5					5	
Any problems with installation are clearly communicated to installers and applicants	5					5	

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Item	Importance (out of 5 with 5 being very important)	Score 1 – poor , 5 very good					Comments
		1	2	3	4	5	
Approval to use process							
Plumbers/owners understand the process	5					5	
All final inspections are called for	5			3			Some inspections are not called for by plumbers/owners
Systems are being properly backfilled	5			3			Some may not be because final inspections are not called
Amended plans are supplied where necessary	5			3			Some are not supplied because permit to use is not asked for by owners
Copy of plumbers certificate is provided	5			3			Some are not supplied
Approval to use is forwarded with appropriate information	5					5	When requested
No certificates of occupancy are issued with approval to use being issued	5				4		Some houses are being occupied without permit to use being issued.
Files and records							
All applications are registered in electronic database	5					5	
Hard copy and electronic files are produced	5					5	
Inspection notes are recorded on hard files	5					5	
Inspection notes are recorded on electronic files	5					5	
Permits, plans and letters are kept on hard files	5					5	

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Item	Importance (out of 5 with 5 being very important)	Score 1 – poor , 5 very good					Comments
		1	2	3	4	5	
Permits, plans and letters are scanned on to electronic files	4					5	
Old files are reasonably accessible	3				4		Depends on which Council are the property is located in
Education program							
Owners of new systems are met on site post installation to explain how systems work and how they should be maintained	5		2				This occasionally occurs
Education kit provided to all owners on how systems work and should be maintained. Kit should be specific to type of system	5	1					Not undertaken
Regular forums/information nights are held with local contractors	4	1					Not undertaken
Monitoring and maintenance							
Treatment plants							
Council has a seperate register of all plants – location, type when installed	5				4		This information can be collected from database but no separate register has been produced
Quarterly maintenance reports are being carried out and reports are provided to Council	5			3			Not all systems are being inspected and not all reports are forwarded
Water sampling is being carried out and reports are being provided to Council	5	1					No samples have been submitted

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Item	Importance (out of 5 with 5 being very important)	Score 1 – poor , 5 very good					Comments
		1	2	3	4	5	
Council is recording inspections	5	1					Not being undertaken
Council is identifying systems where inspections and sampling are not being performed and following up with letter to owners/installers	5				4		
Council is reading reports and sample results and taking action where necessary	5				4		
Other systems							
Council has a routine monitoring system in place	5	1					Not being undertaken
Sludge levels are being measured	3	1					Not being undertaken
Tanks are being regularly desludged	5			3			Not all residents are desludging
Owners are aware of the location of their tanks etc	5			3			A reasonable proportion of residents know where there systems are located
Septic tanks are accessible	5			3			A reasonable proportion of systems are readily accessible
Defective/problem systems							
Council encourages defects to be addressed when identified	5					5	
Systems discharging off site have been identified. Any problems are being dealt with	5	1					Not undertaken
Systems near sensitive water courses have	5	1					Not undertaken

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Item	Importance (out of 5 with 5 being very important)	Score 1 – poor , 5 very good					Comments
		1	2	3	4	5	
been identified and upgraded where necessary							
Contamination of watercourses by wastewater is being monitored through water sampling program	5			3			Some monitoring has taken place
Mapping							
Problematic blocks from a wastewater perspective are mapped	4	1					Not undertaken
Database and reports							
Database able to produce the following information: - Owners and addresses of systems - Types of systems - When installed - Number of systems by type - Number of systems by type and by townships	5			3			
Annual report submitted to EPA	3	1					Not undertaken
Relationships							
Strong relationships have been developed with other organizations involved in wastewater management	5					5	

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Item	Importance (out of 5 with 5 being very important)	Score 1 – poor , 5 very good					Comments
		1	2	3	4	5	
Good relationships with local contractors have been developed	5					5	

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PART C – KEY FINDINGS AND ACTIONS

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Section 8 – Key Findings and Actions

8.1 Introduction

This section summarises the key research findings of the study and outlines and discusses the major issues that emerge from these findings.

8.2 Key Findings

A summary of the key findings is as follows:

8.2.1 Review of Roles and Responsibilities

Finding

- The review of the roles of Council and other agencies indicates that other local and regional agencies have an important role to play in the wastewater management. Council needs to work closely with these bodies and keep them fully informed of any actions it is taking which may have relevance to their operations.

Suggested Action

- *Investigate the feasibility of holding regular and formal meetings with the agencies to discuss wastewater management issues.*

8.2.2 Review of legislation, codes of practice and policy

Findings

- There is some uncertainty about Council's legal power to require owners of septic tank systems to modify their septic tank systems. Council has the power to order property owners to repair failing systems e.g. water surfacing from effluent lines. It also has the power to order property owners to repair or even modify their systems if the systems are causing a nuisance e.g. an effluent discharge which is causing an offensive odour. However, it appears that Council does not have the power to require a person to modify a system which is not causing a nuisance and is performing as per the conditions of its original permit e.g. an approved split system with grey water is discharging off-site but not in a manner which causes offence. If this is an accurate interpretation of Council's powers, it may diminish Council's ability in some circumstances to deal with off-site discharges of grey water.
- Council may be able to strengthen its power to deal with 'approved' off-site discharges of grey water. The Local Government Act gives Council the power to

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enact local laws to regulate wastewater management issues as long as these laws are consistent with State policy and legislation. State policy currently recommends that all wastewater be contained on-site. Therefore, Council may be able enact regulations which it can apply to properties with split systems.

