



Tullamarine Landfill – Community Meeting

31 October 2019

Operational Updates

- Routine flare maintenance and calibration was completed 3rd March
- Leachate sump wellhead upgrades were completed in September
- Groundwater, stormwater & leachate sampling was conducted most recently at the beginning of October
- 53v Audit completed for the July 2017 to June 2018 period

Community Questions

Question 1: Why is there no table of Abbreviations and Definitions?

Answer: The audit report format is based on a standardised template developed to meet the requirements of relevant EPA guidelines – abbreviations are defined at the first reference within the report. (GHD)

Question 2: Page 15 of 174: Why is it that both Flare Emission Test Results were not provided to the Auditor?

Answer: Table 3 of the audit report is the list of documents provided to the auditor. Table 3 includes the results of the flare emission testing (Kleinfelder 2016). URS (2013) Landfill Gas Treatment Options report is also listed – this report details gas composition up to 2013 and options considered that led to the selection of the fully enclosed flare, installed in 2014. Section 9.4.4 of the audit report summarises landfill gas extraction results provided for the audit period. The auditor was provided sufficient historical information to assess historical and current gas extraction. (GHD)

Question 3: Page 24 of 174, Para 3.8.3: LNAPL

“The IRP further concluded that an ongoing monitoring program including triggers, contingencies and regular auditor review, is required to continually assess and evaluate the stability and composition of LNAPL over time and to assess natural mass loss and any changes to the risk profile over time.”

No reports concerning the ongoing monitoring program have been delivered to the community.

Answer: *The Post Closure Management Plan (PCMP) for the site was updated in December 2018. The leachate management procedure in this document includes an LNAPL contingency protocol, amended to reflect what is known about LNAPL from monitoring and reporting (like in the 2014 technical report for auditor review). LNAPL is outside the landfill cell, but within the site boundary and provides the monitoring requirements for LNAPL. Monitoring is for LNAPL levels and thickness (quarterly) in leachate and some groundwater bores with inspection of Moonee Pond Creek for sheen. The LNAPL contingency procedure notes if a sheen or LNAPL be detected in locations not detected before or in the creek, the LNAPL must be sampled, analysed and a baildown test done, if it is feasible to be removed a program will be implemented. The conceptual model for the site would also be updated.*

Further, section 8.14 of the audit report details LNAPL monitoring available for the audit period. Table 7 in Section 6.2 discusses compliance with the monitoring program, including LNAPL. The independent audit in a means by which ongoing communication on LNAPL and other aspects of the monitoring program can be communicated on a regular basis. The PCMP has required leachate levels and dates and contingencies to reduce levels if targets are not met, the PCMP also says that baildown tests will be completed where recommended by specialists. The auditor has recommended annual audits for at least two years, subject to further review after this time. Recommendation 54 of the audit report recommends revised frequency and locations for LNAPL monitoring. (GHD)

Question 4: Page 24 of 174, Para 3.9:1: Landfill Gas Extraction System

“The landfill gas collection system as installed in 2011 had capacity for 500 m³/hr 60% CH₄. In 2014 an enclosed flare was installed at the site with a design capacity ranging from 40 to 200 m³/hr. The capacity of the current flare matches with data from the original flare where it was shown that the LFG flare was drawing approximately 200 m³/hr LFG at 50% methane. The landfill gas generation rate is expected to continue to decline over time at the site based on the estimated annual LFG flow rate of 7.5 m³/year in 2011 compared with a maximum rate of 15.4 m³/year modelled for 1992 and 4.4 m³/year in 2022 (URS 2013).”

Do not understand what the Auditor is saying. Unable to see the link between the gas flow rate in the flare in cubic metres per hour and the generation rates, cubic metres per annum, as stated in the highlighted sentence.

Answer: There is a unit missing within the text. The volumes should read “million m³/year”.

Question 5: Page 25 of 174, Para 3.9.2: Have any of the recommended bores been installed? If not, why not? If not completed what is the status?

Answer: The recommended bores have not been installed. Cleanaway were waiting for the verification of the recommendations within the landfill gas risk assessment. As per recommendation 16 of the audit report, bores will be installed after feasibility investigation and auditor approval is gained.

Question 6: Page 27 of 174, Para 4.2: Cleanaway advises neighbouring landholders may not allow access to monitoring bores and possible pits. What authority does EPA, or other bodies, have to enforce access? If no legal right exists what action has been taken by EPA, for example, to gain such right?

Answer: Cleanaway has an open relationship with the airport to ensure access is not limited. Unfortunately, access has been denied in the area when it is deemed not safe.

