Moira Shire

ENRICHING LIFE ON THE MURRAY

DOMESTIC WASTE WATER MANAGEMENT PLAN

16 May 2007

MOIRA SHIRE
ON THE MURRAY

This Domestic Wastewater Management Plan was prepared on behalf of the Moira Shire Council by the Infocus Management Group Pty Ltd with the assistance of WDMS Pty Ltd.

Principal Consultant – James Smith, Infocus Management Group
Specialist Consultant – Neil Dunbar, WDMS
Project Officer – Simon Berton, Infocus Management Group

March 2007

Contents

Introduction

The Moira Shire Council has participated in a regional approach to domestic wastewater management which has been facilitated by the Australian Institute of Environmental Health North East Regional Group. This approach consisted of two stages. Stage 1 was concerned with the development and implementation of common approaches to domestic wastewater practices across the Region. This has resulted in the development of a regional policy context paper and the development of a set of common operating policies and procedures addressing domestic wastewater, specifically permitting, compliance monitoring, and information management activities. These initiatives now form part of the management action plan of council.

Stage 2 of the Regional Project is the development of the local component for participating councils which, together with the material developed from Stage 1, form Council's Domestic Wastewater Management Plan. This Stage 2 document describes the circumstances surrounding the management of domestic waste water priorities within the Shire and contains a management action plan which addresses the identified domestic wastewater risks and priorities of unsewered towns in the municipality. The document also outlines Council's policy context, a preliminary profile of septic tank systems and related issues, an analysis of domestic waste water threats based on this information, and management strategies for these threats.

The Paper has been prepared also for the purposes of consultation within the community and stakeholders in local domestic waste water management.

There is an ongoing need to collect data and other information that will provide the evidence base needed for further decision making. For this and other reasons the precautionary principle provides a guideline for the development of domestic waste water management strategies. The precautionary principle is based on the understanding that:

1. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

2. Decision making should be guided by—
   (a) a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable; and
   (b) an assessment of the risk-weighted consequences of various options.

(Environment Protection Act 1970)

1.0 Background

The State Government, in its ***Our Water Our Future Action Plan***, introduced the Country Towns Water and Sewerage Supply Program. As part of this program $2.3 million was set aside for eligible Councils to undertake water supply and sewerage infrastructure planning and to develop domestic wastewater management plans. This funding is administered by the Municipal Association of Victoria and allows rural councils to receive funding for the development of their Domestic Wastewater Management Plan (DWMP).

The Moira Shire Council has received funding to develop a domestic wastewater management plan during the 2005/06 financial year. The development of this plan is required under the State Environment Protection Policy (Waters of Victoria) and the Environment Protection Authority Septic Tanks Code of Practice (March 2003). The purpose of the plan is to assess the environmental and health risks posed by existing and proposed septic tank systems within the municipality and identify the options for minimising each of these risks. To assist councils the MAV released a Model Domestic Wastewater Management Plan to be used as the basis for the development of the DWMP.

A description of the legislative and policy context for domestic wastewater management is contained in the Part 1 Regional Context Paper developed in Stage 1 of the Project.

There are an estimated 4,782 septic tank systems in the Shire and it important that these systems are effectively managed by their owners. The discharge of domestic wastewater has the potential to negatively impact on the natural environment and amenity, on human health as domestic wastewater contains disease producing microorganisms and chemicals, and on the economic environment.

> 'It is the type, concentration and location of the discharge that determines the degree of impact on human health and the health of the environment. Sewage can also pollute soils that are used for agriculture. Other evidence has revealed that many private systems are not managed or maintained properly, suggesting that consistent enforcement and monitoring of installation, maintenance and adherence to regulations is required to reduce contamination.
>
> Most waterborne disease risks arise when wastewater contaminates drinking water; waters used for recreational purposes, or if there is direct human contact with effluent. Bacteria and viruses (and other micro-organisms) in the wastewater may cause a range of diseases including Gastroenteritis, Shigellosis, Giardiasis, Cryptosporidiosis and Hepatitis' (James C Smith & Associates 2002 cited in Infocus Management Group 2004).

The risks associated with domestic wastewater management can be categorised as:

- *Public health*

    - Drinking water supplies becoming contaminated with chemicals and bacteria from effluent as a result of poorly drained soils; small lot sizes; high usage; ageing systems; and lack of proper maintenance of septic tank systems

    - Recreational water - statistically significant risk of illness if people come into contact with contaminated water used for recreational purposes.

- *Environmental*

    - Septic tanks systems contribute high rates of nitrogen and phosphorous to water catchments due to surface runoff
    - Septic tanks systems create direct bacterial contamination of the environment with ten times the amount of E coli (a disease producing bacteria found in animal/human waste) found in catchments near residential areas compared to catchments without residential areas;
    - The highest levels of faecal coliforms were found in catchments serving septic tanks compared to other disposal systems

- *Economic*

    - Trying to alleviate years of environmental contamination is costly and involves overcoming a host of practical issues. Prevention is cheaper.
    - In the event of a contamination incident there is the cost of advising residents and visitors to the area of the risk, managing community anxiety, and the indirect costs associated with the perception that the area is unsafe.

- *Legal*

    - Council has statutory duties under the Environment Protection Act 1970 and Health Act 1958
    - Council has a duty to exercise its enforcement powers where it knows there is a breach of the legislation and there is a likelihood of injury.
    - Two court cases have determined that a failure to act will be a breach of the duty of care owed by the Council and it will be liable in negligence for any damages caused by the breach of the duty of care

The Purpose and Aims of the Moira Shire Council's Domestic Wastewater Management Plan (DWMP)

The DWMP is a document that articulates Council's risk management planning process for domestic wastewater. The goals of the DWMP are to:

- protect public health and the physical environment particularly in settled areas of the Shire; and
- promote environmental sustainability by reducing the impacts of domestic wastewater on the local receiving environments.

The key objectives are to:

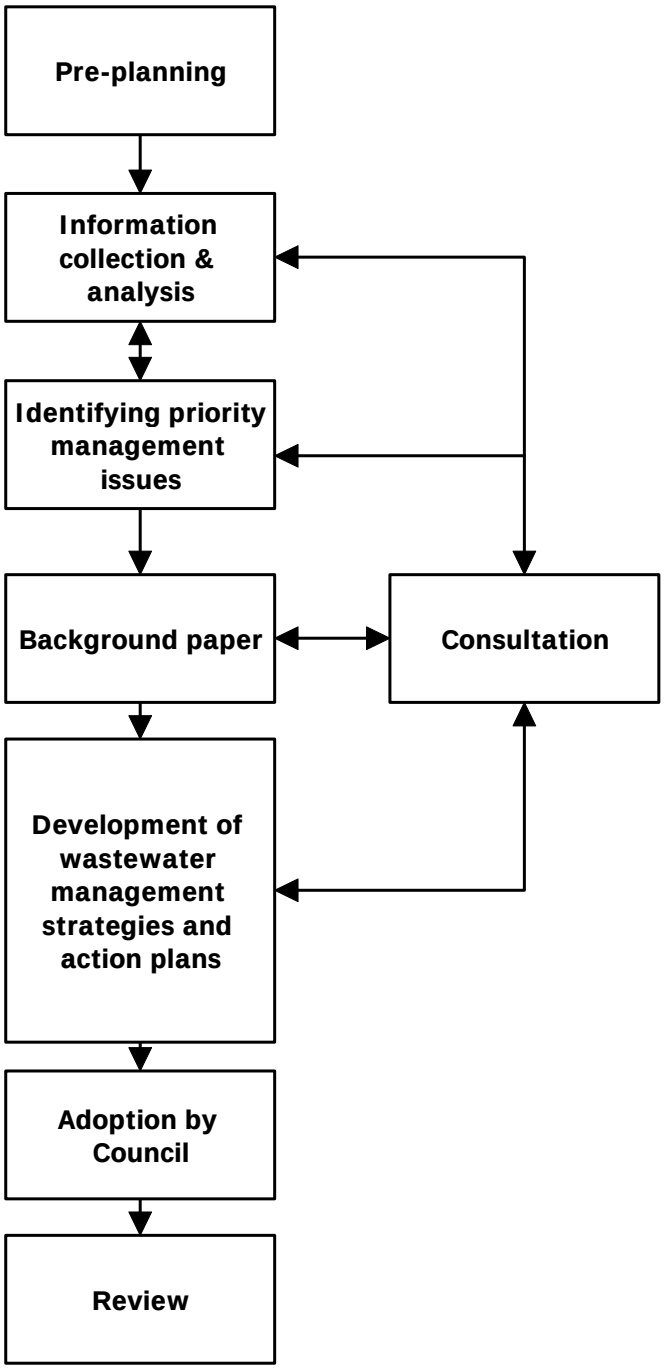
- develop Council's policy for the management of domestic waste water;
- identify wastewater management priorities and develop short and long term strategies for the management of these priorities;
- provide a systematic approach for assessing the costs, impacts and barriers to managing domestic wastewater; and
- provide a mechanism for coordinated wastewater planning and services by council and other stakeholders.

The key outcomes expected from the Plan are:

- Protection of ground and surface waters around un-sewered townships and urban areas from domestic wastewater
- The installation of appropriately designed and operated septic systems for difficult sites affected by slope, landslip, rainfall and poor soils
- Development of education and information strategies for owners of existing septic tank systems
- Development of assessment criteria for proposed sub-divisions in un-sewered areas
- Development of operational policies for permitting, monitoring and compliance

3.0 Development Process

The development of the draft DWMP was managed by a project group consisting of Council officers and consultants (Appendix 1). The major planning process steps consisted of the following steps:



4.0 Council Policy Context

This section briefly outlines Council's policies that inform and link to the development of the DWMP.

4.1 Council Plan 2005/06 to 2008/09

The Council Plan articulates Moira Shire Council's strategic direction for the four years from 2006-2009. The framework for this plan is the Shire's vision, mission statement, and values.

Vision

Moira Shire Council's vision is underpinned by the following commitments:

- Ensuring adequate water supply for irrigation and domestic use to maintain the viability of the shire
- Ensuring sustainability in all aspects of the shire's operations
- Capitalising on the natural assets of the shire
- Demonstrating the quality of life offered by the shire
- Promoting the shire as a welcoming community
- Ensuring accessibility to services by all sectors of the community
- Expanding employment opportunities, recognising that this will be dominated by agricultural, industrial and tourism sectors within the community

Mission statement

A community sharing opportunities, responsibility and prosperity.

