TLCCG
Tullamarine Landfill
Community Consultation Group

# MEETING NOTES

WEDNESDAY

## 22 February, 2017

6:00pm for 6:30 – 8:40 pm

Hume Global Learning Centre
1093 Pascoe Vale Road, Broadmeadows

**Facilitator** – Jen Lilburn **Note taker** – Andrea Mason

# MEETING PURPOSE

To provide an update on site rehabilitation.

# ATTENDEES

**Community:** Sam Cetrola, Lolita Gunning, Ovi Clements, Frank Rivoli, Graeme Hodgson, Peter Barbetti, Kim Westcombe, Julie Law, Helen van den Berg, Jos van den Berg

**EPA Victoria (EPA):** Jeremy Settle (Senior Environment Protection Officer)

**Cleanaway:** Kieren McDermott (Environment Specialist), Alan O'Brien (Environment and Technical Manager), Olga Ghiri (Stakeholder and Community Relations Manager)

**Other guests:** Anthony Lane (Cardno), Cherine Fielder (TTTDAG), Dave Corrigan (Kleinfelder)

**Apologies:** Russell Nilsson, Prue Hicks, Harry van Moorst, Mark Globan (Regional Manager Victoria Post Collections, Cleanaway), Alistair Nairn (Advisor - Community & Environmental Partners, EPA Victoria).

# ABOUT THESE NOTES

*Notes were taken and produced by Andrea Mason. Presenters were given the opportunity to review the notes relating to their item to ensure the discussion was accurately summarised, and that it details best available knowledge at the time of the meeting. Additional comments received after the meeting have been highlighted as such.*

*These notes will be posted on the Tullamarine Community Information page on the Cleanaway website http://www.cleanaway.com.au/community/major-project/tullamarine-closed-landfill-vic/ and will be available to the general public. Meeting participants should advise Andrea Mason or Jen Lilburn if they would like their name removed from this public 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

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| 1 | Welcome, Introductions, Jen Lilburn |
| 2 | EPA Reform Update, Jeremy Settle |
| 3 | Groundwater Management Plan & Monitoring Schedule, Alan O'Brien and Kieren McDermott |
| 4 | Leachate Extraction Trial, Alan O'Brien and Kieren McDermott |
| 5 | Flare sampling, Alan O'Brien and Kieren McDermott |
| 6 | Update on community-chosen consultant review, Jeremy Settle |
| 7 | Actions, Wrap Up, Next meeting, Jen Lilburn |

# ACTIONS FROM THE MEETING

**Action 220217_1:** Cleanaway to ask EHS Support for an explanation of the decision-making process in which it was determined that leachate extraction was not feasible.

**Action 220217_2:** Cleanaway to provide Anthony with the assessments of the ability of the current bore network to detect DNAPL.

**Action 220217_3:** Community members to advise if more time beyond the end of March is needed to review/ comment on the Surface water, Groundwater and Leachate Management Plan.

**Action 220217_4:** Cleanaway to provide the most recent test results from bore MB61L and others sampled within the past 2 years to TLCCG.

**Action 220217_5:** Cleanaway to provide a list of the compounds created in the stack for the Feb TLCCG meeting notes.

**Action 220217_6:** Kleinfelder to report on the possible impact to workers including Cleanaway staff inside the 235m zone from the flare stack.

**Action 220217_7:** Cleanaway to provide the model and frequency for the future flare sampling once established.

**Action 220217_8:** Cleanaway to confirm the next meeting dates via email.

# ITEM 1.
# WELCOME, JEN LILBURN

**Jen Lilburn** (Convenor) welcomed everyone and general introductions were conducted.

# ITEM 2.
# EPA VICTORIA REFORM, JEREMY SETTLE

*The independent Inquiry into the EPA undertaken by the Ministerial Advisory Committee, conducted intensive engagement with the community, industry and government to inform the Inquiry findings and the government response. More than 600 people were consulted across Victoria via stakeholder roundtables, written submissions and discussion forums. The proposed key milestones of community and stakeholder engagement over the coming months builds upon the extensive engagement undertaken by the Inquiry, with additional focused engaged activities.* (http://www.epa.vic.gov.au/about-us/response-to-epa-inquiry)

Jeremy noted that the key recommendations relevant to Tullamarine landfill are:

Recommendation 6.1: Establish a legislated Chief Environmental Scientist position within the EPA's senior executive structure.

Recommendation 14.1: The Department of Environment, Land, Water and Planning develop a comprehensive statewide database of sites that pose a high risk to the community because of their past use, which should link to other relevant government data sources including information held by EPA.

Approximately 44 new EPA roles are being developed including community engagement and environmental health capability which has been transferred from Department of Health and Human Services plus epidemiologists and toxicologists to monitor the impact from the environment on human health.

