TLCCG
Tullamarine Landfill
Community Consultation Group

MEETING NOTES

WEDNESDAY

31 October 2019

6.30 – 9.00pm

Hume Global Learning Centre
1093 Pascoe Vale Road, Broadmeadows

FACILITATOR: SUSAN MCNAIR, CURRIE COMMUNICATIONS

NOTE TAKER: SOPHIE CLAYTON, CURRIE COMMUNICATIONS

MEETING PURPOSE

i. Share and discuss the post-closure audit report.
ii. Confirm topic and community consultation for 2020.

ATTENDEES

Community

• Peter Barbetti, resident • Ovi Clements, Terminate Toxic Tulla Dump Action Group (TTTDAG) • Mick Colaci, resident • Lolita Gunning, resident	• Graeme Hodgson, TTTDAG and resident • Julie Law, resident • Russell Nilsson, TTTDAG and resident • Helen Patsikatheodorou, TTTDAG, resident (left 7.30pm)	• Helen van den Berg, Friends of Steele Creek (FOSC) and TTDAG • Jos van den Berg, FOSC and TTDAG • Harry van Moorst, Western Region Environment Centre

EPA Victoria

• Alistair Nairn, Senior Stakeholder Engagement Advisor – Communications and Engagement	• Jeremy Settle, Manager, North metropolitan Region	• Sean Vintin, Senior Environment Protection Officer, North Metropolitan Region

GHD

• Wajahat Bajwa, EPA Appointed Environmental Auditor	

Cleanaway

• Olga Ghiri, Stakeholder and Community Engagement Manager	• Kieran McDermott, Environmental Specialist	• Barry Griffin, Remediation Manager • Peter Fennelly, Post Closure Technical Lead

Apologies

• Ken Westcombe, resident	• Prue Hicks	

Facilitator: Susan McNair, Currie Communications Note taker: Sophie Clayton, Currie Communications

ABOUT THESE NOTES

Currie Communications has produced these notes, which aim to provide detailed minutes that cover the key information discussed in the meeting. However, these notes are not intended to be a transcript of the meeting, and discussions, comments and questions have been summarised to reduce the overall length of this document.

Presenters were given the opportunity to review the notes relating to their item to ensure the discussion was accurately summarised, and that they detail best available knowledge at the time of the meeting. Attending community members were also given the opportunity to provide feedback, which was addressed by Currie. Additional comments or relevant information received after the meeting have been highlighted in red, and useful hyperlinks have been added to text as additional references.

These notes will be posted on the Tullamarine Community Information page on the Cleanaway website www.cleanaway.com.au/community/major-project/tullamarine-closed-landfill-vic/ and will be available to the public. All meeting participants were asked if they wanted their names to be removed from public version of the document.

The intent of these meeting notes is to promote open communication between Cleanaway, local government, community and EPA Victoria. They are not to be used in a manner that compromises this objective.

AGENDA

1. Welcome, introductions (Susan McNair)
2. Meeting principles and purpose (Susan McNair)
3. Review of rolling actions (Susan McNair)
4. Post-closure audit report – key findings and highlights (Wajahat Bajwa)
5. Response to audit – Community (Helen van den Berg)
6. Response to audit – EPA (Jeremy Settle)
7. Response to audit – Cleanaway (Peter Fennelly and Barry Griffin)
8. Q&A
9. Confirm agenda for 2020
10. Meeting close (Susan McNair)

Item 1: Welcome, introductions

Susan McNair welcomed everyone, and all attendees introduced themselves.

Item 2: Meeting principles and purpose

Participants were reminded of the meeting principles around conduct as agreed at the last meeting:

- Respect each other.
- Give everyone a fair go and a chance to speak.
- Openly share information and be transparent.
- No personal attacks.
- Be clear and concise.
- Be truthful and honest.

The purpose of the meeting was stated as to 1) share and discuss the post-closure audit report, and 2) confirm topics for community consultation in 2020.