- The Local Government Act gives Council the power to introduce a special charge on homeowners to fund any 'genuine function if the function benefits the persons being charged'. Therefore, Council may be able to raise a charge to fund a domestic wastewater management program if it can demonstrate the 'genuineness' and benefits of the program.
- Council is required to remedy nuisance conditions 'as far as reasonable' which exist in its municipality. Therefore, Council must act if it is aware of a nuisance condition being caused by a septic tank system. However, the qualification 'as far as reasonable' provides Council with some leeway in determining what to do. In some situations, the solution may be difficult and costly or there may be no practical solution. Council may be able to say that it cannot resolve the problem.
- Water Authorities have the power to inspect septic tank systems and order owners to repair and/or properly maintain their systems within their sewer districts. They also have the power to carry out works on septic systems and impose charges for these works (if a by-law is created). These provisions appear to give Barwon Water more effective powers than Council to facilitate the repair of septic systems.
- Building Surveyors cannot legally issue a certificate of occupancy until a permit to use has been issued. It is apparent that some owners are occupying homes without a permit to use. They may be doing this with or without a certificate of occupancy. This need to be addressed.
- Council's planning scheme promotes good wastewater management practices. It requires all properties to be able to contain their wastewater on-site, specifies minimum lot sizes which are based on allowing sufficient land for wastewater disposal, provides for rigorous scrutiny of proposals in environmentally sensitive areas, requires land capability assessments in some circumstances and provides for referrals to key agencies for their input.
- The EPA is encouraging the re-use of grey water as per the guidelines it has recently developed. Geelong Council has also indicated its support to the concept of water re-use in its Stormwater Management Plan, Environmental Management Plan and Municipal Strategic Plan. Council needs to develop a policy position on grey water re-use and a process for encouraging households to adopt this practice.
- The SEPP Policy relating to groundwater requires Council to do everything in its power to protect contamination of ground water. A number of unsewered townships in the City have free draining soils and/or high water tables. Council needs to ensure that the performance of septic tank systems in these townships is optimised.
- The Code of Practice requires Council to have a compliance program in place if it is allowing properties to install treatment plants and reduce setback distances

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from boundaries and watercourses. Council has a basic compliance program in place where treatment plant owners are encouraged to submit maintenance reports. Council needs to enhance this program to make quarterly reporting and annual testing of effluent compulsory.

Suggested Actions

- *Discuss with the EPA the merits of giving Council the power to remedy septic tank systems that are operating in accord with their permits but do not satisfy current standards.*
- *Discuss with the EPA the merits of giving Councils the same power as Water Authorities to repair septic tank systems and recover the costs from homeowners.*
- *Develop a policy position on re-use of grey water and an education/promotion campaign to achieve greater levels of re-use.*
- *Ensure that systems installed in areas with high water tables are designed to minimise contamination of the water tables. Take opportunities in these areas, where practical, to upgrade existing systems to treatment plants.*
- *Introduce a comprehensive compliance program for treatment plants.*
- *Give consideration to introducing a special charge to fund Council's wastewater management program*
- *Stress to Building Surveyors that a certificate of occupancy cannot be issued until a permit to use the septic tank is issued. Request Building Surveyors to advise their clients that their house should not be occupied or the septic tank system used until a permit to use is issued.*

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8.2.3 Review of Planning, Permit and Approval Processes

Findings

- The processing of planning applications that are forwarded to the Environmental Health Unit is handled effectively. Sites are visited and the capacity of the proposed sites to treat and dispose of wastewater in a manner which is safe to public health and the environment is given paramount importance in the assessment. Permits are refused, modified or approved with conditions if there are problems with wastewater disposal.
- However, the range of applications that is referred to the Unit is limited compared to neighbouring Councils (for example farmhouses that are being excised off large blocks are not referred even though there is a possibility the septic tank systems may extend beyond the excised block). The types and range of applications that should be referred needs to be reviewed and a protocol established.
- Building Surveyors may not submit report and consent forms for house extensions that do not involve plumbing. However, the extension may impact on the septic systems. Council should insist that report and consent forms are submitted for all building applications in unsewered areas.
- The septic tank approval and inspection processes work effectively and efficiently. Applications are thoroughly examined and detailed inspections are carried out. Comprehensive material including information about appropriate vegetation is provided to the owner. Ageing permits to install are followed up and action is taken if systems are installed without inspections being called.
- The record system for septic tanks appears to be working reasonably well. The information is stored on Council's electronic database and standard reports can be readily produced. Non-standard reports such as the information about numbers and types of systems requested for this study is sometimes difficult and time consuming to retrieve. The Unit should investigate how the 'user friendliness of the system' could be improved.
- Copies of plans, permits and inspection notes are now being scanned on to an electronic property database. This is an excellent initiative and will make the retrieval of information more speedy.
- Old septic tank files (pre-amalgamation) have been archived. Their accessibility depends on the original Council issuing the permit. The Health Unit has investigated the merits of trying to improve the accessibility of the files but has decided that it would not be cost effective.
- Council does not conduct education activities other than meeting the owner on-site when the septic system is being installed. Council does not undertake regular and routine monitoring of septic tanks. It inspects systems as a result of complaints, if asked by the homeowner or as part of special investigations.
- Council does not closely monitor the operation of treatment plants. It processes a list of properties that should be submitting reports and matches the reports