**QUESTION: What is the $2.1M allocated to the database to be spent on? (The report asked for more attention to sites where the full history is unknown)**

> **JEREMY:** The funding is for Department of Environment, Land, Water and Planning to develop a comprehensive statewide database of sites that pose a high risk to the community because of their past use, which should link to other relevant government data sources including information held by the EPA for collation of data on the contaminated sites and production of the map.

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# ITEM 3.
# GROUNDWATER MANAGEMENT PLAN & MONITORING SCHEDULE, ALAN O'BRIEN AND KIEREN MCDERMOTT

Alan provided an overview of the recent activities undertaken by Cleanaway across the landfill operations.

## Recent Activities

- *Moonee Ponds Creek sampling commenced*
- *Ambient air sampling design in progress*
- *Leachate Extraction*
- *Stormwater Connection – Engaged Engineer to prepare a memo for Community*
- *Reviewed Bore Network Depths*
- *Issued Flare Report, Groundwater Management Plan and Groundwater Sampling Schedule*

The creek sampling is focussed on salinity. The ambient air sampling is expected to be implemented this year. The bore depth review is to assess the capacity to detect DNAPL. The new plan for the additional groundwater and gas monitoring bores was circulated late 2016.


In response to Action 301116_2 *Cleanaway to report on whether the high salinity reading at MPCL04 was when there was no flow in the creek*, a flow meter is being used in the creek which will provide more data. Salinity levels are tested every 5m along the stream for 500m in either direction from the landfill.

**QUESTION: Is there any sediment sampling being undertaken in the creek?**

**KIEREN:** There was sediment testing undertaken about 5 years ago, but it is no longer a requirement.

### Tullamarine Planned Activities

- *Sample New Groundwater Wells and Vapour Implants [Underway – to commence in next 2 weeks]*
- *Design Ambient Air Testing [Underway – will be ready by end of March; can share]*
- *Develop Stormwater Concept Design with the Assistance of Community [memo will be ready end of March]*
- *Feedback community on the Groundwater Monitoring Plan [Comments by 31 March]*
- *Install Landfill Gas Extraction Wells on Mound 3 [Late 2017]*

Grey = task underway; Blue = task commencing

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# ITEM 4.
# LEACHATE EXTRACTION TRIAL, ALAN O'BRIEN AND KIEREN MCDERMOTT

EHS Support has undertaken the trials at Mounds 1, 2, and 3. Alan explained that the tests on Mounds 1 and 2 targeted the leachate whereas Mound 3 testing targeted the Light Non-Aqueous Phase Liquids (LNAPL) - oil layer on the leachate.

## Leachate Trial Report

KEY FINDINGS – MOUNDS 1&2 LEACHATE

- *Sumps were selected based on volume of leachate available for pumping.*
- *Small Volumes of Leachate Pumped from sumps (c. 10KL in total).*
- *Relatively slow pumping rate and recovery.*
- *Transmissivity (T) of the waste is low and below threshold recommended in US guidance for continued pumping.*

KEY FINDINGS – MOUND 3 LNAPL

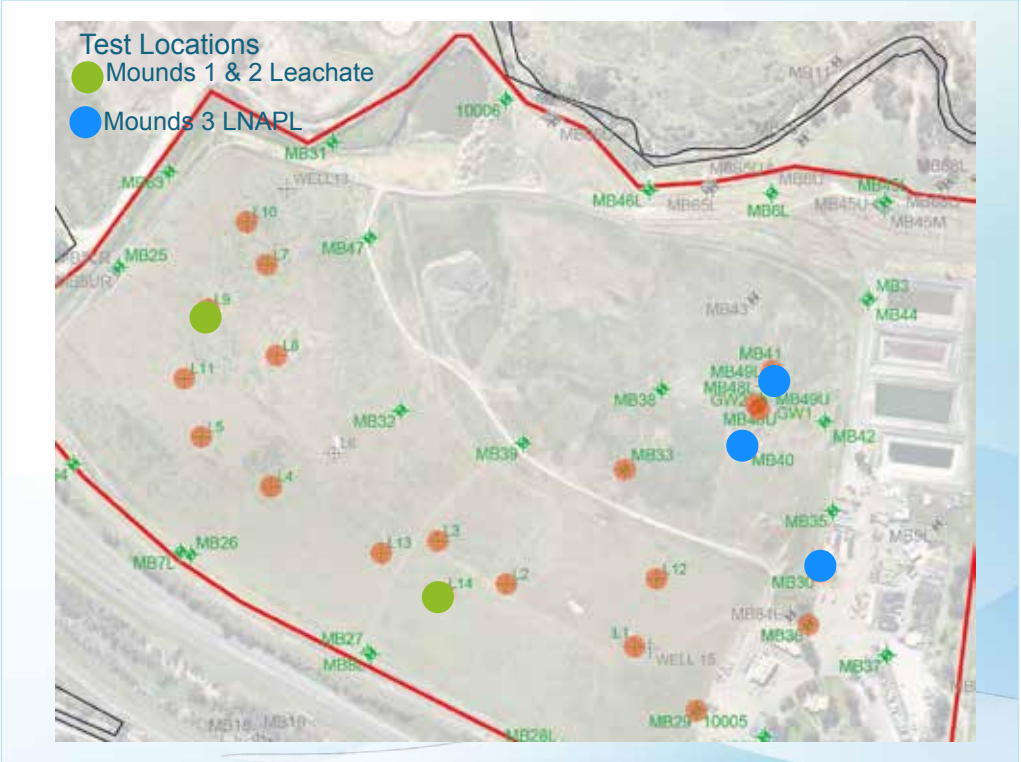
- *Locations were selected based on volume of Liquid Non-Aqueous Phase Liquids (LNAPL) available for pumping.*
- *Very small volumes of LNAPL recovered from pumping operations sumps (c. 100L in total).*
- *Relatively slow pumping rate and recovery.*
- *Transmissivity (T) of the waste is low and below threshold recommended in US guidance for continued pumping.*

