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Committee Environment Committee
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Update of pro-active odour monitoring activities

1. Purpose

The purpose of this paper is to report on the effectiveness of the Proactive Odour Monitoring (POM) programme, carried out for the Carey's Gully Complex and Taylor Preston Limited between March 2004 and June 2005.

This report focuses primarily on the Carey's Gully Complex where the majority of POM has occurred.

2. Background

2.1 Why we do Proactive Odour Monitoring

Proactive Odour Monitoring was developed in 2002 as a targeted and effective way to more closely monitor odour at selected problem sites. The approach was borne out of a clear need for Greater Wellington to be able to more actively monitor odours while they were being discharged (proactive approach) and an associated need to find more efficient ways of responding to daily complaints (reactive approach).

For both Carey's Gully and Taylor Preston odour emissions, considerable limitations lay with a sole reliance on a reactive approach of responding to each complaint. This is because Greater Wellington officers would usually arrive at complainants' sites only to find that odours had either passed or decreased in intensity. Also, for Carey's Gully our ability to identify the alleged specific source of odour nuisance was considerably affected given the presence of several potential sources and the travel time between complainants' sites and Carey's Gully. Consequently, our overall understanding of the source, nature and behaviour of odours off-site is compromised.

The resulting odour management approach for Carey's Gully and Taylor Preston combined proactive and reactive odour monitoring. This approach targets monitoring during those environmental conditions most likely to produce odour emissions (proactive approach), while increasing the threshold for the number of possible complaints needed to generate a reactive odour response. The POM programme would continue until we had enough information to confirm the nature and extent of any on-going odour problem at each of the sites.

The resulting POM programme has been established and implemented with the full cooperation and support of the various consent holders and site operators.

2.2 Carey's Gully Complex

The Carey's Gully Complex is located at the end of Landfill Road, Happy Valley, and comprises several potential sources of odour nuisance, all of which are subject to resource consents for their discharges to air. These are:

- Wellington City Council (WCC) – Southern Landfill
- United Water International Ltd (UWI) – sludge dewatering plant
- Living Earth Ltd (LEL) – composting plant
- Novagas – landfill gas flare

Each of the Carey's Gully Complex sites (excluding Novagas) has undertaken work in recent times, in an attempt to reduce their odour emissions. Measures include tree planting, improvements to landfill waste covering practices and improvements to the odour-neutralising spray treatment system.

Recent work by WCC is expected to enhance our understanding of odours generated at Carey's Gully. WCC has completed odour mapping for the Carey's Gully area and a report on the findings is likely to be available within the next month. Odour modelling work is expected to follow, and we expect that the models will help predict how odour is being generated and moves out of Carey's Gully.

2.2.1 Odour complaints

The majority of odour complaints for Carey's Gully occur between February and August each year, which corresponds with the warm, still evenings of summer and cool, calm evenings in autumn. These conditions appear to reduce the dispersion of odours generated at the Carey's Gully site, and moves odorous air to nearby neighbourhoods.

Complaints about odour from the Carey's Gully Complex are typically received from the suburbs of Happy Valley, Island Bay, Owhiro Bay, Kingston, Mornington, Vogeltown, Kowai Park and Brooklyn. There were a total of 551 odour complaints attributed to the Carey's Gully Complex between March 2004 and June 2005, which equates to approximately 413 complaints/year (compare with 525 complaints for the same period in the 2003/2004 year).

Figure 1 shows the distribution of odour complaints received over the period during which POM took place. This Figure also illustrates the occurrence of significant odour incidents (>10 complaints) and POM events.

