

**LIQUID WASTE
MANAGEMENT PLAN
2005**

LIQUID WASTE MANAGEMENT PLAN

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Part 1 – Introduction

1.1 What are liquid wastes?

Liquid wastes¹ are those that are generated in, or converted to, a liquid form for disposal. For Wellington City Council this relates to sewage and stormwater.

Sewage in Wellington city is collected by a network of pipes discharging to treatment facilities at Moa Point, Karori and Porirua. It includes contaminated water from residential, commercial and industrial activities. The Council's sewage collection and disposal network includes more than 1,000km of pipes and tunnels, 62 pumping stations, two treatment plants with a share in a third plant, a sludge de-watering plant and a composting plant.

Stormwater is rainwater run-off from “hard” surfaces such as roofs, roads, paths and ground surfaces, as well as the ground water that flows in streams. The Council operates 683km of stormwater pipes and tunnels through the city and there are seven major streams.

1.2 Purpose of the Liquid Waste Management Plan

The Liquid Waste Management Plan meets requirements set out in the Local Government Act 2002 and the New Zealand Waste Strategy 2002. It also builds on the strengths of the existing infrastructure in the city by laying a sustainable path for future challenges.

1.2.1 Local Government Act 2002

Under the Local Government Act 2002, Council is required to complete a waste management plan based on provisions set out in the Local Government Act 1974. In 2003 the solid waste part of the plan was agreed to by Council and this document is the second and final part.

Section 539 of the Local Government Act 1974 states the primary objective of a waste plan is waste reduction, followed by (in order of importance) waste reuse, recycling, recovery, treatment and disposal. Section 538 of the Act also requires that every territorial authority promote effective and efficient waste management and:-

- a. have regard to environmental and economic costs and benefits for the district and
- b. ensure that the management of waste does not cause a nuisance or be injurious to health.

1.2.2 New Zealand Waste Strategy 2002

The New Zealand Waste Strategy 2002 covers solid, liquid and gaseous waste, and recognises that moving *towards zero waste and a sustainable New Zealand* is a long-term challenge. It has three core goals:

- lowering the social costs and risks of waste
- reducing the damage to the environment from waste generation and disposal

¹ New Zealand Waste Strategy (Ministry for the Environment, Local Government NZ) 2002
Sustainable Wastewater Management (Ministry for the Environment) 2003.

- increasing economic benefit by more efficient use of materials.

Stormwater, which receives a range of wastes, is not specifically dealt with in the New Zealand Waste Strategy.

1.2.3 Future Challenges

The Wellington City Council sewer and stormwater system are operating effectively and efficiently under current standards as set out under the Resource Management Act 1991 and as required by Greater Wellington Regional Council consents. However, the city faces several challenges over the next 10-15 years as new legislative requirements come into place, as Council seeks to continually improve its management of assets and as the community's expectations about the environment and sustainability change. Such challenges need to be addressed and include determining:

- the desirable stormwater quality standards for the natural waters in the city (that is, Wellington harbour, south coast and streams)
- the acceptable frequency and extent of sewage overflows into natural waters
- how sewage sludge will be disposed of in the future
- the most effective and efficient way to manage trade waste.

1.3 Objectives

Given the nature of liquid waste, the concept of 'zero liquid waste' is not a realistic expectation in the foreseeable future and thus liquid waste cannot be regarded the same way as solid waste. This means that Council will have a secondary, complementary, objective to those set out under the Local Government Act and the NZ Waste Strategy and that is to ensure that we **manage liquid waste in an environmentally, economically, socially and culturally sustainable manner**. This policy document sets out the framework from which we can ensure that waste recovered, treated and disposed of, not only meets environmental standards but also considers the views of the community.

This plan will have a five year focus but will need to set a longer term philosophy for future actions, at least 10-20 years, whilst not losing sight of what is practically achievable.

1.4 Guiding principles for the management of liquid waste

The principles underlying the Liquid Waste Management Plan and actions are:

1. *Sustainable development*

All members of society are responsible for looking after the environment and for the impact of wastes they produce. A sustainable development approach will be undertaken in making future decisions with consideration given to environmental, economic, social and cultural impacts.