**QUESTION: Was the recovery rate for the leachate as slow as before when it was decided that extraction wasn't feasible?**

**KIEREN:** The recovery rates were the same as before. Mound 3 has not been tested before.

**QUESTION: Why did EHS Support decide to use the highest Transmissivity reading as the threshold for not undertaking LNAPL extraction, when there was a broad range of lower readings measured across the wells that the experts in the area ITRC say is feasible and well MB40 showed a range of measures in the middle?**

***Action 220217_1:*** *Cleanaway to ask EHS Support for an explanation of the decision-making process in which it was determined that leachate extraction was not feasible.*



## Surface water, Groundwater and Leachate Management Plan

WHAT IS IT?

- *Provides a road map for the next few years' environmental management at the landfill in terms of surface water, groundwater and leachate.*
- *It is required as part of the post closure Pollution Abatement Notice (PAN).*
- *Needed updating now that the Groundwater Technical Review for Auditor Review (TRAR) is completed.*
- *The Auditor is reviewing and comments will be taken from the Community until end of March.*
- *Currently Cleanaway is following this plan.*

**QUESTION: Where is the planned testing for DNAPL going to be undertaken? Is it possible for the Auditor to be involved in those discussions? What is the rationale for testing for DNAPL? It would be terrible if the DNAPL made its way into the creek.**

**ALAN:** The current testing is looking at the infrastructure of the wells to see if they could be used for testing for DNAPL. The contractor is sampling all the wells on site. Testing is best in deep wells especially in the bedrock. Cleanaway is comfortable with the Auditor being involved in the decision-making process.

**QUESTION: If the DNAPL has escaped how far could it have travelled? Can it move through the fractured basalt?**

**KIEREN:** DNAPL doesn't move quickly – it tends to move preferentially into more permeable zones where it sits and diffuses into the groundwater. Solubility can provide a measure for assessing for the presence of DNAPL and this was done at Tullamarine.