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received to the list. It does not, however, follow up reports that have not been submitted or insist that annual tests are performed on the effluent discharged from the plants. Council is aware that it needs to significant enhance this program.

- Council is also not requiring owners of septic tanks to routinely desludge their tanks. Council should give consideration to enforcing this requirement.

Suggested Actions

- *Identify the range and types of planning applications that should be forwarded to the Environment Health Unit. Establish a protocol for ensuring these referrals occur*
- *Request Building Surveyors to submit report and consent forms for all house extensions projects in unsewered areas.*
- *Identify the reports that the Environmental Health Unit wants to generate from Pathways and write programs for these reports.*
- *Introduce a monitoring program of septic tanks systems. This monitoring program should involve the following:*
  - *Regular and random measurement of sludge levels.*
  - *Inspection of systems to ensure that tanks, pits, pumps etc are in good working order.*
  - *Inspection of systems to ensure to identify that they are operating properly and in accordance with their permits to use.*
  - *Random testing of sand filter effluent*
  - *Introduce monitoring for treatment plants. Investigate the feasibility of operating a Council controlled program. Implement program if feasible.*
  - *Introduce a process for advising residents when their tanks are due for desludging.*
- *Conduct an ongoing wastewater management community education program (see page for the components of the program).*

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8.2.4 Review of Audit Findings

Findings

- There are 10000 septic tank systems in the City. The predominant system type across the townships is all waste septic tank/on-site absorption systems (42% of all systems). This is followed by split systems with on-site disposal (37%).
- Sand filters and treatment plants account for only 17% of systems in the townships. This reflects the age of the townships with most development occurring more than 20 years ago.
- 95% of properties contain their wastewater on-site. This is a very high proportion – similar to Surfcoast but much higher than other Western District municipalities. This reflects the preference of Council to contain on-site, the draining capacity of the soils in some of the townships and the size of blocks.
- Only 5% of the properties discharge off-site. The discharge is grey water that is largely untreated. At the time of the audit the discharge was not casing offensive conditions or significant environmental damage.
- The predominant system type in the townships varies. The most common system in Ceres, Batesford, Moolap, Barwon Heads and Port Arlington are all waste/absorption drains whereas split systems are the predominant systems in the other townships.
- 49% of the systems inspected were at least 25 years old and could be nearing the end of their serviceability. A further 39% will reach this state over the next 10 years. The oldest systems are in Lara, Avalon Beach, Fyansford, Port Arlington and Breamlea and the youngest systems are in Barwon Heads and Ceres.
- The audit found that only a small proportion of houses had defects with their septic tank systems. There were some failing systems and broken pits.
- A small proportion of properties were discharging grey water off-site. This discharge was not causing offensive conditions at the time of the audit. One property was discharging septic tank effluent. Action should be taken to address these discharges.
- At the time of the audit, there was no visible evidence that wastewater was discharging to any watercourses. However, it may occur and Council should undertake routine water sampling of streams in the unsewered townships to monitor pollution and take action if it is evident that wastewater is flowing to the streams.
- There are specific problems in each township. These need to be specifically addressed. There are a handful of blocks in the unsewered townships that could be unsuitable for development. Consideration needs to be given to identifying and mapping these blocks and proposing innovative solutions which may allow development to occur.

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Suggested Actions

- *Introduce a wastewater management community education program. The program should extend to rural systems. The components of the program should be as follows:*
  - *An education kit for homeowners on the proper use and maintenance of septic tank systems. The kit should be specific to the type of systems on the properties. This should include statements/information on:*
    - *The importance of knowing the location of the septic system and making sure it is accessible and what type of septic tank system has been installed and how if functions.*
    - *The importance of not driving over the septic tanks system and of considering the septic tank when planning any extension to the house or other project which might impact on the septic tank system.*
    - *The vegetation that is suitable to plant around septic tank systems.*
    - *The importance of water conservation and advice on water conservation practices.*
    - *The importance of regularly desludging septic tanks and emptying grease traps.*
    - *The things that could typically go wrong with the system and how the homeowner should respond.*
    - *The things that do go wrong when owners attempt to repair or upgrade systems without reference to experienced drainers/plumbers and Council.*
    - *A notice indicating that systems cannot be altered without Council's consent and a suggestion that they always contact Council before undertaking any works other than basics repairs on their systems.*
    - *Advice to owners of treatment plants that they must comply with the conditions of the permit to use with respect to quarterly maintenance tests and annual effluent tests.*
  - *Advice on how to re-use grey water.*
  - *Meeting owners of new systems on-site to explain the operation of and how to best maintain their systems. Provision of an education kit to these homeowners which provides the same information as above.*
  - *An annual forum with plumbers, treatment plant installers, maintenance contractors etc to discuss relevant waste management issues.*
    - *Identify the vacant blocks in each township which are unsuitable for development. Give consideration as to what action should be taken with respect to these blocks – advising the owners, requiring consolidation with adjacent vacant blocks prior to development, changing the zoning of the blocks.*

