EHS Support

Leachate Pumping Trial
Tullamarine Landfill

Prepared for:
Cleanaway

February 2017

consider it done

FINAL
Report

Prepared by:
EHS Support, LLC

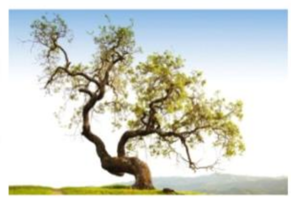

TABLE OF CONTENTS

LIST OF TABLES

FIGURES

PLATES

APPENDICES

ACRONYMS

%	percent
cm	centimetre
C	Celsius
EHS Support	EHS Support Pty Ltd
EMS	Engineering and Maintenance Solutions
EPA	Environmental Protection Authority of Victoria
FID	Flame Ionisation Detector
4WD	four-wheel-drive
HAZOP	Hazard and Operability Study
ITRC	Interstate Technology Regulatory Council
kg	kilogram
kL/day	kilolitres per day
kPa	absolute pressure
kPag	Kilopascal Gauge
L	litres
LGM	Landfall Gas Meter
Lph	litres per hour
Lpm	litres per minute
LEL	Lower Explosive Limit
LNAPL	Light Non-aqueous Phase Liquid
LS	level switch
LSH	level switch high
m	metres
mg/L	milligram per litre
mm	millimetres
m^2/day	square metre per day
PCBs	Polychlorinated Biphenyls
PID	Photo-ionisation Detector
psig	pounds per square inch gauge
PVC	Polyvinyl chloride
scfm	standard cubic feet per minute
the Site	Tullamarine Closed Landfill Site
Tn	transmissivity

STATEMENT OF LIMITATIONS

This report is intended for the sole use of Cleanaway. The scope of services performed during this report may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or of the findings, conclusions or recommendations presented herein is at the sole risk of said user.

Background information and other data have been furnished to EHS Support Pty Ltd (EHS Support) by Cleanaway and/or third parties, which EHS Support has used in preparing this document. EHS Support has relied on this information as furnished, and is neither responsible for nor has confirmed the accuracy of this information.

Opinions presented herein apply to the existing and reasonably foreseeable Site conditions at the time of our assessment. They cannot apply to Site changes of which EHS Support is unaware and has not had the opportunity to review. Changes in the condition of this property may occur with time due to natural processes or works of man at the Site or on adjacent properties. Changes in applicable standards may also occur as a result of legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond our control.

EXECUTIVE SUMMARY

This document reports on leachate pumping activities (Mound 1 and 2) and LNAPL baildown testing (Mound 3) undertaken at the Cleanaway Tullamarine landfill located at 206 to 300 Western Avenue, Tullamarine (Melbourne).

The objective of the leachate pumping trial was to evaluate whether lowering of the leachate elevation within the landfill cells can be accelerated by pumping and whether longer-term pumping may be feasible. The pumping trial is not a regulatory requirement and is driven by Cleanaway's corporate and community objectives.

A separate scope of works focused on determining transmissitivity of LNAPL by bailing down testing from monitoring wells within Mound 3. LNAPL removal in Mound 3 is also not a regulatory requirement and is driven by Cleanaway's corporate and community objectives.

Based on the data collected during pumping of L-09 and L-14, transmissivity of the waste media within Mound 1 and 2 is low. The analysis herein indicates a large number of wells must be installed to accelerate the reducing of leachate elevation with in the order of 60 new wells required to reduce the leachate elevation in fifteen years. Kleinfelder 2015 states the leachate elevation will reduce to an acceptable level by 2035 without pumping with the capping of the landfill removing the primary source of leachate generation (rainfall and infiltration through the waste). Considering the significant effort with expected low volume of leachate and limited reduction in leachate head, coupled with multiple penetrations of the cap that would be required, installation of additional wells and pumping to accelerate the reducing of the leachate elevation is not considered justified.

Based on the baildown tests undertaken in Mound 3 and associated data analysis, the derived Tn for MB30 and MB40 and inferred Tn for MB41, were less than the United States Interstate Technical and Regulatory Council (ITRC) mobility and recoverability threshold. Consequently, LNAPL in the vicinity of MB30, MB40 and MB41 is considered to have low migration and recoverability potential.

1.0 INTRODUCTION

1.1 Purpose

This document reports on leachate pumping activities (Mound 1 and 2) and LNAPL baildown testing (Mound 3) undertaken in August 2016 at the Cleanaway Tullamarine landfill located at 206 to 300 Western Avenue, Tullamarine (Melbourne).

1.2 Background

The Tullamarine Closed Landfill Site (the Site) is owned and operated by Cleanaway. Between 1972 and 2008, the Site was used for disposal of Prescribed Industrial Wastes (Liquid and Solid) under Environmental Protection Authority of Victoria (EPA) license HS346. Liquid waste disposal ceased in 1987 and solid waste disposal ceased in 2008. By 2011, the landfill was capped to EPA performance requirements.

Monitoring of leachate levels within extraction wells L1 to L14 (within Mound 1 and 2) began in June 2003 and is currently undertaken monthly. In May 2014, leachate elevation ranges were recorded approximately 2.5 to 7.5 m above the base of the landfill and 0.4 to 3.5 m above the surrounding groundwater. The leachate elevation in one well only was below the surrounding groundwater elevation (0.5 m in L11). The Hydrogeological Assessment (Kleinfelder, 2015) concluded leachate levels are generally lowering and will reach specified target elevations by 2035.

Figure 1 shows the Site.

Figure 1 Site

1.3 Objectives

The objective of leachate pumping was to evaluate whether the lowering of the leachate elevation within the landfill cells could be significantly accelerated by pumping. While LNAPL is present in most of the wells in Mound 1 and 2, LNAPL removal was not the objective of this assessment.

The objective of LNAPL removal from wells in Mound 3 was to assess LNAPL transmissivity (Tn). LNAPL transmissivity is a measure of the ability of the formation to transmit LNAPL to a well. It is widely used as an indication of mobility and recoverability of LNAPL.

Leachate pumping and LNAPL removal are not regulatory requirements and are driven by Cleanaway's corporate and community objectives.

2.0 LEACHATE PUMPING

2.1 Design, Construction and Commissioning

The design of the leachate pumping test was detailed in the Work Plan (EHS Support, 2016) and any variations to the design are discussed in the following sections.

A design safety review (Hazards and Operability Study or HAZOP) was undertaken for the leachate pumping and processing system prior to commissioning (Appendix A). Commissioning was undertaken in a systematic manner to ensure critical safety devices were properly tested.

A HAZOP for the LNAPL trailer was undertaken for the Baildown Testing in 2014. Consequently, as no significant changes were made since then, a formal HAZOP was not undertaken. Review of the operation was undertaken when dry-running the operation procedures.

2.2 Leachate Pumping Wells and Observation Wells

Leachate extraction wells L9 and L14 were selected for testing based on location (one on the eastern side of the site and one on the west), leachate thickness (with thicker horizon preferred) and LNAPL thickness / recoverability (low thickness preferred). Gauging immediately prior to the testing phase confirmed sufficient leachate thickness for testing (see Table 3).

Observation wells were selected based on proximity to the test wells and suitability of construction. Table 1 shows the monitoring wells used to monitor influence on leachate level resulting from pumping from each test well.

Table 1 Leachate Pumping and Observation Wells

Test Well	L9	L14
Observation wells	L7, L8, L10 and MB25	L2, L3 and L13

Figure 2 shows the locations of the test and observation wells.