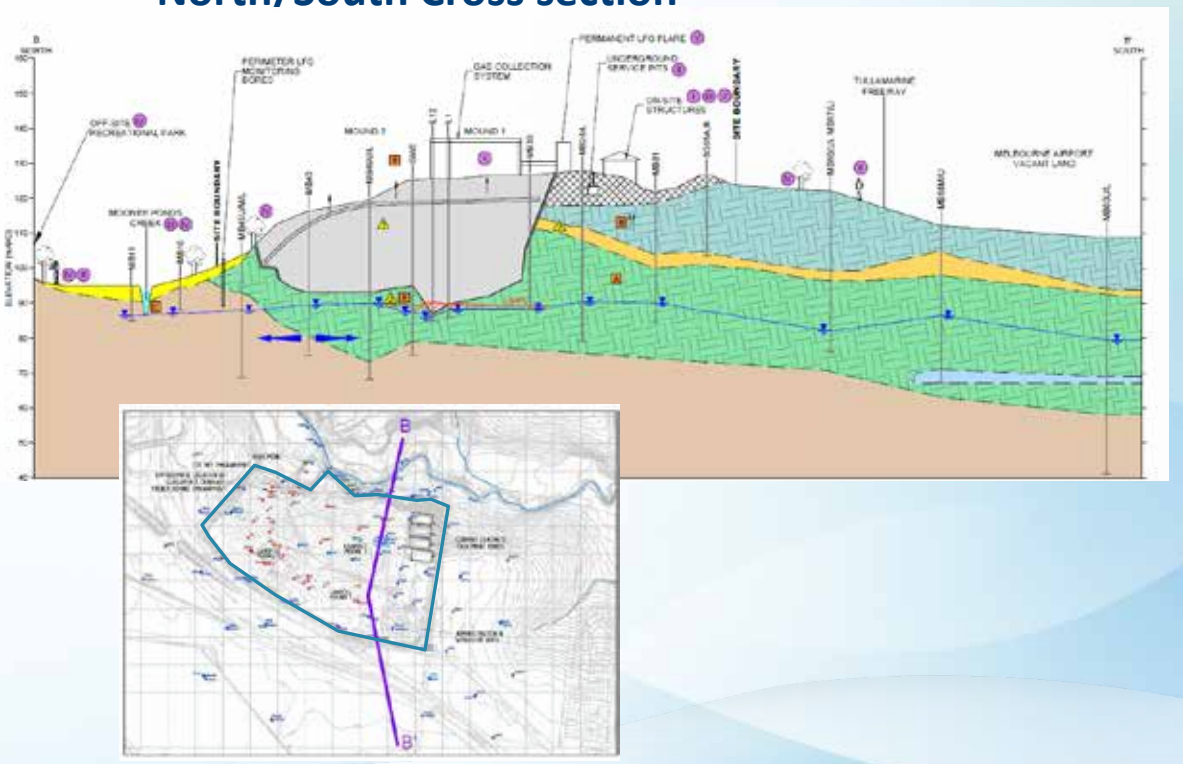
**ANTHONY:** DNAPL will follow gravity and its movement is dependent on the permeability of the zones. If the openings in the bedrock are too small, it can't pass through. The DNAPL pattern of occurrence is irregular and there is not much pushing it sideways – therefore it is unlikely to have moved.

***Action 220217_2:*** *Cleanaway to provide Anthony with the assessments of the ability of the current bore network to detect DNAPL.*

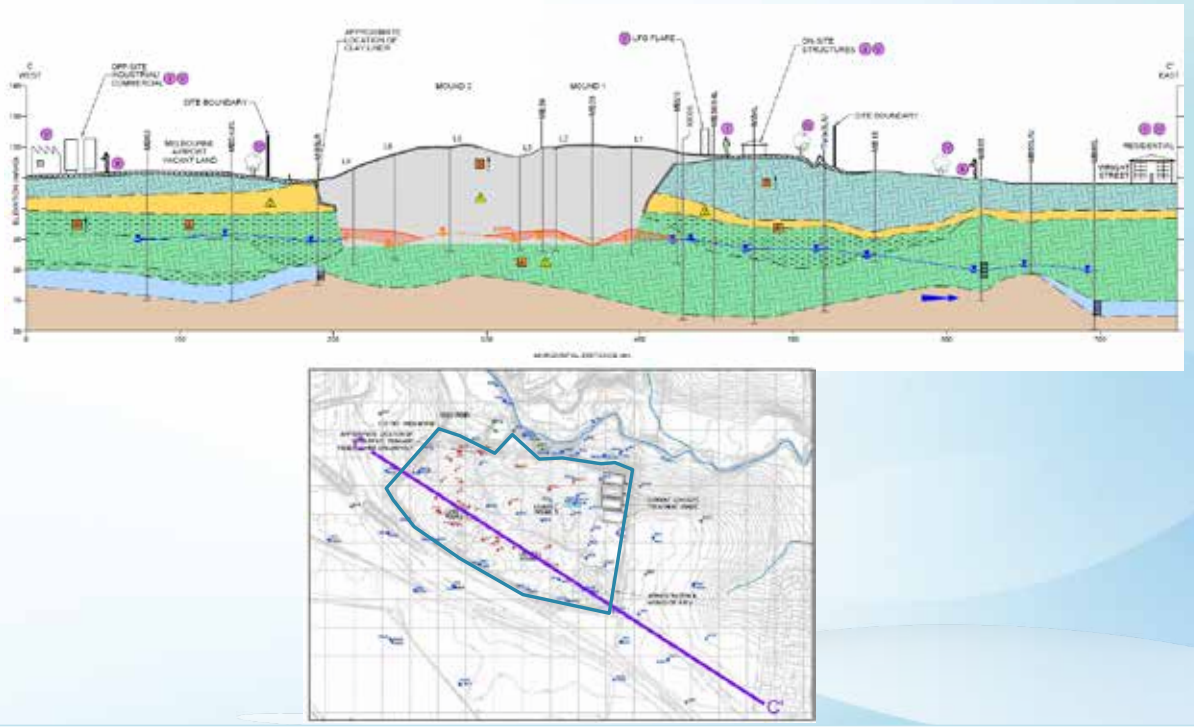
**QUESTION: Could the EPA also be involved in the assessment of the proposal for DNAPL testing?**

**JEREMY:** The DNAPL testing is not required by EPA and EPA would not need to take part in these discussions.

## Depth of Wells Near Landfill
## North/South Cross section




## Depth of Wells Near Landfill
## East/West Cross section



The cross-section diagrams (on previous page) show the depth of the wells on site. Preferred wells for testing are at the bottom of the landfill, deep in the bedrock and down gradient from the landfill.