The values underpinning this mission statement are:

- Integrity and honesty;
- A focus on service;
- High professional standards;
- Triple bottom line outcomes;
- Teamwork with common goals and objectives; and
- A high level of effective communication.

The Council has identified nine major challenges that influence the way that the Shire approaches planning and development. Of these the following are particularly important to the development of the Shire's DWMP:

- *Managing the flood plain*

  The Shire is bounded by a number of river systems which provide a number of benefits to the community including water for irrigation. However, there is the risk of flooding which requires floodplain management plans and consideration of land use planning (and wastewater management which is a part of this consideration)

- Developing an integrated approach to land management

  Council will continue its role in initiating policy to maximise benefits to the environment by coordinating individual programs associated with land care.

- *Protecting and promoting natural attributes*

  Protecting the natural attributes of the Shire balanced with the promotion and economic aspects is an important challenge.

- *Sustainable managing natural resources*

  Maintaining productive rural land in a sustainable manner depends on effective environmental strategies, including protection of land and water resources that may service that land.

The effective management of domestic wastewater is seen to be an important implementation strategy particularly in protecting land and water resources and ultimately preserving natural resources in the Shire.

4.2 Moira Shire Council Urban Stormwater Management Plan

The aim of the stormwater management policy is to protect urban stormwater quality throughout the Shire. The following sixteen towns were included in the study area of the Plan:

- Barmah
- Bundalong
- Cobram
- Katamatite
- Katunga
- Nathalia
- Numurkah
- Picola
- St.James
- Strathmerton
- Tungamah
- Waaia
- Wilby
- Wunghnu
- Yarrawonga
- Yarroweyah

Of these towns four were identified with having domestic wastewater as a characteristic of the township drainage:

- Barmah – sullage and septic tank system overflows are discharged into the stormwater system;
- St James – sullage and septic tank system overflows are evident in stormwater runoff;
- Tungamah – sullage and septic tank system effluent pose significant risk to Boosey Creek

(Sinclair Knight Merz 2002)

The table below identifies where sullage and septic tank system effluent have been identified as threats to the receiving environment.

Table 1 Location of threats to receiving environments by sullage and septic tank system effluent

Receiving environment	Risk rating
Murray River - Barmah	Very high
Lake Mulwala - Bundalong	Moderate
Boosey Creek - Katamatite	Very high
Murray River - Katunga	Very high
Groundwater – St James	Very high
Boosey Creek – Tungamah	Very high
Broken Creek – Waaia &	Very high
Green Swamp - Picola	Moderate
Nine mile Creek - Wunghnu	Very high

(Adapted from Sinclair Knight Merz 2002)

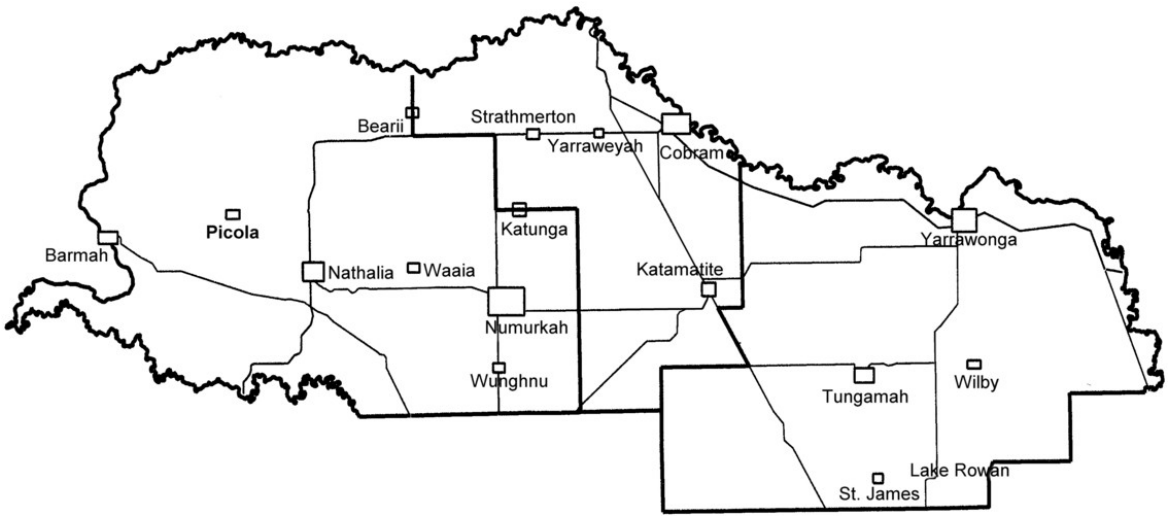
According to Sinclair Knight Merz (2002) septic tank system effluent was identified as one of the greatest threats to stormwater in the plan's study area.

5.0 Domestic Wastewater Profile

Moira Shire Council was created on 18 November 1994 through the merger of the five former shires of Cobram, Nathalia, Numurkah, Tungamah (less the Katandra district) and Yarrawonga (less Peechelba). Moira Shire encompasses a geographic area of 4,057 square kilometres, and is home to a population in excess of 26,000 people. It is projected that the population will reach 28,928 by 2021 (10.37% increase). The number of households in 1996 was 9,681 and this is projected to increase to 12,908 by 2021 (33.33%). The climate is temperate with an average annual rainfall of approximately 500-600 millimetres.

The Shire encompasses the major centres of Cobram, Yarrawonga, Numurkah, and Nathalia, as well as eighteen (18) smaller towns and communities, supported by a diverse agricultural base. Physically, Moira Shire is based on the alluvial floodplains of the Murray and Goulburn Rivers within the Goulburn-Broken and Ovens catchments.

Agricultural land use accounts for approximately 71% of the total land area, divided equally between irrigated and dry land production.



5.1 Numbers of septic tank systems

The Shire of Moira has a number of unsewered areas encompassing some 53 towns and rural communities. There are approximately 4,700 septic tank systems within the municipality. Of these systems it is estimated that over 75% of installations are older than 20 years based on annual permit issues and available age profiles.

Based on the age of systems and permit history the vast majority of septic systems are conventional type systems with sub-surface disposal. The conventional septic tank systems installed after 1980 provided for all waste treatment while before this time systems provided for diversion of grey water. These installations included provision for approved off-site discharge. The number of installations that are discharging off-site (whether with or without approval) is unknown.

The number of permit applications processed over the past 3 years has seen a continuing increase. Because of the age and condition of systems it is expected that the permit applications will continue at these higher levels. A total of 280 applications have been processed during this three year period from 2003 to 2005.
It is estimated that approximately 20% of applications are for system alterations and upgrades.

One planned outcome of the DWMP is to identify the location of septic tanks within the whole municipality and to undertake more detailed profiling of these systems to aid future management decision making.

5.2 Distribution of Septic Tank Systems

Table 2 details the distribution of septic systems by township and rural communities within the municipality.

Table 2.1 Location of Septic Tanks

Locality	Septic tanks	Locality	Septic tanks	Locality	Septic tanks
Barmah	168	Katamatite	219	Tharanbegga	18
Barwo	6	Katunga	367	Tungamah	217
Bathuni	7	Koonoomoo	9	Ulupna	2
Baulkamaugh	3	Kotupna	99	Waaia	285
Bearii	132	Lake Rowan	6	Waggarandall	53
Boomahnoomoonah	31	Marungi	4	Wilby	37
Boosey	94	Muckatah	2	Wunghnu	199
Boweya	32	Mundoona	3	Yabba	59
Boxwood	1	Naring	2	Yalca	65
Bundalong	131	Naringaningalook	1	Yambuna	2
Burramine	59	Narioka	62	Yarrawonga	262
Cobram	232	Nathalia	149	Yarroweyah	282
Cobram East	98	Numurkah	315	Yielima	55
Devenish	14	Peechelba	48	Youanmite	57
Dunbulbalane	275	Pelluebla	37	Youarang	49
Invergordon	44	Picola	79		
Kaarimba	54	St.James	102		
Kanyaella	3	Strathmerton	196		
Karrasumet	55	Telford	1	**Total**	**4782**

Note that these numbers are approximates only and will be verified on a site by site basis.

5.3 Priority Towns

Most of the townships in the Shire contain small allotments and these have poor soil permeability and are closely situated to river systems. Moira Shire is predominately flat with the exception of a few areas such as Cobram-East.

The Shire has identified the following towns in order of priority for provision of reticulated sewer.

The towns were prioritised based on level of complaints received in respect to offensive conditions and odours being created by waste water, discharges to the streets and neighbouring properties. Additionally, the towns were assessed as to their development potential based on levels of town planning applications and building permit enquiries. Promixity to 'natural' waterways was also considered.

Table 3 Priority towns and septic tank systems

Town	Number of septic tank systems	Comments
1. Tungamah	140	No reticulated sewer service but reticulated water supply. Growth static. 85% of septics >20 years with 80% of properties surveyed having off-site discharge. Septic waste in stormwater drains and sullage and septic tank overflows identified a very high threat to Boosey Creek.
2. Katamatite	100	No reticulated sewer service but reticulated water supply. Growth modest 1%. 60% of septics >20 years with 50% of properties surveyed having off-site discharge. Septic waste in stormwater drains and sullage and septic tank overflows identified a very high threat to Boosey Creek.
3. Barmah	76	No reticulated sewer service but reticulated water supply. Growth static. 60% of septics >20 years with 90% of properties surveyed having off-site discharge. Sullage and septic tank overflows are discharged to the stormwater system and into the Murray River.
4. Katunga	105	No reticulated sewer service but reticulated water supply. Growth static. 85% of septics >20 years with 85% of properties surveyed having off-site discharge. Septic waste in stormwater drains and sullage and septic tank overflows identified.

5. St James	40	No reticulated sewer service but reticulated water supply. Growth static. 75% of septics >20 years with 60% of properties surveyed having off-site discharge. Septic waste in stormwater drains and sullage and septic tank overflows identified a very high threat to groundwater which is sometimes used in the town water supply.

Note that the number of septic tank systems in Table 3 varies from that in Table 2 as Table 2 includes all septics in the locality whereas Table 3 is for the township only.

All of the five townships are serviced by reticulated water but there are no immediate plans to extend sewer services. Tungamah and St James are serviced with water by North East Water while Katamatite, Katunga and Barmah are serviced by Goulburn Valley Water. The Water Authorities have no plans for any backlog sewer programs in the respective towns that they each service.

Field assessments of priority towns

The following information was obtained from field assessment conducted by the Shire as part of the development of the DWMP.

Katamatite

The area is generally flat with loam soils. There is a mix of allotment sizes with the bulk of properties in the inner township under 1000m^2.