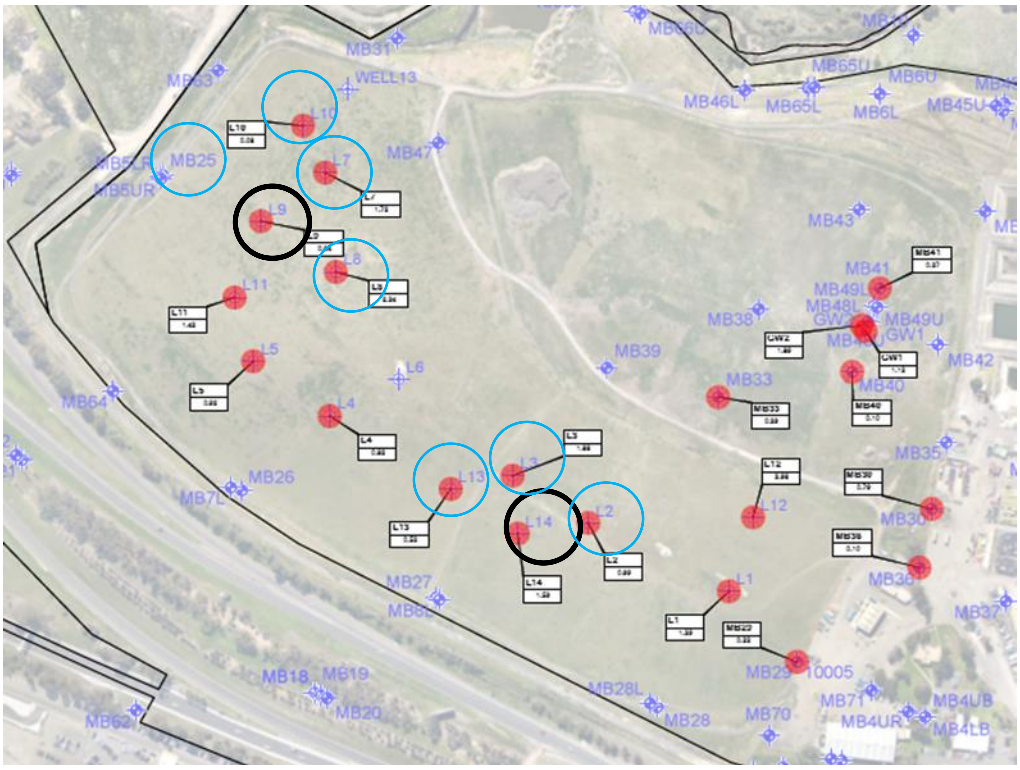

Figure 2 Location of Test and Observation Wells

2.3 LNAPL Removal Equipment

LNAPL recovery equipment used for the LNAPL Baildown Testing undertaken in May 2014 was re-used for this phase of works. The LNAPL recovery system consists:

- Top loading on-demand submersible pump (Autopump® AP4)
- LNAPL Trailer comprising sealed bund trailer with leak detection level switch, spooled oil hose, flow measuring tank, storage tank, nitrogen compressed gas supply and control system including over-fill protection. Prior to use for this work, the LNAPL trailer under-went maintenance including replacement and tightening of weeping fittings (contained within the trailer bund), replacement of the measuring cylinder for a smaller and easier to manage tank.
- Portable bund.

Plate 1 shows the LNAPL trailer sitting on the portable bund (sides to be put up at that stage) and adjacent a pumping well. The oil-hose spool is shown on the right of the photograph, the measuring cylinder at the top and the storage tank in the top-right.

Plate 1 LNAPL Trailer on Portable Bund

2.4 Leachate Pumping and Processing Equipment

The leachate pumping system comprised bottom loading on-demand pump (AP4) pumping through double contained HDPE hose to an oil-water separator where oil was drained to a 205-L drum and leachate into a separate transfer tank. The oil/water separator was required to manage any oil remaining in the leachate stream after bulk LNAPL removal. An air-operated diaphragm pump transferred leachate to a demountable interceptor tank supplied by the Cleanaway Campbellfield facility. The oil/water separator, oil-storage tank, transfer tank and transfer pump were installed within a bunded shipping container. An air-powered control system comprising level switches and solenoids was installed to prevent over-fill. The air for the down-well pump, transfer pump and control system was supplied by a portable 12 scfm air compressor powered by a rental generator. Plate 2 shows the leachate processing container and interceptor tank and the air-powered controls.

The wells were maintained under slight vacuum during testing using a valve throttling extractive flow from the landfill extraction system.

Plate 2 Air Control System for Leachate Processing Container

Plate 3 shows two of the process containment mechanisms deployed – double contained liquid piping from the well to the leachate processing container (prior to sealing of the annulus) and a check valve on the interceptor tank to prevent flowback.


Plate 3 Double Contained Piping and Check Valve

2.5 Disposal

LNAPL collected in the trailer storage tank was transported to Daniel's Health Services on 25th November 2016. The EPA Waste Transport Certificate is included in Appendix B.

The interceptor tank was transported back to Cleanaway Campbellfield for disposal of the leachate. The EPA Waste Transport Certificate is included in Appendix B.

2.6 Monitoring Methods and Equipment

Table 2 shows the monitored parameters and methods and equipment used to obtain those parameters.

Table 2 Monitoring Methods and Equipment

Parameter	Equipment	Method
LNAPL removed from test well	Interface probe	Gauge LNAPL storage tank for LNAPL and leachate
Leachate flowrate	Pulse counter on down-well pump with comparison to weighed mass at disposal facility	Record down-well number of pump pulses and multiply by known volume of pump. Reconcile with disposed from interceptor tank.
Liquid level change in test and observation wells	Interface probe	Gauging under the procedure outlined in the Work Plan

A landfill gas meter and photo-ionisation detector were used to monitor the atmosphere around the works to ensure a safe operating environment.

2.7 Testing - LNAPL Removal and Leachate Pumping

Two independent leachate pumping tests were performed. Prior to leachate pumping, LNAPL was removed from each test well using the top loading on-demand submersible pump.

Pumping of leachate from well L14 in Mound 1 commenced at 1:32 pm on 3 August 2016 and ended at 1:25 pm on 5 August 2016. Pumping of leachate from well L09 in Mound 2 commenced 2:10pm on10 August 2016 and ended 1:00 pm on 12 August 2016.

Prior to leachate pumping, LNAPL was removed from each test well using the top loading AP4 pumping to the LNAPL trailer.

2.8 Results and Analysis

Measurements of pumping flowrate, drawdown in the test well and change in liquid level in surrounding wells were collected to evaluate the test against the objectives. Table 3 shows the key results for the test wells and the charts following show gauging for the observation wells.

Table 3 Key Results from Leachate Pumping

Parameter	L14 Pre-test	L14 Post test	L09 Pre-test	L09 Post-test
Total test time	~47 h		~48 h	
Depth to LNAPL (mbTOC)	28.26	-	23.26	26.46
Depth to leachate (mbTOC)	29.19	31.01	25.12	26.60
LNAPL thickness (m)	0.89	nil	1.86	0.14
Leachate thickness (m)	2.31	0.49	5.98	4.50
Volume of LNAPL in well	28 L	nil	58 L	4 L
Bulk LNAPL removed	84 L		79 L	
Volume of leachate removed	860 L		1,843 L	

Notes:

1. mbTOC = metres below top of casing
2. L = litres
3. L/h = litres per hour

The total mass disposed by Cleanaway from the Interceptor tank was 3,160 kg. Accounting for approximately 400 L of rainwater from the bund used to charge the oil/water separator and assuming a density for water of 1 kg/L, the total leachate pumped from the two wells is approximately 2,760 L. This accords with the total volume estimated from the pump cycles (~2,700 L).

Table 4 shows the depth to, thickness and volume of leachate pre-test and the maximum drawdown for the test and observation wells.