Item 3: Review of rolling actions

Rolling actions were reviewed, noting that all had been completed and will be closed. (see *Attachment 1: Rolling action list*).

Item 4: Post closure audit report

Wajahat Bajwa from GHD and auditor of the post-closure audit report presented its key findings and highlights. He noted that he is appointed by the EPA and must follow their guidelines for completing the audit and that he was provided with help from his support team to complete the audit.

He summarised what was in the report and in each section (see *Attachment 2: GHD presentation*).

One of his key messages was that his findings were based on a risk assessment. He reviewed previous audit reports and the information made available to him. In consultation with his team, he made recommendations on available information to determine risk. There are only a few risks that were escalated, and that was purely based on uncertainty because of information gaps. All required monitoring should fill the gaps to help the auditor make more informed decisions/recommendations in the future.

Question asked during meeting: If the buffered land wasn't there, and buildings closer, would the risk be higher (in relation to landfill gas)?

If the house is next door, the risk would be higher.

Wajahat noted that he looked at the situation and the risks, but that there was no imminent risk, and that the risk assessment of medium in some cases was because of gaps in the data and uncertainty because of that. He made 59 recommendations and assigned each risk as low, medium or high priority based on his own judgement and the available information.

Question asked during meeting: Who will select the bores for additional monitoring?

The auditor selects the bores. Cleanaway will propose a selection of bores and the auditor will consider those in relations to various factors (e.g. geology, creek beds) to inform the final selection.

Question asked during meeting: Does it matter when you take measurements during the year?

No, it does not.

Question asked during meeting: Why did you recommend that it be mandatory for LNAPL to be monitored. (Noting that monitoring was previously voluntary)?

It is the continuation of past monitoring to provide ongoing data.

Question asked during meeting: Did you, or are you able to, conduct your own testing, aside from relying on provided data?

Auditors are able to do additional testing and this has happened at other sites, but it was not deemed necessary for this site. It is up to auditor to decide. An auditor can only agree to an audit report if genuinely satisfied it provides an accurate report of the situation. The auditor is personally legally liable if he signs an audit but does not have adequate evidence in support of a recommendation. An auditor looks at the totality of evidence in considering this.

Question asked during meeting: What is the significance of the distance required between the bore and the waste?

With respect to landfill gas two factors are considered: 1) regulatory compliance which is distance based (20m), 2) risk assessment, which may be based on concentrations, time and flow rate.

EPA referred to a minimum distance of 20m (see Table 6.4 in the audit report). Noting that the aim is to see if there is migration.

Question asked during meeting: Is it usual to have missing data – how valuable is the data when there are gaps?

This audit is not done in isolation, auditing is a long-term process and all available information is assessed and used to inform the recommendations.

Participants thanked Wajahat for his presentation and recommendations, noting they were impressed by his answers and found him to be helpful and knowledgeable.

Item 5: Response to audit – Community

Susan thanked community members for submitting their questions before the meeting. She informed participants that Cleanaway and GHD had provided written answers to questions directed at them. She noted that a printed document with those questions and answers was distributed to meeting attendees and that it would be added to following the meeting with answers provided for all additional and unanswered questions requiring follow up. It will be included in the final document. Susan noted an additional question about the buffer land had been received and an answer provided but that it had not been included in the handout distributed. That final document would be attached to the meeting notes (see *Attachment 3: Responses to submitted questions*).

Susan invited Helen van den Berg to respond to the audit on behalf of the community and for community members to raise any other questions. Helen noted she felt let down and misled by missing data.

> **Question asked during meeting:** Can you clarify why an environmental management audit is recommended for 2020-2021? Will it be a full audit?

Wajahat explained that he recommended an additional audit to help fill data gaps. He said that once the monitoring is back on track the frequency of audits could be reduced again. It will be a full audit.

> **Question asked during meeting:** Page 73 of 174, 8.14 LNAPL: LNAPL depth was not recorded, so how was the thickness of LNAPL determined?

