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Report to the Environment Committee
from Jan Hania, Hazard Analyst

Natural Hazards Risk Associated with Petroleum Storage, Wellington Region

1. Purpose

To report the findings of a study to determine the risks from natural hazards associated with the storage of petroleum products in the Wellington Region.

2. Background

For many years, the Regional Council's research on hazards focused on natural hazards. However, in the last two years the focus has been broadened to include "technological" hazards, in line with the current "all hazards" approach to comprehensive emergency management.

During the 1989/99 financial year a study was completed on the hazards associated with the transport of petroleum products within the Region. This financial year a study has been completed on the hazards associated with petroleum storage. Specifically, the study:

- Identified the nature and location of petroleum products stored in the Region
- Assessed the vulnerability of the storage facilities to natural hazard events
- Determined the risks to the community and the environment.

The petroleum storage study is identified in the Resource Policy Department's 1999/2000 Operating Plan. It 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 were commissioned to undertake the study. A copy of their report will be tabled at the Committee meeting.

3. The hazard associated with petroleum storage

Tens of millions of litres of petroleum are stored in the Wellington Region. Most is stored in bulk storage tanks in Seaview, and to a lesser extent in bulk storage tanks in Kaiwharawhara and Miramar. Modest quantities are stored at service stations and truck stops around the Region, as well as airports. Much smaller quantities are stored at industrial, commercial and other private premises.

The study shows that an event associated with petroleum storage and natural hazards is of very low probabability but with high potential impact. For example, the annual probability of a large spill (of the order of one million litres) from one of the bulk storage tanks at Seaview is of the order of 1 in 8,500, with the dominant natural hazard being large earthquakes. The impact of such a spill will depend on factors like the weather and the availability of staff to contain the spill (likely to be a problem after a major earthquake).

It is likely that a large-scale spill into Wellington Harbour would foul beaches and the coastline. Heavier petroleum components could eventually coat parts of the harbour floor, with clumps of fuel eventually washed up on those parts of the harbour exposed to the north.

The risk of fatality to people from petroleum storage incidents from natural hazards is quite low compared to other risks faced by the community. However, the risk is involuntary and the consequential impact could affect a large number of people, as demonstrated by the recent fireworks warehouse explosion in Holland (May 2000).

When the combined risk to the environment, including people, was assessed, the major storage facilities at Seaview and Kaiwharawhara present the highest relative risk. Most of the rest of the Region has no more than a low risk. Attachment 1 to this report summarises the results.

4. Risk Management

The report contains suggestions to manage the risks associated with petroleum storage and natural hazards. These range from *industry responses*, like maintaining and upgrading tanks and pipelines, to *land use solutions*, like buffer zones between hazardous facilities, sensitive environments and people. Managing risks associated with fire-fighting include containing fire-water run-off.

5. Other Matters

The report notes there are different perspectives among the many agencies with responsibilities for managing an event about what constitutes a satisfactory response. Co-ordination issues have been specifically addressed by the development of the New Zealand Co-ordinated Incident Management System by the New Zealand Fire Service.

There are some logistical issues that need to be addressed, such as the ability to obtain suitable materials to respond to land based incidents. The report also observed that no site in the Region has a discharge retention system, which would allow the containment and treatment of contaminants in the event of a large spill.

6. Study Recommendations

The study recommended that the Regional Council:

- Contribute to the development of the HSNO Regulations, and keep up to date with the development process to ensure that issues relating to petroleum storage hazard are catered for.
- Consider the Co-ordinated Incident Management System (CIMS) approach to the management of hazardous substance emergencies.
- Discuss co-ordination issues with territorial authorities and emergency service organisations, including issues relating to the acquisition and delivery of appropriate materials for dealing with spills.

7. Where to from here?

The findings will be presented to the emergency management officers and emergency services organisations in the Wellington Region early in the 2000-2001 financial year to gain their feedback to help determine the course of action.

Further discussions will be held with territorial authorities to outline the outcomes and recommendations, and to improve their understanding of the risks involved with petroleum storage in their respective districts.

Further consideration will be given to the potential problems of contamination run off during spill or fire events. These will be discussed with relevant Wellington Regional Council officers.

All recommendations outlined above will be actioned through discussions with appropriate personnel.

8. Communication

The study will be communicated to others through:

- Presentations to emergency management and emergency services organisations.
- Distribution of written report and digital information to territorial authorities and relevant emergency services.
- Follow up discussions with relevant Wellington Regional Council and territorial authority staff.

9. **Recommendation**

That the report be received and its contents noted.

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Attachments: 1