2. *Liquid waste is a resource*

This recognises there are beneficial reuse opportunities for both sewage and stormwater and possibly waste to energy opportunities whilst recognising that the viability of any systems will need to be explored.

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The reuse (or recycling) of sewage and stormwater for the purposes of water conservation is not considered as part of this Plan. Any reuse project must be considered from a wider water conservation perspective and on a regional basis to ensure any benefits are fully realised. It is likely the Greater Wellington Regional Council and other local authorities in the region will look to address water demand issues in 2005 and water conservation will be integral to this.

3. *Integrated solutions*

Potential solutions will take into account systems that, if possible:

- maximise use and benefits of natural catchment areas
- are planned in conjunction with other infrastructural developments
- are as flexible as possible
- fit with community plans and views.

4. *Maori and iwi values are incorporated*

Recognise and provide for the kaitiakitanga or guardianship role of local Iwi as defined in the 1991 Resource Management Act, including

- incorporation of Maori environmental values and management processes
- cooperation between the Council and Iwi in developing natural as well as pragmatic modern solutions to liquid waste problems
- relevant monitoring mechanisms which address the marine and freshwater environs including water resources.

5. *Partnerships*

Where appropriate, a co-operative approach to liquid waste planning will be taken with other regional territorial authorities, the Greater Wellington Regional Council, local Iwi and the community to achieve joint priorities.

6. *Polluter pays*

This reflects the concept that those who produce waste are responsible for its disposal (or otherwise). In practice, this will only be relevant for trade waste at this stage. There is currently no legal mechanism for Council to implement user charges for sewerage as 'flow' would need to be measured by proxy (based on water consumption) for which universal water metering would be required. It is also not possible to accurately determine the individual sources of stormwater pollution at this stage.

1.5 Linkage to other WCC Strategies and documents

To achieve our *Creative Wellington – Innovation Capital* vision Council has a core role to look after the city's infrastructure, including its sewerage and stormwater system.

The Liquid Waste Management Plan will contribute to achieving the following strategic outcomes in the Council's Resources and Waste Key Achievement Area:

6.3 Reducing Waste

Reducing quantities of waste entering the waste stream where an increasing volume is reused, recycled or recovered.

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6.4 Sustainable Disposal

All waste is disposed of in an environmentally sustainable manner ensuring the protection of people and ecosystems.

This Plan further recognises the importance of liquid waste planning in the long term. It takes a broad examination of Council's levels of service for the sewerage and stormwater asset together with future environmental standards. The Plan links closely to the *Sewerage and Stormwater Asset Management Plans* as they provide the detail on how each asset is managed to meet those levels of service.

The *Solid Waste Management Plan* was agreed to by Council in August 2003. As the Liquid Waste Management Plan will impact on the organic (biosolids) waste stream from sewage and any waste-to-energy action initiatives, there will be areas where the two plans link. Appendix 1 outlines the linkages between the liquid and solid waste plans.

Other related Council work/documents include the:

- Flood Protection Strategy 1993 – sets the standards that Council wishes to achieve for the protection of buildings and land from flooding
- Catchment Management Plans – detailed analysis of the flooding and potential flooding in a particular catchment, environmental risks and mitigation options (seven plans have been completed to date)
- Drainage Rehabilitation Strategy 1993 – Council's strategy for the renewal of sewerage and stormwater pipes that reach the end of their service life
- Sewage Pollution Elimination Project 1993 – Council's strategy to improve the quality of the waters in the harbour, south coast and streams by managing and improving the sewer system.
- Bush and Streams Restoration Plan 2001 – sets Council's targets for the management of the city's natural environment, including water quality
- Sustainable Development Strategy 2003 – includes principles for adopting sustainable practices
- Bylaws – includes the Trade Waste, Collection and Transportation of Waste, Water Courses and Earthworks bylaws.

Part 2 – Sewage: Where we are now and required actions

Sewage is produced by residential, commercial and industrial properties in the city. In the reticulated area of the City it is collected and treated at the Moa Point, Western, and Porirua City Treatment Plants. In the non reticulated areas, septic tanks are used for sewage disposal.

