

6.5 The Present Situation

6.5.1 Water Quality

Stormwater quality is currently being improved by:

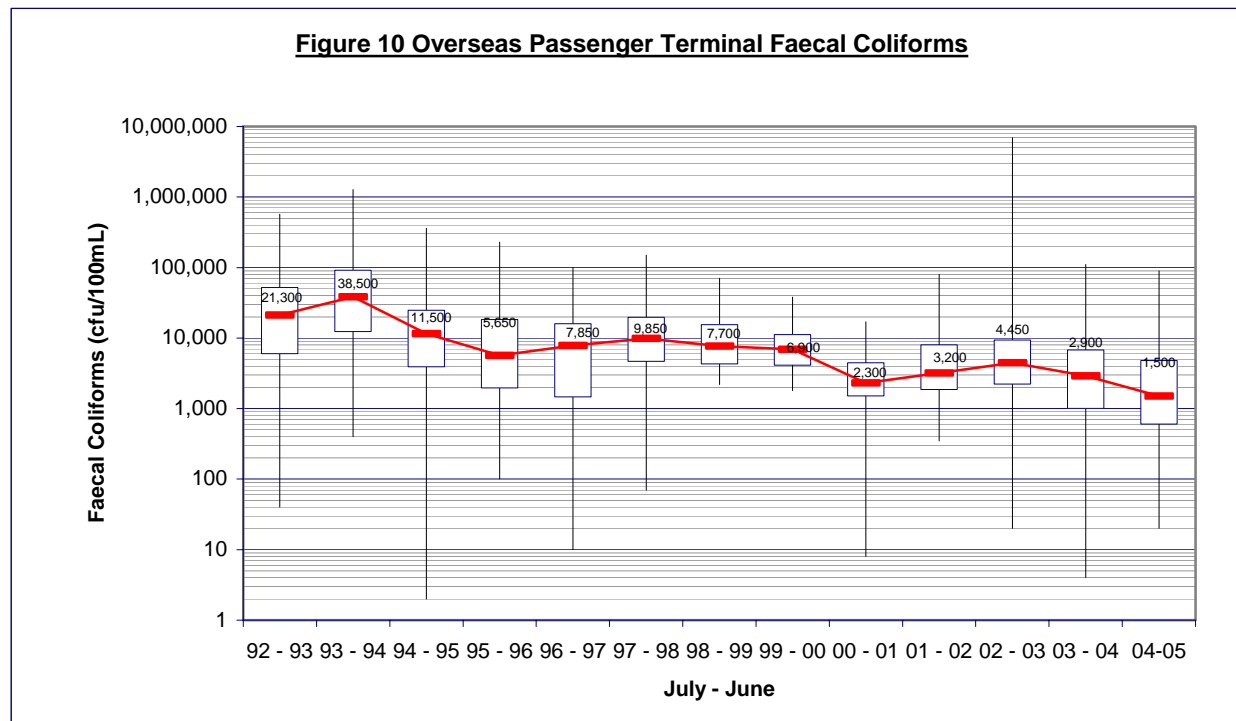
- The SPE project. The project is driven by the 11 resource consents for the discharge of wastewater-contaminated stormwater. The project calls for considerable works to be carried out on the wastewater system. The results to date have markedly improved water quality.
- The Lateral Policy 1993. A lateral is the private connection from a building to the public main. There are two distinct components of the lateral. The upper lateral is in private property, and the lower lateral is in legal public road. Council takes responsibility for the structural maintenance of the private laterals located in road reserve. The intention of this policy is to reduce stormwater pollution from wastewater leaking from private laterals.
- Beaches and Streams monitoring is carried out to determine the status and trends of water quality in the harbour and sea, streams and culverts. Some 80 sites, both fresh water and marine, are sampled on a fortnightly basis throughout the year. The samples are analysed for a variety of environmental performance indicators. These include *Faecal coliforms*, *E-Coli*, *Enterococci* and at some sites, heavy metals. The results of this monitoring form the basis of the pollution investigation work carried out by Council and are reported to the GWRC annually.
- Baywatch monitoring incorporating 22 water samples at 15 sites on Wellington's bathing beaches is conducted on a weekly basis from November to March in keeping with the MfE guidelines. The *Enterococci* results indicate that Wellington's bathing beaches generally meet MfE standards for contact recreation and that stormwater discharges are not having a significant adverse effect on receiving waters in this respect.