Question 7: Page 28 of 174: Recommendation that additional bores be installed south of SG 13 and SG 14 but Fig 2C, page 300 of 558 (appendices) shows the new bore being to the North. Suspect there is a typo. Did EPA Audit team pick up this apparent mistake?

Answer: This appears to be a typing error.

Question 8: Page 30 of 174: Have the four structural defects at the well head been repaired and reverified? If not, why not and what is the schedule for these repairs. To what liability is Cleanaway exposed, especially with their workforce, to the possible exposure to landfill gases?

Answer: Upgrades to all 14 leachate sump well heads were completed in September 2019. During the upgrade works, the sumps were temporarily capped to prevent the exposure of landfill gasses.

Question 9: Page 32 of 174, LC 11: The auditor notes Monitoring did not meet requirements. Has Cleanaway instituted a system whereby PAN Actions, other documents and other events are scheduled and notified to the relevant project officers and operators to ensure such actions are:

1. Notified of details including dates to be actioned;
2. Actioned and reports raised;
3. Completed with EPA and other regulatory bodies advised?

Answer: A system has been implemented to ensure monitoring, updates to monitoring plans and notifications to the EPA occur within the appropriate timeframes.

Question 10: Page 55 of 174, Groundwater Section 8.3: Notwithstanding the auditor's observations little is said about the bores in the residential area east of the site. MB 90 is the most eastern bore. Kleinfelder (Offsite Residential Monitoring Well Sampling Results of 18 June 2018), Table 2 shows elevated levels of Chromium, Manganese, Nickel and Zinc. Should additional bores be drilled east of MB90 in order to determine the extent, pathway and rate of progress of the ground water plume? If not, why not?

Answer: The auditor looks at all available historical results to see if contaminants are trending upwards and historical reports related to the contaminant plume. Contaminant levels decrease further from the landfill, including to the east and further spread is predicted to be prevented by permanent capping of the site. Results available for groundwater bores such as MB88 and MB86 don't appear to show any upward trends in contaminants.

Bores located further east will likely show the same information in relation to risks to relevant uses of groundwater in the residential area. In determining if there was a significant risk to residents from leachate-impacted groundwater the auditor considered if there was potential for exposure (Table 16). Recommendations made to fully implement the monitoring program and to update the HA will further assess risks to residences to continue to monitor if the risk remains low.

Our report provides data specific to the audit period, the auditor has also made recommendations to update the Post-closure monitoring program so that relevant trigger levels are included and assessed against.

No TDS trigger levels for groundwater bores were exceeded for data in the audit period. (GHD)

Question 11: Page 67 of 174 / Page 111 of 174: Auditor states MB88L was monitored in December 2017. The [Kleinfelder report](#) shows MB88L (along with MB88U; MB87U/L; MB89U/L & MB90U/L) were monitored twice in 2017, namely 23 March and 2 June. I infer from the Audit Report that MB88L had elevated concentrations of benzene, trichloroethene (TCE), vinyl chloride and associated breakdown products above the adopted criteria for potable water supply and water based recreation. TCE was also reported above the adopted criteria for stock watering. The Kleinfelder Report states at page 1, Concentrations of chlorinated hydrocarbons (CHC) and all organic substances analysed were reported below laboratory detection limits at all locations, with the exception of MB88L, where detectable concentrations of 1,1,2-Trichloroethane, 1,2-Dichloroethane and trichloroethene were reported, all below the adopted criteria. Does the Auditor have information not released to the community? If so, can we get this point clarified please?

Answer: Audit period is July 2017 to June 2018; results from earlier in 2017 are not specifically discussed, by available to the auditor to assess against for historical trends.

Appendix G to the audit report summarises historical monitoring results, the auditor does not have additional information not supplied here.

The audit report provides a discussion the concentrations of 'benzene, TCE, vinyl chloride and associated breakdown products' in regards to the medium risk assigned for primary contact recreation in Table 16. Results for some contaminants are below the limit of detection but show as an exceedance because the trigger limit is very low and set lower than the limit of detection.

The auditor recommended that the PCMP note the detention limit for a chemical must be consistent with the assessment criteria/maximum limits (i.e., the method used must be sufficiently sensitive to detect the chemical in very low concentrations so it can be assessed against the criteria). (GHD)

Question 12: Page 73 of 174, Para 8.14 / Page 74 of 174, Table 15: If MB41 had 11.25 m of LNAPL why was is not extracted? Re Table 15: Is May 2017 correct? Where may I find the superscript references 1 and 2?