Table 4 Leachate Details Pre-Test and Drawdown for Test and Observation Wells

Well ID	Test Well and Distance (m)	Depth to leachate pre-test (mbTOC)	Leachate thickness pre-test (m)	Leachate volume pre-test (L)	Maximum drawdown during testing (mm)
L14		**29.19**	**2.31**	**72.6**	**683**
L2	L14	33.94	0.00	nil	24
L3	L14	30.33	0.00	nil	108
L13	L14	29.14	2.36	74.1	76
L9		**25.12**	**5.98**	**187.9**	**0**
L8	L9	30.34	3.66	115.0	192
L10	L9	20.08	19.92	625.8	135

Well ID	Test Well and Distance (m)	Depth to leachate pre-test (mbTOC)	Leachate thickness pre-test (m)	Leachate volume pre-test (L)	Maximum drawdown during testing (mm)
MB25	L9	18.65	7.16	14.1	183

2.9 Pump Test Evaluation

Pumping and recovery data was input to the AQTESOLV pump test model to calculate transmissivity. The results are:

- L-09 Pumping Transmissivity=1.13e-6 m^2/sec
- L-09 Recovery Transmissivity=6.99e-6 m^2/sec
- L-14 Pumping Transmissivity= 3.14e-6 m^2/sec
- L-14 Recovery Transmissivity=2.35e-6 m^2/sec

The transmissivities are all in the same order of magnitude and reflect the low permeability of the waste media.

Figure 3 shows the leachate thickness using March 2014 gauging data.

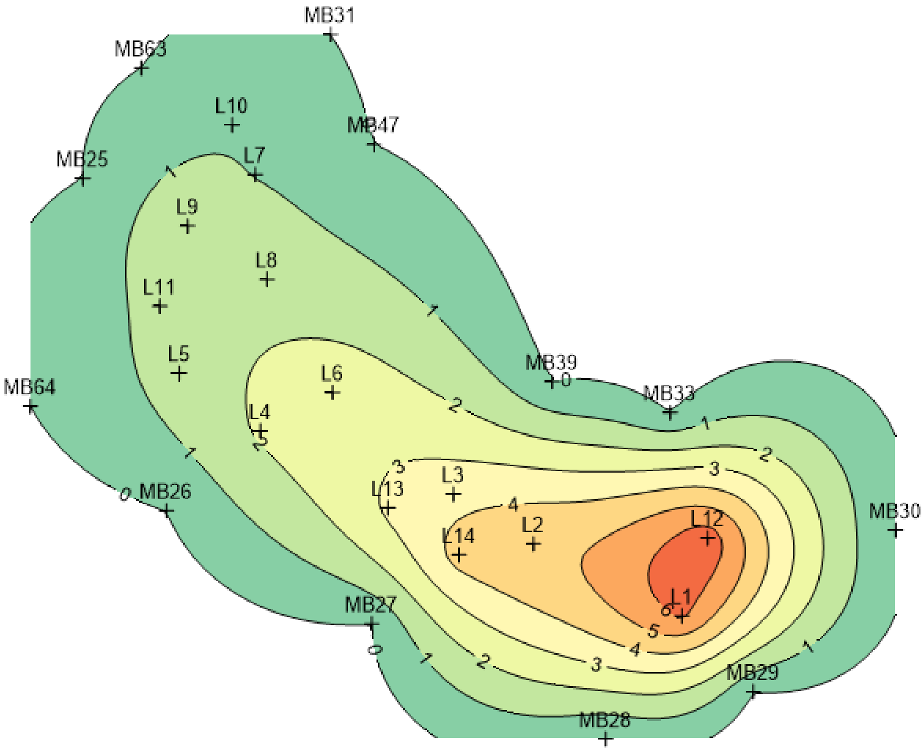

Figure 3 Leachate Thickness March 2014

The leachate volume above the 0-m contour is 343,760,400 L and the volume above the 1-m is 188,239,000 Litres. The specific capacity during pumping from L-09 and L-14 were 0.18 and 0.2 Lpm/m of drawdown, respectively. The 0.2 Lpm/metre of drawdown equals 288 L per day for every metre of drawdown. Assuming two metres of drawdown in each well is sufficient to capture the leachate this means 576 L per day per well.

Figure 4 uses the leachate volume at the 1 m leachate thickness and the required pumping rate per wells to show the number of wells required to reduce the leachate elevation for a length of time. The chart shows 179 wells required to reduce the leachate elevation within 5 years reducing to 36 wells to reduce the leachate elevation in 25 years. For each of these examples, the total flowrate required to be processed is in the order of 103,000 litres per day and 27,000 litres per day, respectively.

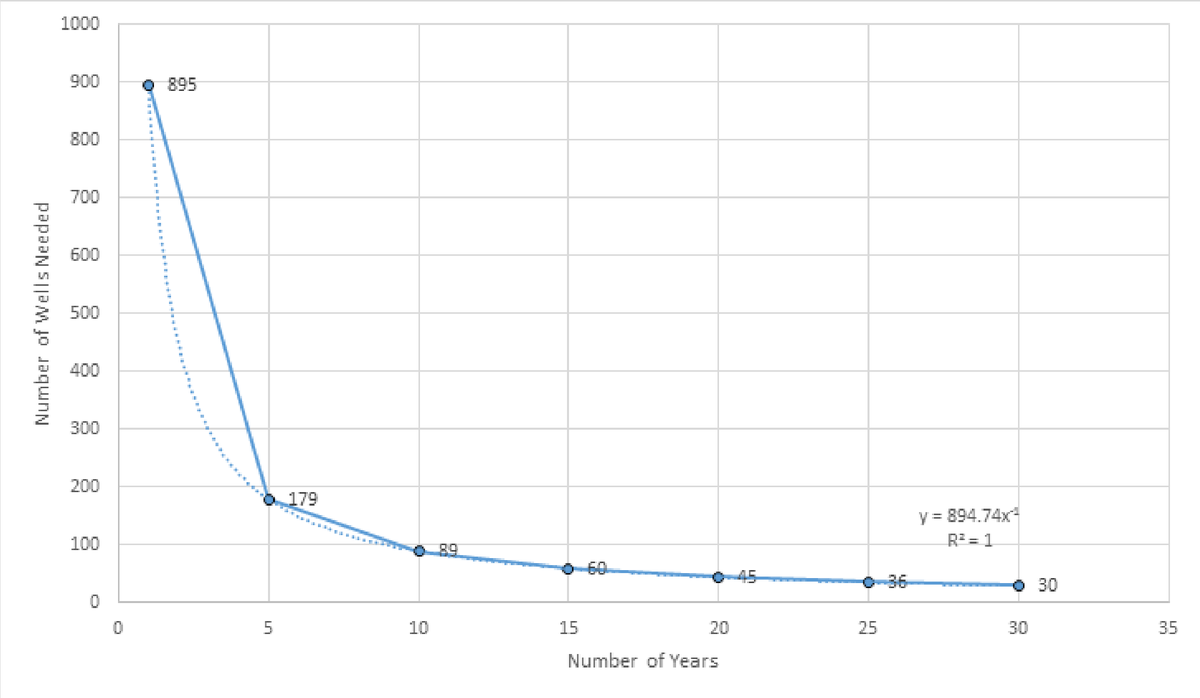

Figure 4 Number of Wells versus Number of Years to Reduce Leachate Elevation

2.10 Conclusion

Based on the data collected during pumping of L9 and L14, transmissivity of the waste media within Mound 1 and 2 is low. The analysis above indicates a large number of wells must be installed to accelerate the reducing of leachate elevation with even 60 wells required to reduce the leachate elevation in fifteen years. Kleinfelder 2015 states the leachate elevation will reduce to an acceptable level by 2035 without pumping with the capping of the landfill removing the primary source of leachate generation (rainfall and infiltration through the waste). Considering the significant effort with expected low volume of leachate and limited reduction in leachate head, coupled with multiple penetrations of the cap that would be required, installation of additional wells and pumping to accelerate the reducing of the leachate elevation is not considered justified.

3.0 LNAPL TESTING IN MOUND 3

3.1 Objective

The objective of LNAPL testing in wells in and around Mound 3 was to gain an insight into the LNAPL transmissivity in the area.

