

## **Report 99.202**

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Report to the Environment Committee  
from Michael Green, Hazard Analyst

### **Petroleum Transportation Hazards in the Wellington Region**

#### **1. Purpose**

To report the findings of a study to determine the hazard associated with the transport of petroleum in the Wellington Region.

#### **2. Background**

Research on natural hazards at the WRC is being broadened to include 'technological' hazards in line with the current 'all hazards' approach in hazard research and comprehensive emergency management.

A study of the "transport of petroleum and LPG on State Highways 1 & 2" is one of two projects identified in the Resource Policy Department' Operating Plan 1998/9. This study relates to Natural Hazards Method 10, and Waste Management and Hazardous Substance Methods 16, 17(3), and 19(2) of the Regional Policy Statement.

Opus International Consultants have undertaken the work.

#### **3. Methodology**

- Literature on petroleum hazards was reviewed and relevant information compiled
- Information on petroleum products, volumes, and destinations from petroleum companies operating within New Zealand was obtained
- Petroleum products were classified based on their hazard characteristics
- Traffic volume and accident data were used to develop scenarios to assess the likelihood and impact of petroleum transport incidents

- Information on the natural and built environment and census information on the distribution of people was integrated with a fault tree analysis to assess potential risk to each of these components
- A series of maps were produced to represent the relative risk for each component and these were combined to give the overall risk for the Region

This analysis allowed comparison between different modes of petroleum transport.

#### 4. **The hazard associated with petroleum transport in the Region**

Although the hazard associated with the transport of petroleum is very low when compared with other activities, e.g. driving a car, aeroplane flight, the consequences of a large release are likely to be significant. Of the modes of transport considered in this study, the hazard increases from rail to sea to pipeline, with transport of petroleum products by road presenting the greatest risk. When petroleum volumes, people, and natural and built environment information is incorporated, the areas in the Region with the highest hazard are:

##### (1) **Road Transport**

- The foreshore road from the Seaview terminal to Ngauranga Gorge
- Aotea Quay exit from SH1
- Short stretches of road from Ngauranga Gorge to Tawa on SH1
- Mana esplanade
- SH1 near Whenua Tapu
- SH1 Paekakariki
- SH1 Pukerua Bay
- SH1 McKay's crossing
- SH1 south of Raumati
- SH1 south of Waikanae

Most major intersections on State Highway 1 and State Highway 2 to Kaitoke were identified in the “high” risk category.

Where not already mentioned, State Highways 1 and 2 in the western part of the Region are classified in the “medium” risk category. State Highway 2 and other roads in the Wairarapa are classified in the “low” risk category.

##### (2) **Pipelines**

The hazard rating at Burnham wharf was “medium” but the Aotea Quay to Kaiwharawhara pipeline rated “high” and “very high”.

**(3) Rail**

Petroleum transport by rail is rated as “low” risk throughout the Wellington Region.

**(4) Sea**

Hazard is “extremely low” in the major shipping routes, but is “low” outside the entrance to Wellington Harbour and at Seaview Terminal. The coastline of the Wellington Region is at risk of a spill in the shipping lanes. Any petroleum spilt at sea would likely be driven ashore by currents and wind.

**6. Risk management**

The report notes numerous options for managing the risks of petroleum transport. Also mentioned are concerns at a lack of co-ordination and co-operation between agencies responding to petroleum incidents. In addition, logistical issues, such as the ability to obtain suitable materials to respond to land based petroleum incidents, have been identified as of concern.

**7. Report recommendations**

The following recommendations for the Regional Council are made to address the hazard posed by the transportation of petroleum products:

- Contribute to the development of the HSNO Regulations to ensure the risk associated with the transport of petroleum is adequately addressed
- Consider the Co-ordinated Incident Management System (CIMS) approach to the management of hazardous substance incidents
- Discuss co-ordination issues with territorial authorities and emergency service organisations
- Consider, along with Wellington City Council, the level of compliance with by-laws regarding transport of hazardous substances through Mt Victoria tunnel and other critical routes
- Consider limiting the transport of hazardous substances through highly sensitive areas.

**8. Future actions**

The findings will be presented to the emergency management officers and emergency services organisations in the Wellington Region early in the 1999-2000 financial year to gain their feedback to determine the course of action. The Hazardous Substances Technical Liaison Group, made up of local authorities, emergency services, and interested parties, is due to reconvene in the near future

after being inactive during the recent Fire Service restructuring. This forum may provide the ideal place to address some of the issues raised by the work.

## 9. **Recommendation**

*That the report be received and its contents noted.*

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