

Q&A's – Market Rd landfill 2013

Q) What has occurred at the site? Has the initial assessment of the situation changed at all since the first notifications were provided?

A) Transpacific Industries Group is currently monitoring areas of increased temperatures (known as 'hot spots') at our closed landfill site on Market Rd in Brooklyn. The hot spots were detected during routine landfill gas management planning work conducted at the site.

With the help of external consultants, initial indications suggested it may have been a deep-seated underground fire, however further work and additional data collected this week now shows that it is smouldering of materials, or hot spots. We do not believe the community, workers or environment are at risk.

We have proactively advised the Metropolitan Fire Brigade (MFB), the Victorian Police and the Environmental Protection Agency (EPA), and are keeping them abreast of our activities in relation to this situation. Local councils, community groups, industrial neighbours and other government agencies have also been notified.

Q) When was this situation identified? How long has it been active?

A) The hot spots were detected during routine landfill gas management planning work undertaken on Thursday, 29th June 2013.

Further investigation is currently being carried out to determine the exact area of the hot spots and an appropriate course of action. The temperatures of the hot spot are in the order of 60 degrees Celsius, which is approximately 20 degrees Celsius above the normal temperature of a landfill.

While this type of event is slow and does not represent immediate danger to the public, Transpacific is taking this event very seriously and has notified appropriate authorities, including the MFB, the Victorian Police and EPA, as well as obtaining the services of experts to assist in resolving the issue.

Q) What caused the hot spots at the landfill?

A) The most common cause of underground landfill hot spots is an increase in the oxygen content of the landfill. This, in turn, increases bacterial activity and raises temperatures (known as aerobic decomposition). If the so-called hot spots come into contact with pockets of methane gas, it can result in slow burning underground smouldering. Investigations undertaken at the Market Rd closed landfill to date indicate the likely cause of the hot spots to be air infiltrating parts of the landfill. This is currently being addressed through the compaction of clay-type materials into suspected air ingress points in the soil.

Reference: Landfill Fires – their magnitude, characteristics and mitigation - Federal Emergency Management Agency United States Fire Administration National Fire Data Center (May 2002).

Q) How is Transpacific controlling the incident?

A) Transpacific Industries Group has alerted relevant authorities, including the MFB, the Victorian Police and the EPA, and is keeping them abreast of our activities in relation to this issue.

Further testing on the site has been undertaken and the implementation of an agreed course of action to starve the hot spots of any air infiltration is currently underway.

Transpacific has also sought advice and technical support from a USA-based firm that has significant expertise in this area and has engaged a specialist contractor to implement the corrective actions.

Q) What does remediation of an underground fire usually involve?

A) To remediate an underground fire, areas where air is entering the landfill must be sealed off. Such areas include leachate wells and other penetrations in the landfill. Once sealed, this prevents oxygen from entering the landfill, which suffocates the hot spot.

Transpacific is working with local authorities and a specialist contractor in the implementation of an appropriate course of action to resolve the hot spots as a matter of priority.

Q) Is there a risk to the community?

A) At this time, Transpacific does not believe the community is at risk.

As a precaution however, we are continuing to undertake extensive testing on the site to determine necessary further actions.

We have notified the MFB, the Victorian Police and EPA and will continue to keep them abreast of our activities in relation to this situation to ensure any risks are identified and mitigated.

Q) Is there a risk to workers?

A) Transpacific has engaged a specialist landfill contractor who has Occupational Health & Safety protocols and procedures in place for this type of situation. Anyone entering the site must work to their health and safety systems. Monitoring of the emissions in the workers' environment did not identify harmful emissions.

Q) What management strategies will Transpacific put in place to ensure this incident doesn't re-occur?

A) Transpacific is currently in the process of planning for rehabilitation and aftercare of the site. Once rehabilitation is complete, it will further prevent air penetrating the landfill and encouraging the potential development of a hot spot. In addition, ongoing monitoring for any signs of the development of hot spots will continue. We are also investigating the cause of the situation and will be implementing a company-wide corrective action to increase awareness and ensure that landfills are operated and monitored so that temperatures are kept within a normal range.

Q) Is air quality monitoring currently being undertaken? How is this being conducted and what have been the results to date?

A) Yes. Transpacific is undertaking detailed testing on the site to determine whether any emissions may be present due to this issue. Results so far have not identified any harmful emissions. Initial and ongoing monitoring has been performed by Run Energy using hand held instruments. Parameters being measured include landfill gas constituents, CO₂, H₂S and temperature. These results have indicated that subsurface oxidation ('hot spots') are present at the site.