Question will be answered post-meeting in Q&A document (see *Attachment 3: Responses to submitted questions*)

Item 6: Response to audit – EPA

Jeremy Settle responded to questions submitted to EPA (also see *Attachment 3: Responses to submitted questions*).

Submitted question 18, 'Can you pls supply the past three years of Annual Report received from Cleanaway? Which section of EPA is responsible for reading them?': Data is in the audit.

Submitted question 19, 'Given the change in circumstances at Cleanaway's Closed Prescribed Waste will EPA increase Cleanaway's financial assurance?': Financial assurance is for if the company was to abandon the site and the state had to pick up the cost. But there is no material change to the financial risk of the state. These financial assurances get assessed periodically.

Submitted question 20, 'Is EPA accepting all the Auditor's recommendations as is or are making changes to them? If so, what changes are they making?': EPA has had conversations with Cleanaway and will amend the pollution abatement notice (PAN) to stipulate the frequency of audits.

Submitted question 21, 'Will EPA reschedule the next Hydrological Assessment? If so to what date?': One was done in 2019. The audit pulls in different management documents on ground water, landfill gas and surface water, which are continually updated and assessed. These assessments will be continued. The requirements are no more or less, but the emphasis is on monitoring in accordance with them.

> **Question asked during meeting:** Are the ponds that are present now intended as a temporary measure? Or will they become permanent.

Question will be answered post-meeting in Q&A document (see *Attachment 3: Responses to submitted questions*)

Submitted question 22, 'Have the incorrectly locate bores been relocated? If so when was that done?': The work is ongoing.

Submitted question 23, 'Can you please supply a copy of the now merged Surface Water, Groundwater and Leachate Post Closure Plans with the Landfill Gas Monitoring Plan?': Data is in the audit.

Submitted question 24 was redirected to Cleanaway.

Submitted question 25, 'Has EPA meet with Cleanaway's Senior managers yet?': EPA has had a meeting with Cleanaway senior managers, but not the executive team, and has expressed their expectations moving forward.

Submitted question 26, 'When the extent of Cleanaway's non-compliance was established in Oct 2018 was there any media announcement? If not, why not?': EPA became aware of the missed sampling in September 2019.

Submitted question 27, ': How long will it take EPA to issue fines on Cleanaway?': EPA will go through an internal process to determine if a sanction will be issued.

EPA will put forward an amended PAN to include picking up the recommendations of the 2020-21 audit. It sees the missing data as a non-compliance of the monitoring programs and a breach of the post closure pollution abatement notice (PC PAN). Any enforcement outcomes will be determined internally and enforced accordingly. The EPA will continue to enforce the PC PAN and if it changes, their actions will reflect those changes.

> **Question asked during meeting:** We've had many recommendations from past auditors that EPA has not responded to? Will you respond to the recommendations of this audit and take action?

EPA noted that it was their job to hold Cleanaway to account. Some audit recommendations go for a longer period and beyond the timing of the next audit. EPA cannot enforce all recommendations because they may change over time, but they will enforce them until they change.

> **Question asked during meeting:** How do we get to know about changes are included and excluded?

Via the audit report.

Item 7: Response to audit (Cleanaway)

Peter Fennelly from Cleanaway provided a site operations update and shared Cleanaway's answers to submitted questions in his presentation (see *Attachment 4: Cleanaway presentation*). Additional questions were asked and answered throughout his presentation.

Peter said Cleanaway acknowledges the history of issues, and that it is now focused on improving activities moving forward.

Community members noted that their presence and involvement has been long-term and that while individuals from Cleanaway have been helpful, senior management are not showing interest and don't seem to care.

> **Question asked during meeting:** Can a table be generated that shows what bores have been tested that can be regularly updated?

The data for this is in the appendices of the audit report, however Peter agreed to compile a simpler summary.

New action

1019_01: Cleanaway to compile a summary table showing which bores have been tested and to share this with participants quarterly.