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- *Develop a strategy to reduce and improve the quality of off-site discharge of wastewater – water re-use, water conservation, kitchen waste to septic system, more regular emptying of grease traps, installation of grease traps.*
- *Undertaking the following actions with respect to each township (many overlap with previous recommendations)*

Table 12 – Actions for each township

Township	***Recommendations***
Ceres	• *Identify sources of wastewater discharge and attempt to contain on-site or improve treatment* • *Upgrade old systems to treatment plants when opportunities arise* • *Determine the development capacity of vacant blocks. Nominate system type.* • *Regularly clear and flush open drains.* • *Monitor systems in winter* • *Require maintenance checks and effluent tests on treatment plants and sand filters* • *Provide education pack to householders specific to their systems*
Breamlea	• *Stipulate that only treatment plants are to be installed at new houses* • *Upgrade old systems to treatment plants when opportunities arise* • *Monitor water quality in Thompsons Creek* • *Require maintenance checks and effluent tests on treatment plants and sand filters* • *Provide education pack to householders specific to their systems*
Batesford	• *Stipulate that only treatment plants are to be installed on new houses* • *Upgrade old systems to treatment plants when opportunities arise* • *Monitor water quality in River* • *Require maintenance checks and effluent tests on treatment plants and sand filters* • *Provide education pack to householders specific to their systems*
Fyansford	• *Stipulate that only treatment plants are to be installed on new houses* • *Upgrade old systems to treatment plants when opportunities arise* • *Monitor water quality in River* • *Require maintenance checks and effluent tests on treatment plants* • *Provide education pack to householders specific to their systems*
Anakie	• *Provide education pack to householders specific to their systems*

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	• *Attempt to contain grey water on-site. If not feasible ensure better treatment* • *Upgrade systems when opportunities arise* • *Require maintenance checks and effluent tests on treatment plants*
Avalon Beach	• *Provide education pack to householders specific to their systems* • *Monitor water quality in marshland*
Moolap	• *Investigate feasibility of connecting to sewer* • *Provide education pack to householders specific to their systems* • *Attempt to contain all grey water on-site. If not feasible ensure better treatment* • *Upgrade systems to treatment plants when opportunities arise (if sewer not an option)* • *Require maintenance checks and effluent tests on treatment plants*
Barwon Head (fringes)	• *Investigate feasibility of connecting to sewer* • *Provide education pack to householders specific to their systems* • *Upgrade systems to treatment plants when opportunities arise (if sewer not an option)* • *Require maintenance checks and effluent tests on treatment plants*
Portarlington Fringes	• *Investigate feasibility of connecting to sewer* • *Provide education pack to householders specific to their systems* • *Upgrade systems to treatment plants when opportunities arise (if sewer not an option)* • *Require maintenance checks and effluent tests on treatment plants and sand filters*

- *Take quarterly water samples at the following locations. Run the program for a year and then review.*

Table 13 – Recommended water sampling locations

Township	***Recommended sampling points***
Ceres	*From open drain at western edge of township*
Breamlea	*Thompson's Creek upstream and downstream of township*
Batesford	*Moorabool River upstream and downstream of township*
Fyansford	*Moorabool River upstream and downstream of township*
Moolap	*Large open drain upstream and downstream of residential areas*
Avalon Beach	*Salt marsh at rear of properties*

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8.2.5 Consultation Outcomes

Findings

- The issues raised by the Council staff should be considered and, where feasible, addressed by this study. These include:
  - Identifying deficiencies Council current wastewater approval and records processes and making recommendations for improvement.
  - Ensuring that all developed properties that are serviced by reticulated sewerage are connected to the sewer.
  - Identifying a process for encouraging properties that are located close to reticulated sewerage to connect to the sewer.
  - Identifying a process for ensuring that vacant blocks that are situated close to the sewer are required to connect the sewer when they are developed (where it is feasible).
  - Identifying the unsewered townships or areas within these townships that in the long term cannot support on-site absorption of wastewater and make recommendations about future wastewater management practices in these areas.
  - Recommending a process for identifying and controlling development on already subdivided vacant blocks where development from a wastewater disposal perspective may be problematic.
  - Ensuring that individual blocks created by future subdivisions and the whole subdivided area have the long term capacity to successfully contain their wastewater on-site (areas for replacement absorption fields, capacity to cater for the combined water load from all the house in the subdivision etc)
  - Recommending a process for controlling the redevelopment of already developed blocks (e.g. extensions, outbuildings, driveways, swimming, complete rebuild of houses) where this development from a wastewater perspective may be problematic.
  - Recommending a process that ensures that the wastewater implications of all planning applications for development in unsewered areas are given proper consideration.
  - Introducing processes which ensure that damage to the environment by wastewater discharge is minimised – protection of surface waters, ground waters, vegetation, soil etc
  - Developing a management plan which ensures that the public health risks associated with wastewater disposal are mimimised (water catchment areas, odour, effluent ponding in open drains, effluent surfacing on properties, inappropriate surface irrigation etc)
  - Identifying a mechanism for dealing with septic tank systems which do not satisfy current standards but are operating as per their original permit (eg split systems with grey water discharge off-site).