Commerce and industry account for 20% of total sewage treated². Overall the quantity of sewage produced is influenced by population growth. The projected population increase of 15% over the next 20 years will not have a significant impact on transport and treatment capacity but will be included as one of the considerations in the planning of future projects as they arise (such as the Northern Growth Framework).

Sewage has two major features, the quantity and the load (or “strength”). The wet weather quantity is determined by inflow (of stormwater) and infiltration (of ground water) and domestic usage. The total average dry weather volume in 2002 made up 90% of flow treated at Moa Point.

A recently acquired consent requires Council to investigate the possibility of reducing flows in the sewerage system by carrying out works to decrease the quantity of inflow of stormwater and infiltration of ground water (known as inflow and infiltration or “I/I”).

The load or “strength” is primarily influenced by population, trade waste discharges and to a lesser extent, domestic insinkers/waste disposal units. Trade waste makes up 10-12% of the total wastewater treated at Moa Point. Of this, commercial insinkers account for less than 1%.

2.1 Sewage Treatment

Objective

To comply with the Resource Management Act 1991 for the treatment of all sewage.

Current Situation

All sewage discharged to the sewerage network currently receives treatment to internationally high standards. The Moa Point Treatment plant and the Western Treatment Plant are operated under contract to WCC by United Water. These operate within the conditions of their resource consents although there have been un-consented overflows at Moa Point due to operational failures. The “Baseline Assessment of Environmental Effects” found that the environmental effects of the Moa Point Treatment Plant discharge posed a minimal risk to public health, shellfish gathering and recreation. An Assessment of Environmental Effects for the Western Treatment Plant is to be carried out within the next year.

By international standards Wellington has ‘weak’ sewage in terms of contaminants due to the relatively small industry base. The city has little industry with the main

² Based on 85% water consumption

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trade waste contributor being the Taylor Preston abattoir. In 1997 a pre treatment plant was commissioned at the abattoir to treat its effluent, however, the effluent remains an ongoing cause of concern (see trade waste section 2.2 below).

While the Local Government Act sets a target for reducing waste volumes, this is not applicable to sewage as the biological load is population based. Reducing peak flows in terms of volume and having a greater base flow may lead to better efficiency in treatment and lower energy costs, however such a decrease would only be minor. This is because under the existing management contract for the treatment plants, the cost of treatment is based on a calculation that considers both the flow and the biological load.

Those properties not connected to the sewerage network rely on individual septic tanks. The risks and future management regime of these tanks are being addressed through the Assessment of Water and Sanitary Services (to be completed in 2005).

Overflows

Sewage flows vary with rainfall, with wet weather having a flow many times the dry weather flow. The existing pipe network and treatment facilities have sufficient capacity for dry weather flows but during wet weather, some overflows occur. These overflows are either diluted sewage overflowing into Cook Strait via the treatment plant or from the sewerage system to the stormwater system and then to natural waters.

Refer to section 3.3 regarding the effect and possible mitigation of sewage overflows.

Moa Point and Western (Karori) Treatment Plants resource consents

The major operational resource consents with Greater Wellington Regional Council come up for renewal in 2006 (Western Treatment Plant) and 2008 (Moa Point Treatment Plant).

Prior to these consent renewal applications being submitted, works are required on inflow/infiltration (I/I) as required by a recent consent granted for the bypass discharge of effluent at the Moa Point Treatment Plant.

Investigation work carried out as part of the Council's Interceptor Upgrade project (Project CX029) has identified areas of the City with significant I/I problems. The Central Business District, Newtown and Berhampore all rated poorly, but the issue is not only isolated to these catchments.

Council now needs to evaluate how it can manage I/I volumes in a holistic manner across the entire City. This should be carried out under a long term plan structured around benefits and costs, with realistic expectations on what level of I/I removal is achievable and how much Council is prepared to pay to manage it.

This first phase of this work has been completed with the extent and scale of the problem identified. The second phase, a management plan is currently underway and is due for completion by 30 September 2005.

The Council's contract with United Water International Limited for the management of the Moa Point and Western Treatment Plant expires in 2019. Prior to then the options and alternatives for the long term treatment of sewage in the city will need to be considered.