There was strong evidence of off-site discharges and ponding of effluent on some allotments. These problems would be substantially more evident in times of wet weather. In many cases the small size of allotments and area taken up by building on the sites would make it difficult for conventional disposal on site.

Of particular note was the main commercial premises inspected which indicated severe system failures. It was also noted that there had been a reasonably high level of de-sludging undertaken based on the inspections conducted. This would suggest that owners have had problems on site as there has been no external driver for this to have taken place. Accordingly sludge levels were difficult to obtain. In other instances the septic tank was buried or otherwise not accessible.

Of the properties inspected in the township:

- 63% of systems were >20 years, 15% 15-20 years, some over 80 years.
- 50% of properties showed evidence of off-site discharges (dry weather)
- 96% of properties had sub-soil absorption disposal
- 56% of properties surveyed had been de-sludged in the last 3 years

Katunga

The area has generally small flat blocks of gravelly loam and similar problems to that of Katamatite. There was strong evidence of off-site discharges with wastewater being conveyed to open stormwater street drainage. Discussions with residents confirmed wet weather substantially increased the problem. Additionally the rain results in flooding of systems and lines.

It was also noted that there had been a reasonably high level of de-sludging undertaken based on the inspections conducted, particularly in 2004. Property owners had apparently initiated their own action to provide relief to their congested septic tank systems by de-sludging them..

Of the properties inspected in the township:

- 57% of systems were >20 years, 29% 15-20 years, some over 60 years.
- 86% of properties showed evidence of off-site discharges (dry weather)
- 100% of properties had sub-soil absorption disposal

St James

A small town with loam based soils. The noticeable problem was old poorly maintained systems with grey water discharges to stormwater drains. It was also noted that there had been a reasonably high level of de-sludging undertaken based on the inspections conducted. This would suggest that owners have had problems on site as there has been no external driver for this to have taken place. Accordingly sludge levels were difficult to obtain. In other instances the septic tank was buried or otherwise not accessible.

Of the properties inspected in the township:

- 83% of systems were >20 years, 17% 15-20 years, some over 40 years.
- 67% of properties showed evidence of off-site discharges (dry weather)
- 100% of properties had sub-soil absorption disposal
- 50% of properties surveyed had been de-sludged in the last 3 years (note that this may be an underestimate).

Barmah

The area is flat with sandy clay soils. It was clearly evident at the time of inspections that there was grey water sitting in open drains beside the road in Murray Street and into run-off to stormwater Schier St. In Lawford St there was evidence of sullage lying in the back yards of properties.

The tanks where sludge levels could be obtained, showed high volumes and in all instances above recommended operating levels.

Of the properties inspected in the township:

- 57% of systems were >20 years, 29% 15-20 years, some over 60 years.
- 86% of properties showed evidence of off-site discharges (dry weather)
- 100% of properties had sub-soil absorption disposal

Tungamah

The area is flat with clay soils and stormwater discharges to the local Boosey Creek. There is a mix of allotment sizes with the bulk of properties in the inner township around the 1000m^2. A recent LCA confirmed very poor percolation results.

Of the properties inspected in the township:

- 72% of systems were >20 years, 12% 15-20 years.
- 83% of properties showed evidence of off-site discharges (dry weather)
- 85% of properties had sub-soil absorption disposal

Council conducted water tests in Tungamah at two stormwater drain outfalls that flow into the Boosey Creek. The analysis results revealed levels of faecal contamination. The majority of households in Tungamah dispose grey water through a grease trap and into the street gutters, which eventually flow towards the creek or into the stormwater drains.

In the absence of any plans for reticulated sewer there is an immediate need to locate and monitor existing septic systems, particularly in the higher risk areas and this has been identified in the DWMP.

A preliminary risk assessment for monitoring has been undertaken of septic tank sites based on land use planning. Other parameters will be included to derive a Model that can be used to develop monitoring and audit programs as identified in the Action Plans.

Table 4 Preliminary Risk Assessment for Compliance Monitoring

Zone	Description	Barmah	Barwo	Bathumi	Baulkamaugh	Bearii	Boomah-noomoonah	Boosey	Total
B1Z	Business 1 Zone								0
B3Z	Business 3 Zone								0
ERZ	Environmental Rural Zone								0
IN1Z	Industrial 1 Zone								0
LDRZ	Low Density Residential Zone								0
PCRZ	Public Conservation and Resource Zone	2							2
PPRZ	Public Park and Recreation Zone								0
PUZ1	Public Use Zone 1		1						1
PUZ2	Public Use Zone 2								0
PUZ3	Public Use Zone 3								0
PUZ4	Public Use Zone 4								0
R1Z	Residential 1 Zone								0
RLZ	Rural Living Zone	11							11
RUZ	Rural Zone	50		7	2	123	26	80	288
TZ	Township Zone	96							96
UFZ	Urban Floodway Zone								0
Total		**159**	**1**	**7**	**2**	**123**	**26**	**80**	**398**

Zone	Description	Boweya	Boxwood	Bundalong	Burramine	Cobram	Cobram East	Devenish	Total
B1Z	Business 1 Zone					1			1
B3Z	Business 3 Zone					1			1
ERZ	Environmental Rural Zone								0
IN1Z	Industrial 1 Zone					15			15
LDRZ	Low Density Residential Zone			17	1	15			33
PCRZ	Public Conservation and Resource Zone				1				1
PPRZ	Public Park and Recreation Zone								0
PUZ1	Public Use Zone 1			1		3			4
PUZ2	Public Use Zone 2								0
PUZ3	Public Use Zone 3								0
PUZ4	Public Use Zone 4								0
R1Z	Residential 1 Zone			6		18			24
RLZ	Rural Living Zone								0
RUZ	Rural Zone	30	1	130	48	205	92	1	507
TZ	Township Zone			198					198
UFZ	Urban Floodway Zone								0
Total		**30**	**1**	**352**	**50**	**258**	**92**	**1**	**784**

Zone	Description	Dookie	Dunbulbalane	Invergordon	Kaarimba	Kanyapella	Karrabumet	Katamatite	Total

B1Z	Business 1 Zone								0
B3Z	Business 3 Zone								0
ERZ	Environmental Rural Zone					4			4
IN1Z	Industrial 1 Zone								0
LDRZ	Low Density Residential Zone								0
PCRZ	Public Conservation and Resource Zone								0
PPRZ	Public Park and Recreation Zone								0
PUZ1	Public Use Zone 1								0
PUZ2	Public Use Zone 2								0
PUZ3	Public Use Zone 3								0
PUZ4	Public Use Zone 4								0
R1Z	Residential 1 Zone								0
RLZ	Rural Living Zone								0
RUZ	Rural Zone	2	242	53	50		43	150	540
TZ	Township Zone							25	25
UFZ	Urban Floodway Zone								0
Total		**2**	**242**	**53**	**50**	**4**	**43**	**175**	**569**

Zone	**Description**	**Katunga**	**Kialla**	**Koonoomoo**	**Kotupna**	**Lake Rowan**	**Marungi**	**Muckatah**	**Total**
B1Z	Business 1 Zone								0
B3Z	Business 3 Zone								0
ERZ	Environmental Rural Zone								0
IN1Z	Industrial 1 Zone								0
LDRZ	Low Density Residential Zone								0
PCRZ	Public Conservation and Resource Zone								0
PPRZ	Public Park and Recreation Zone								0
PUZ1	Public Use Zone 1								0
PUZ2	Public Use Zone 2								0
PUZ3	Public Use Zone 3								0
PUZ4	Public Use Zone 4								0
R1Z	Residential 1 Zone								0
RLZ	Rural Living Zone								0
RUZ	Rural Zone	314		21	87	9	5	3	439
TZ	Township Zone	9	1			1			11
UFZ	Urban Floodway Zone								0
Total		**323**	**1**	**21**	**87**	10	**5**	**3**	**450**

Zone	Description	Mundoona	Mulwala	Naring	Naring-aningalook	Narioka	Nathalia	Numurkah	Total
B1Z	Business 1 Zone								0
B3Z	Business 3 Zone							1	1
ERZ	Environmental Rural Zone								0
IN1Z	Industrial 1 Zone						3	6	9
LDRZ	Low Density Residential Zone		1				7	6	14
PCRZ	Public Conservation and Resource Zone						1		1
PPRZ	Public Park and Recreation Zone							1	1
PUZ1	Public Use Zone 1						1	3	4
PUZ2	Public Use Zone 2								0
PUZ3	Public Use Zone 3								0
PUZ4	Public Use Zone 4								0
R1Z	Residential 1 Zone						4	2	6
RLZ	Rural Living Zone								0
RUZ	Rural Zone	3		3	3	49	124	278	460
TZ	Township Zone								0
UFZ	Urban Floodway Zone								0
Total		**3**	**1**	**3**	**3**	**49**	**140**	**297**	**496**

Zone	Description	Peechelba	Pelleubla	Picola	St James	Strathmerton	Telford	Tharanbegga	Total
B1Z	Business 1 Zone								0
B3Z	Business 3 Zone								0
ERZ	Environmental Rural Zone					2			2
IN1Z	Industrial 1 Zone					2			2
LDRZ	Low Density Residential Zone								0
PCRZ	Public Conservation and Resource Zone					1			1
PPRZ	Public Park and Recreation Zone								0
PUZ1	Public Use Zone 1					1			1
PUZ2	Public Use Zone 2	1							1
PUZ3	Public Use Zone 3								0
PUZ4	Public Use Zone 4					1			1
R1Z	Residential 1 Zone								0
RLZ	Rural Living Zone								0
RUZ	Rural Zone	42	37	40	48	167	1	12	347
TZ	Township Zone			24	17	9			50
UFZ	Urban Floodway Zone								0
Total		**43**	**37**	**64**	**65**	**183**	**1**	**12**	**405**

Zone	Description	Tungamah	Ulupna	Waaia	Waggarandall	Wilby	Wunghnu	Yabba	Total
B1Z	Business 1 Zone								0
B3Z	Business 3 Zone								0
ERZ	Environmental Rural Zone								0
IN1Z	Industrial 1 Zone								0
LDRZ	Low Density Residential Zone								0
PCRZ	Public Conservation and Resource Zone								0
PPRZ	Public Park and Recreation Zone								0
PUZ1	Public Use Zone 1								0
PUZ2	Public Use Zone 2								0
PUZ3	Public Use Zone 3								0
PUZ4	Public Use Zone 4	1							1
R1Z	Residential 1 Zone								0
RLZ	Rural Living Zone								0
RUZ	Rural Zone	13	2	220	50	6	114	53	458
TZ	Township Zone	162		37		37	57		293
UFZ	Urban Floodway Zone	1					7		8
Total		**177**	**2**	**257**	**50**	**43**	**178**	**53**	**760**