3.2 Methodology

The LNAPL baildown test program was completed in general accordance with ASTM standards (ASTM, 2012) and broadly comprised the following:

- Short-term extraction on MB30, MB40 and MB41.
- Extraction at each location focused on the LNAPL within the well and limited recovery of groundwater utilizing a bailer.
- Recovery monitoring on each test well continued until 80% recovery was achieved, or 6 days, whichever came first.

Baildown test data was analysed using the API LNAPL Transmissivity Workbook (API, 2012). In addition, diagnostic plots were utilised to assess changes in depth to LNAPL, corrected depth to leachate and LNAPL thickness during rebound periods.

The Interstate Technology & Regulatory Council (ITRC), (2009) reports that significant LNAPL cannot be recovered and is not at risk of migration at LNAPL transmissivity values of less than 1.4 x 10^{-3} m^2/day based on Becket and Lundergard (1997). However, the ITRC LNAPL team members indicated that based on experience, hydraulic or pneumatic recovery systems are effective until Tn values of between 9.3 x 10^{-3} m^2/day to 7.4 x 10^{-2} m^2/day are observed.

Based on the mobility thresholds described above, the results of the baildown tests were utilised to assess LNAPL migration and recoverability potential. If the derived Tn values are greater than 7.4 x 10^{-2} m^2/day, then conditions would indicate that the LNAPL is recoverable and has the potential to migrate.

The API LNAPL Transmissivity workbook allows for the calculation of Tn via the following three methods for unconfined conditions:

- Bouwer and Rice: Calculation of Tn and standard deviation based on the Bouwer and Rice method using linear least squares. A straight line is fit to the log-drawdown versus time data with the slope of the line used to determine Tn and variance of the slope for Tn standard deviation.
- Cooper and Jacob: Whilst designated as the Cooper and Jacob method, the Theis equation is used in the equations (API, 2012) and is a modified form of the method three of Huntley (Huntley, 2000). Tn is estimated based on LNAPL discharge to the well and LNAPL drawdown as a function of time. This method utilizes a storage parameter in addition to Tn to fit the model and data and subsequently requires consideration of early time filter pack drainage.
- Cooper, Bredehoeft and Papadopulos: Calculation of Tn based on the Cooper, Bredehoeft and Papadopulos slug test model based on measurements of LNAPL drawdown over time and relies on an estimate of the LNAPL storage coefficient.

The API LNAPL Transmissivity workbook provides an estimate of Transmissivity with a coefficient of variation (ratio of the standard deviation to the mean value) as an indicator of uncertainty. As there is no preferred method for analysis of baildown test data, all three methods are typically used and averaged.

To account for the potential impacts of filter-pack drainage and well storage that does not reflect LNAPL flow from the waste to the well, a cut off time is designated to remove early time data and establish an initial drawdown value.

3.3 Test Wells

The LNAPL baildown test wells were selected based on location (with a spread across and in the vicinity of Mound 3 preferred) and LNAPL thickness (greater than 15 cm to enable meaningful transmissivity analysis).

Gauging of wells within Mound 3 showed LNAPL of 0.8 m in MB30, 0.10 m in MB33, 0.19 m in MB36, 0.52 m in MB40, 0.20 in MB41, 1.38 m in GW1 and 1.8 m in GW2. MB33 was ruled out due to insufficient LNAPL thickness and despite having large LNAPL thickness, GW1 and GW2 were not selected due to difficulties with bailing from the wells. Of the remaining four wells, the three wells with thickest LNAPL and reasonable spatial spread were selected. These wells were MB30, MB40 and MB41 their location is shown on Figure 5. Testing was undertaken on MB30 on 16th August 2016 and on MB40 and MB41 on 17th August 2016.

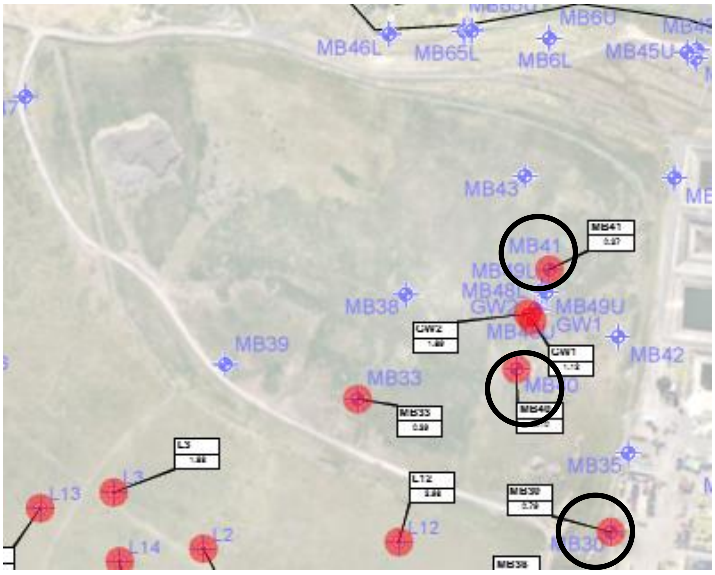

Figure 5 Location of LNAPL Baildown Test Wells

3.4 Disposal

LNAPL recovered during the LNAPL removal events on Mound 3 was transferred to the LNAPL Trailer storage tank. The LNAPL was transported to Daniel's Health Services on 25th November 2016. The EPA Waste Transport Certificate is included in Appendix B.

3.5 Monitoring Methods and Equipment

An interface probe was used to detect the LNAPL elevation in each test well using the procedure detailed in the Work Plan.

A landfill gas meter and photo-ionisation detector were used to monitor the atmosphere around the works to ensure a safe operating environment.

3.6 Results and Analysis

3.6.1 MB30

The prestart LNAPL thickness in MB30 was 0.85m, which was reduced to 0.13m following 9 minutes of bailing. The initial in-well volume was calculated to be 4.05L comprising 1.66L from the casing and 2.39L from the filter pack.

The post bailing (immediately after cessation of bailing) well volume was 0.62L comprising 0.26L from the casing and 0. 73L from the filter pack.

A total of 2.3L of liquid was bailed from the well comprising 2.1L of LNAPL with the remainder being leachate/groundwater, indicating no LNAPL was drawn from the waste material during bailing.

Gauging data indicating depth to LNAPL (DTL), depth to leachate (DTW) and water table depth post extraction are presented in Figure 6.