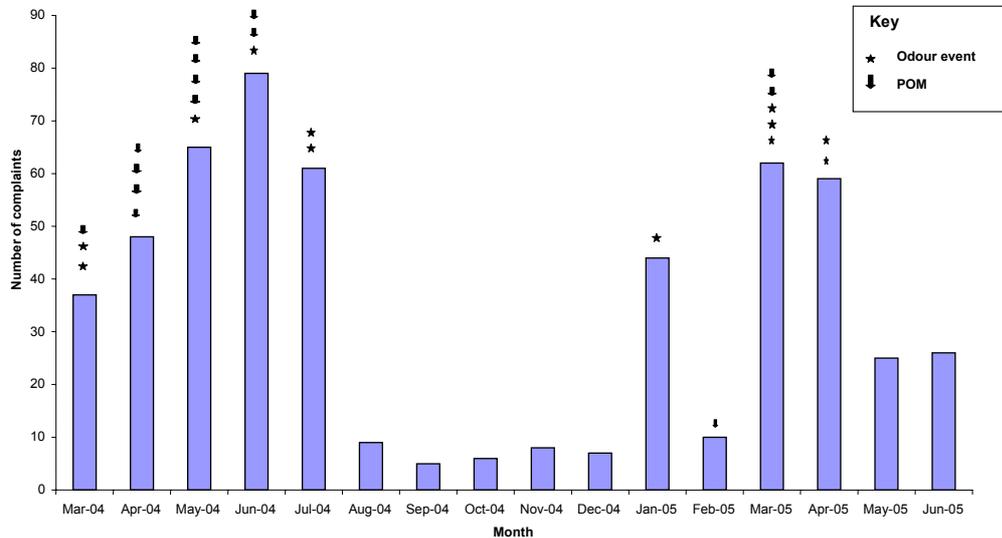


Figure 1: Odour complaints for March 2004 to June 2005, Carey's Gulley

2.3 Taylor Preston Limited

Taylor Preston is a meat processing and by-products rendering facility located in Ngaurunga Gorge, adjacent to the Kiwi Point Quarry.

Odour complaints are received from Broadmeadows, northern Khandallah and Johnsonville. Complaints often coincide with light northerly or southerly winds, or calm and warm conditions.

Unlike Carey's Gully, we are able to clearly identify the specific source of most complaints as being from Taylor Preston.

Taylor Preston holds a discharge to air permit, covering all activities that generate odours at the site, and in 2003 sought a change of consent conditions from Greater Wellington to accommodate new odour treatment measures, including installing a biofilter and the isolation and housing of certain odour-producing activities on site. Some reduction in the frequency of odour complaints has occurred in this time, although some odour incidents have been significant and resulted in offensive and objectionable odours being detected in the surrounding areas on two occasions¹ between March 2004 and June 2005.

¹ Confirmed by Greater Wellington enforcement officers.

3. POM methodology and objectives

POM events are planned to coincide with ideal odour detecting conditions or site operating practices, and involve at least two officers. One officer is stationed at the odour source, while the other is positioned at one of several pre-determined sites in the surrounding odour catchment (surrounding urban areas). A range of environmental and odour data is collected over a two hour minimum period².

The analysis of POM data primarily seeks to determine the following:

- Links between particular activities on-site and odours detected in the catchment area;
- How odour moves in the catchment;
- The relationship between weather and complaints;
- Links between complaints and severity of odours (complainant validity);
- Appropriateness of current POM locations and protocols; and
- Value of the POM programme.

It should be noted that POM was discontinued at Taylor Preston Limited in Autumn 2005 which is discussed in the Section 4 of this report.

4. POM Outcomes

It was intended to conduct a total of 20 POM events at the Carey's Gully Complex and 10 at Taylor Preston Limited. Unseasonably variable weather and limited staff resources meant that it was only possible to achieve 14 and four events, respectively, over the monitoring period. A synopsis of observations made during these events is presented in **Attachment 1**, with key outcomes summarised below:

4.1 Carey's Gully Complex

Key outcomes for Carey's Gully POM are:

- All POM events detected odours near the site boundary, with offensive and/or objectionable levels of odours confirmed near the site boundary in 50% of events. However, only one of these events corresponded with offensive and/or objectionable odours confirmed beyond the boundary;
- Odour complaints were received by Greater Wellington during 50% of POM events;

² More on the background rationale for POM can be found in Environment Committee report 02.616: *Rationalising our Response Approach for Odour Complaints*.

- Monitoring was being undertaken in close proximity to complainants when they lodged complaints during three POM events, yet the officer detected no significant odour.
- There was a significant reduction in odour complaints over the POM period (March 2004 to June 2005) when compared to previous years.
- Characteristics of odours detected near the site boundary differed from those in the urban catchment downwind. Odours detected on site were associated with all three businesses at Carey's Gully, while odours in the urban catchment appeared to be mostly attributed to activities at LEL.
- Specific identifiable site activities that appeared to correspond with elevated odour intensity near the site boundary on several occasions included:
 - Opening of the main roller door at LEL composting plant;
 - Disturbance/moving of outdoor compost stockpiles at LEL; and
 - Turning-off of the deodorisers at both LEL and the landfill.
- Typical conditions for detecting odours were during light winds (wind speed < 5 knots), with an air temperature between 9 and 14⁰C, and between 18:00 and 20:30 hours.
- In very light southerly wind conditions, a pattern emerged of odour complaints being received initially from Kowhai Park, then Brooklyn and Mornington, and finally Island Bay. Although this sequence has been observed on many occasions, its mechanism is not understood.