Zone	Description	Yalca	Yambuna	Yarrawonga	Yarroweyah	Yielima	Youanmite	Youarang	Total
B1Z	Business 1 Zone								0
B3Z	Business 3 Zone								0
ERZ	Environmental Rural Zone								0
IN1Z	Industrial 1 Zone			1					1
LDRZ	Low Density Residential Zone			130					130
PCRZ	Public Conservation and Resource Zone			2					2
PPRZ	Public Park and Recreation Zone			1					1
PUZ1	Public Use Zone 1			4	1				5
PUZ2	Public Use Zone 2								0
PUZ3	Public Use Zone 3			3					3
PUZ4	Public Use Zone 4			13					13
R1Z	Residential 1 Zone			20	2				22
RLZ	Rural Living Zone			19					19
RUZ	Rural Zone	58	3	97	245	49	45	30	527
TZ	Township Zone			1					1
UFZ	Urban Floodway Zone								0
Total		**58**	**3**	**291**	**248**	**49**	**45**	**30**	**724**

Preliminary Risk Assessment for Compliance Monitoring

Zone Code	Zone Description	Risk	Septic Tanks	Total
B1Z	Business 1 Zone	High	1	
B3Z	Business 3 Zone	High	2	
ERZ	Environmental Rural Zone	High	6	
LDRZ	Low Density Residential Zone	High	177	
R1Z	Residential 1 Zone	High	52	
TZ	Township Zone	High	674	
UFZ	Urban Floodway Zone	High	8	920
IN1Z	Industrial 1 Zone	Low	27	
PCRZ	Public Conservation and Resource Zone	Low	7	
PPRZ	Public Park and Recreation Zone	Low	2	
PUZ1	Public Use Zone 1	Low	15	
PUZ2	Public Use Zone 2	Low	1	
PUZ3	Public Use Zone 3	Low	3	
PUZ4	Public Use Zone 4	Low	15	
RLZ	Rural Living Zone	Low	30	
RUZ	Rural Zone	Low	3,566	3,666
Total				4,586

The above table provides a more detailed summary of the location of septic tank installations by locality within each of the Planning Zones within the municipality. The planning zone has been used as a key parameter to determine land use suitability for existing and future development of sites with on-site wastewater systems. The planning zones have also been used to develop a risk based model for future compliance monitoring and audit.

Of particular interest is the land use planning zones that provide for high density residential development (R1Z) and Township Zone (TZ) and lower density residential development (LDRZ) and have been categorized as High Risk. For example under the Planning Scheme development in R1Z requires the provision of reticulated sewer. This will assist in prioritising the areas that need further investigation to verify risk.

Initial Findings

The predominant High Risk Zone localities are Barmah, Bundalong, Tungamah and Yarrawonga.

- Barmah has 96 sites in Township Zone (TZ) which represents 2.1% of total sites within the municipality but 10.4% of sites within High Risk Zones.

- Bundalong has 189 sites in Township Zone (TZ) which represents 4.1% of total sites within the municipality but 20.5% of sites within High Risk Zones.

- Tungamah has 162 sites in Township Zone (TZ) which represents 3.5% of total sites within the municipality but 17.6% of sites within High Risk Zones.

- Yarrawonga has 20 sites in Residential 1 Zone (R1Z), 1 in Township Zone (TZ) and 130 sites in Low Density Residential Zone (LDRZ) which represents 3.3% of total sites within the municipality but 16.4% of sites within High Risk Zones.

- The locality of Wunghnu has a high proportion of total sites (36%) in High Risk Zones.

- Cobram and Yarrawonga which have reticulated sewer have sites in Residential 1 Zone (R1Z) that have septic tanks.

6.0 Community Consultation

Moira Shire Council have developed a three phase method of community consultation and engagement aimed towards ensuring that the community are involved in the Domestic Waste Water Management Plan throughout various planning and implementation stages. The three phases relate to; Pre-consultation, Information Seeking (interactive) and Community Involvement (interactive). Below are the three phases in more detail.

Pre-consultation

- Advertisements in the local papers to invite submissions;
- Council Web page to display issues paper;
- Articles inserted into the regular council publications;
- Media releases in the local papers;
- Letterbox drop at targeted high priority towns.

Seeking Information (interactive)

- Community survey targeting high priority towns;
- Focus groups for invited community representatives;
- Inviting written submissions.

Involving the community (interactive)

- Townships committees for targeted high priority towns;
- Public meetings.

7.0 Values, Domestic Wastewater Threats, and Risk Assessment

7.1 Environmental values

Values reflect the perception of public health and the protection of beneficial uses of the receiving environment. Value categories include public health (infectious disease transmission and exposure to disease), environmental (surface water, land and groundwater quality), amenity (aesthetic values), economic (development potential, property value) location (density of systems and effluent), land capability (soil characteristics), indigenous values, and agricultural values.

The values for the unsewered population centres in the Shire are seen to be good environmental amenity and aesthetics, high values relating to surface water quality, and health protection and are complementary to those values identified in the Stormwater Management Plan.

Wastewater poses a public health, environmental, legal and economic risk and the scientific literature establishes these risks including decisions made by the courts in relation to councils' responsibilities and their management of statutory duties.

Table 5 Receiving Environmental Values

Population Centre	Receiving Environmental Values
Tungamah	• High values relating to Surface Water quality due to Water course being in close proximity to town. • Public Health - Health protection is highly valued, complaints have been received concerning amenity (odour and visual). • Amenity - Weed growth concerns related to leaking septic tank systems • Economic – Development potential cannot be realized and is constrained due to the lack of disposable waste infrastructure being present
Katamatite	• Economic – Development potential cannot be realized and is constrained due to the lack of disposable waste infrastructure being present • Public Health - Health protection is highly valued, complaints have been received concerning amenity (odour and visual).

Population Centre	Receiving Environmental Values
Barmah	• High values relating to Surface Water quality due to Water course being in close proximity to town. • Environment is valued in relation to recreational uses and amenity, conservation and protection necessary concerning indigenous cultural values • Environment – Conservation of Reticulated water supple can produce positive effects on environment in relation to effluent dispersal, groundwater and surface water.
Katunga	• Environment – Conservation of Reticulated water supple can produce positive effects on environment in relation to effluent dispersal, groundwater and surface water. • Economic – Development potential cannot be realized and is constrained due to the lack of disposable waste infrastructure being present (Multi slot subdivisions being constrained) • High values relating to Surface Water quality due to Water course being in close proximity to town.
St James	• Health protection is highly valued – complaints have been received concerning amenity (odour and visual) of open street drains. There is a potential exposure to disease from contact with the contents of these drains. • Amenity - Weed growth concerns related to leaking septic tank systems

7.2 Domestic wastewater threats

The following table depicts the generic domestic wastewater threats which are associated with domestic wastewater. Each of these threats can be graded as Low, Moderate, and High.

Table 6 Generic Domestic Wastewater Threats

Threat	Cause	Key Impacts
Failed systems with offsite discharge	• Damaged effluent disposal drains/trenches • Increased loading from extensions to dwellings • Design criteria not complied with • Faulty installation • New works & activities impacting on disposal envelope • Age • Septic tank full	• Nutrients • Pathogens • Odour • Visual amenity • Oxygen depleting material • Local land degradation (erosion) • Pollution of water courses
Treated off site effluent discharge	• Permitted system	• Pollution of water courses • Local visual amenity
Treated on site effluent systems	• Permitted system	• Local visual amenity • Pollution of groundwater
Re-use of waste water	• Allowed re-use • Low water supply • Poor management by individual residents	• Pathogens • Odour
Untreated off site sullage discharge	Poorly maintained system: • sand filter not functioning • sand filter bypassed to stormwater • septic tank full	• Nutrients & pathogens • Odour • Visual amenity • Oxygen depleting material • Local land degradation • Pollution of water courses
Ineffective regulation	• Failure to comply with permit conditions • Ineffective data base • Non-connection to sewer • Unclear regulatory responsibilities	• Liability • Increased incidence of preventable pollution and environmental degradation • Increased risk to public health

The assessment of comparative wastewater threats is dependent upon three particular variables:

- the number and density of septic systems within the sub-catchment area;
- the proportion of effectively operating septic systems; and
- the proportion of the types of systems installed.

However, the currently available data on the above variables is incomplete and a quantification of the potential threats could not be undertaken. This lack points to the immediate need for the systematic collection, analysis and verification of domestic wastewater data. Despite this lack of data a preliminary estimate of threats in each of the priority towns was conducted (the number of threats were counted and rated high, moderate, or low). The EPA Septic Tank Code of Practice and LCA Guidelines, survey data and local knowledge were used to identify the following as the assessment criteria for potential threats:

- Number of septic systems in the population centre;
- Proximity of systems to drains and watercourse(s);
- Allotment size;
- Soil and land characteristics;
- Flooding proneness;
- Type of system installed (on-site or off-site disposal);
- Age of installed systems; and
- Monitoring results of water courses.

The results of these estimations are depicted in Table 7 below (On the collection and analysis of the required point source data, a further risk assessment will be conducted for all population centres using the risk assessment tools of the MAV Model Plan).