Porirua Treatment Plant

The sewage from the northern part of the city discharges to the Porirua City Treatment Plant under an agreement with that Council (Wellington City owns 27.6% of the Porirua Treatment Plant.) While using the Porirua Treatment Plant is still the most effective and efficient method of disposal for the northern part of Wellington, this agreement is being reviewed because:

- there is a need to increase the existing allocation as Wellington City is already using the agreed share and the recent population growth in the northern part of city means this share will be exceeded in the next financial year
- use of the associated sludge waste needs to be determined as the Spicers Landfill, where the sludge is currently disposed of, is expected to close within 10-15 years.

Required Actions

- Continue to treat all sewage to best international practice and in accordance with the Resource Management Act 1991
- Undertake preparatory works to ensure new resource consents will be attained when the existing consents expire in 2006 (Western Plant) and 2008 (Moa Point). This includes an investigation into options to decrease the current inflow and infiltration rates (see also 3.3 Sewage Overflows)
- Review treatment options for the Moa Point and Western Treatment Plants in approximately 2015 to ensure an appropriate treatment and disposal method is in place for when the current management contract expires in 2019
- Renegotiate the existing Porirua Treatment Plant contract with Porirua City Council by end of 2005. Seek to increase the Wellington city allocation of capacity and establish an agreement for the disposal of sewage sludge
- Implement the outcome of the Assessment of Water and Sanitary Services for septic tank management as detailed in that document when completed.

2.2 Trade Waste

Objectives

To reduce the quantity of trade waste, its pollutant load and to ensure disposal methods are safe.

Current Situation

Trade waste comes from industry, businesses and public institutions. It includes discharges from electroplating, food and drink preparation (including supermarkets), laundries, educational and research institutes. Trade wastes are discharged to the wastewater system and conveyed to the treatment plants. Some trade wastes receive pre treatment before discharge to sewer. At the Moa Point Treatment Plant trade waste comprises 10-12% of the total flow and approximately one-third of the trade waste flow comes from the Taylor Preston abattoir.

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Trade waste can potentially include materials that strip the oxygen out of the sewage, (measured as biochemical oxygen demand (BOD)³, produce obnoxious and acidic gases, suspended solids that clog up the system, metals, pesticides, insecticides, solvents, grease, oil and fat. These all influence the biological treatment process at the treatment plants, present health risks for sewage workers, can damage the pipe network and can create potential problems with sludge disposal. Therefore there are incentives to minimise trade wastes entering the sewerage system.

There has been a positive and measurable reduction in trade waste volumes over the past five years through consent holders with water meters being more conscious of the cost of water. Taylor Preston in particular have considerably reduced the material content of their waste through the installation of a pre treatment plant and through recovery and reuse programmes to a point that their percentage BOD and suspended solids contribution to the overall influent at Moa Point has noticeably reduced.

Through an agreement between the Council and the operators of the sewage treatment plants Council pays a tariff for flow and BOD above a certain level. Any discharge that is non-compliant with its trade waste consents could have a significant economic impact on the tariff paid. Given the volume of trade waste it produces, the Taylor Preston abattoir is still the largest risk. Currently there are some issues of dispute between Council and Taylor Preston that are being progressed.

The Wellington City Council Trade Waste Bylaw 2004 is designed to protect sewer workers and the treatment process/sewage network from damage. The Wellington City Collection and Transportation of Waste Bylaw ensures trade and liquid wastes are collected and transported safely in compliance with Council's licensing system. This bylaw is being reviewed in 2005.

The New Zealand Waste Strategy sets a target for all holders of new or renewed trade waste consents to have in place a recognised waste management and minimisation programme. As the first step to achieving this target, Council will, through the Trade Waste Bylaw, ensure that holders of high volume, fast flow or complex trade waste discharges will have such a programme in place. Consent holders of a smaller scale will also be required to have a waste programme but the benefits of having a programme against the costs of imposing it and the practicalities involved will first need to be assessed.

The NZ Waste Strategy also requires that full cost recovery is achieved by councils. This will encourage dischargers to make efforts to minimise materials discharged in their waste. The Trade Waste Bylaw includes a provision to charge for the disposal of trade waste based on user charges and Council will need to consider issues around implementing this.