> **Question asked during meeting:** There are a few typographical errors across the audit, will these be corrected and a revised version published?

A corrected version will be completed and uploaded to the portal.

> **Question asked during meeting:** Cleanaway worked hard to get access to the airport bores – how come the airport now decline access? Can EPA step in and ask for the airport's compliance?

There was construction going on in that area that affected the safety of access. Bores in airport have now been monitored, since this audit report. Peter agreed to confirm when the bores were last looked at.

New action

1019_02: Cleanaway to confirm when the bores in the airport were last looked at.

> **Question asked during meeting:** How long do the bores stay in the ground for?

Bores remain until they are decommissioned.

> **Question asked during meeting:** In relation to the structural defects at the well head, what risk was there to Cleanaway staff in regard to their exposure to landfill gas?

The risk would have been low because gas would have been venting to the atmosphere. Wajahat confirmed that the risk was 'medium' only because of the uncertainty, not because of imminent risk to people's safety.

> **Question asked during meeting:** Given the gaps in monitoring, does Cleanaway have a system in place that automatically shows what needs to be done, or automatically triggers when activities should be scheduled?

Cleanaway noted that they do have a system in place that supports monitoring.

> **Question asked during meeting:** While there is a standard distance of 20m between the waste mass and a bore, can the gas be released to the environment in that space?

Gas can be released to the atmosphere within the 20m are, but it will depend on the preferential pathway of the gas. However, EPA guidelines stipulate that you always monitor past the extent of the waste mass.

> **Question asked during meeting:** Has the audit report been shared with prospective buyers of the site?

Question will be answered post-meeting in Q&A document (see *Attachment 3: Responses to submitted questions*)

> **Question asked during meeting:** Do the aquifers have LNAPL in them?

The groundwater bores are not targeting aquifers. An independent panel has assessed this issue and the monitoring program shows that LNAPL is not mobile, therefore it was not included in an audit report because there was no evidence it was necessary to look at it.

> **Question asked during meeting:** How much more sampling will be done?

Question will be answered post-meeting in Q&A document (see *Attachment 3: Responses to submitted questions*)

> **Question asked during meeting:** Kleinfelder found some 'nasties' at the eastern most bore. Should we have a bore drilled further east to track movement?

Question will be answered post-meeting in Q&A document (see *Attachment 3: Responses to submitted questions*)

> **Question asked during meeting:** A previous report showed groundwater was moving at 8m per year. If the groundwater is moving at this rate, could the plume have already spread to 1.5km off site and be underneath houses?

Wajahat responded by saying that if the plume is underneath a residential area it will not escalate the risk compared to where it is now. In consideration of the fact that groundwater is not in use by residents, the level of risk has been categorised as low.

> **Question asked during meeting:** Do we need to know where the plume is so that anyone accessing groundwater can avoid it?

Wajahat noted that as per the site's verified Hydrogeological Assessment once the groundwater levels are reduced the movement towards north should stop. Future audits will assess the effectiveness of this approach.

Community members requested Cleanaway to summarise which recommendations have been completed and which ones are partially complete.

New action

1019_03: Cleanaway to provide a table to summarise which recommendation have been completed and which ones are partially completed.

Item 8: Q&A

Susan McNair clarified that the answers to all questions will be completed in writing and provided in the minutes.

Community acknowledged the helpfulness of the written answers.

Item 9: Confirm agenda for 2020

Susan McNair asked participants when they wanted to meet next and what they would like included on the next meeting's agenda.

The community suggested that a follow up was required and that an appropriate time to meet would be after completion and receipt of the annual report of the site's PC PAN (due in March 2020). The next meeting was scheduled for Thursday 14 May, pending finalisation of the PC PAN annual report.

> **Question:** How does Cleanaway communicate with residents outside of meetings?

Olga Ghiri responded noting that any community member may join the meetings and that all minutes from every meeting are made public on the Cleanaway website. The level of engagement for the Tullamarine site was tailored to the fact the site is a closed (not active) site. Tullamarine is the only site in post-closure PAN phase that has community consultation meetings (CRG) and that was because of the uniqueness of the site.