4.2 Taylor Preston Limited

Key outcomes for Taylor Preston are:

- Four POM events were conducted. Complaints were received on three of the event days, but not during any actual monitoring event.
- Typical odours detected appear to have been mainly sourced from stockyard and rendering activities.
- Typical weather conditions for receiving odours from Taylor Preston are during calm conditions or light winds (wind speed < 5 knots), and warm temperatures, although there is no pattern to odours being generated at a specific time of day.

- Odour events appear to be closely aligned with on site operating practices and processes, such as increased stockyard activity or ongoing problems with their existing odour management systems.
- POM was discontinued at Taylor Preston Limited in Autumn 2005 for several reasons:
 - Planned POM events were not coinciding with times when odour complaints were received.
 - Our understanding of the odour issue at Taylor Preston had dramatically improved.
 - A change back to a more reactive odour response approach was proving more successful than before at detecting odours during bonafide odour events.

5. Conclusions

5.1 Carey's Gully Complex

Key conclusions from the POM programme at Carey's Gully are summarised below:

- POM monitoring events have shown the most likely conditions for detecting odours beyond the boundary of the Carey's Gully Complex are during evenings, with light winds and moderate temperatures.
- Objectionable and/or offensive odours near the site boundary often do not result in odour complaints in downwind suburban areas.
- Odour character appears to change with distance from the source.
- Occasional disparities between odours detected by monitoring officers and complainants indicate that some complainants may be sensitised to a certain intensity of odours.
- The reduction in odour complaints over the POM period is attributed to a combination of unsettled weather, odour control improvements at source sites, and possible complainant fatigue.
- There is scope to review the location of some POM stations in suburban areas, to ensure they correspond more closely with likely odour complaints. Other refinements may also be made including changes to on-site monitoring to enable us to more readily identify and distinguish between specific odour sources.

- While undertaking the POM programme, reactive odour response continued to be effective during this period for significant incidents at the Carey's Gully, where 10 or more odour complaints were received within several hours. It is proposed to continue with this response while the POM programme is in place.

5.2 Taylor Preston Limited

Key conclusions from the POM programme at Taylor Preston are summarised below:

- Odour emissions appear to be more closely aligned with site activities.
- POM events have shown the most likely conditions for detecting odours beyond the boundary of Taylor Preston are during calm conditions or light winds with warm temperatures.
- A more reactive approach should be persevered with and POM suspended indefinitely, given its improved level of success.

5.3 Future of the Proactive Odour Monitoring Programme

The Proactive Odour Monitoring programme has provided and continues to present an important means of improving our understanding of the odour issue at Carey's Gully, while providing less value to overall monitoring of Taylor Preston odour discharges.

Clearly we will continue to have difficulties striking the right weather conditions for monitoring, or will face staff availability problems from time to time. Furthermore, with regards to Carey's Gully we still do not have a firm understanding of the changing nature and characteristics of odour between the source and urban catchment area. However, these matters should not detract from the overall value in which POM is able to provide to Greater Wellington's odour management work. In this regard, we will continue to carry out POM at Carey's Gully where we believe benefits from this work can still be obtained.

Finally, despite its inherent value, a proactive monitoring approach can only exist as one of a series of tools to help improve odour management at critical facilities such as Carey's Gully.

6. Communication

This report will be presented to WCC, as they are conducting investigations into odour nuisance from the Carey's Gully site.

The contents of this report will be discussed at the next Carey's Gully Community Liaison Group Meeting, and provided to the Gorge Action Group.

7. Recommendations

It is recommended that the Committee:

1. *receive this report; and*
2. *note the contents.*

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**Attachment 1: Appendix 1: Summary of Carey's Gulley Complex POM data and
Appendix 2: Summary of Taylor Preston POM data**