**QUESTION: In the past, it was said that there was equivalent to 20 double garages in volume of LNAPL in the landfill but is there an estimation of the quantity of DNAPL in the site?**

**ALAN:** DNAPL hasn't been detected yet at the landfill at all.

**KIEREN:** During drilling and sampling of the wells the chemicals that show DNAPL presence would be detected even if you don't hit a fracture in the basalt that may be full of DNAPL, by checking for concentrations of these chemicals in the groundwater. We have never crossed the solubility threshold of those chemicals at Tullamarine that would indicate the presence of DNAPL.

## Groundwater Monitoring Schedule

WHAT IS IT?

- *It specifies the requirements for monitoring for the landfill such as frequency and monitoring suite.*
- *Adjustments can be made to this and Cleanaway can notify our contractors of the change.*
- *Comments will be taken from the Community until end of March.*
- *Currently Cleanaway is following this schedule.*

Comments from the community on the Surface Water, Groundwater and Leachate Management Plan would be appreciated by the end of March to finalise the process.

***Action 220217_3:*** *Community members to advise if more time beyond the end of March is needed to review/comment on the Surface water, Groundwater and Leachate Management Plan.*

**QUESTION: Bore MB61L has been shown to contain vinyl chloride – is there any update on this polluted well?**

**KIEREN:** Sampling will be undertaken this year as part of the sampling of all 110 boreholes. This testing is completed every 3 years for the Groundwater Technical Review for Auditor Review (TRAR). There was some sampling done in the past 2 years as part of the assessing natural attenuation. The results have not been released as they were intended to provide a snapshot for the TRAR.

***Action 220217_4:*** *Cleanaway to provide the most recent test results from bore MB61L and others sampled within the past 2 years to TLCCG.*

# ITEM 5.
# FLARE REPORT, ALAN O'BRIEN AND KIEREN MCDERMOTT

Alan gave an overview of the flare sampling techniques and report undertaken by Kleinfelder.

## Flare Report

KEY FINDINGS

- *A New more robust sampling technique was employed*
- *Results indicate Flare emissions are low and there is no impact to ambient air*
- *Methane destruction efficiency >99.9%*
- *Some compounds are created in the stack and these are below relevant standards including US and Europe*
- *While further sampling is not required by EPA Victoria, Cleanaway will complete ambient air sampling during 2017*
- *LFG Auditor (Warren Pump) is providing his comments on the report.*

**QUESTION: What are the compounds that are created in the stack?**

**ALAN:** Some of the compounds include dioxins, acrolein and furans.

***Action 220217_5:*** *Cleanaway to provide a list of the compounds created in the stack for the Feb TLCCG meeting notes.*

**QUESTION: Does Cleanaway adopt the lowest standard?**

**ALAN:** Cleanaway uses the lowest levels in the standards as its guide.

**DAVID:** The flare emissions testing results have been below all the relevant standards that are available.

**COMMENT:** ***The current standards do not meet the community standards. Cleanaway has taken steps greater than those required on other issues - so why not on this?***

**QUESTION ON NOTICE: (For EPA) Why are the standards (e.g. for Dioxins) for Victoria more lenient than those for Australia, and why are Australian standards more lenient than for Europe/the US? (The questioner acknowledged that this question has been asked at TLCCG before, but is interested in a response from those in EPA Victoria who set the standards.)**

**JEREMY:** EPA do not set the standards but regulate them. The standards for all segments of the environment are set by the department.

There are different standards for in stack monitoring vs ambient air monitoring. Victoria doesn't have a standard for in stack monitoring and the EU standard of 0.1 ng/m3 is used.

For ambient air monitoring, the standards are outlined in the State Environment Protection Policy - Air Quality Management (SEPP AQM) which has a design criteria for dioxins and furans of 0.0037ng/m3. This is a modelled number that takes into consideration atmospheric conditions and specific stack parameters.

**COMMENT:** ***Is there a way the community can put in a submission for the development of a national standard for dioxin intake per month? Everyone is using different measures, methods and standards which is very difficult for community members to understand.***

**JEREMY:** The communication of technical material is a constant challenge for science. In Victoria, the SEPP AQM defines the environmental standards.