Answer: The audit report discusses in detail why extraction of LNAPL is not considered feasible or beneficial at the landfill as it is immobile. The auditor was provided with information to assess the stability of the LNAPL to see if it remains immobile, and it appears that it is (subject to continued monitoring, as recommended in the audit report). May 2017 could be a typo, the audit team is going back through the data provided to check the accuracy of this date. Subscript references refer to the list of references in Table 3 of the audit report. (GHD)

Kleinfelder (2016) is the 2014 auditor report for technical review

Kleinfelder (2017) is the In situ Groundwater assessment

Question 13: Page 92 of 174, Para 9.4.1: The Auditor notes that a number of bores along the western boundary and one along the eastern boundary reported methane levels above the trigger level. However, the Auditor notes these bores are less than 20 metres from the waste mass. Why do bores need to be located 20 metres from the waste mass?

Answer: Bores need to be located more than 20 m from the waste mass so that they do not overestimate risks to offsite receptors of subsurface gas against the trigger levels for carbon dioxide and methane. The trigger levels are related to sub-surface bores located at greater than 20 m from the waste mass as recommended by EPA guidelines. EPA Victoria 2015, Publication 788.3 – Sitting, design, operation and rehabilitation of landfills, August 2015 – Appendix B7.1 (GHD)

Question 14: Is it true that the buffer land has been sold. If sold do you know of any planning/development restrictions have been applied? Olga sent through a response, but will you cover in presentation?

Answer: Yes, I'm told we are in final negotiations with a developer and the contract of sale is dependent on a number of factors that are still being worked through. Questions about planning /development restrictions can be followed up with Hume City Council.

Question 15: The attached 2007 maps shows the inferred extent of LNAPL on groundwater. What is the current inferred are?

Answer: The auditor notes in section 8.19.1 that there is some variation in thicknesses of LNAPL but no evidence of offsite migration or significant redistribution, or identification of LNAPL in locations where it was not detected previously. The inferred extent of LNAPL is considered unchanged.

Question 16: TTTDAG FOSC & WREC have always believed that monitoring of LNAPL was a compulsory requirement - particularly where it has PCB concentrations above 50ppm. Why did Cleanaway advise the Auditor that monitoring LNAPL was voluntary? What evidence did they produce to support that claim?

Answer: LNAPL monitoring is incorporated into the current monitoring plan. We will ensure the monitoring continues as stated within the monitoring plan.

Question 17: Are the damaged well heads repaired? What were the latest methane and carbon dioxide readings from them?

Answer: The wellheads were repaired with works completed September 2019. The most recent round of monitoring of the gas collection system conducted on 24th October 2019 showed results of methane ranging from 0.1 to 79.5 % (V/V) and carbon dioxide from 0.0 to 22.8 % (V/V).

Question 28: Not maintaining the scheduled testing of groundwater bores dating as far back as 2013.

Response: Moving forward, a comprehensive round of monitoring will be conducted as recommended within the audit report to assist in filling data gaps. Procedures have been implemented to prevent data gaps occurring in the future.

Question 29: Not complying with landfill gas monitoring schedule.

Response: Steps have been taken to ensure compliance with the monitoring plan. In certain cases, we have conducted more sampling than is required within the monitoring plan.

Question 30: A number of landfill gas bores are incorrectly placed.

Response: No landfill gas monitoring bores are incorrectly placed; however, we do have a number of bores that are within the recommended 20m from waste boundary due to site topography and potential access to neighbouring land.

Question 31:

1. Poor management - too many to list - so here are a few examples:
 - a. Forgetting some quarterly testing,
 - b. A number of adjacent landowners had consented to the installation of groundwater monitoring bores on their land. In 2013 and 2017 some owners refused Cleanaway access rights. The auditor felt Cleanaway made too little effort to get the permission reinstated.
 - c. Not notifying EPA when non compliances occurred e.g. June 2018 higher methane gas levels recorded near damaged well heads on bores.
 - d. No record of any maintenance work to rectify the above damage.
 - e. Not recording all required details when taking groundwater readings.

Response: We have implemented procedures to prevent data gaps occurring. Access issues are dependent on a number of different factors including safety issues. Cleanaway has an open relationship with the airport to ensure access is not limited. The EPA has been notified of all non-compliance including the June 2018 surface emissions monitoring. Our current consultants have a live “issues register” to advise us of any damage etc. which we work to rectify as soon as practicable. A thorough review of field sheets has occurred to ensure the appropriate details are recorded during each monitoring event.

Summary

- The audit report consists of 59 recommendations;
 - 13 of these have already been completed
 - 24 of these are partially completed
- The audit report indicates that the overall risk for the site has not changed