The results are assessed using various water quality guidelines for aquatic ecosystem protection, fisheries, and recreational water use. The water quality of the streams is variable, with generally better water quality either in, or in close proximity to, forested or relatively undeveloped catchments. The water quality of many waterways deteriorates progressively downstream as a result of run-off from more intensive land use, stormwater discharges, and localised pollution. In comparison with other urban stream systems Kaiwharawhara Stream ranks as one of the best

as it has significant regenerating bush areas lining it and significant work has been done on the discharges into the stream. Porirua, Makara, Karori, and Ngauranga Streams have the poorest water quality in the region.

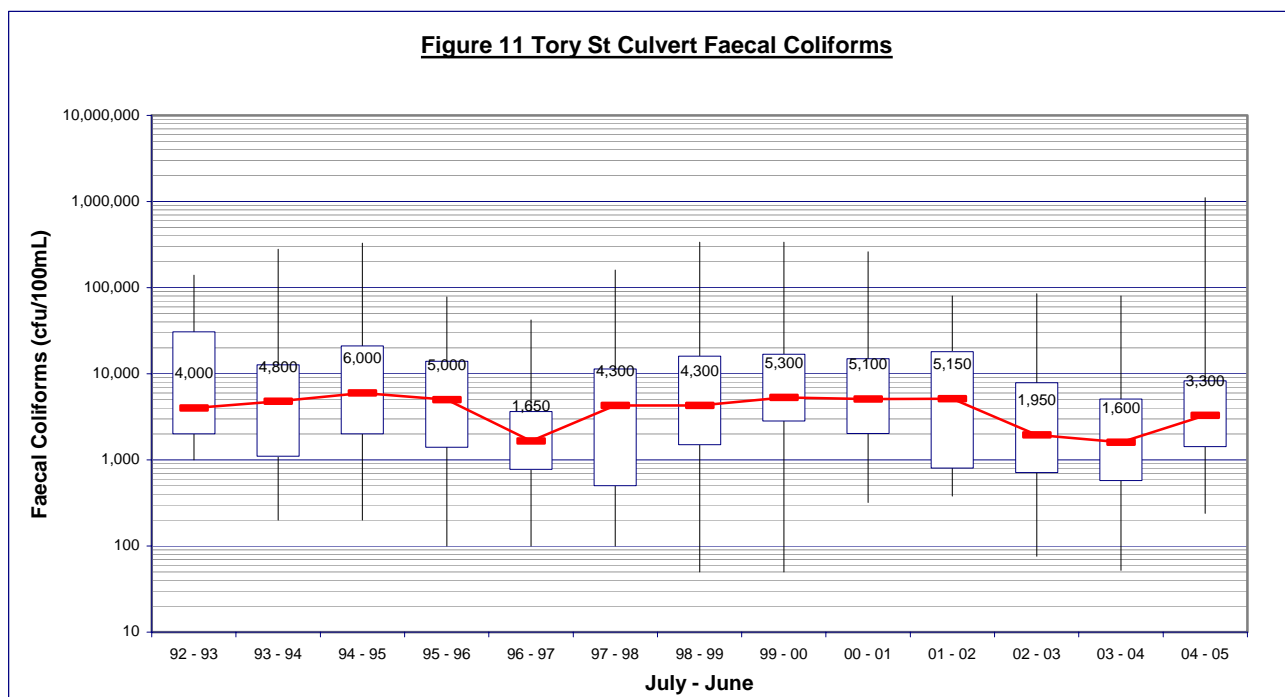
Beaches and Streams monitoring has highlighted the improving water quality throughout the city, however a few sites have been identified where stormwater quality has not shown significant improvement. These sites are Overseas Passenger Terminal (OPT), Tory Street Culvert and Ngauranga Stream near the harbour.