Compost is made by Living Earth Limited with a resource consent controlling various levels of materials present. Trade waste activity can affect the levels of contaminants, metals, hydrocarbons, pesticides, insecticides etc present in the sludge. Reductions in the contaminants could lead to a possible increased use of biosolids and this will be considered as part of the biosolids use review (see section 2.3 below).

³ Biochemical oxygen demand – the quantity of oxygen used in the oxidation of organic matter.

Required Actions

- Determine appropriate fees and charges for the discharge of trade wastes and implementation of polluter-pays charging policy issues (2005)
- Continue to minimise the impact on the treatment process, disposals, pipe network and workers through the Trade Waste Bylaw
- Ensure the review of the Collection and Transportation of Waste Bylaw promotes safe disposal practices (2005)
- Ensure that trade waste consent holders having high volume, fast flow or complex trade waste discharges have a waste management and minimisation programme in place by December 2005 and ensure their effective implementation
- Evaluate the benefits, costs and practicality of small and medium sized trade waste consent holders to have a waste minimisation programme in place by December 2007.

2.3 Biosolids

Objective

To ensure that sustainable, long term and beneficial reuse methods for the disposal of biosolids are adopted.

Current Situation

Council currently contracts Living Earth Limited to beneficially reuse sewage sludge. The sludge is mixed with green waste and made into compost, mulch and gardening mix and is available for sale. This reduces the amount of waste disposed of at landfills thereby extending their life.

Council has invested significantly into biosolids/green waste composting, however the future economic and sustainable options for sludge disposal must be reassessed and decided upon. As stated in Council's Solid Waste Management Plan 2003, the primary focus is on ensuring the stability and viability of long-term beneficial reuse solutions, rather than on short-term and a significant increase in waste diversion. Potential options for future biosolids use will be evaluated taking into account the considerations below but also risks, impact on the environment, Iwi concerns and costs. Any changes to the existing compost plant will also affect the future planning of the Southern Landfill.

Sludge disposal and the future of bio solids require further investigation because:

- the 10 year contract with Living Earth Limited expires in December 2008
- Living Earth Limited are having some difficulty in finding a receptive market for this type of compost
- the current operational cost of this project to Council is \$2.04m per year, however alternative options are also likely to involve significant costs to Council
- sludge disposal from the wider area, at least Wellington City and Porirua City areas, should be considered as a whole and there may be potential to explore further regional beneficial reuse options
- the current treatment process does not present any obvious waste-to-energy recovery options

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- there are increasing public and private sector limits on discharges to land for example, by Fonterra
- the process that produces the bio solids produces quantities of centrate, a trade waste with high hydrogen sulphide and BOD which has downstream effects and there may be more sustainable processes that can be adopted.

Required Action

- Review the current biosolid disposal process in 2005, evaluate alternative options and establish the timeframe to implement the agreed preferred option.

Part 3 – Stormwater: Where we are now and required actions

All stormwater ultimately discharges to the sea via pipes and streams (and occasionally overland). Stormwater issues relate to either:

- Quantity – an excess of which causes flooding
- Quality – the pollution in the stormwater causes environmental damage. This pollution comes from a number of sources including:
 - Sewage entering the stormwater system
 - Heavy metals and hydrocarbons mainly associated with car use and combustion
 - Sediment and silt from erosion and developments
 - Litter

3.1 Flooding

Objective

To manage the effects of flooding by meeting Council’s agreed levels of service for flooding as articulated in the Stormwater Asset Management Plan. (see table below)

Level of Service for the Flooding of Property	
Land Use	Level of protection provided by New Infrastructure Design
Arterial roads, major community facilities related to essential services	1 in 100 years
Houses, commercial and industrial buildings, internal flooding	1 in 50 years (as per the Building Act)
Garages, sheds and unoccupied basements – internal flooding	1 in 10 years
Roads, active recreational area, access to property – safe use denied, damage to roads	1 in 5 years
Gardens, yards, passive recreation areas, flooding >150mm deep over more than 20 square meters	1 in 2 years

There will be circumstances where the cost of achieving these standards is very high in comparison to these benefits (e.g. to a limited number of properties). Achieving these standards will be subject to meeting acceptable cost benefit criteria. Council will also consider innovative methods to achieve outcomes and regulatory actions to minimise flooding hazards.