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  - Recommending a process/policy for encouraging greater wastewater re-use in the sewered and unsewered areas of the municipality.
  - Identifying the most effective way of ensuring that treatment plants are being properly maintained and are producing a high quality of effluent.
  - Identifying the most effective way of ensuring that septic tanks are being regularly desludged.
  - Investigating the best method of informing prospective purchasers of unsewered properties of the ramifications of the block being unsewered.
  - Ensuring that occupancy certificates are not issued prior to septic tank permits to use being issued.
  - Identify the resources needed to implement the wastewater plan and investigate potential funding agencies.
- Contractors involved in the approval of building permits and the installation and maintenance of septic tank systems are highly satisfied with the service they get from Council. It is important that this level of service continues.
- It is apparent that some treatment plants are not maintained properly and are probably discharging poor quality effluent. Council needs introduce a more rigorous monitoring regime for these systems.
- It is also apparent that very few people routinely have their septic tank desludged and normally wait until a problem occurs. Consideration needs to be given to introducing a compulsory desludging program.
- The agencies responsible for environment protection, potable water supply and river health want the incidence of off-site discharge to be reduced. Council needs to give consideration to introducing a strategy to achieve this objective.

Suggested actions

- *Ask Barwon Water to identify developed properties in sewerecd areas that are not connected to sewer. Determine which properties should be connected to sewer and either ask Barwon Water to force connection or issue a nuisance notice requiring connection, if appropriate*
- *Identify properties that are close to sewer and where connection may be possible. Determine which properties should be connected to sewer and either ask Barwon Water to force connection or issue a nuisance notice requiring connection if appropriate*
- *Request the Planning Office where feasible to require developers of blocks near sewer, through a condition on the permit, to connect to the sewer*
- *Identify and map the vacant blocks in each township which are unsuitable for development. Give consideration as to what action should be taken with respect to these blocks – advising the owners, requiring consolidation with adjacent vacant blocks prior to development, changing the zoning of the blocks*
- *Identify a process, if feasible, for controlling further development on already developed small blocks in unsewered areas*

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- *Identify septic tanks systems that are located in close proximity to watercourses. Enhance the monitoring program for these systems*
- *Develop and implement a waste water re-use policy.*
- *Introduce a comprehensive monitoring and community education campaign.*

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PART C – STRATEGY PLAN

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Section 9 – Domestic Wastewater Management Strategy

9.1 Introduction

This section outlines the goals and objectives of the wastewater management plan, describes Council role in wastewater management and outlines the actions that Council should undertake to achieve sustainable wastewater management in the City.

9.2 Goals

Council's goals with respect to domestic wastewater management are as follows:

- The minimisation of damage to the environment resulting from the treatment and disposal of domestic wastewater.
- The minimisation of public health risks associated with the treatment and disposal of domestic wastewater.
- The promotion of environmentally responsible development in unsewered areas.
- The encouragement of the conservation and reuse of water.
- Improved relationships between all the parties involved in domestic wastewater management.

9.3 Objectives

Council's specific objectives in relation to domestic wastewater management are to

- Achieve best practice in wastewater management.
- Ensure that all septic tank systems approved for installation in the municipality meet the relevant legislative requirements, standards and codes of practice.
- Ensure that all systems are installed in accordance with the approved plans, legislation and codes of practice.
- Ensure that all new and existing systems operate effectively and in a manner that does not cause nuisance conditions or environmental damage and in accord with their permits to use.
- Take appropriate action to rectify any problems which arise from defective systems.
- Achieve greater levels of water conservation and wastewater re-use.
- Seek community involvement and support in achieving these objectives.

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9.4 Functions of Council

The specific functions of Council with respect to domestic wastewater management are to:

- Enforce legislation, standards, plans and codes of practice.
- Coordinate the approval and inspection process for septic tank systems.
- Educate property owners in the proper operation and care of septic tank systems.
- Monitor the performance of septic tank systems and take action to rectify any problems.
- Coordinate regular forums for exchanging information amongst all persons involved in on-site wastewater management and servicing.

9.5 Co-operation with Other Agencies

Council recognises that other local and regional agencies have an important role to play in the protection and conservation of the environment (Barwon Water, Corangamite Catchment Authority, Western Coastal Board etc). Council will work closely with these bodies and keep them fully informed of any actions it is taking which may have relevance to their operations.

9.6 Action Plan

A detailed 3 year action plan is provided in Table 14. It lists the actions that Council should undertake in response to the findings of this study and gives priority to these actions. The priorities are described as Year 1, 2 and 3.