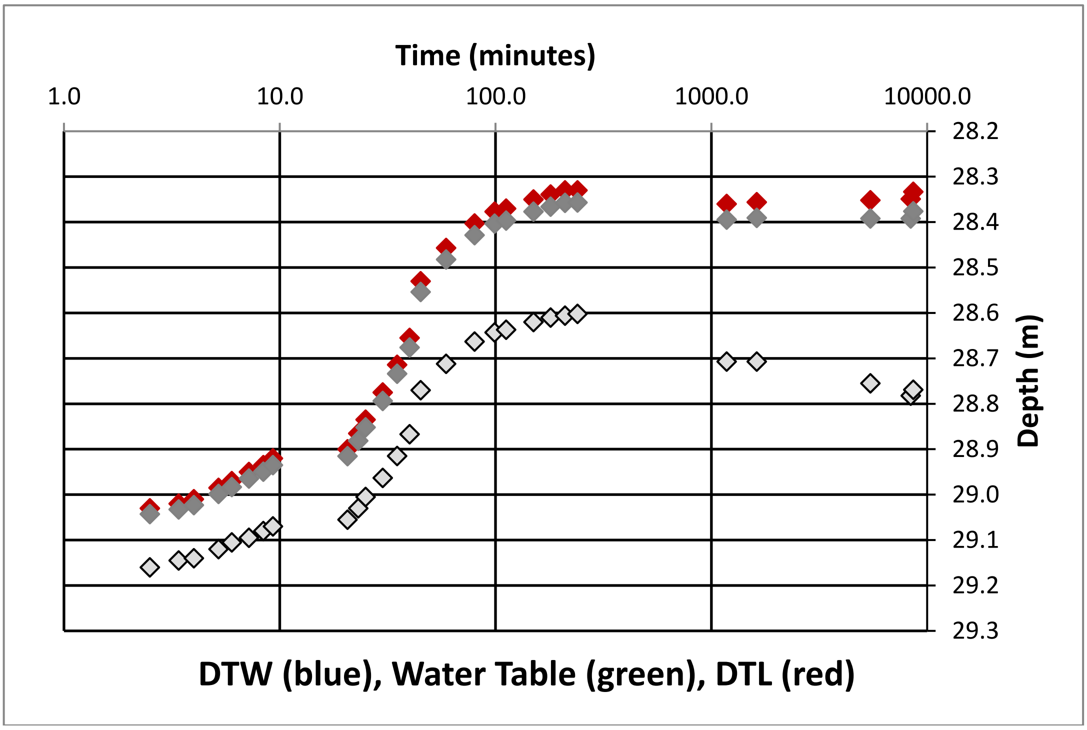

Figure 6 MB30 Recovery Monitoring Hydrograph

During recovery depth to leachate and depth to LNAPL slowly rebounds to within 0.39m and 0.02m, respectively, of pre-test levels with approximately 51% in-well thickness rebound observed following 8,622 minutes (approximately 6 days) of rebound monitoring.

Figure 7 indicates the potential for filter pack drainage at discharge rates greater than 0.007 m^3/day corresponding to approximately the first 60 minutes of recovery with discharge rates less than 0.002 m^3/day observed thereafter.

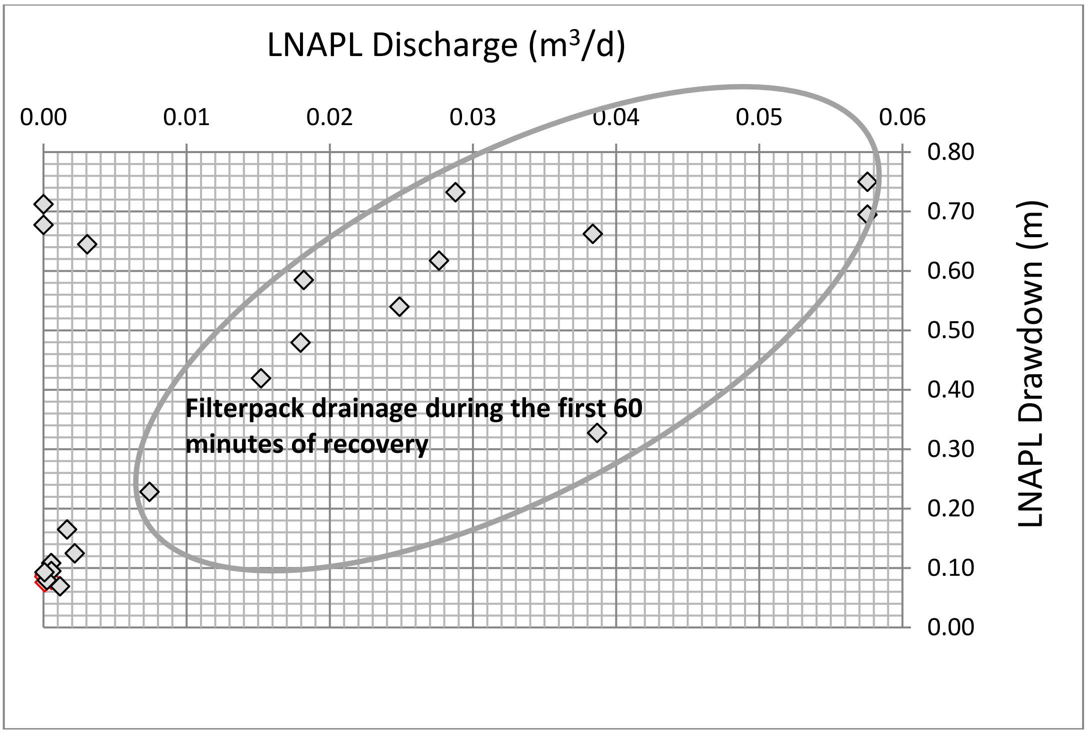

Figure 7 MB30 LNAPL Drawdown - Discharge Relation

The initial 1000 minutes of rebound monitoring data indicates variable conditions (refer to Figure 8) associated with filter pack drainage and leachate likely competing with LNAPL flow to the well. Consequently, a 1000 minute time cut off was applied to capture the data set suitable for analysis.

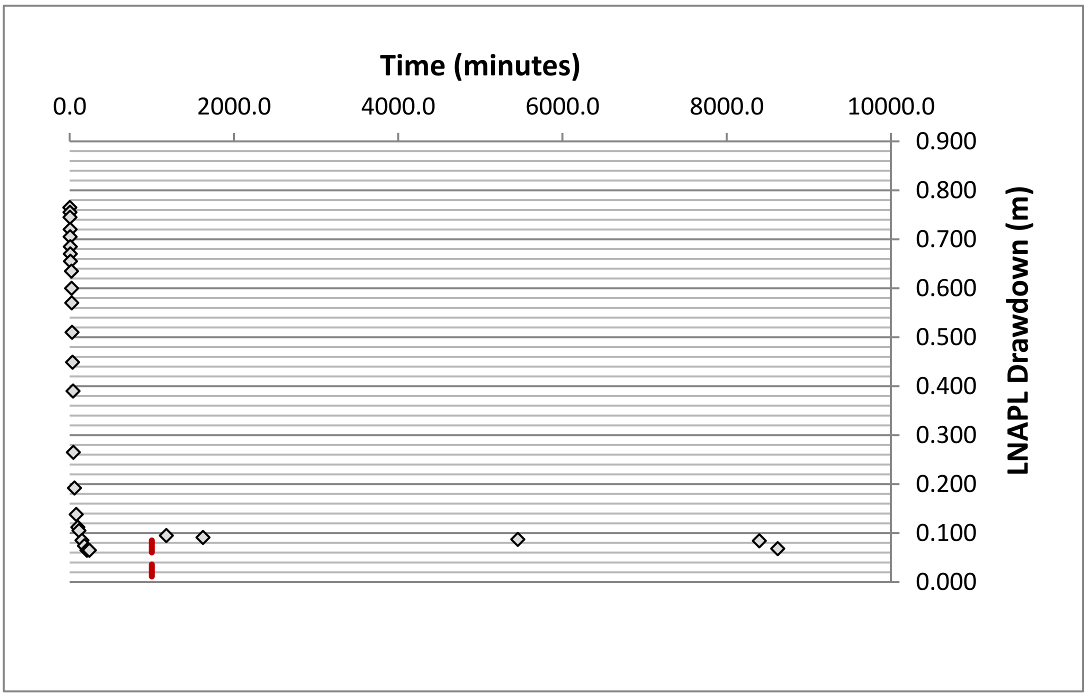

Figure 8 MB30 LNAPL Drawdown - Time Relation

The results of data analysis indicate a mean LNAPL transmissivity of **0.0005 m^2/day.**

Based on the derived Tn being less than the ITRC mobility and recoverability threshold, LNAPL in the vicinity of MB30 is considered to have low migration and recoverability potential.

3.6.2 MB40

The prestart LNAPL thickness in MB40 was 0.52m, which was reduced to 0.23m following 10 minutes of bailing. The initial in-well volume was calculated to be 2.6L comprising 1.08L from the casing and 1.52L from the filter pack. The post bailing (immediately after cessation of bailing) well volume was 1.08L comprising 0.45L from the casing and 0.63L from the filter pack.

A total of 2.1L of liquid was bailed from the well comprising 1.05L of LNAPL with the remainder being leachate/groundwater, indicating no LNAPL was drawn from the waste material during bailing.

Gauging data indicating depth to LNAPL (DTL), depth to leachate (DTW) and water table depth post extraction are presented in Figure 9.