Susan McNair offered to share the minutes again with the council, which the community agreed to.

New action

1019_04: Meeting minutes to be shared with council.

Participants were thanked again for their time and contribution in attending and preparing for the meeting. Susan noted her appreciation for the community's scrutiny of the audit report.

Meeting closed at 8.40pm.

Attachment 1: Rolling action list

UPDATED 31 October 2019

Reference	Action	Who	Status
0418_5	Cleanaway to provide a statement to the community outlining the ongoing monitoring of the flare, the instruments to be used and the technical limitations regarding these measurements.	Stephanie Holland	*Complete. To be removed from action list.*
1018_02	Set the dates of future meetings so they align with the release of a report or other relevant activity.	Susan McNair	*Complete. To be removed from action list.*
1018_03	Forward meeting notes to council to encourage their interest and engagement.	Susan McNair	*Complete. To be removed from action list.*
1019_01	Cleanaway to compile a summary table showing which bores have been tested and to share this with participants quarterly.	Peter Fennelly	
1019_02	Cleanaway to confirm when the bores in the airport were last looked at.	Peter Fennelly	
1019_03	Cleanaway to provide a table to summarise which recommendation have been completed and which ones are partially completed.	Peter Fennelly	
1019_04	Meeting minutes to be shared with council.	Susan McNair	

Attachment 2: GHD presentation

Tullamarine closed landfill audit report

Wajahat Bajwa| EPA Appointed Auditor



Audit report – overview and scope

Independent EPA-appointed auditor appointed to prepare an audit as per EPA guidelines:

- Identify and where possible, quantify the risk of any potential harm or detriment to the environment caused by operations and after care management
- Review the completeness of the site risk assessment
- Re-verify the landfill monitoring program
- Assessed ongoing aftercare management, audit period was July 2017 – June 2018, historical data referenced where appropriate for context
- Considered potential impact to beneficial uses relevant and existing for the site and surrounds in accordance with State environment protection policies
- Revised risk assessment based on risk to beneficial uses and recommendations provided.

Audit report – review of information

- Audit report lists information supplied to the auditor for the audit (Table 3)
- Auditor reviewed available monitoring data, completed site visits, looked at previous reports and used information to develop an understanding of the site conditions and management (summarized in site description, section 3).
- Reviewed previous recommendations and their implementation (section 4), PC PAN requirements (Section 5) and the requirements of the monitoring program (Section 6)
- Completed detailed assessment of monitoring data in the context of the surrounding environment and completed risk assessments related to leachate and groundwater (section 8), landfill gas (section 9) and other aspects and impacts (section 10).
- Assessed the adequacy of the monitoring program and reviewed it and made recommendations for its improvement to address risks (section 11)

Risk assessment – key findings

Risk to groundwater beneficial uses:

- Determined which beneficial uses apply based on the SEPP (Waters)
- Determined if each beneficial use is likely to exist or be relevant at the site and surrounds
- Assessed and assigned risk based on likelihood of impact (i.e., pathway for impact and beneficial use existing and relevant) and available monitoring data and previous reports
- The auditor has reviewed previous risk assessments and reviews by auditors and attempted to assess if risks remained the same based on more recent data compared with historical data and reports, noting that there are gaps in the monitoring data
- All risks assigned as low except for Primary Contact Recreation, this assignment of a medium risk is based on the (low) possibility of contact with groundwater extracted for filling pools and contact with creek water. Assignment of medium partly based on uncertainty due to monitoring gaps.

Risk assessment – key findings

Risk associated with landfill gas:

- Assessed risks as ‘low’ except for direct emissions to open air, assigned medium because there was not follow up on exceedances on triggers from penetrations through the cap – risk may be low, upon showing follow up and rectification and consistently compliant results.
- Medium risk for subsurface migration (accumulation in buildings and structures and services), buildings onsite and nearby service pits – offsite buildings nearby to west only.
- Recommendations made in regards to monitoring to assess risks and to update monitoring program so all required monitoring is captured and completed.