The OPT catchment covers approximately 448 ha of which an estimated 262 ha is impervious, it is heavily urbanised (64%) with some light industry. Heavy traffic loads are carried through the catchment. The monitoring results show a significant improvement over the last 10 years

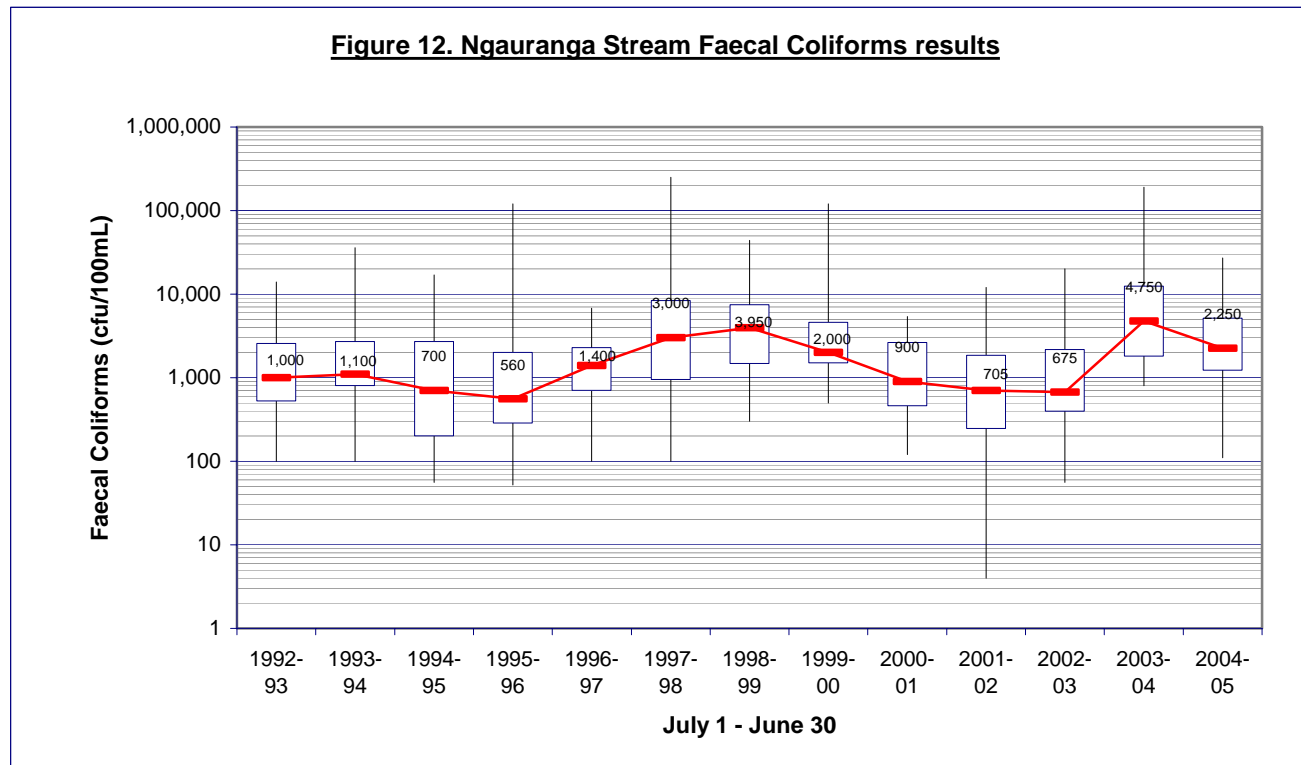


with annual median faecal coliform values reduced from 21,300 cfu/100ml in 1992/93 to 1,500cfu/100ml in 2004/05 (Figure 10). The annual 95-percentile value declined from 128,000 to 31,200 cfu/100ml over the same period. The SPE project has reduced both dry weather leakage and wet weather overflows, although the data indicates that sewage faults remain.