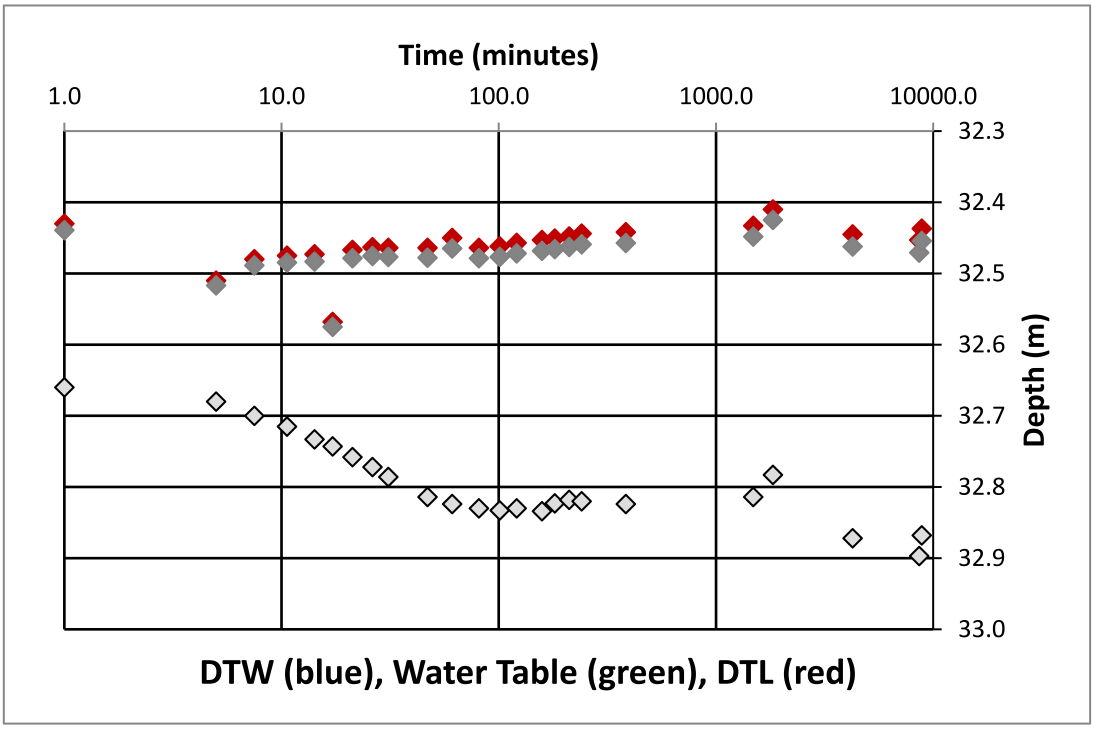

Figure 9 MB40 Recovery Monitoring Hydrograph

During recovery, depth to leachate and depth to LNAPL slowly rebounds to within 0.1m and 0.01m, respectively, of pre-test levels with approximately 83% in-well thickness rebound observed following 8,855 minutes (approximately 6.1 days) of rebound monitoring.

Figure 10 and Figure 11, indicate the potential for filter pack drainage at discharge rates greater than 0.03 m^3/day corresponding to approximately the first 20 minutes of recovery with discharge rates less than 0.02 m^3/day observed thereafter. To account for filter pack drainage a time cut off of 20 minutes was applied.

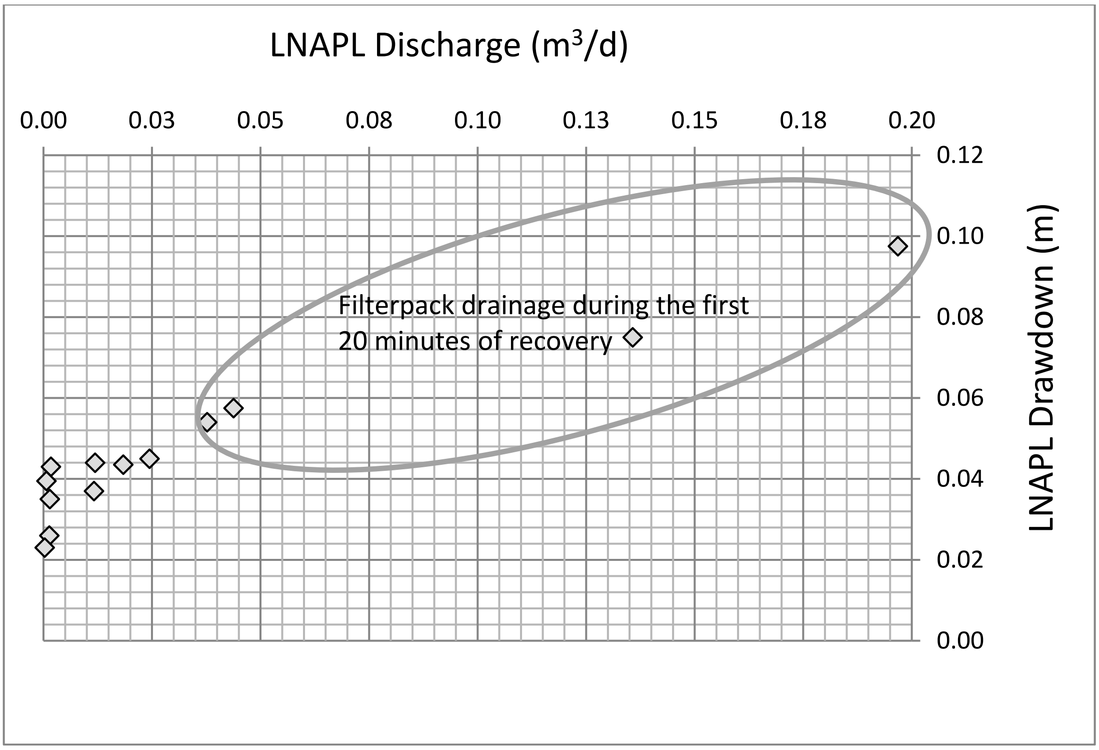

Figure 10 MB40 LNAPL Drawdown - Discharge Relation

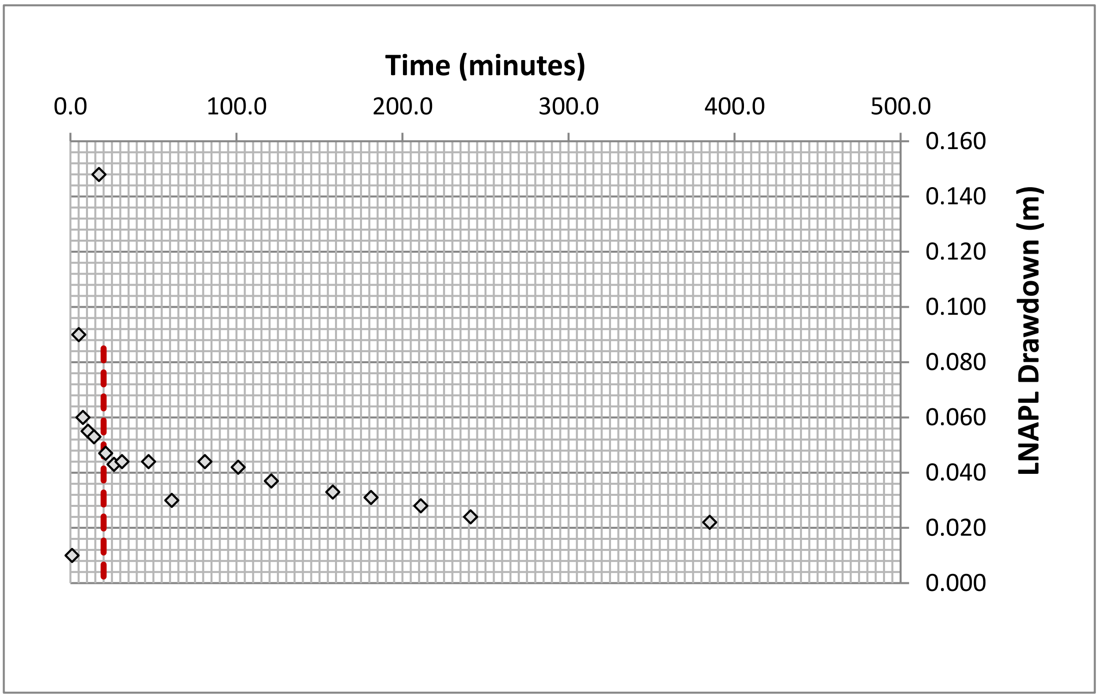

Figure 11 MB40 LNAPL Drawdown - Time Relation

The results of data analysis indicate a mean LNAPL transmissivity of **0.027 m^2/day.**

Based on the derived Tn being less than the ITRC mobility and recoverability threshold LNAPL in the vicinity of MB40 is considered to have low migration and recoverability potential.