Current Situation

Parts of the city experience flooding at times of high rainfall. Council’s Stormwater Asset Management Plan sets out a process that systematically prepares Catchment Management Plans for at risk catchments taking into consideration flooding risk, ecological risk, health and safety and projected population growth. All viable options are considered and evaluated and any resultant works are prioritised and programmed for construction. This process is ongoing and at the current rate of one catchment a year will take many years to complete the plans and carry out the works required to achieve the above levels of service over the city.

Population growth and the associated increase in hard surfaces through increased housing development and landscaping also influences stormwater runoff quantities. These are taken into consideration in the catchment planning process and through normal pipe size determination. However, while stormwater pipes and structures are only replaced once in 80-100 years, the rate of infill and landscaping with hard surfaces can increase at a rate faster than this. Developer contributions would assist with the payment of upgrades but are not explored further in this Plan (Council is currently considering a Development Contributions Policy).

Required Actions

- Continue with the flood protection programme as outlined in the Stormwater Asset Management Plan
- Investigate the adoption of planning methods to limit or decrease the use of hard surfaces by either development or landscaping that influence stormwater runoff in conjunction with the Code of Practice for Urban Development review (by 2007).

3.2 Water Quality: General

Objective

To increase or preserve the amenity of the city and ensure public health standards are met by complying with all legislative requirements associated with the quality of stormwater runoff.

Current Situation

Receiving waters standards

The water quality standards for 11 of Council's largest catchments are determined by existing resource consents granted in 1993. The discharges in the Wellington City area are mostly compliant and work continues on the non complying discharges.

The current Ministry for the Environment and Ministry of Health guidelines used to monitor the quality of receiving waters are structured around public health issues and are not specifically designed to protect environmental or ecological values.

The standards are an adequate bottom line measurement but only take sewage contamination into consideration. Within the near future other factors such as heavy metals, hydrocarbons, land use issues, amenity and location will become more important, both to the public and through legislation.

There is also an issue about current resource consents conditions being set on a discharge by discharge basis. (Wellington has in excess of 200 stormwater discharges.) National and regional consideration is being given to setting standards on a catchment basis for multiple or all discharges taking into account a broader range of factors (as mentioned above) and based on land use and potential risk. The consultation process undertaken during the resource consent process will allow the public to assist with the setting of those standards.

Stream ecology

The ecology of streams is recognised as being imperative to the health of the stream. Therefore given that stormwater is discharged into streams, the quality of the

discharges needs to be monitored and controlled. Council has recently placed greater attention to the condition of the streams in the city, such as through the “Wet and Wild” Bush and Streams Restoration Plan (2001) and the Baseline Assessment of Environmental Effects (2004). This is also likely to be included in the Environmental Strategy (under development) and changes to the Council’s Code of Practice for Land Development to ensure future practices in the city do not degrade the city’s streams and receiving waters further.

Required Actions

- Assist with the current Greater Wellington Regional Council initiative to determine standards and monitoring regimes for receiving waters, taking into account public health, environmental and ecological factors
- Investigate the advantages of applying for catchment based stormwater consents as existing consents expire
- Consider including practices that do not degrade the city’s waterways in the Code of Practice for Land Development review (by 2007).

3.3 Water Quality: Sewage overflows

Objective

To increase or preserve the amenity of the city and ensure public health standards are met, by managing overflows of sewage to comply with the quality standards determined under the Resource Management Act 1991.

Current Situation

On occasions the volume of sewage being transported in the sewer pipes exceeds the capacity of the system. This normally occurs during wet weather but can also occur as a result of pipe or pump failure. As a consequence sewage escapes and overflows into the stormwater network, ultimately discharging to the natural waters - streams, the harbour or the coast.

The quality of stormwater discharging to the natural waters has improved considerably over the past 12 years due to the Council’s \$70m Sewage Pollution Elimination Project. Ongoing sewage pollution control will continue to be addressed through regular monitoring, investigation, repair and capital works, as managing pollution is an essential key driver for sewage works (as required by the Resource Management Act).