Council's Environmental Heath Unit will have primary responsibility for the coordination and implementation of the recommendations. Council's planning, engineering infrastructure, building and GIS staff will assist the Unit. Other external agencies such as Barwon Water, MAV and the EPA will be involved in the implementation of the recommendations.

Many of the actions are currently not performed by Council and will require additional resources. These include the monitoring activities and education program. Costs are provided in the table. These are indicative only and include staff time, production of materials, hire of contractors, distribution, water sampling etc. They include both recurrent and 'once only' costs.
It is estimated that the implementation of the recommendations will cost $51000 'once only' ($6.50 per system) and $918500 per annum recurrent (or $120 per system). A substantial portion of the recurrent cost is the treatment plant monitoring program ($600000). If this was only charged to properties with treatment plants, the cost would be $640 per annum for properties with treatment plants and $40 per annum for other properties.

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Funding for the program could be derived from rates, Government grants or special charge or a combination of these sources. It is recommended that Council investigate the feasibility of introducing special charge to fund the program.

9.7 Evaluation and Review Process

It is strongly recommended that the action plans be regularly reviewed and evaluated. This process should involve the following:

- Formal adoption of the action plan by Council.
- Monthly report to Council and EPA on the progress of implementation.
- Annual report to Council and EPA on the status of each recommendation.

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Table 14 – Recommended Actions

ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Legislation/Codes of Practice			
Discuss with the EPA the merits of giving Council the power to remedy septic tank systems that are operating in accord with their permits but do not satisfy current standards	1	Env. Health	EPA MAV
Discuss with the EPA the feasibility of introducing a legislative provision to allow Council to stipulate a minimum life span for septic tank systems in the permits to use	1	Env. Health	EPA MAV
Discuss with the EPA the merits of giving Councils the same power as Water Authorities to repair septic tank systems and retrieve the costs from homeowners	1	Env. Health	EPA MAV
Request the EPA to ensure that the proper legislative framework is in place to encourage greater re-use of grey water	1	Env. Health	EPA MAV
Policy			
Develop a policy position on the re-use of grey water in sewered and unsewered areas (including rural areas). The policy should identify what, where and when it will be allowed, the processes for approval, who will manage and how it will be funded	1	Env. Health	EPA Barwon Water
Planning			

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Develop a protocol for the referral of planning applications to the Environmental Health Unit. The protocol should identify the range of applications that will be forwarded and timelines for responses	1	Env. Health Planning	
Identify and map the vacant blocks in the unsewered townships which could be unsuitable for development. Give consideration as to what action should be taken with respect to these blocks – advising the owners, requiring consolidation with adjacent vacant blocks prior to development, changing the zoning of the blocks.	1	Env. Health Planning GIS	
Investigate the merits of advising owners of developed properties blocks that would be difficult to further develop from a wastewater perspective of the limitations of their properties. Introduce the system.	1	Env. Health Planning GIS Rates	
Ask Barwon Water to identify developed properties in sewered areas that are not connected to sewer. Determine which properties should be connected to sewer and either ask Barwon Water to force connection or issue a nuisance notice from Council requiring connection if appropriate	2	Env. Health Planning	Barwon Water
Request the Planning Office where feasible to require developers of blocks near sewer, through a condition on the permit, to connect to the sewer	2	Env. Health Planning	Barwon Water
Approval processes and record systems			

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Require Building Surveyors to submit 'report and consent' forms for all house extension projects in unsewered areas (not required if a permit to install a septic tank systems has already been issued)	1	Env. Health	Building Surveyors
Review the fees charged for 'report and consent' forms and the process of submission. Investigate the feasibility of sending forms directly to the Health Unit not through the Building Dept.	1	Env. Health Building	Building Surveyors
Reaffirm to Building Surveyors that a certificate of occupancy is not be issued until a permit to use the septic tank is issued. Request Building Surveyors to advise their clients that their house should not occupied or the septic tank system used until a permit to use is issued	1	Env. Health Building	Building Surveyors
Identify the reports that are required from the Pathways systems and write the appropriate programs	1	Env. Health IT	

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Education program			
Introduce a wastewater management community education program. The components of the program should be as follows: • An education kit for homeowners on the proper use and maintenance of septic tank systems. The kit should be specific to the types of system installed at the property. This should include statements/information on: – The importance of knowing the location of the septic system and making sure it is accessible and what type of septic tank system has been installed and how if functions – The importance of not driving over the septic tanks system and of considering the septic tank when planning any extension to the house or other project which might impact on the septic tank system – The vegetation that is suitable to plant around septic tank systems – The importance of and advice on water conservation practices – The importance of regularly desludging septic tanks and emptying grease traps – The things that could typically go wrong with the system and how the homeowner should respond. – The things that do go wrong when owners attempt to repair or upgrade systems without reference to experienced drainers/ plumbers and Council	2	Env. Health Public Relations	