Table 7 Preliminary assessment of potential domestic waste water threats in sub-catchments

Towns/urban centres	Threats	Threat assessment	Threat priority (High, Medium, Low)
Katamatite	☒ No. of systems/density ☑ Proximity to watercourses ☑ Located in water catchment ☒ Allotment size ☒ Type (on-site v offsite) of systems ☒ Age of systems ☒ Retic water available ☒ Slope ☒ Water quality (rec. env) ☒ Soil characteristics ☑ Flood prone ☒ Rainfall ☑ Poor maintenance	• 100 systems • Generally small flat allotments and loam soils • Strong evidence of off-site discharges with wastewater being conveyed to open stormwater street drainage. 86% of properties showed evidence of off-site discharges (dry weather) • Rain results in flooding of systems and lines. • High level of de-sludging undertaken particularly in 2004. This suggests owners have had problems on site • 57% of systems were >20 years, 29% 15-20 years, some over 60 years. • 100% of properties had sub-soil absorption disposal	High
Katunga	☒ No. of systems/density ☑ Proximity to watercourses ☑ Located in water catchment ☒ Allotment size ☒ Type (on-site v offsite) of systems ☒ Age of systems ☒ Retic water available ☒ Slope ☒ Water quality (rec. env) ☒ Soil characteristics ☑ Flood prone ☒ Rainfall ☑ Poor maintenance	• 105 systems • small flat allotments and gravelly loam soils • strong evidence of off-site discharges with wastewater being conveyed to open stormwater street drainage. 86% of properties showed evidence of off-site discharges (dry weather) • rain results in flooding of systems and lines. • high level of de-sludging undertaken (particularly in 2004). Suggests owners have had problems on site • 57% of systems were >20 years, 29% 15-20 years, some over 60 years. • 100% of properties had sub-soil absorption disposal	High

Towns/urban centres	Threats	Threat assessment	Threat priority (High, Medium, Low)
St James	☒ No. of systems/density ☑ Proximity to watercourses ☑ Located in water catchment ☒ Allotment size ☒ Type (on-site v offsite) of systems ☒ Age of systems ☒ Retic water available ☒ Slope ☒ Water quality (rec. env) ☒ Soil characteristics ☑ Flood prone ☒ Rainfall ☑ Poor maintenance	• 40 systems • loam based soils • noticeably old poorly maintained systems with grey water discharges to stormwater drains • high level of de-sludging undertaken suggesting owners have had problems - 50% of properties surveyed had been de-sludged in the last 3 years • 83% of systems were >20 years, 17% 15-20 years, some over 90 years. • 67% of properties showed evidence of off-site discharges (dry weather) • 100% of properties had sub-soil absorption disposal	High
Barmah	☑ No. of systems/density ☑ Proximity to watercourses ☒ Located in water catchment ☒ Allotment size ☒ Type (on-site v offsite) of systems ☒ Age of systems ☒ Retic water available ☑ Slope ☒ Water quality (rec. env) ☑ Soil characteristics ☑ Flood prone ☑ Rainfall ☒ Poor maintenance	• 76 systems • flat with sandy clay soils • evident there was grey water sitting in open drains beside the road in Murray Street and into run-off to stormwater Schier St. In Lawford St there was evidence of sullage lying in the back yards of properties. • The tanks where sludge levels could be obtained, showed high volumes and in all instances above recommended operating levels. • 57% of systems were >20 years, 29% 15-20 years, some over 60 years. • 86% of properties showed evidence of off-site discharges (dry weather) • 100% of properties had sub-soil absorption disposal	High

Towns/urban centres	Threats	Threat assessment	Threat priority (High, Medium, Low)
Tungamah	☑ No. of systems/density ☑ Proximity to watercourses ☒ Located in water catchment ☒ Allotment size ☒ Type (on-site v offsite) of systems ☒ Age of systems ☒ Retic water available ☑ Slope ☒ Water quality (rec. env) ☒ Soil characteristics ☑ Flood prone ☑ Rainfall ☒ Poor maintenance	• 140 systems • flat with clay soils and stormwater discharges to the local Boosey Creek. • mix of allotment sizes with the bulk of properties in the inner township around the 1000m^2. • A recent LCA confirmed very poor percolation results. • 72% of systems were >20 years, 12% 15-20 years. • 83% of properties showed evidence of off-site discharges (dry weather) • 85% of properties had sub-soil absorption disposal • Council conducted water tests in Tungamah at two stormwater drain outfalls that flow into the Boosey Creek. • water quality analysis of surface receiving environment revealed levels of faecal contamination. • majority of households dispose grey water through a grease trap and into the street gutters, which eventually flow towards the creek or into the stormwater drains.	High

8.0 Key Findings

The following have been identified as the key findings in domestic wastewater for the Moira Shire:

- The Shires septic tank profile in terms of numbers, location and types of septic tank systems is incomplete and does not enable a quantification of potential threats.

- The performance of septic tank systems and compliance with permit conditions by owners across the municipality is unknown. There is evidence that septic tank systems are not being maintained and points to the need for improved community knowledge of the effective management of septic tank systems.

- The receiving environment particularly watercourses are being negatively impacted on by domestic effluent, largely due to septic system failure which is capable of producing high levels of contamination. There is evidence of detrimental environmental effects in waterways downstream from the priority towns (water quality and habitat degradation)

- Septic tank system effluent was identified as one of the greatest threats to stormwater in the Urban Stormwater Management Plan's study area

- Floodplain management is a significant factor in the Shire affecting permit conditions for septic systems and needs to be addressed as a priority in the DWMP.

- Continued residential growth in unsewered areas requires the development of policies and procedures to ensure that sites are capable of retaining and treating domestic waste on-site. There are no policies on the management of sites where waste is not retained on-site and the management of grey water.

- Council issues permits for installation of systems but has no organised compliance management services to ensure permit conditions are complied with by owners or information on the performance of these systems.

9.0 Management strategies and actions

This section outlines Council's approach to the management of domestic wastewater issues that have been identified through the development of the DWMP, the major strategies and the specific action planned to implement these strategies over the next three years.

9.1 Management Approach

Council's management strategies for wastewater are informed by three factors:

1. Council's statutory duty
2. Council's capacity to undertaken wastewater management services
3. The risks posed by ineffective septic tanks systems

Council has a statutory duty to regulate septic tank systems as it issues permits for the installation of these systems. Further, under the State Environment Protection Policy (Waters of Victoria) Council is required to:

- ensure that strategic and statutory planning tools are consistent with the SEPP;
- improve the management of urban stormwater and domestic wastewater (waste from septic tanks);
- consider the capability of land, in unsewered areas, to contain wastes when making land use planning decisions and that such use is sustainable;
- assess compliance of septic tank performance with permit conditions; and
- develop a Domestic Wastewater Management Plan

Currently Council's domestic waste water management and regulatory services are limited to permitting activities and complaint investigation. The management of council's statutory duty in relation to septic tank systems would require that it undertakes activities relating to the:

- monitoring of system performance and general environmental monitoring (particularly in identified high risk areas);
- compliance audits of septic tank system permit conditions; and
- community information services relating to septic tank systems.

The capacity of council to undertake these activities and services requires a range of resources including:

- the collection of appropriate data at the point source through an ongoing monitoring program, development of an domestic wastewater information management system, and analysis of this information;
- review and development of operating policies and procedures; and
- the development of, and access to, a range of information by owners of septic tank systems and other stakeholders

9.2 Domestic Wastewater Management Priorities

The key findings identify a number of management actions that need to be implemented so as to improve the effectiveness of septic tank systems:

.

1. Capacity development – information management

There is a need to develop an accurate and complete septic tank system profile of the municipality that is integrated with Council's Graphical Information System (GIS).

2. Capacity development – policies and procedures

There is a need to develop policies to improve the management of domestic wastewater consistent with the legislation and Council's environmental and other policies. The continued growth of the municipality will result in issues:

- Pertaining to residential growth and new developments in unsewered areas
- The re-use of grey water particularly as there is much interest in this issue and there are government incentives in place for re-use
- Special regulatory controls of septic tank systems in high risk areas i.e. sensitive receiving environments and where there are high environmental values, the concentration of ageing, and failing septic tank systems and where there is off-site discharge of effluent (treated or otherwise).
- Review the requirements of the planning scheme.
- Develop inter-departmental protocols relating to building and town planning permits and the issuing of approvals for septic tank systems.

3. Compliance auditing and monitoring of septic tank systems

- As the permitting authority Council needs to develop activities to ensure compliance with conditions on permits and other requirements on applicants/owners after the system has been installed. This is particularly critical in identified high risk areas.
- This consideration will need to include the options available for resourcing these activities, and legislative constraints.
- These compliance activities need to be risk based.

4. Community development and compliance

Although owners of septic tank systems have a legal responsibility under the Environment Protection Act 1970 to comply with permit conditions, there is evidence that there is a need for ongoing education of owners.

5. Environmental monitoring and protection

Together with inspections of individual septic tank systems/installations, there is a need to investigate, with other agencies, the overall impact that systems have collectively on the receiving environment. Current information suggests that there is septic tank effluent infiltrating into water courses. Information derived from these investigations will assist in refining the preliminary risk/threat assessment that has been undertaken for the DWMP and in developing specific permit conditions for septic tank approvals.

6. Review

There is a need for a review of the DWMP management actions within 12 months as the development of a complete septic tank profile will need to be analysed together with any State government policy and legislative changes.

7. Commitment to North East Management Project

Continue as an active participant in accordance with the Regional Action Plan.

9.3 Action Plans

Year 1	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current Status
1. Strategy: ***Development of a community information and education strategy on septic tank maintenance and management.*** **Objectives :** • To reduce loading on septic tank systems and reach the designed age for system • To increase owners' awareness of the importance of managing septic tank systems • To improve compliance with permit conditions • To prevent alterations exceeding the design capacity of existing approved systems	a) Ascertain information needs of septic tank owners via a survey		Team Leader Environmental Health	31/12/06	Needs ascertained and analysed for Tungamah	Survey conducted of Tungamah only
	b) Develop a communication strategy • Consultation with internal staff (customer service, communications) • Develop information material using Smart Septics resource • Dissemination via dedicated website and hard copy materials		Team Leader Environmental Health	30/11/06	Completion of communication strategy	To use Smart Septics resource
	c) Evaluate strategy		Team Leader Environmental Health	30/06/07	Community feedback	Ongoing
	d) Revise and continue implementation of strategy		Team Leader Environmental Health	ongoing	Strategy revised	Ongoing

Year 1	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current Status
2. Strategy: ***Development of a septic tank system monitoring program for council owned properties*** **Objectives:** • To ensure that council septic tank systems are operating effectively and meet permit and licensing requirements • To develop a complete septic tank system profile on each high risk sub-catchment area	a) Identify all unsewered council properties	NERW, GVW	Team Leader Environmental Health	30/9/06	95% properties identified	Spatial data base has this capability
	b) Develop and implement a monitoring regime for sites not EPA licensed	EPA	Team Leader Environmental Health	31/12/06	Monitoring regime implemented	Incomplete
	c) Obtain compliance reports for EPA licensed systems	EPA	Team Leader Environmental Health	31/12/06	Compliance reports obtained	Completed
	d) Provide a report to council with recommendations for improvement		Team Leader Environmental Health	15/2/07	Council report received	Report partially completed
	e) Review and revise monitoring program		Team Leader Environmental Health	30/4/07	Monitoring program reviewed	Ongoing