Risk assessment – key findings

Risk assessment ‘other key aspects and impacts’:

Risks assigned as low for potential pathways of impact (sub-surface migration of volatiles into enclosed spaces; leachate discharge to waters/inadequate containment, above ground leachate discharges, contaminated stormwater discharges

With regards to sub-surface migration of volatiles into enclosed spaces – the review of the Groundwater Quality Management Plan and Liquid Waste Management Plan in 2012 (by EPA auditor, Anthony Lane) notes long-term risk to the environment is low, with the exception to land to the south-east. An audit on the land to the south east in 2015 concluded risk to this land via this pathway is low.

Notes that current dataset is limited to assess petroleum and chlorinated hydrocarbons and has recommended updating risk assessment to confirm low vapour intrusion.

Monitoring program - identified non-conformances

- Non conformances were predominantly related to gaps in the required monitoring program (missing data).
- Where monitoring data was not available for the audit period the auditor looked at overall data record, technical reports and audit documents (by other auditors) and professional judgement and experience to assign risk ratings
- Table 7 in the audit report – details the monitoring requirements and where the gaps are, such as not meeting the monitoring frequency for LNAPL thickness and levels and missed groundwater monitoring locations
- Sections 8, 9 and 10 refer to the available monitoring and other information to assess risks. Where data gaps cause too much uncertainty based on professional experience – a higher risk is assigned.

Conclusions

Audit report includes 59 recommendations, assigned high, medium or low priority:

- Additional monitoring for leachate, groundwater and landfill gas
- Revision of monitoring program and inclusion of trigger levels
- Update of the Hydrogeological Assessment for auditor verification
- Ongoing audits at an annual frequency for at least two years to assess implementation of recommendations

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Attachment 3: Responses to submitted questions

Submitted questions and answers in response to audit

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.
>
> *Answered by: 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
>
> *Answered by: 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.

Answered by: 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 typographical error in the units given in the report.
Text from URS (2013):
"The estimated annual LFG flow rate was 7.5 million m3/year in 2011. The estimate annual methane stream flow rate was 3.7 million m3/year in 2011. The study shows that LFG flow rates gradually decline from 15.4 million m3/year in 1992 to 4.4 million m3/year in 2022.
'million' was accidently omitted from each of the units given in the highlighted sentence.

Answered by: GHD

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.

Answered by: CWY

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.*

Answered by: CWY

EPA response: It is Cleanaway's responsibility to maintain relationships with stakeholders and implement access agreements, where necessary. Alternatively, Cleanaway must demonstrate why the inaccessible monitoring locations should no longer be included in the monitoring program along with justification for their removal from the PCMP, to the satisfaction of the Auditor, with alternative monitoring locations proposed if necessary.

EPA can confirm that access issues are associated with monitoring locations on Commonwealth Land. This land is therefore regulated by the Airports (Environment Protection) Regulations 1997 and not EPA jurisdiction.

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: SG13 and SG14 are north of the boundary, the recommendation stated in Edge (2018) and referenced in the audit report is: *'an onsite boundary bore is recommended to the north of SG13/SG14', thus, the reference to 'south'* in this section of the audit report is a typo. However, other sections of the audit report that discuss this in more detail, i.e., Table 20 – states to replace northern bores that are within 20 m of the waste mass. This typographical error does not impact the recommendations made in the report in this regard.

Answered by: GHD

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.

Answered by: CWY

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.

Answered by: CWY

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.

Answered by: 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)

Answered by: 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 is a typo, it should be 2014. Subscript references refer to the list of references in Table 3 of the audit report.

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

Kleinfelder (2017) is the In situ Groundwater assessment

Answered by: GHD

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 required by EPA guidelines.

Answered by: 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.