The discharge of sewage through wet weather overflows is covered at most sites by existing resource consents. These consents however will expire before 2013 and Council will need to have a plan in place when they expire. The emphasis in the future will most likely be on managing the whole catchment, with the risk of sewerage overflow being just one of the pollutants to be managed (see section 3.2 above).

It is prohibitively expensive to reconstruct the sewerage reticulation system so that it will never overflow. Although considerable effort goes into keeping stormwater out of sewerage, in practice it is not possible to ensure that every connection to the sewer system is a sewage pipe, and that every pipe joint is water tight. International

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industry standards call for sewer pipes to be sized to cope with a flow allowing for a “wet weather” flow that is 4.5 times the dry weather flow. And the more intense the storm, the more stormwater ends up in the sewer.

The current Greater Wellington Regional Council Freshwater and Coastal plans do not allow for the discharge of untreated sewage. It is a controlled activity and must be consented.

Existing resource consents require Council to investigate the options to control overflows of sewage (as mentioned in 2.1 Sewerage Treatment above). Council and stakeholders must decide how often this sewage is to be allowed to overflow into the natural waters. This will include looking at the ratepayer’s willingness to pay to bring down the frequency and reduce the volumes of these overflows. A factor in this decision making process is the possibility of treating the overflows as they discharge into natural waters and what standards the treatment must achieve.

It may be possible to increase storage in the network, or to pursue the reduction of inflow and infiltration (I/I) into the system but each of these has a considerable cost associated with implementation.

Council is currently applying for a change to the resource consent that requires the construction of a duplicate sewer tunnel under Mt Victoria. This reflects the desire by Council to look at these issues in a more holistic manner. Even if this application is successful, alternative works to decrease the incidence of sewer overflows will still be required.

Required Actions

- Evaluate options and costs to reduce the environmental effects of overflows, including the preparation of an Inflow/Infiltration Management Plan, from the sewage system in 2005.

3.4 Water Quality: Pollution from roads and paved areas

Objective

To manage the polluted runoff from roads and paved areas to ensure that water quality standards are not breached.

Current Situation

Vehicles travelling on roads leave residue from the wear of tyres and brake linings and the leaking of oil products. These get washed off in rain causing a build up of heavy metals and hydrocarbons in the stormwater system and natural waters. This runoff is now widely recognised as one of the major stormwater polluters.

Considerable research and investigation is being carried out to determine the effects of the run off and the risks it poses to the environment, but the most suitable and effective way to mitigate the problems has not yet been determined.

While polluted runoff from roads and paved areas does not currently necessitate resource consents it is highly likely to in the near future that they will as their impacts are more clearly identified and solutions determined. It is therefore important for

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Council to at least monitor the research in this area to ensure Council can identify and plan mitigation programmes before consents are required.

Required Actions

- Continue to monitor the effects on the environment of runoff from roads and paved areas
- Monitor and contribute to the research and mitigation work currently being carried out by central government and local authorities
- Investigate solutions to control/reduce the effects of the run off taking into consideration a wide range of receiving environments and the community's wishes.

3.5 Water Quality: Sediment and Silt

Objective

To decrease the quantity of sediment and silt that reaches the City waterways to a level acceptable to Greater Wellington Regional Council.

Current Situation

According to the Greater Wellington Regional Council, excessive sediment in watercourses is becoming one of the most significant water pollution issues in the Region having significant adverse effects on natural waters and aquatic ecosystems. The presence of sediment and silt in fresh and marine waters smothers the organisms that dwell in that water and changes the overall characteristics of it. This impacts on the water quality of natural waters and the fragile ecosystems they support more than previously thought. By volume, sediment is the biggest single water pollutant worldwide.

Sediment and silt in our waterways and stormwater network comes from:

- erosion that results from vegetation clearance
- erosion that eventuates when land is disturbed during development (earthworks)
- erosion due to high water flows in natural circumstances
- the silt and pollutants from roads.

The Greater Wellington Regional Council Soil Plan and the Freshwater Plan aim to maintain and enhance of quality of natural waters. Greater Wellington also has "Erosion Sediment Guidelines" that apply to bigger sites and guidelines for sediment control on smaller sites are under development.