Year 1	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current Status
3.* Strategy:** ***Establish a funded permitting system for septic tank systems **Operational objectives:** • Develop a cost sustainable permitting system reflecting the costs of providing the service	a) Establish full operating costs for the provision of permitting services		Team Leader Environmental Health	30/9/06	Operating costs established	Awaiting Council approval of new fees
	b) Advise Minister and EPA for the need to change current legislation with government set maximum fees	AIEH regional group		30/12/06		Regional AIEH group currently preparing report
	c) Communicate to stakeholders, rate payers and service providers	MSC Media	Team Leader Environmental Health	30/10/06	Media releases	Media release still to be prepared
	d) Review current system of charging fees and benchmark against other councils		Team Leader Environmental Health	30/12/06	Benchmark completed	Completed

Year 1	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current Status
4. **Strategy:** ***Review Domestic Wastewater Information Management System*** **Operational objectives:** • To develop a system matching the requirements of both current and future services in domestic wastewater management using the MAV information management model • Identification of properties retaining or otherwise waste on-site • Identification of trends in wastewater technology and its application, receiving environment impacts, servicing levels	a) Review/Upgrade existing information management systems to store the additional data requirements as detailed in Table A (MAV Information Management Specification)	MSC IT	Team Leader Environmental Health	30/9/06	Additional data requirements enabled	STEMS data base established all data from historic records
	b) Modify the existing information management systems to provide the reporting needs as identified in Table A	MSC IT	Team Leader Environmental Health	30/03/07	Ability to report as per Table A	Works in progress
	c) Verify existing database of location of septic tank systems within the municipality	MSC IT	Team Leader Environmental Health	30/9/06	90 % verification	Completed for known septic records
	d) Develop a profile of all septic tank systems within the municipality	MSC IT	Team Leader Environmental Health	30/03/07	Profile developed	Ongoing
	e) Implement a system for collection and recording of permit compliance and audit information	MSC IT GMW	Team Leader Environmental Health	30/9/06	System of recording in place	Subject to appointment of EFT septic tank officer
	f) Develop a visual profile of septic tanks on the corporate Geographical information system (GIS)	MSC IT	Team Leader Environmental Health	30/6/07	Layer on GIS in place	Partial completion
	g) Review preliminary risk assessment	MSC IT	Team Leader Environmental Health	30/6/07	Preview completed	Ongoing

Year 1 -2	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current Status
5.* Strategy:** ***Development and review of operational policies and procedures **Objectives:** • To develop a range of operating and other policies relating to domestic wastewater and its management (based on draft regional policies and procedures) • To manage Council's exposure and statutory duties in wastewater management • To improve the effectiveness of service provision	a) Establish a scope of policies and procedures relating to the following areas: • Permitting (new and alteration) policies and procedures (Assessment criteria, LCAs, fees, permit conditions, site inspections) • Joint operating procedures with internal service units (planning, building) on planning permits (sub-divisions, infill development, grey water reuse) • Joint operating procedures with external agencies on information exchange (sewer availability, connections, priority areas for sewerage) • Exploration of common protocols and benchmarks with neighbouring councils	AIEH regional group	Team Leader Environmental Health	30/4/07	Policies and procedures used by Environmental Health Officers	Regional AIEH group have developed a significant no. of policies
	b) Draft policies and procedures and consult with internal and external stakeholders	AIEH regional group GMW	Team Leader Environmental Health	30/6/07	Stakeholders consulted	Ongoing
	c) Develop a procedure and policy manual based on regional model	AIEH regional group	Team Leader Environmental Health	Sept 07	Manual based on regional model	Ongoing

	d) Develop a grey-water re-use policy, in consultation with stakeholders, to be adopted by council		Team Leader Environmental Health	Dec 07	Re- use policy adopted by council	Questions regarding cost-effectiveness
	e) Review and amend local planning controls, in consultation with stakeholders to address domestic management		Team Leader Environmental Health	June 08	Planning controls amended	Ongoing
	f) Promote policies to the community and service providers (jointly with communication strategy)		Team Leader Environmental Health	June 08	Media releases and public meetings	Ongoing

Year 1 -2	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current status
6. Strategy: ***Development of a septic tank system monitoring program high risk catchment area/localities*** **Objectives:** • To develop a complete septic tank system profile on each high risk sub-catchment area • To ascertain specific systems' performance (point source) • To assess surface water and ground water quality • To monitor and assess the impact of wastewater management strategies	a) Assess legislative options to address monitoring and monitoring limitations. Determine council obligations and explore solutions	AIEH regional group	Team Leader Environmental Health	Dec 07	Report from AIEH regional group	Ongoing
	b) Implement a risk based program for monitoring septic tank systems.		Team Leader Environmental Health	Dec 07	Risk based program implemented	Ongoing
	c) Determine base-line ground water / surface water quality.	GMW	Team Leader Environmental Health	Dec 07	Base line quality determined	Not commenced
	d) Implement a system for periodic reporting of monitoring and auditing results to stakeholders	GMW	Team Leader Environmental Health	June 08	Reporting system implemented	Ongoing
	e) Investigate the implementation of a charging system to recover the cost of monitoring		Team Leader Environmental Health	June 08	Report on investigation received by council	Ongoing

Year 1 -2	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current Status
7. Strategy: **Review of Action Plan** **Objectives:** • To report progress to management, stakeholders and community • To ensure any changes in government policy and community expectations are assessed and reflected in the Action Plan • To update Action Plan	a) Identify any changes to government policies through discussion with stakeholders	AIEH regional group	Team Leader Environmental Health	Dec 07	Attendance at AIEH regional meetings	Ongoing
	b) Assess any feedback received from the community through implementation	AIEH regional group	Team Leader Environmental Health	Dec 07	Feedback assessed	Ongoing
	c) Review operational policies as appropriate	AIEH regional group	Team Leader Environmental Health	Dec 07	Review operational policies in line with council QA system	Ongoing
	d) Draft report for management and community on progress in domestic wastewater management	AIEH regional group	Team Leader Environmental Health	Dec 07	Report drafted	Ongoing

Year 2-3	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current status
8. **Strategy:** ***Development of a compliance auditing regime*** **Operational objectives:** • To manage council's statutory duty in relation to enforcement activities • To minimise the impacts from domestic waste water on the environment and protect public health • To comply with legislative expectations of government	a) Assess current legislative options/tools, identify gaps and lobby government for improved enforcement powers	Regional AIEH group	Team Leader Environmental Health	Dec 08	Gaps identified	Commenced
	b) Review and develop compliance policies and procedures	Regional AIEH group	Team Leader Environmental Health	Dec 08	Policies and procedures reviewed in line with council QA	Ongoing
	c) Implement a program for auditing owner/occupier compliance with permit conditions	Regional AIEH group	Team Leader Environmental Health	Dec 08	Auditing program implemented	Commenced
	d) Implement a program for auditing septic tank system performance	Regional AIEH group	Team Leader Environmental Health	Dec 08	Auditing program implemented	Not commenced
	e) Implement a system of periodic reporting of monitoring and auditing results to stakeholders	Regional AIEH group	Team Leader Environmental Health	Dec 08	Periodic reports	Not commenced
	f) Investigate the implementation of a charging system to recover the cost of auditing	Regional AIEH group	Team Leader Environmental Health	Dec 08	Report received by council	Not commenced

Year 3	Action Steps	Team/ Partners	Responsible person	Due date:	Monitoring & performance indicators	Current status
9. Strategy: **Evaluation of Domestic Wastewater Management Plan** **Objectives:** • To assess implementation of strategies and progress towards objectives • To identify successes and constraints to implementing strategies • To report progress to management, stakeholders and community • To re-develop the Plan	a) Develop evaluation objectives and design evaluation process in consultation with stakeholders		Team Leader Environmental Health	Mar 09	Stakeholder consultation undertaken	Not commenced
	b) Undertake evaluation and analyse results		Team Leader Environmental Health	Mar 09	Report of results	Not commenced
	c) Draft report for management and community on progress in domestic wastewater management		Team Leader Environmental Health	Mar 09	Council report drafted	Not commenced
	d) Re-develop DWMP		Team Leader Environmental Health	Mar 09	DWWMP revised	Not commenced

SPECIFIC LOCALITY ACTION PLAN

Township	Specific Strategies	Action Steps	Team/ Partners	Responsible Person	Due Date/ Timeframe	Monitoring & Performance Indicators
Tungamah	Investigate feasibility of developing sewerage infrastructure for the town	Support initiatives for State funding of $100k for NE Water to conduct preliminary study into design	NE Water Moira Council	Manager Environment	June 2007	• Funding secured • Preliminary Report
Katamatite	Obtain evidence on wastewater management in the township	Develop site survey of 100 properties Implement survey	Moira Council	EHO	December 2006	• Survey undertaken • Report drafted
Barmah	Obtain evidence on wastewater management in the township	Develop site survey of 100 properties Implement survey	Moira Council	EHO	December 2007	• Survey undertaken • Report drafted

Township	Specific Strategies	Action Steps	Team/ Partners	Responsible Person	Due Date/ Timeframe	Monitoring & Performance Indicators
Katunga	Obtain evidence on wastewater management in the township	Develop site survey of 100 properties Implement survey	Moira Council	EHO	June 2008	• Survey undertaken • Report drafted
St James	Obtain evidence on wastewater management in the township	Develop site survey of 100 properties Implement survey	Moira Council	EHO	December 2008	• Survey undertaken • Report drafted

Proposed Regional Action Plan

Specific Strategies	Action Steps	Team/ Partners	Responsible Person	Due Date/ Timeframe	Monitoring & Performance Indicators
1. Preparation of a proposal for government funding for the development, piloting and evaluation of (regionally based) risk based compliance monitoring model	• Develop a preliminary proposal to ascertain feasibility for funding of model development and piloting of model • Obtain support for proposal from local and regional stakeholders • Presentation to government (DSE) *(Further actions to be developed if successful in funding bid otherwise an action plan will be developed to proceed on a smaller scale pilot)*	Participating councils and authorities	Consultants	31 July 2006 August 2006	Development and presentation of proposal
2. Development of a non-compliance management policy	• Preparation and conduct workshops/forums to scope non-compliance issues and develop criteria for management and resolution • Develop draft policy operating procedures through continued consultation • Develop draft policy for adoption by participating councils	Participating councils and authorities	Consultants	31 August 2006	Development of draft policy

Specific Strategies	Action Steps	Team/ Partners	Responsible Person	Due Date/ Timeframe	Monitoring & Performance Indicators
3. Review of draft policies and procedures	• Undertake systematic review of policies and procedures • Redraft policies and procedures as appropriate • Publish revised policy and procedures manual	Participating councils and authorities	Consultants	30 November 2006	Re-issue of policy and procedures manual
4. Review of DWMPs	• Undertake review of DWMPs through workshop(s) and informed by: o the collective & individual experiences in implementing plans o changes to septic tank system profiles o changes to legislation and/or policy	Participating councils and consultants	Council managers	April –May 2007	Reviews undertaken, DWMP revised, and report to council

Appendices

Appendix 1 DWMP Project Management Group Members

Paula Tovey	Manager Environment, Moira Shire Council
Caitlin Wilkie	Environmental Health Officer
Jim Smith	Infocus Management
Neil Dunbar	WDMS

Appendix 2 CTWS&SP Preliminary Assessment of Sewerage Needs

Appendix 3 Tungamah Domestic Waste Water Management Plan (draft)

MOIRA SHIRE
ON THE MURRAY

Tungamah Domestic Wastewater Management Plan

Initial draft

Contents

1 Introduction

Moira Shire Council has prepared a Domestic Wastewater Management Plan ("The Plan") for the municipality to assist in management of existing septic tank installations and identifying suitability of new developments for septic tank systems.