The Tory Street catchment is approximately 70 percent central city area, parts of which carry very high traffic volumes. Commercial and light industrial activity is located throughout. The stormwater collection system covers approximately 44 ha of which an estimated 70 percent is impervious. The results show a significant improvement over the last 10 years with annual median faecal coliform values reduced from 4000 cfu/100ml in 1992/93 to 3300cfu/100ml in 2004/05 (Figure 11). The annual 95-percentile value declined from 79,350 to 21,000 cfu/100ml over the same period. The results show that the SPE works implemented to the end of 2004 had not significantly reduced indicator bacteria numbers.



Ngauranga Stream drains an urban catchment which is predominantly residential, but includes commercial and light industry premises. It covers an area of 840 ha of which an estimated 10% is impervious. The monitoring results show annual median faecal coliform levels have varied over the 1993- 2004 period, but there is no clear increasing or reducing trend (Figure 12).



Other active and proposed stormwater quality improvement works;

- The Trade Waste Bylaw ensures that discharges are analysed, monitored and directed to the wastewater system as appropriate.

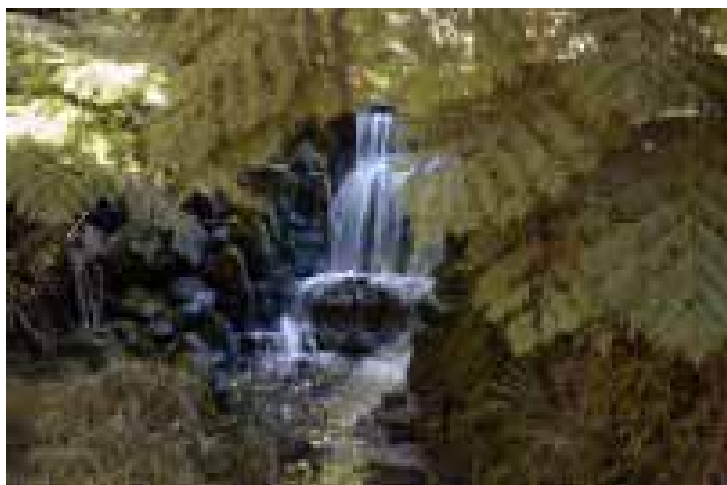
- A Liquid Waste Management Plan taking into consideration the influences on, and of, wastewater and stormwater was adopted by Council in 2005.
- The Code of Practice for Land Development is to be updated to include sediment control measures for land developments.
- The implementation of standards for development proposals and works supervision. e.g. ensuring cross connections do not occur.

A Baseline Assessment of Environmental Effects (BAEE) has been undertaken and shows the presence of various pollutants other than wastewater. Work continues to determine the source, the nature and effect of stormwater pollutants and the best methodology to reduce the presence of these pollutants including;

- Sediment
- Heavy metals and hydrocarbons
- Organic pollutants resulting from malfunctioning septic tanks
- Litter.

The effect and magnitude of these contaminants is not yet fully understood.

Project Kaiwharawhara is a joint venture between Council, GWRC and local community groups working actively to protect the stream and to promote the awareness of the importance of the stream and the surrounding bush ecosystems. Despite the urban land use pressures placed upon



the ecological values of the stream style, Kaiwharawhara Stream retains a relatively good habitat. This is a result of the generally high to good quality of the riparian vegetation is present in reserves and parks, which provides centres of biodiversity and aids restoration activities and rehabilitation. In addition the relatively steep and entrenched nature of the catchment, which has minimised the effects related to sedimentation and channelisation often associated with urban streams.

Leachate from operating and closed landfills is a potential source of contamination to local streams. The Northern, Southern landfills (Carey's Gully), Spicer landfill in Ohariu Valley (operated by PCC) and the closed landfill at Horokiwi are managed under consents to ensure long-term effective containment of contaminants. The landfills present no water quality issues at this current time.

