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## Background

The Dandenong Ranges are an icon for the people of Melbourne. However, there is evidence that the significant environment for which this area is known is at risk. The effect of poorly maintained wastewater systems on the creeks and waterways are having significant impact on the health of the environment and the broader community. Wastewater issues in the Dandenongs are becoming increasingly important as a result of increasing community, population, planning and environmental pressures.

Many different groups and authorities have an interest in the issue of wastewater in the Dandenongs, but there is no one body responsible for moving the issue forward. The Shire has recently received funding from the Department of Human Services, which is intended *to stimulate new developments and creative approaches to municipal public health planning using the new Framework, Environments for Health*, as a demonstration project for Councils across Victoria.

Council has taken the opportunity to use this funding to assist in development of an integrated approach to the issue of wastewater management in the Dandenongs, providing solutions to protect and preserve this significant area. This project is entitled: *Integrated Planning and Health: Wastewater Management in the Dandenongs*.

## Purpose of this Project

The issue of wastewater management in the Dandenongs involves a wide range of stakeholders including State and Local Government, Statutory Corporations, environmental groups, community and business.

**The purpose of the Project is to gain commitment from all of these key stakeholders to the development and implementation of a sustainable Wastewater Management Strategy for the Dandenongs.**

This process will detail sustainable solutions which will reduce the negative impacts on the water quality within the streams and catchments of the Dandenongs and improvements to the health and wellbeing of the community and environment.

## Purpose of this Paper

**The purpose of this Background Paper is to provide the basis for discussion at a stakeholder Workshop.** It provides a broad understanding of the scope and complexity of the project, identifies key topics for discussion and invites stakeholder contribution in preparation for the workshop.

The Workshop will be convened on 14 May 2003 to:

- discuss and document each stakeholder's issues pertaining to wastewater management in the Dandenongs, and
- determine an agreed process for all stakeholders to participate in the development of a Wastewater Management Strategy.

## Scope of the Project

### Where?

The Dandenongs are a unique urban fringe and rural environment on the eastern margin of Melbourne and home to around 48,000 people. They comprise 5 urban fringe suburbs and fifteen townships as well as bushland living areas and are characterised by steep slopes, national and state parks with significant flora and fauna, extensive tourist venues and facilities and intensive farming.

See the map in Attachment One which depicts the area covered.

### What is Wastewater?

Wastewater is waste generated by domestic, commercial and industrial activities including toilet, bathroom, clothes washing and kitchen cleaning activities and treated effluent from sand filters and package treatment plants. Wastewater contains high levels of microorganisms and chemicals that are quite capable of causing human illness. This waste is either transported away from the property for treatment (centralised sewerage system) or treated on-site via a domestic wastewater system such as a septic tank and effluent disposal trench. This general definition obviously includes "black water" or sewage which is waste from toilets, and "grey water" or sullage which comprises other household wastewater.

### Why now?

Wastewater issues in the Dandenongs are becoming increasingly important as a result of increasing community, population, planning and environmental pressures.

Refer to Figure 1 for the general threats posed by wastewater and the related impacts throughout the Shire. Later sections of the paper detail the specific threats and related issues of wastewater in the Dandenongs.

Threat	C a u s e	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 (high rates of nitrogen & phosphorus from surface runoff) Pathogens (including high e.coli) Odour Visual amenity Oxygen depleting material Local land degradation Pollution of water courses (including high levels of faecal coliforms)
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
Untreated off site sullage discharge	Poorly maintained system: Sand filter not functioning Sand filter bypassed to stormwater Septic tank full	Nutrients & pathogens (high rates of nitrogen & phosphorus from surface runoff) 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 (including vegetation die-back) Increased risk to publichealth
Re-use of wastewater	Allowed re-use Low water supply Poor management by individual occupants (domestic, commercial, industrial premises)	Pathogens Odour

**Figure 1: Generic Wastewater Threats** (Adapted from J. Smith, Model Municipal Domestic Wastewater Management Plan; MAV, 2001.

## Local Sewerage Infrastructure

The Shire of Yarra Ranges estimate that as of 2003, there are at least 10,000 unsewered households in the Dandenongs, and of these, 7,350 households have been on the metropolitan backlog sewer program since the 1970s. There are no plans to commence sewerage works in the Dandenongs in the next 25 years.