Answered by: CWY

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

Answer: The auditor notes in section 8.19.1 his findings 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.

Answered by: CWY

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.

Answered by: CWY

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).

Answered by: CWY

Questions to EPA

Question 18: Can you pls supply the past three years of Annual Report received from Cleanaway? Which section of EPA is responsible for reading them?

Answer: The PCPAN for Tullamarine (90004621) was implemented in May 2018. Requirement LC13 states that "by 31st March each year you must supply to the Authority an annual statement on your compliance". As such, only one Annual Report has been provided since the PCPAN was issued, which did not flag any non-compliances. EPA North Metro's desktop assessment identified that not all data had been sighted. All available data for the period before the 2019 annual report is contained within the Post Closure Audit Report.

Answered by: EPA

Question 19: Given the change in circumstances at Cleanaway's Closed Prescribed Waste will EPA increase Cleanaway's financial assurance?

Answer: The Financial assurance is an estimated cost that accounts for potential state liability if it had to take possession of a site. The changes from the audit do not significantly alter that cost and so the FA will remain the same.

Answered by: EPA

Question 20: Is EPA accepting all the Auditor's recommendations as is or are making changes to them? If so what changes are they making?

Answer: Accepting. EPA is considering a PAN requiring an Action Plan, or similar, that addresses each of the 59 requirements of Table 26 of the GHD PCAR, including timeframes for implementation. Note: PAN 90010567 has been drafted to require Cleanaway to provide an action plan. Draft PAN 90010568 has been drafted to formalise the 53V Audits in 2020 and 2021.

Answered by: EPA

Question 21: Will EPA reschedule the next Hydrological Assessment? If so to what date?

Answer: HA was completed in June 2015 (Kleinfelder, 2015) and verified by Auditor Anthony Lane. Section 8.11 of the PCAR states that Cleanaway will be providing a revised HA in 2019.

Answered by: EPA

Question 22: Have the incorrectly locate bores been relocated? If so when was that done?

Answer: EPA infer that this query relates to landfill gas monitoring bores LFG16B and LFG21A which the Auditor noted were plotted incorrectly (by approximately 200 metres) based on the locations of these monitoring bores in the Landfill Gas Risk Assessment (LFGRA). This discrepancy is noted on Page 90, Section 9.4.1 of the Audit Report. A re-survey of all monitoring locations to metres above Australian Height Datum (mAHD) was recommended by the Auditor in the Audit Report.

Answered by: EPA

Question 23: Can you please supply a copy of the now merged Surface Water, Groundwater and Leachate Post Closure Plans with the Landfill Gas Monitoring Plan?

Answer: This can be found in the GDH PCAR (CARMS 62139-3_B) staring on Page 194.

Answered by: EPA

Question 24: Have all the tasks listed in Table 26 Summary of Recommendations pg. 133/174 GHD Report due to be completed by August and September 2019 been completed?

Answer: Cleanaway to clarify what, if any, recommendations from the Audit Report have been implemented or actioned. This includes repairs to damaged monitoring points, re-surveys and the installation of additional monitoring locations etc.

Answered by: EPA

Question 25: Has EPA met with Cleanaway's Senior managers yet?

Answer: EPA has met with those at Cleanaway responsible for management of the site.

Answered by: EPA

Question 26: When the extent of Cleanaway's non-compliance was established in Oct 2018 was there any media announcement? If not, why not?

Answer: EPA became aware of the audit and recommendations in September 2019 at virtually the same time as the community.

Answered by: EPA

Question 27: How long will it take EPA to issue fines on Cleanaway?

Answer: EPA will determine any issuing of fines according to our Compliance and Enforcement Policy

Answered by: EPA

Additional issues raised

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.

Provided by: CWY

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.

Provided by: CWY

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.

Provided by: CWY

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 2O13 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.

Provided by: CWY

Attachment 4: Cleanaway presentation

Tullamarine Landfill – Community Meeting

31 October 2019

CLEANAWAY

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 competed 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?

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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.

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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