3.6.3 MB41

The prestart LNAPL thickness in MB41 was 0.2m, which was reduced to 0.11m following 12 minutes of extraction. The initial in-well volume was calculated to be 0.94L comprising 0.39L from the casing and 0.55L from the filter pack. The post bailing (immediately after cessation of bailing) well volume was 0.52L comprising 0.22L from the casing and 0.30L from the filter pack.

A total of 1.0L of liquid was bailed from the well comprising 0.45L of LNAPL with the remainder being leachate/groundwater, indicating no LNAPL was drawn from the waste material during bailing.

Gauging data indicating depth to LNAPL (DTL), depth to leachate (DTW) and water table depth post extraction are presented below.

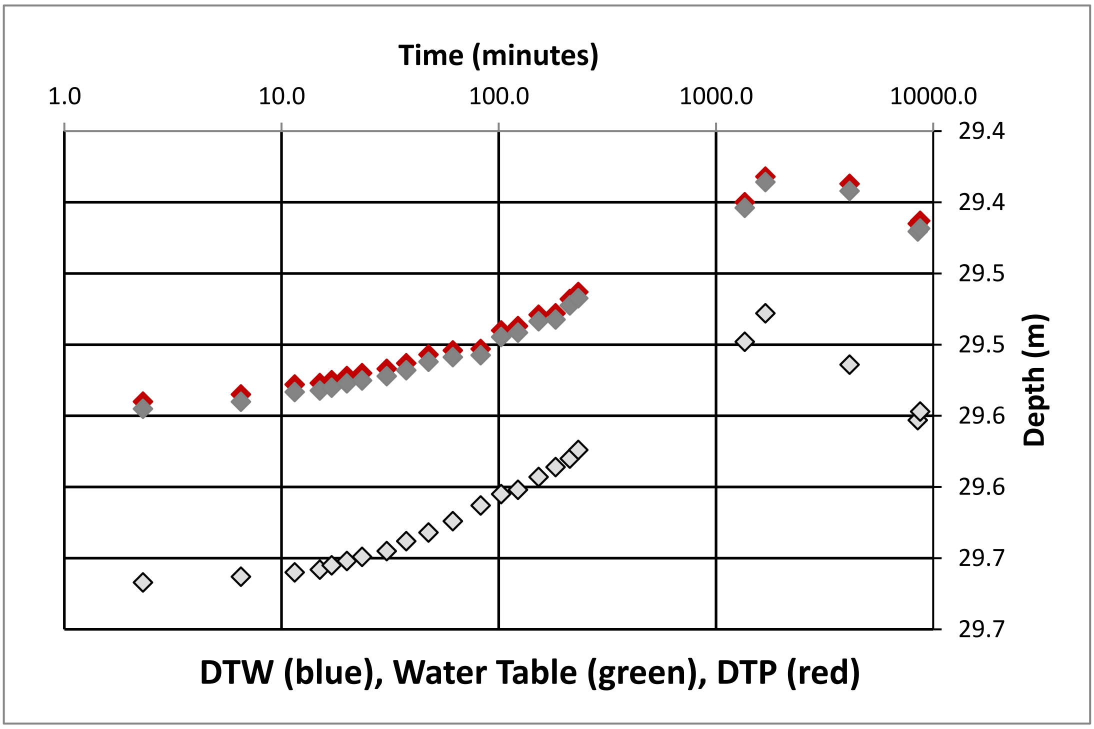

Figure 12 MB41 Recovery Monitoring Hydrograph

During recovery, depth to leachate and depth to LNAPL slowly rebounds to within 0.14m and 0.1m, respectively, of pre-test levels with approximately 67% in-well thickness rebound observed following 8,712 minutes (approximately 6 days) of rebound monitoring.

LNAPL transmissivity was not evaluated as more water was removed than LNAPL given the viscous nature of the product and limited LNAPL thickness. In addition, difficulties associated with obtaining accurate depths to LNAPL and water due to the physical nature of the LNAPL further compounds the difficult accurately evaluating LNAPL transmissivity. However, given the slow rebound and proximity to MB40, it is anticipated that the LNAPL transmissivity at MB41 is very low and likely similar to MB40 which was less than the ITRC mobility and recoverability threshold LNAPL and indicative of low migration and recoverability potential.

3.7 Conclusion

Based on the baildown tests undertaken and associated data analysis, the derived Tn for MB30 and MB40 and inferred Tn for MB41, were less than the ITRC mobility and recoverability threshold. Consequently, LNAPL in the vicinity of MB30, MB40 and MB41 is considered to have low migration and recoverability potential.

4.0 REFERENCES

API, 2012. *LNAPL Transmissivity Workbook: A Tool for Baildown Tests Analysis and User Guide*. American Petroleum Institute. (API, 2012).

ASTM E2856 – 11, 2012. *Standard Guide of Estimation of LNAPL Transmissivity*.

ITRC (Interstate Technology & Regulatory Council). 2009. Evaluating LNAPL Remedial Technologies for Achieving Project Goals. Washington, D.C.: Interstate Technology & Regulatory Council, LNAPLs Team. www.itrcweb.org.

Kleinfelder, 2015. Hydrogeological Assessment

APPENDIX A HAZARDS AND OPERABILITY STUDY

EHS-Support HAZOP Template (Rev 0)

Project:	Tullamarine Landfill	**Leader:**	Kevin Simpson	**Date:**	Friday, 29 July 2016
System:	Leachate Pumping	**Team Members:**	Mark Kenna, Brad Marquand, Kevin Simpson	**Location:**	Tullamarine Landfill
Drawing / Line / Node:	Liquid side	**Minutes By:**	Kevin Simpson		

#	Guide Words	Possible Causes	Consequences	Existing Safeguards	Recommended Actions	By	Done
1.1	General Discussion						
1.2a	High Flow - to / in OWS	Faster than anticipated flow into well and resulting high flow to OWS Gravity flow	Inefficient separation of oil from leachate	OWS sized for maximum flow of pump Capacity in 1 inch hose is around 50 L.	None		
1.2b	High Level - in OWS	Blockage downstream of OWS Water transfer pump failure	Overflow of OWS	Flow into water transfer tank and/or oil storage drum and subsequent stop well-pump by high level switches. Bunded container Supervised operation during day	None		
1.2c	High Flow - into oil storage drum / high level in oil storage drum	Inefficient oil / water separation in OWS causing leachate to flow in Higher than anticipated flow from well Incorrect height of the skimmer pipe. Incorrect levelling of OWS	Overflow of oil storage drum	Oil storage drum has capacity for 200 litres. Bunded container Supervised operation during day High level switches (2) that shutdown well-pump and Water Transfer Pump. Bunded volume in container is greater than 50 L	None		

EHS-Support HAZOP Template (Rev 0)