Streams need protection from pollution

The thirty-two known closed landfill sites within Wellington City are continually re-assessed in line with changing conditions and circumstances related to individual landfill sites or development taking place in proximity of a closed landfill site.

6.5.2 Floodplain Management

Council adopted a Floodplain Strategy in 1993 this included a procedure for assessing deficiencies in the drainage network and approaches to deal with flooding.

Catchment Management Plans are prepared to provide a strategic framework to protect properties from flooding, evaluate stormwater quality and protect or enhance the ecological health of the receiving waters. It is vital integrated catchment management plans are completed to assess

Asset Knowledge	<ul style="list-style-type: none"> ▪ assess flood risk ▪ prepare flood hazard maps
Upgrading	<ul style="list-style-type: none"> ▪ provide information to prioritise, plan and budget for flood protection works ▪ as a basis for future detailed design of the stormwater system ▪ explore options for flood mitigation ▪ consider options for mitigating adverse environmental effects, particularly road runoff
Development Control	<ul style="list-style-type: none"> ▪ set floor levels for new developments above flood levels ▪ control development on overland flow paths to prevent the blockage of these paths ▪ identify catchments where general restrictions on development are needed ▪ establish land use controls as appropriate ▪ possibly set levies on development to fund works
Water quality	<ul style="list-style-type: none"> ▪ to determine the influences on water quality in streams and receiving waters ▪ to determine what mitigation works

Table 9. Information provided in the Catchment Management Plans

the future environmental and biodiversity effects of building developments in previously undeveloped catchments. The purpose of individual catchment management plans is to provide Council with the information shown in Table 9:

Integral in the preparation of the Catchment Management Plan is a hazard map. These maps are based on a 1 in 50-year storm event and recommended freeboard of 200-300mm on houses in areas prone to flooding, where ponding or secondary flow paths may occur.

To date catchment management plans and flood assessments have been prepared as shown in Table 10:

Catchment name	Flooding assessment	Area (ha)	Ecological assessment
Harris	Yes	15	No
Hunter	Yes	8	No
Island Bay	Yes	480	No
Kaiwharawhara		1867	Yes (stream)
Karori	Yes (pt)	519	Yes (stream)
Kilbirnie	Yes	130	Yes
Miramar	Yes	394	No
Ngauranga		955	Yes (stream)
Newtown (OPT)	Yes	442	No
Owhiro Bay		965	Yes (stream)
Porirua Stream	Yes	5,380	Yes (stream)
Te Aro	Yes	242	No
Waring Taylor	Yes	52	No
TOTAL AREA		17,229	

Table 10. Catchment management plans prepared to date.

There are flooding issues in Makara resulting from unrestricted development and the amount of increased impermeable surface area, hence increasing stormwater runoff. This runoff may lead to increased low land flooding and the erosion of sediments.

6.6 Stormwater Risks

A comprehensive Risk Management Plan for the stormwater asset covering statutory compliance, property safety, capacity, future stormwater quality issues, service reliability and responsiveness to customer issues was implemented in July 2002. It also formulated controls and procedures to deal with these risks.

Council is aware that the buried infrastructure has inherent risks associated with it. However it is not just the buried infrastructure as there are risks associated with anything dependent on natural events, such as earthquakes and rainfall.

To mitigate the risk of a decreased level of service associated with a natural event an Emergency Management Plan including a response plan is in place for natural events whose timing is unknown such as storms and earthquakes. In most cases the normal procedure to service fault notifications will cope with rain, overflowing pipes and other events.

These above documents all interrelate to mitigate risk possibilities associated with unexpected situations which could affect the stormwater system

6.6.1 Water quality risks

Recreational Water Quality and Public Health Risks	Level of Risk
Enterococci levels can be elevated above contact recreation standards after significant rainfall events	Moderate
Illness due to contact with contaminated stormwater or receiving waters	Low
Loss of access to recreational bathing areas due to poor water quality	Moderate
Consumption of contaminated shellfish	Moderate