Septic tanks provide a localized wastewater treatment system for property owners whose properties are either not serviced by reticulated sewer or have not connected to the sewer. The Moira Shire Council has identified over 500 sites within its municipality that have septic tank installations with a proposed 4,500 more unidentified. Council has processed on average approximately 120 new septic tank applications per year over the past 3 years.

The Plan addresses the suitability of sites for the installation of new septic tank systems, including residential, commercial, industrial, rural and public land, which discharges up to 5,000 liters of wastewater per day. Typically the wastewater consists of toilet, bathroom, kitchen and laundry wastes. On-site wastewater management systems which discharge greater than 5,000 litres/day require an individual EPA license. The majority of domestic properties discharge up to 1,200 L/day.

It is important that septic tank systems are only installed on sites that will allow them to perform properly and do not cause a risk to public health or an adverse impact on the environment.

Monitoring the performance of septic tank installations is a key element in ensuring that systems, once installed continue to meet acceptable treatment standards. It is the responsibility of the landholder to ensure that the on-site wastewater management system is operated and maintained in a responsible manner, but Council as the monitoring authority must ensure landholder compliance.

2. Local government, Public Health and Wastewater Management

Local government has had a longstanding role in the protection, maintenance and promotion of public health. Much of the early public health effort was spent in the development of basic infrastructure such as drains, roads and waste management. Although there have been changing determinants of health over the last century or more, control of human waste disposal and waste management generally continues to be a critical issue for both human health and environmental perspectives.

The obvious threat to human health comes from the contamination of the catchment areas from which we draw our drinking water supplies; the contamination and pollution of recreational waters; and the short and long term degradation of the natural environment. Local government has responsibility for a number of State Statutes for the regulation of domestic wastewater and maintaining the municipal district in a clean and sanitary state. However, sustaining this effort requires integrated planning, appropriate resourcing and renewed capacity building at the local level.

2.2 Planning

As with all branches of government in Australia, local government has many planning processes. Legislation requires the development of Corporate Plans, Municipal Public Health Plans, and the development of the Municipal Strategic Statement. There are also many plans or strategies addressing environment (environment and conservation planning), economic growth (strategic land use strategies, infrastructure planning, and business development), and community development (arts, disability, and recreation plans).

When considering the development of a Domestic Wastewater Management Plan it is important to understand that such a plan is clearly a 'strategic plan'. What does 'strategic' mean? Essentially a strategic planning process acknowledges that there are choices that can be taken and the following features are typical of this process:

- Broad scale information gathering
- Exploration of alternatives
- Emphasis on future implications of present decisions
- Fostering of orderly decision making
- Successful implementation

A Domestic Wastewater Management Plan (DWMP) would tend to set out the overall strategy of the Council with other activities such as new service plans and budgets being developed as a result of that strategic plan. A DWMP at a practical level is also seen to be strategic because of the following factors:

- it requires Council approval and commitment subsequently the DWMP must be linked to the Corporate Plan and budgetary processes and to other processes such as Municipal Public Health Plans and Stormwater Management Plans;
- it requires a whole of Council approach as it is across a number of functional areas e.g. building, town planning, pubic health, strategic land use planning, stormwater management & infrastructure development;
- it will inform service delivery and potentially reorientate service priorities and policies; and
- it will require community consultation and involvement.

Further consideration must be taken in relation to the requirement to adopt and implement Best Value principles. Best value is about meeting the needs of the municipal community by the provision of council services that are the 'best on offer'. The six principles that underpin the Best Value requirements are:

- quality and cost standards for all services;
- responsiveness to community needs;
- accessible and appropriately targeted services;
- continuous improvement;
- regular community consultation; and

- frequent reporting to the community

Clearly any local government planning process needs to acknowledge and integrate with these principles.

(MAV 2003)

The aim of the Moira Shire Council's On-Site Domestic Wastewater Management Plan is to:

- Establish Council Guidelines to assist developers and other land owners in assessing suitability of sites for septic tank installations" and
- Provide the municipality with a strategy to prioritize the management of existing on-site disposal systems with respect to their risk to public health and environmental impact"

The following objectives have been developed to achieve this aim:

- Identification and recording of all septic tank installations within the municipality.
- Assessment of threats to public health and/or the environment from poorly maintained or failing septic systems.
- Development of Council policies and strategies for the effective ongoing management of domestic wastewater.
- Review of resources, systems and processes required to monitor and manage compliance of septic installations with permit conditions and other legislative requirements.
- Establishment of a communication framework for internal liaison between Council Departments, and external liaison with the public and relevant organizations on domestic wastewater issues.
- Identification of requirements for an ongoing community awareness program that will inform and encourage owners to maintain their systems.
- To encourage water conservation and safe re-use of grey water whether by individual landholders or on a larger scale.

2.3 Regional Context

Other local and regional initiatives may exist that will impact on the development of a DWMP. It is important to identify these so that the DWMP and other initiatives can be implemented and be complimentary to each other. Similarly, differences in priorities and goals must be identified and a common solution found to avoid duplicity or confusion.

Relevant local and regional initiatives may be Council based or from other agencies or neighbouring Councils. Possible sources include regional EPA

branches, CMAs and water authorities. Other levels of government may also have plans that will impact on a DWMP.

The initiatives identified as relevant will vary from council to council, but may include:

- Township strategy plans
- Environment strategies
- Subdivision strategies
- Estuaries and coastal action plans
- Regional catchment strategies
- Water authority's 10 year capital works plans

.

(MAV 2003)

Councils within the Hume Region have given an indication that they are willing to tackle the problems of Wastewater in the form of a regional approach with regards to the Domestic Wastewater Management Plan. This partnership has submitted a regional matrix highlighting wastewater problems of non sewered towns, to the Municipal Association of Victoria (MAV). Additionally, individual Council's submissions have been forwarded to the MAV seeking to secure essential funding.

Since the submission of the regional matrices the region has developed a steering committee to help guide all Councils within the region on how best to progress to have a functional working Plan.

2.4 Legislation and policies

The approval process for household on-site wastewater systems is set out in the Environment Protection Act 1970.

Council is responsible for approving the installation and use of septic tank systems designed to discharge up to 5,000 Litres of effluent per day. (Systems that are designed for and/or produce more than this volume require approval and licensing direct from the EPA).

The legislation sets out a two-stage approval process:

- EPA authorizes the types of on-site wastewater treatment systems that can be installed in Victoria, via a 'Certificate of Approval' system, and
- Local government operates a permit system, to control the installation of individual units. Council may only issue permits for systems with an EPA Certificate of Approval. Council cannot however issue a permit where the use of an approved system would be contrary to any declared State Environment Protection Policy (SEPP).

EPA's role is to examine how effectively a proposed system would treat and dispose of or reuse wastewater, and determine whether it would protect public

health and the environment. EPA approves systems that are capable of providing a high level of protection – it issues 'Certificates of Approval' for these systems. EPA may specify conditions in Certificates of Approval (many of these relate to maintenance, since effective maintenance is essential if on - site systems are to provide satisfactory long term performance).

(EPA 2005)

Local government's role is to consider how local factors (such as allotment size, area available for effluent disposal or reuse, climate, number of people/bedrooms using the system, whether the property would be occupied full or part time, etc) would affect a system's performance at a specific site, and decide if the system would be suited to that site.

Council has clearly defined statutory duties under the Environment Protection Act 1970 and the Health Act 1958 and has a "duty of care" in the exercise of its statutory duties.

Two particular court cases, Ryan v Great Lakes Council 1999 and Pyrenees Shire Council v Day 1988, considered the statutory duties of councils and how the respective councils had discharged their duties.

The cases highlighted the exposure of Councils to liability for breaching its common law duty of care.

A failure to "act" by a Council that is aware of a breach of legislation and such breach is or could cause injury and it has the power to do so, may leave the Council liable in negligence for any damages as a consequence of it breaching its owed duty of care.

Council's statutory role under the provisions of the Planning & Environment Act 1987, Environment Protection Act 1970, State Environment Protection Policies, Codes of Practice and relevant guidelines includes:

- Issuing permits to install or alter on-site wastewater management (septic tank) systems based on Land Capability Assessments and Town Planning Provisions.
- Issuing certificates to use on-site wastewater management systems.
- Ensuring compliance with issued permits and certificates.
- The submission of an annual return to EPA containing information on septic tank system approval and inspection programs.
- Development of a domestic wastewater management plan for the municipality.
- Ensuring there is provision for the acceptance of sewage sludge from on-site wastewater management (septic tank) systems.
- Ensuring that Planning Permits are not issued for any other unsewered subdivision unless wastewater can be satisfactorily contained on-site.

(EPA 2005)

EPA has produced a Septic Tanks Code of Practice (detailed in EPA publication 891 of 2003) to guide in the design and installation of septic tank

systems for the treatment and safe disposal of effluent in small wastewater systems, (note the reuse of effluent is detailed in other EPA publications).

Under SEPP (Waters of Victoria) – which came into effect on 15 March 1988 – Councils are responsible for ensuring new residential subdivisions are provided with reticulated sewerage at the time of subdivision or that the allotments are capable of treating and containing domestic wastewater within the boundaries of each allotment (Clause 40).

The Local Government Act empowers Councils to enact local laws and set special charges for council activities. Councils can use these powers to develop local regulations for wastewater management as long as these regulations are consistent with State policy and legislation and to raise revenue for its Wastewater Management Programs.
A Council may make local laws for, or with respect to, any Act or matter if the council has a function or power under State legislation. Part 5 of the Local Government Act (1989) outlines the powers of councils to make local laws and the procedures for developing and implementing such laws.