Transpacific has also retained EML to monitor air quality to ensure that potentially hazardous and odorous materials and dust do not adversely impact on the quality or the amenity of the air either onsite or offsite. There are two types of monitoring being performed at the source (the leachate risers). This has involved collection of samples for laboratory analysis. These are as follows:

- *OHS monitoring for site workers. Parameters being monitored included landfill gas composition.*
- *Environmental air monitoring – including a broad suite of parameters.*

The results are expected later this week. This information will then be used to design a perimeter air quality monitoring program, which will commence the week following.

Dust sampling has also been established around the site boundaries.

We will continue to keep the authorities and members of the local community informed of any changes in respect of the above activities.

Q) What actions have been taken in the week 8 – 12 July to further investigate and determine the severity of this situation?

A) This week, a number of actions have taken place in order to determine the nature and extent of the hot spots at the site. This has included, but is not limited, to the following:

- *Visual survey – an initial walk over was conducted to identify and document areas of concern such as leachate risers, surface irregularities and settlement areas with the findings recorded on a site plan and used to establish the plan for corrective actions. The physical integrity of the site perimeter has also been visually assessed and points of potential access identified and minimised. These surveys will be repeated on a weekly basis throughout the duration of the project to maintain a record of the condition of the site;*
- *Surface fire watch – visual inspections of the landfill surface area and features were initiated once the hot spot areas were identified. The locations of the hot spots have been recorded and temperatures monitored with a hand held device;*
- *Aerial thermal imaging – a thermal imaging survey of the site was conducted by Landair which will be used to assist in corrective action activities. MFB have also performed exploratory thermal imaging on the site using drones equipped with thermal imaging cameras;*
- *Subsurface data monitoring – a subsurface data monitoring program has been implemented at the site, which consists of monitoring the leachate risers and landfill gas wells. Parameters recorded include leachate levels and temperature, and where possible, temperatures were recorded at different depths within the landfill to help establish a temperature profile for the site; and*
- *Subsurface temperature modelling – findings of the subsurface data monitoring performed as part of the site characterisation activities is being modelled in three dimensions using a visualisation/modelling software program. This model will then assist with understanding the subsurface conditions and for planning and implementation of the corrective actions.*

Q) What initial corrective actions are planned as a result of these findings?

A) The overall strategy, which is in line with proven techniques to address similar issues of hot spots, is to stop air infiltration into the landfill, which will essentially suffocate the hot spot areas. The scope of work during this phase includes the following activities:

- *Remediation of any surface irregularities – this will involve filling to the normal surface profile with a clay soil mixture. Surface emissions monitoring will be performed to ensure stability;*
- *Sealing of perimeter areas – areas of settlement, surface fissures and cracks around the perimeter of the landfill that represent areas where air can enter will be sealed. Remediation activities will include re-working the cover in the area to eliminate the crack/fissure, as well as filling the area with a mixture of soil;*
- *Sealing of leachate risers – currently the top of leachate risers contain several openings through which air may enter the landfill. To prevent air infiltration, while allowing for periodic monitoring, a high-density polyethylene cap will be installed. This will also assist in mitigation of odours emanating from the site; and*
- *Assess and improve stormwater drainage – to assist in possible excess water on the surface of the landfill associated with hot spot mitigation, existing stormwater conveyance system (drains, drainage etc.) will be improved to ensure no water runoff from within the landfill will drain off-site, specifically to Kororoit Creek. This will include the cleanout of existing stormwater drains and holding areas.*

Q) What corrective action work took place in the week commencing 15 July?

A) A number of corrective actions have been conducted including:

- *Remediation of perimeter surface completed;*
- *Increasing our visual site inspections to twice per day with results recorded;*
- *Manufacturing of high-density polyethylene caps to seal leachate risers; and*
- *Planning for advanced perimeter cover works.*

EML have also conducted air gas sampling, with results of samples taken from the leachate recovery sumps on site indicating that the gas is typical of landfill gas. A gas expert and engineers are looking at the results at present to further analyse. This air sampling is in addition to the EPA air samples which have shown no risk to the community or the environment.

This work has been in addition to ongoing:

- *Monitoring of the site;*
- *Surface fire watch;*
- *Surface emissions and temperature monitoring;*
- *Gas monitoring from wells and collection of subsurface data; and*
- *Site inspections with EPA & MFB.*

Q) What is the current status of the closed Brooklyn landfill site?

A) In addition to ongoing daily visual surveys and surface fire watch, a number of corrective actions have now been completed on site. Surface irregularities at the perimeter of the landfill have been remediated and leachate risers have been sealed with a soil mixture. To further prevent air infiltration and allow for periodic monitoring, high-density polyethylene caps have also been installed on the leachate risers.

Daily air monitoring along the landfill perimeter has continued and no landfill gas emissions have been identified. This is in addition to continued temperature monitoring within leachate risers and the commencement of the 6-8 week monitoring phase of site conditions to determine the success of the remediation works.