The Sewer Backlog Program was commenced around 1973/4 by the Melbourne Metropolitan Board of Works and coincided with legislative changes requiring developers to provide reticulated water and sewer systems to any new subdivisions within the metro area.

All *Residential C & D* subdivisions approved before this date were considered backlog and the water and sewerage systems for these subdivisions were to be generally provided via metropolitan wide rates. Specific areas could be serviced ahead of the program if residents were willing to participate in a scheme (Sect 74 & 142a of *MMBW Act*).

By the early 1990s most of Melbourne's backlog program was completed. The majority of remaining Sewerage Backlog properties are in the Yarra Valley and Dandenong Ranges. These properties, particularly in the Dandenong Ranges, are exceedingly difficult and costly to sewer.

The issue of Sewer Backlog was included as a general condition in the Operating Licence of the retail companies (Section 7) as part of their Community Service (non-commercial) Obligations. Also, as part of the original licence the Retail Companies were required to publish an annual Backlog Program. However, the Office of Water Reform did not specifically include the requirement to complete the Backlog program within a specific timeframe as was the case for issues such as Water Quality.

## Who are the stakeholders?

There are many organisations with statutory responsibility for aspects of managing wastewater. A full listing of agencies and authorities, the key legislation and relevant legislative framework is provided in Appendix One. The key stakeholders are:

- **The local community** - Those who live and work in the area – the local community - have a strong stake in the current and future management of wastewater in the Dandenongs. These include local resident and environmental groups (including Upper Yarra and Dandenongs Environmental Coalition - UYDEC), local public health representatives, local tourism authorities and Ward Councillors.
- **Yarra Valley and South East Water** – the “retail” water companies which are responsible for providing local drinking water supply and wastewater (sewage) disposal systems to metropolitan customers;
- **Melbourne Water** – the “wholesale” water company that provides bulk water and wastewater services to the “retail” companies and manages the regional stormwater drainage system and waterways in Metropolitan Melbourne;
- **Southern Rural Water (SRW)** – is the trading name of the Gippsland and Southern Rural Water Authority, which is a statutory rural water authority established under the provisions of the Water Act 1989. SRW is responsible for rural water supply across the entire southern part of Victoria, from the Great Divide to the coast.
- **Department of Infrastructure** – the state government department which coordinates long term infrastructure planning for Victoria and Victorian Government agencies;

- **Department of Sustainability and Environment** – the state government department responsible for:
  - Catchments and Water
  - Forests Service (including Forestry Victoria)
  - Parks Flora and Fauna
  - Land Victoria
  - Greenhouse Policy Unit
  - Water Sector Development Group (under development) – major group that will drive the implementation of the Government’s election commitments in the water sector, and manage related **policy and program initiatives**.
- **Parks Victoria** – a statutory authority which reports to the Minister for Environment and Water. It is responsible for the management of Dandenong Ranges National Park and Silvan Reservoir Park.
- **VicRoads** – is fully responsible for managing highways and tourist roads throughout the municipality. Funding is provided to the Shire of Yarra Ranges by VicRoads for managing, maintaining, upgrading, and extending the declared road network. These responsibilities includes road drainage.
- **Shire of Yarra Ranges** – the Council has a number of responsibilities relevant to the issue :
  - under the Environment Protection Act 1970, Council operates a permit system, which controls the installation, maintenance and monitoring of domestic wastewater disposal systems (ie, those that produce less than 5,000 litres per day). Council also provides educational material on the use and maintenance of waste water systems;
  - under the Yarra Ranges Planning Scheme and the Planning and Environment Act 1987, Council has responsibility for developments approvals;
  - the Shire is responsible for managing the local road and stormwater network throughout the municipality; and
  - under the Heath Act 1958, the Council is obligated to investigate complaints in relation to the public health concerns associated with wastewater discharges.
- **Environment Protection Authority (EPA)** - Under the Environment Protection Act 1970 the EPA approves the type of onsite systems that may be installed in Victoria , via a 'certificate of approval system', and is responsible for the formulation of State Environment Protection Polices (Waters of Victoria) which set out the requirements for managing domestic waste water. They also approve under licence agreement, disposal systems that treat more than 5,000 litres of waste water per day.