**QUESTION: Is there a national standard for intake into humans per month for different situations e.g. pregnant women, children and for all pathways of intake?**

**JEREMY:** EPAs Principle Air Expert is not aware of a national standard that addresses this in relation to dioxins and furans.

Currently at Tullamarine, the EU standard is used for monitoring in stack. The SEPP AQM is used for outdoor ambient air, and this is modelled – not measured. For Tullamarine, it was determined by Kleinfelder that the greatest impact from the stack was at the 235m landing point for emissions from the stack. At that point, the SEPP standard of 0.0037ng/m3 is used. This is a measurement of concentration and should be confused with the flow rate, ng/min, measurement which was also recorded in the report. The concentration and flow are both used in assessing against the design criteria of 0.0037ng/m3.

**DAVID:** Kleinfelder uses the EU and USA standards. The reports answer to those standards.

**COMMENT:** ***According to toxicologists, individuals differ in their responses to dioxins – particularly children, pregnant women and the elderly and there is no truly safe level.***

**QUESTION: Why don't we simply follow the lowest worldwide standard?**

**JEREMY:** The standards across the world are based on different studies and are designed to be applied in different scenarios. The standards referred to in legislation can also vary based on when the legislation was set and what was the accepted standard or limit at that time.

**QUESTION ON NOTICE: (For Cleanaway) Can the reporting on the flare please be consistent with that provided in 2015? In particular, is it possible to see data compared with the established standards in the same way as that provided in 2015? (The 2015 flare report included a table with the standards from the SEPP AQM which was easy to follow. The new report is comprehensive but much harder to read. The dioxin and furans showed quite clear readings in 2015 but the 2016 readings are way above the standard for 2015. The concern is that the differences are not explained. The response from Kleinfelder states that different tests were used and therefore there were different results - but shouldn't the results be the same and why are there inconsistencies in the data? Also there is no link back to the standards throughout the document.** ***Reports should be able to be read by anyone including government, community, media etc.)***

**KIEREN:** The 2015 report only referred to flare stack emissions. The second in 2016 is much more comprehensive and covers more scenarios.

**ALAN:** This feedback on the communication of reports is valuable and Cleanaway will continue to make changes so that reports are easier to read in the future.

**COMMENT:** ***There needs to be an interim step in the reporting which takes the scientific data from the required scientific reports and re-presents this in a format that is accessible to the community to increase their understanding and reduce the number of volunteer hours spent reading the reports.***

**QUESTION: How do you explain the difference in the data between 2015 for dioxins of 0.0037ng/m3 but in Table 3.1 of the 2016 report the in-stack reading is 0.49?**

**JEREMY:** I think there was confusion in the comparison of the two numbers. The really low number is when toxicity of the specific dioxin has been taken into account, while the 0.49 is when all raw numbers have been summed. The toxicity of each dioxin is different and can vary up to three orders of magnitude and this difference of toxicity needs to be taken into consideration. The 0.00037ng/m3 is the design criteria considering the variability of toxicity.

COMMENT: ***Cleanaway made a promise that there would be 99.99% destruction in the flare in the stack. This has not been achieved and still hasn't been addressed in these reports. Mass weighted averages are statistical methods but are not suitable for saying that the stack meets the requirements. One compound in excess is not acceptable. We are not convinced that this flare meets the 99.99% destruction in stack as promised. Methane is not the only compound that needs to be measured.***

**ALAN:** Cleanaway is assessing the ambient air quality to quantify the risk from the flare and will report back to TLCCG in a manner that is accessible to the members.

QUESTION: **Where can the SEPPs be found online?**

[**After the meeting:** The SEPPs can be found at http://www.EPA Victoria.vic.gov.au/about-us/legislation/air-legislation]

QUESTION: **What risks/impact is there on the landfill staff who are working inside the 235m zone?**

**ALAN:** There is some reference to this in the Kleinfelder report. The ambient air quality sampling will be undertaken closer to the flare and will help inform those questions.

***Action 220217_6:*** *Kleinfelder to report on the possible impact to workers including Cleanaway staff inside the 235m zone from the flare stack.*

QUESTION: **Dioxins and furans carry a long way in the air. Does the model consider both high wind events and still days (which can often be worse) and when more people are at risk?**

**DAVE:** The modelling takes on board worst conditions using meteorological data from a 5-year period to predict that the highest concentration on that worst day would be 235m from the stack. The worst possible result in the modelling was still less than the acceptable criteria.