The Wellington City District Plan manages the visual impact of earthworks and the Council's Earthworks Bylaw regulates earthworks to ensure they are stable. Council officers also work with officers from Greater Wellington to evaluate consent applications and advise on standards relating to sediment and erosion controls.

These tools aim to provide adequate controls, but the development of more steep sites in the city is resulting in substantial sediment loss causing silt problems.

The Council is also responsible for public drainage so there is a requirement to ensure best practice for the management of sediment is identified, applied and enforced. To achieve this, the review of the Council's Code of Practice for Land Development and

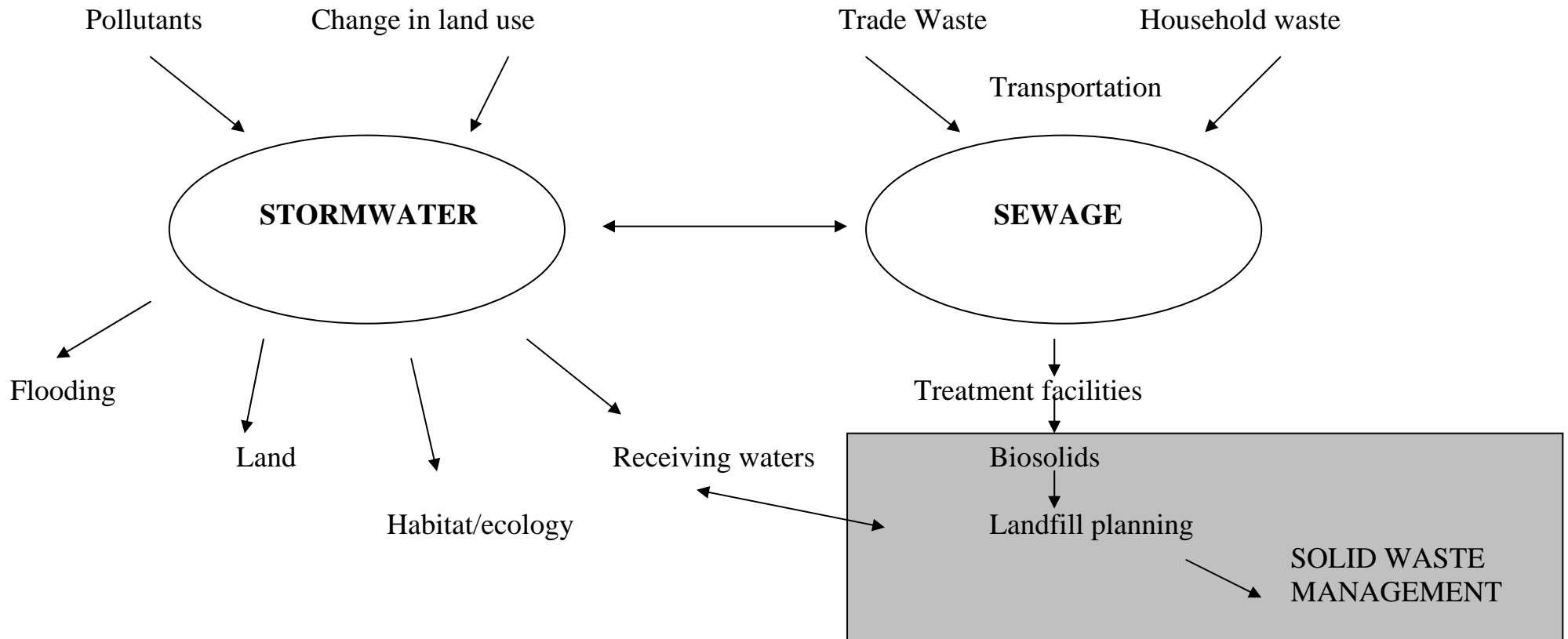
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the Earthworks Bylaw will examine such practices and how they can be applied to Council.

Required Actions

- Continue to work closely with Greater Wellington officers to ensure that best practice sediment controls are identified and implemented
- Ensure the review of the Wellington City Earthworks Bylaw addresses methods to achieve best practice for the management of sediment and silt (2005)
- Review the Code of Practice for Land Development to take into account ways to better cover the management of sediment by 2007.

Appendix 1: Liquid and Solid Waste Management Plan



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