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
– A notice indicating that systems cannot be altered without Council's consent and a suggestion that they always contact Council before undertaking any works other than basics repairs on their systems			
• Developing an education kit for new homeowners which provides the same information as above. Meeting each new owner to explain kit	2	Env. Health Public relations	
• Conducting annual forums with plumbers, treatment plant installers, maintenance contractors, liquid waste removal contractors etc to discuss relevant waste management issues	2	Env. Health	Plumbers Maintenance contractors Liquid waste removal contractors
Investigate the best mechanism for advising prospective purchasers of unsewered properties of the implications of the property not being sewered – eg maintenance of septic tank system, potential restriction on development etc. Introduce the process	2	Env. Health Rates	Barwon Water Local solicitors Real estate agencies Conveyancing firms
Monitoring activities			
Introduce a monitoring program of septic tanks systems (excluding treatment plants). This monitoring program should involve the following:	2, 3 ongoing	Env. Health Finance Tendering	Barwon Water

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
• Inspection of 50 township and 25 rural systems each year. • Ensuring that tanks, pits, drains, pumps etc are accessible and in good working order • Ensuring that systems have not been altered and are not being driven on or built over • Identifying the septic tank systems that are located near watercourse are ensuring that they are functioning properly • Routinely sampling sand filter effluent • Requiring rectification where there is a problem			
Examine the feasibility of introducing a Council co-ordinated compulsory maintenance and monitoring program for treatment plants. This program should involve the following: • Developing a register of treatment plants • Engaging contractors through a tender process to monitor systems • Coordinating the visits by maintenance contractors • Coordinating the annual water sampling process • Arranging repair works • Arranging payments home owners	2, 3 ongoing	Env. Health Finance Tendering	
If not feasible, revert to systems where owner is responsible. This will	2, 3	Env. Health	

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
involve the following: • Developing a register of treatment plants • Sending a letter to owners requiring them to arrange inspection of their systems and submission of reports and water samples • Matching reports and samples against register • Following up/sending notices to owners who are not submitting reports • Requiring rectification works where necessary	ongoing		
Explore the feasibility of introducing a centrally run, compulsory desludging program. This would involve: • Confirming that Barwon Water can receive greater volumes of sludge at their treatment plants • Developing a register of septic tank systems • Developing a program for desludging • Engaging contractors • Coordinating desludging • Arranging payments from homeowners	3, ongoing	Env. Health Finance Tendering	Barwon Water
If not feasible, introduce a program for advising residents when their tanks are due for desludging	3, ongoing	Env. Health	Barwon Water
Townships			

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Adopt a policy that only treatment plants can be installed in areas with high water tables – Breamlea, Moolap, Port Arlington, Barwon Heads. Request Barwon Water o consider the provision of sewer to Moolap, Breamlea, Port Arlington (Ramblers Rd) and Barwon Heads (Stephens Parade) Upgrade old systems in all townships when the opportunities arise	1,2,3	Env. Health Env. Health Env. Health	 Barwon Water
Identify the source of grey water discharges in Anakie and Ceres and either require that the discharges be contained on-site or improve treatment before discharge Undertake quarterly water sampling at the locations listed in Table 13.		Env. Health Env. Health	
Funding			
Investigate funding sources, including a special charge, for implementing this action plan	1	Env. Health Rates Finance	

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Appendix A – Category of recommendations

The following table divides the recommendations into the following categories – actions that can be undertaken using existing resources and/or requiring minor additional resources, actions that require a reasonable level of additional resources and actions that require significant investigation and/or potentially significant resources.

ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Actions that can be undertaken using existing resources and/or requiring minor additional resources			
Discuss with the EPA the merits of giving Council the power to remedy septic tank systems that are operating in accord with their permits but do not satisfy current standards	1	Env. Health	EPA MAV
Discuss with the EPA the feasibility of introducing a legislative provision to allow Council to stipulate a minimum life span for septic tank systems in the permits to use	1	Env. Health	EPA MAV
Discuss with the EPA the merits of giving Councils the same power as Water Authorities to repair septic tank systems and retrieve the costs from homeowners	1	Env. Health	EPA MAV
Request the EPA to ensure that the proper legislative framework is in place to encourage greater re-use of grey water	1	Env. Health	EPA MAV
Develop a policy position on the re-use of grey water in sewered and unsewered areas (including rural areas). The policy should identify what, where and when it will be allowed, the processes for approval,	1	Env. Health	EPA Barwon Water

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
who will manage and how it will be funded			
Develop a protocol for the referral of planning applications to the Environmental Health Unit. The protocol should identify the range of applications that will be forwarded and timelines for responses	1	Env. Health Planning	
Ask Barwon Water to identify developed properties in sewered areas that are not connected to sewer. Determine which properties should be connected to sewer and either ask Barwon Water to force connection or issue a nuisance notice from Council requiring connection if appropriate	2	Env. Health Planning	Barwon Water
Request the Planning Office where feasible to require developers of blocks near sewer, through a condition on the permit, to connect to the sewer	2	Env. Health Planning	Barwon Water
Require Building Surveyors to submit 'report and consent' forms for all house extension projects in unsewered areas (not required if a permit to install a septic tank systems has already been issued)	1	Env. Health	Building Surveyors
Review the fees charged for 'report and consent' forms and the process of submission. Investigate the feasibility of sending forms directly to the Health Unit not through the Building Dept.	1	Env. Health Building	Building Surveyors
Reaffirm to Building Surveyors that a certificate of occupancy is not be issued until a permit to use the septic tank is issued. Request Building	1	Env. Health Building	Building Surveyors