**KIEREN:** The 235m zone is close to the landfill depot and the buffer land.

QUESTION: **What is the criteria used to determine where to undertake the air quality sampling?**

**ALAN:** The 235m zone is only a guide for a worst-case scenario. The sampling will be undertaken at differing locations - close to the flare and further into the buffer land. For the sampling, power and a secure site over a long period is required. The sampling sites also need to be away from other sources such as the freeway to reduce sampling contamination. The modelling outcomes will provide a good snapshot of what is occurring. There will be up to 10 rounds of sampling and Cleanaway is still investigating all the options.

COMMENT: ***The flare should have zero emissions at the highest drop point – 235m in the modelling.***

QUESTION: **Are you aware that the airport is undertaking air sampling near the Westmeadows football ground and is it appropriate to communicate with them about this?**

**KIEREN:** Cleanaway has been in discussions with the airport in the past and we have a good relationship with them. Cleanaway could ask what they are testing for in Westmeadows.

QUESTION: **In 2004/5 a mystery illness saw 37 people hospitalized. Could this have been due to the potential emissions source of dioxins from the landfill and has EPA been involved in any of these investigations?**

**JEREMY:** EPA Victoria has no jurisdiction over Commonwealth land and has not been involved in any investigation into this incident to my knowledge.

## Flare Sampling Equipment - Calibrated In-Situ Equipment

### Methane ($CH_4$), Temp, Pressure, Flow



## Flare Equipment (new sample locations circled in red)

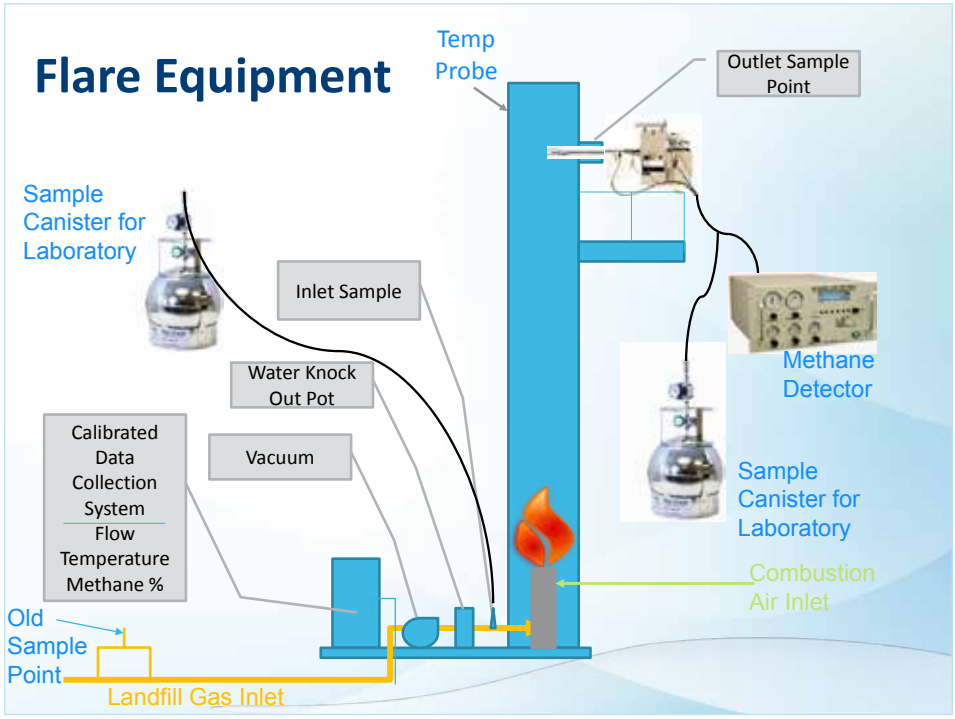
Ektimo used the sampling points shown to collect samples directly into a canister which reduced contamination or air exposure.