Currently, the **Environment Protection Authority** and the **Municipal Association of Victoria** are working with Local Government to develop a Model Domestic Wastewater Management Plan. The outcome of the trial will inform the development and implementation of legislative reforms proposed by government.

## Wastewater in the Dandenongs - Topics for Discussion

### Topic: Local community concerns

Local community concerns in the past have included environmental risk, controls on inappropriate growth and costs of connection to individuals. Addressing these and other concerns have significantly increased the complexity and cost of this project and has lead to significant delays in providing suitable solutions.

While these issues are still important to the local community there is growing concern about the adequacy of existing septic systems, issues with storm water management and their detrimental impact on the local environment and water catchments.

The local community has become vocal to Council regarding these concerns as evidenced during the community consultations held in late 2002 as part of the revision of Council's Vision 2020 – Community Plan.

#### **Specific Stakeholder Comments relating to this issue:**

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

**Topic: Outdated, inadequate and failing infrastructure**

Around 12.7 megalitres of wastewater is discharged into septic tank systems in the Dandenongs daily. This is equivalent to 13 Olympic sized swimming pools.

Until recently, septic tank design did not take account of soil type which is an issue in the Dandenongs. Due to the age of tanks, there are many cracked and leaking septic tank systems. In addition, people are often unaware of the appropriate management of their septic systems and, in particular, the need to have them regularly emptied.

**Specific Stakeholder Comments relating to this issue:**

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

**Topic: Current and growing degradation of environment**

Although further research needs to be done on nutrient tolerances of the native and indigenous vegetation and in-stream flora and fauna in the Dandenongs, there is significant anecdotal evidence that high nutrient loads contained in waste water runoff is having a negative impact on their survival. This is particularly important as a number of indigenous flora and fauna species are regionally significant and some are also threatened.

Poor water quality is one of the threats to the endangered Dandenong Amphipod, the Sherbrooke Shrimp, and also for other macro invertebrates in the Dandenongs. There are a variety of sources for high nutrient levels in the streams and creeks of the Dandenong Ranges with septic discharge being one of these.

**Specific Stakeholder Comments relating to this issue:**

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

## Topic: Waterways and water quality

Waterways include creeks, streams, rivers, lakes and wetlands.

Waterways are used for a range of recreational activities such as swimming, boating and fishing, as well as for irrigation of agricultural areas and as a source of drinking water in some non-urban areas.

Overloaded or malfunctioning septic systems can increase the levels of pathogenic organisms and nutrients which infiltrate into waterways. This wastewater flowing into our waterways and bay environments has a detrimental effect on the water quality, and also has significant public health ramifications. Poor street drainage can also allow nutrient enriched stormwater to stagnate, causing odours and posing health risks for the public.

Poor water quality in our waterways causes declines in flora and fauna values locally and contributes to the regional problems associated with the wider Yarra and Westernport Catchments.

While dilution is not an acceptable solution to the problem of poor water quality, high rainfall such as occurs in the Dandenongs, can alleviate water quality impacts through dilution, in the short term. Further water quality monitoring needs to be undertaken on a localised catchment and a broader scale to draw the linkage between waterway quality and impacts from wastewater.

### **Specific Stakeholder Comments relating to this issue:**

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

**Topic: Public health**

Water is an important resource in terms of its quantity and quality as both drinking water and water for domestic and recreational uses. From the public health perspective it has always been critical to protect water used for drinking and recreational purposes from contamination by wastewater. Bacteria, viruses and chemicals are prevalent in wastewater and effluent (Reneau et al 1989 in J. Smith, *A Literature Review of the Public Health and Environmental Impacts of Domestic Wastewater*, 2002) and if they contaminate drinking water or recreational water they will cause illness.