(MAV 2003)

3.1 Project management team

A Project Management Team was formed comprising of various Council officers from differing departments and community representatives.

The project management team will;

- Develop, implement, monitor and review the Domestic Wastewater Management Plan for Moira Shire Council.
- Ensure that other relevant staff are aware of and participate in the implementation of the Domestic Wastewater Management Plan.
- Identify relevant staff or organisations and their roles in implementing the Domestic Wastewater Management Plan.
- Provide all relevant staff with regular updates on Domestic Wastewater Management.
- Provide leadership and direction for Moira Shire Council's Domestic Wastewater Management.
- Review and amend the Domestic Wastewater Management Plan as required.

- Periodically participate in State wide discussions and events on Domestic Wastewater.

The project management team will continue to meet during the implementation and evaluation stages of the plan.

3.2 Process of DWMP

Following the formation of a project management team for the DWMP, Council proceeded to gather information such as septic tank system types and those systems that were observed to be failing. Using this information and comparing similarities of other non sewered towns with in the shire, a Public Health and Environmental risk assessment was performed for the Tungamah township.

The project management team proceeded to identify strategies that would be aimed at completing desired outcomes for Tungamah based on the collected information. Priorities were then established based on the risk assessment and best values practices.

The project management team with endorsement form the community will allocate actions, responsibilities and timelines. These will then be submitted to Council for approval and ultimately adoption of the DWMP.

3.3 Community Consultation

The Municipal On-Site Domestic Wastewater Management Plan has been developed through consultation with the key stakeholders and the community.

Public information nights will be held in the local townships to discuss the contents of the proposed On-site Domestic Wastewater Management Plan and its implications on existing and future developments within the municipality.

In addition to the feedback gained from the public information nights, individuals and community groups are invited to make submissions to Council regarding the Draft Plan.

Following consideration of the comments received from the public consultation process the final Domestic On-site Wastewater Management Plan will be prepared and recommended to the Council for endorsement.

4.1 Local Wastewater Management Profile

Council's data base has identified 647 registered septic tanks. This is significantly less then the number of households within the Shire that are not connected to a reticulated sewerage system. All occupied dwellings that are

not connected to reticulated sewerage therefore must be connected to a septic tank system. Moira receives in the order of 250 septic tank complaints a year.
Council recently conducted water tests in Tungamah at two stormwater drain outfalls that flow into the Boosey Creek. The analysis results revealed levels of faecal contamination. The majority of households in Tungamah dispose grey water through a grease trap and into the street gutters, which eventually flow towards the creek or into the stormwater drains. Similar testing was conducted at the Wunghnu effluent settling ponds. This drainage system also carries stormwater as well as sullage from households.
The majority of townships within the Shire contain small allotments with poor soil permeability and are closely situated to river systems. Moira Shire is predominately flat with the exception of a few areas such as Cobram-East.

Council's Septic Tank Approval Process

- Includes receiving of application with all attached documentation i.e. locality map, block plan, floor plan etc.
- Site inspection with owner/plumber.
- Approval from planning
- Issuing of permit to install
- An inspection of inlet and trenches (if applicable) prior to backfilling.
- Receiving final plan of installation along with a Certificate of compliance a copy of the maintenance agreement (if applicable)
- Final inspection
- Issuing of certificate to use.

A Map of the Shire and of Tungamah can be found in Attachment One.

4.2 Priority Setting

Following the collection of baseline information of small townships not connected to a reticulated sewerage system, and incorporating local expert advice, Tungamah was identified as the priority township within Moira Shire. Subsequently a draft DWMP has been prepared with the objective of all other towns being encompassed in a wider Municipality based DWMP.

4.2.1 Threats

Below is an outline of the risks associated with domestic wastewater, separating them into specific risk categories.

Public Health Risks

- Raw sewage can carry a range of pathogens including bacteria, viruses, protozoa, Helminths (intestinal worms), and inhaled moulds and fungi.

- Human diseases caused from these pathogens range from mild gastroenteritis to cholera, dysentery and hepatitis.
- The public can be exposed to these pathogens via contaminated drinking water, swimming or boating in contaminated water bodies, eating contaminated foodstuffs such as shellfish, or contact with domestic animals that have been exposed.
- Septic overflows can cause organic rich pooling, increasing mosquito breeding capacity resulting in a public pest and possible disease vectors:
- Health risks vary across the community. For example children, the elderly or those not immunised are at greater risk.

Environmental Risks

- Contamination of groundwater by nitrate, ammonia and faecal pathogens.
- Seepage can raise the groundwater table causing salinity in certain areas.
- Surface runoff adds nitrogen and phosphorus to water catchments, stimulating algal and weed growth and causes land degradation, namely erosion.
- Effluent carries suspended solids, ammonia and organic matter, which can affect fish, aquatic plants and micro organisms.
- Effluent can be carried into other bodies of water and cause further pollution.

Economic Risks

- Indirect perception that the area is unsafe could decrease tourist-generated revenue.
- Tourism capacity could be limited where enforced maximum seasonal septic loads exist.
- Algal blooms or large mosquito outbreaks could impact on tourism potential.
- Poor septic management decreases land amenity and economic value.
- A build up of salt or soil nutrient concentration decreases land productivity.
- Contaminated water bodies can negatively impact on aquaculture and agriculture using the water.
- For home owners, replacing failing systems or connection to reticulated sewerage can be very expensive.
- Possibility of increased maintenance to stormwater drains which receive effluent due to excessive weed growth and scouring.

Legal Risks

- Council can be found liable for failure to discharge their statutory responsibilities (eg Wallis Lakes).

- Risk of litigation is increasing as law firms become more proactive in seeking cases such as Wallis Lakes on behalf of their clients.

(MAV 2003), (EPA 2005)

4.2.2 Values

The Tungamah community have acknowledged that allowing the current situation to continue is not an option and that the impacts on the environment and potential to cause health problems are of concern and that something must be done both in the short term and long term.

4.2.3 Risk Assessment

A risk assessment will be done for each town to calculate the combinations of values and threats by assigning a numerical score for each (i.e. 1 = Low 2 = Moderate 3 = High 4 = Very High). The receiving values are then multiplied by the wastewater threats to give an overall risk value ie. If a failed system has a threat value of 4 and infectious disease transmission has a public health value of 4, the overall risk is 16. This figure is then used comparatively in developing priorities for action.

The risk assessment can be found in Attachment two.

5.1 Setting goals

The Goal of the DWMP is to;

- To guide Council towards more sustainable domestic wastewater management.
- To reduce the environmental, health and economic risk, both to Council and the Community, posed by the Domestic Wastewater.
- To comprehensively identify actions, relevant stakeholders and necessary timelines to manage Domestic Wastewater sustainability in Moira Shire Council.
- To support rational town planning

5.2 Strategies

A list comprising various strategies for the problems faced at Tungamah was put forward for comment and discussion in a meeting with representatives of the Tungamah community. In the discussions the community representatives acknowledged that doing nothing was not an option that could be taken.

The following strategies are those that have resulted from both internal and external workshops. They will be discussed further with the Tungamah community before a final strategy is chosen and subsequent timelines proposed.

Common Effluent Drainage Scheme (CED):

Low pressure system.

This would involve collecting wastewater from each lot or at a designated point (ie. end of the street). The wastewater would then be pumped to a central treatment area eg wetlands or a pond system. The treated effluent would then need to be disposed of to land, perhaps a sports ground or other appropriate space. This system allows for disposal of all effluent.

Diversion of water from the Middleton St and Bailey St outfalls.

This would involve piping the water from the two outfalls and either gravity feeding or pumping the water to a secondary treatment area. The water could be disposed at either a sports ground or other appropriate space. This system would only accommodate effluent that reaches the outfalls and would not alleviate the problems faced on the Yarrawonga side of the railway line.

All CED schemes are similar in design, involving the wastewater draining to a central point, and when treated, is discharged to an appropriate disposal area

Resources:

Designated Officer.

A designated officer's role would include monitoring the operation of septic tanks and implementing a compliance program to ensure the satisfactory operation of septics systems within the municipality. The officer would also be involved in community education programs that would provide advice and information on how to effectively manage septic tank systems.

Designated septic tank data base.

Council has recently established a septic tank database which incorporates the storage of GIS information, and plots the location of septic tanks and associated wastewater disposal areas on private properties. This information can then be uploaded to mapping programs to show where all recorded septic tank systems are.

Community Awareness Program:

Brochures

Brochures will inform home owners of the legal requirements of the operation of their septic tank systems. For example, every property owner using a septic tank system must have a “Certificate to Use”.

Economic Development:

Setting a minimum size for new subdivisions.

This would see the adoption of a minimum size building block for all new subdivisions. The assessment of septic tank applications would focus on the availability of a minimum sized allotment eg. one acre, regardless of how many people are residing in the new dwelling and their daily wastewater discharge volume.

References

EPA (2005) [as viewed on the 12/9/05] accessed online at http://www.epa.vic.gov.au/Localgov/default.asp.

MAV (2005) [as viewed on the 10/9/05] accessed online at http://www.epa.vic.gov.au/Localgov/default.asp.

Acknowledgments
Acknowledgements must go to MAV, DSE, EPA and the Councils within the North East region for helping with all queries and questions put forward in the development and process of all stages through out the DWMP.

References

Department of Sustainability and Environment (2005*) Index of stream Condition: The Second Benchmark of Victorian River Condition*, DSE, Melbourne.

Environment Protection Authority *Code of Practice - Septic Tanks (EPA Publication 451)*.

Environment Protection Authority, *State Environment Protection Policy (Waters of Victoria)* 2003.

Infocus Management Group (2004) *Part 1 Report on Waste Water Management Issues in Gippsland*, Waste Water Management in Coastal Settlements of Gippsland Project, Department of Transport and Regional Services Sustainable Regions Program.

James C Smith & Associates (2002) *A Literature Review of Public Health & Environmental Impacts of Domestic Wastewater*, JCS, Melbourne.

Moira Shire Council (2004) *City Plan 2005/06to 2008/09*

Municipal Association of Victoria (2001) *Model Municipal Domestic Wastewater Management Plan*, MAV, Melbourne.

Municipal Association of Victoria (2002) *Municipal Domestic Wastewater Management Planning, Issues & Options Paper*, MAV, Melbourne.

Municipal Association of Victoria (2005) *Domestic Wastewater Management, a planning guide for Local Government*, MAV, Melbourne.

Sinclair Knight Merz (2002) *Moira Shire Council Urban Stormwater Management Plan*, Malvern.

Victorian Government, *Environment Protection Act 1970*, Government Printer, Melbourne.