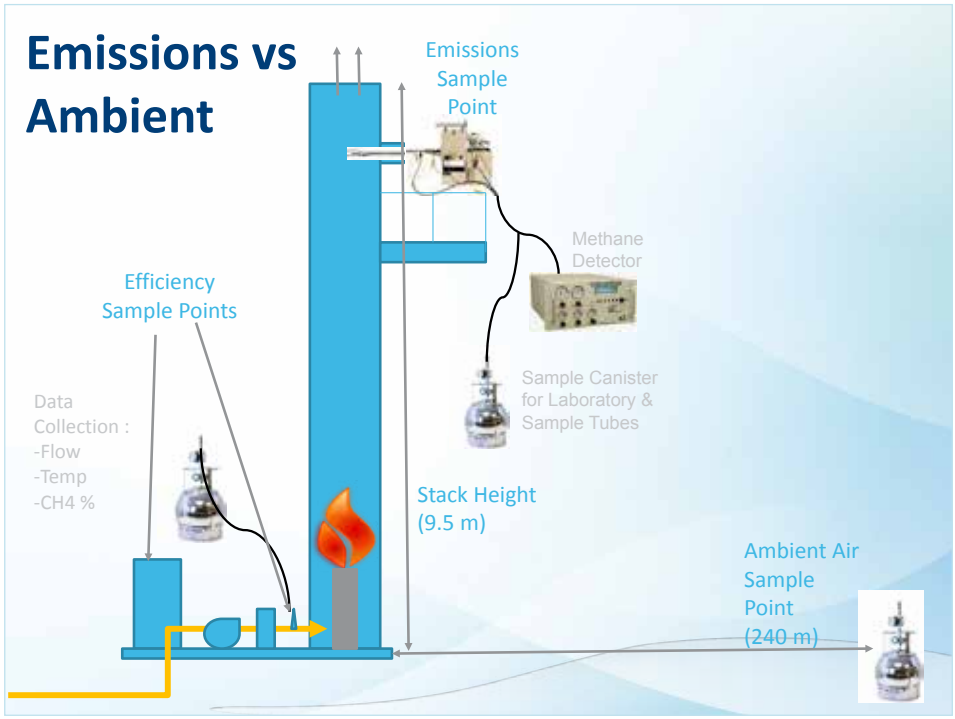
**QUESTION: Is there data comparing what comes into the flare from below and what comes out after the destruction process?**

**KIEREN:** These results are shown in the Kleinfelder report as sent.

**QUESTION: What chemicals other than methane are measured in the flare?**

**KIEREN:** Sampling is undertaken before the entry point into the flare and the emissions are measured at the top of the stack. Over 600 chemicals are tested as well as the methane (CH4). Everything identified in the LNAPL testing was tested for in the flare. This sampling is the most comprehensive undertaken in Australia.



The sampling techniques have been improved on older attempts. The sample canister is filled at a much lower point in the flare after reaching the vacuum pump, allowing for more accurate testing.

Ektimo also sent a truck around to do instantaneous monitoring while sampling. The figure shows three different sample points – efficiency sample points, the emissions sample point and the proposed ambient air sample point 240m from the flare (where modelling indicated sampling should take place).

COMMENT: ***There appears to be improvements from what was learned from the 2015 sampling. It seems unusual that the company that designed the flare didn't know about any of these issues when they sold it to Cleanaway.***

QUESTION: **How often is the sampling to be undertaken?**

**KIEREN:** Cleanaway is still working with the Auditor to finalise the testing regime but most likely there will be three sample points that transect the site at different distances from the flare. Sampling has been undertaken in 2015 and 2016. The frequency is still to be determined for future sampling.

QUESTION: **What would happen if the sampling returned a really poor result or showed that the chemicals weren't being destroyed properly?**

**ALAN:** Providing the flare is operating within the correct parameters it should be achieving the levels that have been validated through the monitoring. Methane levels, temperature and flow are monitored in the flare constantly and the flare will shut down if there is a problem. Providing the flare temperature is correct, then the emissions should be correct. The sampling has been designed to demonstrate that this is working correctly.

QUESTION: **Are there plans to do further monitoring?**

**ALAN:** That would need to be decided in consultation with the Auditor but there are no plans at present. The next step is to complete the ambient air sampling.

***Action 220217_7:*** *Cleanaway to provide the model and frequency for the future flare sampling once established.*

COMMENT: ***Several community members reiterated their disappointment that the flare was not reaching the promised 99.99% destruction rate by Cleanaway management and that it has taken years to make the necessary changes to the flare to improve the sampling. The 99.99% destruction rate is the benchmark that the community expects to be reached. The community is disappointed that a commitment given by a manager has caused so much disappointment and that no one in senior management has given any assistance in addressing this serious failure.***

**ALAN:** Those claims were made by other staff members and I wasn't in attendance at the meeting where that commitment was made to understand the context. The current monitoring is designed to understand the emissions from the flare and what needs to be improved.

# ITEM 6.
# UPDATE ON COMMUNITY-CHOSEN CONSULTANT REVIEW, JEREMY SETTLE

Jeremy reported that EPA Victoria and the community were still waiting on the report from the US consultant who has had several interruptions leading to serious delays.

COMMENT: ***Projects that have a permanent community consultant working with them have shown to assist the community members with complex issues they struggle to understand.***

**Next meeting:** Wednesday May 24 (tbc), followed by October.

***Action 220217_8:*** *Cleanaway to confirm the next meeting dates via email.*

**Jen thanked everyone for their contributions.**

**Meeting closed 8.40pm.**

KISMET FORWARD
FACILITATING BETTER DECISIONS