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Surveyors to advise their clients that their house should not occupied or the septic tank system used until a permit to use is issued			
Identify the reports that are required from the Pathways systems and write the appropriate programs	1	Env. Health IT	
Conduct annual forums with plumbers, treatment plant installers, maintenance contractors, liquid waste removal contractors etc to discuss relevant waste management issues	2	Env. Health	Plumbers Maintenance contractors Liquid waste removal contractors
Adopt a policy that only treatment plants can be installed in areas with high water tables – Breamlea, Moolap, Port Arlington, Barwon Heads.	1,2,3	Env. Health	
Request Barwon Water o consider the provision of sewer to Moolap, Breamlea, Port Arlington (Ramblers Rd) and Barwon Heads (Stephens Parade)		Env. Health	Barwon Water
Upgrade old systems in all townships when the opportunities arise		Env. Health	
Identify the source of grey water discharges in Anakie and Ceres and either require that the discharges be contained on-site or improve treatment before discharge		Env. Health	
Investigate funding sources, including a special charge, for implementing this action plan	1	Env. Health Rates	

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
		Finance	

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Actions that require further investigation and/or a reasonable level of additional resources			
Identify and map the vacant blocks in the unsewered townships which could be unsuitable for development. Give consideration as to what action should be taken with respect to these blocks – advising the owners, requiring consolidation with adjacent vacant blocks prior to development, changing the zoning of the blocks.	1	Env. Health Planning GIS	
Investigate the best mechanism for advising prospective purchasers of unsewered properties of the implications of the property not being sewered – eg maintenance of septic tank system, potential restriction on development etc. Introduce the process	2	Env. Health Rates	Barwon Water Local solicitors Real estate agencies Conveyancing firms
Investigate the merits of advising owners of developed properties blocks that would be difficult to further develop from a wastewater perspective of the limitations of their properties. Introduce the system.	1	Env. Health Planning GIS Rates	

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Actions that require significant investigation and/or potentially significant resources.			
Introduce a wastewater management community education program. The components of the program should be as follows: • An education kit for homeowners on the proper use and maintenance of septic tank systems. The kit should be specific to the types of system installed at the property. This should include statements/information on: – The importance of knowing the location of the septic system and making sure it is accessible and what type of septic tank system has been installed and how if functions – The importance of not driving over the septic tanks system and of considering the septic tank when planning any extension to the house or other project which might impact on the septic tank system – The vegetation that is suitable to plant around septic tank systems – The importance of and advice on water conservation practices – The importance of regularly desludging septic tanks and emptying grease traps – The things that could typically go wrong with the system and how the homeowner should respond. – The things that do go wrong when owners attempt to repair or upgrade systems without reference to experienced drainers/	2	Env. Health Public Relations	

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plumbers and Council – A notice indicating that systems cannot be altered without Council's consent and a suggestion that they always contact Council before undertaking any works other than basics repairs on their systems			
• Developing an education kit for new homeowners which provides the same information as above. Meeting each new owner to explain kit	2	Env. Health Public relations	

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
Introduce a monitoring program of septic tanks systems (excluding treatment plants). This monitoring program should involve the following: • Inspection of 50 township and 25 rural systems each year. • Ensuring that tanks, pits, drains, pumps etc are accessible and in good working order • Ensuring that systems have not been altered, are not being driven on or built over • Identifying the septic tank systems that are located near watercourse are ensuring that they are functioning properly • Routinely sampling sand filter effluent • Requiring rectification where there is a problem	2, 3 ongoing	Env. Health Finance Tendering	Barwon Water
Examine the feasibility of introducing a Council co-ordinated compulsory maintenance and monitoring program for treatment plants. This program should involve the following: • Developing a register of treatment plants • Engaging contractors through a tender process to monitor systems • Coordinating the visits by maintenance contractors • Coordinating the annual water sampling process • Arranging repair works • Arranging payments home owners	2, 3 ongoing	Env. Health Finance Tendering	

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ACTION	YEAR	COUNCIL DEPT	SUPPORT AGENCIES/ PROFFESSIONALS
If not feasible, revert to systems where owner is responsible. This will involve the following: • Developing a register of treatment plants • Sending a letter to owners requiring them to arrange inspection of their systems and submission of reports and water samples • Matching reports and samples against register • Following up/sending notices to owners who are not submitting reports • Requiring rectification works where necessary	2, 3 ongoing	Env. Health	
Explore the feasibility of introducing a centrally run, compulsory desludging program. This would involve: • Confirming that Barwon Water can receive greater volumes of sludge at their treatment plants • Developing a register of septic tank systems • Developing a program for desludging • Engaging contractors • Coordinating desludging • Arranging payments from homeowners	3, ongoing	Env. Health Finance Tendering	Barwon Water
If not feasible, introduce a program for advising residents when their tanks are due for desludging	3, ongoing	Env. Health	Barwon Water
Undertake quarterly water sampling at the locations listed in Table 13.		Env. Health	

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