Waterways are a source of drinking water supplies. Illnesses are contracted from effluent contaminated water include: gastroenteritis, shigellosis, giardiasis, cryptosporidiosis and hepatitis. There is also a significant risk of illness if people come into contact with contaminated water. Illnesses include ear and eye infections and respiratory infections. (J. Smith, *A Literature Review of the Public Health and Environmental Impacts of Domestic Wastewater*, 2002)

***Specific Stakeholder Comments relating to this issue:***

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

## Topic: Landslip

The steepness of the slopes and geological formations combined with heavy rainfall across the Dandenongs means that the area is susceptible to landslip events. The steep slopes make most soil types problematic in retaining wastewater. Loading of soils on the steep slopes with wastewater can accelerate landslip potential. Geotechnical Consultants, Coffey and Partners, have mapped landslip zones into high, medium and low regions with corresponding restrictions of development in these areas.

"On sloping sites, excess water may act to destabilise the slope if allowed to concentrate on the surface or, more significantly, if it is allowed to enter the ground and build up groundwater pressures." (Coffey and Partners International Pty Ltd, *Yarra Ranges Landslip Study*, 1999)

This geological structure presents three main challenges for effective wastewater management solutions:

1. The loading of soils on steep slopes with wastewater can accelerate landslip potential.
2. The steep slopes make most soil types problematic in retaining wastewater.
3. The topography and sensitive environment of the Dandenongs increases the costs of installing reticulated sewer systems

### ***Specific Stakeholder Comments relating to this issue:***

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

**Topic: Tourism**

Tourism is critical to the economics of the area. Environmental degradation, open sullage and unhealthy recreational water will have detrimental effects on the future of tourism and on the local economy.

In 2001, 531,000 tourists stayed for around 1.3 million visitor nights, or for an average stay of 2.4 nights. (National Visitor Survey 2001, International Visitor Survey 1999, Bureau of Tourism Research). Over two thirds of these visitors were on holiday. Additionally, there were 2.4 million day trip visitors to the region.

The rapid growth of tourism has exacerbated some of the problems of inadequate (wastewater) infrastructure.

**Specific Stakeholder Comments relating to this issue:**  
*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

## Topic: Growth and development

Some residents are concerned that addressing wastewater in the Dandenongs may promote further residential and commercial development in the area. However, inferior infrastructure is not an appropriate solution to managing growth sustainably in the future.

The planning policies for the region have consistently emphasised the need to protect the conservation values of the Yarra Valley and Dandenong Ranges. This has required a strict limitation on the opportunities for urban growth.

### ***Specific Stakeholder Comments relating to this issue:***

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

**Topic: Costs of infrastructure provision**

The topography and sensitive environment of the Dandenongs means that wastewater management solutions are more costly than those in many other parts of Melbourne. For example, the cost of installing reticulated sewer systems can be up to five times the cost of flatter areas.

As a “one size wastewater system is not likely to fit all” in the Dandenongs, a range of tailored solutions will need to be considered. For example, traditional trench based systems may be appropriate for the townships of Mount Evelyn, Montrose, Belgrave, Tecoma and Monbulk, but not in the more mountainous areas. It is probable that these local solutions for mountainous areas will be equally expensive. Further investigation of their feasibility and cost is needed to determine effective wastewater management solutions for the Dandenongs.

The anticipated high costs for the provision of an effective wastewater management system is the most significant barrier. This will require all agencies to commit to exploring options for cooperatively funding agreed solutions. The cost to the local residents of any wastewater management systems, and their capacity to meet these costs must be a consideration.

**Specific Stakeholder Comments relating to this issue:**

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

**Topic: Multiple stakeholders and multiple responsibilities**

As noted earlier, there are many organisations with some responsibilities for wastewater management. A shared commitment is needed to improve the situation.

***Specific Stakeholder Comments relating to this issue:***

*You are invited to contribute your comments to this issue in the table below.*

Stakeholder Group/ Organisation:	Comment:

## How do we move this forward?

For effective wastewater management in the Dandenongs we need:

- political, agency and community ownership of the issue of wastewater management;
- commitment to sustainable solutions;
- to clarify and integrate the roles and responsibilities of stakeholders;
- stakeholders working together to plan agreed actions and to resource their implementation;
- resources available to research and cost the most appropriate systems/solutions for particular geographical areas and their local communities;
- resources available to install these systems/solutions; and
- an informed community, aware of how wastewater works on their own properties and surrounds, and their role in managing it effectively.

**APPENDIX ONE -  
Map of the relevant Dandenong Ranges area**