#	Guide Words	Possible Causes	Consequences	Existing Safeguards	Recommended Actions	By	Done
1.2d	High Flow - into water transfer tank / High Level in water transfer tank	Faster than anticipated flow into well and resulting high flow to tank	Overflow of tank	Bunded container Supervised operation during day High level switches (2) that shutdown well-pump and Water Transfer Pump	None		
1.2e	High Level in water transfer tank	Failure of high level switch in interceptor or oil storage tank to shut-down well pump	Overflow of tank	Bunded container Supervised operation during day Redundant high level switch in water transfer tank	None		
1.2f	High Level in interceptor tank	Water transfer pump continuing to pump from water transfer tank after well-pump shutdown.	Overflow of tank	Supervised operation during day High level switches (2) that shutdown well-pump and Water Transfer Pump Volume in water transfer tank full is 1,200 L and setting of high level switch in interceptor allows sufficient freeboard to take whole volume.	None		
1.2g	High Level in interceptor tank	Failure of high level switch in interceptor	Overflow of tank	Supervised operation during day Redundant level switch in interceptor Ultimate overflow is to landfill	None		
1.3a	Low Flow in liquid line from well-pump	Blockage in liquid line or downstream	Overflow of OWS, water transfer tank, oil storage tank - see high level	See above	None		

EHS-Support HAZOP Template (Rev 0)

#	Guide Words	Possible Causes	Consequences	Existing Safeguards	Recommended Actions	By	Done
1.3b	Low Flow in liquid line from well-pump	Blockage in liquid line or downstream	Stall pump	Materials of pump and piping designed for shut-in pressure (see high pressure)	None		
1.3c	Low Flow in water transfer line to interceptor tank	Blockage in line between water transfer pump and interceptor tank	See high pressure				
1.4a	Zero Flow to interceptor tank	Water transfer pump failure Compressed air system failure	Overflow water transfer tank	Supervised operation during day. Overflow into line to interceptor Bund within container	None		
1.4b	Empty water transfer tank	Breach in tank	Spill to container bund	Materials suitable for liquid. Tank within container therefore can't be struck by vehicles. Bund in container	None		
1.4c	Empty oil storage drum	Breach in drum	Spill to container bund	Materials suitable for liquid. Drum within container therefore can't be struck by vehicles. Bund in container Only top entries	None		
1.4d	Empty interceptor tank	Breach in tank	Spill to ground	Materials suitable for liquid. Tank made of sturdy steel and has geometry making it unlikely to be struck by vehicles. Spill unlikely to leave landfill	None		
1.4e	Empty interceptor tank	Breach in line to interceptor tank Camlock comes loose During emptying of hose	See high pressure		Use caution when emptying hoses	Kingtech	

EHS-Support HAZOP Template (Rev 0)

#	Guide Words	Possible Causes	Consequences	Existing Safeguards	Recommended Actions	By	Done
1.5	Reverse Flow - interceptor tank to container	Check valve failure	Overfill water transfer tank	High level switch in water transfer tank would activate stopping flow from well and operator may notice. Bund in container	None		
1.6a	High Pressure in liquid line from well	Blockage in line between well pump and container	Line failure and spill to ground	Materials suitable for liquid and process conditions Double containment Well end is within trailer bund Container end - raised to 1.5 m but not above well elevation so also pack with wadding and duct tape to prevent oil leak. Continuous inner line from trailer to container	Install wadding and duct tape to provide protection against leak from interstitial space (very unlikely as inner hose is one piece)	Kingtech	
1.6b	High Pressure in water transfer line to interceptor tank	Blockage in line between water transfer pump and interceptor tank Check valve stuck closed	Line failure and spill to ground	Materials suitable for liquid and process conditions Back up into water transfer tank and trip the high level switch	None		
1.6c	High Pressure in OWS	Blocked pipes to other vents	Over-pressurise OWS and potential spill	Loose seal on OWS lid	None		
1.6d	High Pressure in Water Transfer tank	Blocked vent	Over-pressurise Water Transfer Tank and potential spill	Study steel tank. Free vent. Small vent Bund	Ensure vent is free (e.g. no nesting birds)	Kingtech	

EHS-Support HAZOP Template (Rev 0)

#	Guide Words	Possible Causes	Consequences	Existing Safeguards	Recommended Actions	By	Done
1.6e	High Pressure in Oil Storage Drum	Blocked vent	Over-pressurise drum and potential spill	Free vent. Bund Clamp would loose	Ensure vent is free (e.g. no nesting birds)	Kingtech	
1.6f	High Pressure in Interceptor Tank	Blocked vent	Over-pressurise drum and potential spill	Camlock on top loosely fitted Bund	Ensure camlock is secure and check regularly	Kingtech	
1.7a	Low Pressure in OWS	Blocked vent	Implode OWS and potential spill	Free vent. Bund	Ensure vent is free (e.g. no nesting birds)	Kingtech	
1.7b	Low Pressure in Water Transfer tank	Blocked vent	Over-pressurise Water Transfer Tank and potential spill	Free vent Bund	Ensure vent is free (e.g. no nesting birds)	Kingtech	
1.7c	Low Pressure in Oil Storage Drum	Blocked vent	Over-pressurise drum and potential spill	Free vent 2 inch line from OWS Bund	Ensure vent is free (e.g. no nesting birds)	Kingtech	
1.7d	Low Pressure in Interceptor tank	Siphon flow	Implode Interceptor Tank and potential spill	Check valve in line from container			
1.8a	High Temperature in container	Fire	Damage to equipment	No live electrical equipment within container. No other ignition sources. Unlikely to be explosive atmosphere as negligible oil and low vapour pressure. Housekeeping. Container door will be open			
1.8b	High Temperature outside	Fire caused by ignition of diesel fuel for generator or electrical fire	Damage to equipment	Packaged generator. Robust fuel tank.	Cordon off generator to minimise risk of collision	Kingtech	
1.9	Low Temperature	Cold weather	Unlikely to be significant issues beyond health and safety for personnel (covered in HASP)	Water coming from landfill is in the order of 30 degrees Celsius and double contained.			

EHS-Support HAZOP Template (Rev 0)

#	Guide Words	Possible Causes	Consequences	Existing Safeguards	Recommended Actions	By	Done
1.10	Impurities	Solids (granular) from the well	Block separator and inefficient separation. Reduce flow	Filter pack around well. Filter mesh on well-pump inlet Likely settle OWS and tanks Bund			
1.11a	Change in Composition or Concentration / Two-Phase Flow / Reactions	Excessive oil in stream	Nuisance, potential drift to sensitive receptors	Vent above container. Unlikely to get high oil as bottom loading well-pump	None		
1.11b	Change in Composition or Concentration / Two-Phase Flow / Reactions	Inefficient oil / water separation in OWS	Oil into interceptor tank	OWS sized for maximum flow of pump. Manual inspection	None		
1.12	Testing - Leaks	Connections loose or not properly made	Spill to ground	Attention to installation	Commission line to interceptor tank with clean water	Kingtech	
1.13	Plant Items - Faults						
1.14	Electrical	Fuel run-out overnight and compressor stops.	Well-pump stops. Only consequence is for test integrity - no safety hazard identified	Check fuel at regular intervals	Check prior to leaving for the day and fill if necessary	Kingtech	
1.15	Instruments - insufficient information of system status and						

EHS-Support HAZOP Template (Rev 0)

Project:	Tullamarine Landfill	**Leader:**	Kevin Simpson	**Date:**	Friday, 29 July 2016
System:	Leachate Pumping	**Team Members:**	Mark Kenna, Brad Marquand, Kevin Simpson	**Location:**	Tullamarine Landfill
Drawing / Node:	Air side	**Minutes By:**	Kevin Simpson		

#	Guide Words	Possible Causes	Consequences	Existing Safeguards	Recommended Actions	By	Done
2.1	General Discussion						
2.2a	High Flow / High Level	No issues					
2.3a	Low Flow / Low Level	Compressor / associated equipment malfunction, blockage in air line	Well-pump slows or stops (no issue) Water Transfer Pump slows or stops causing level in Water Transfer tank to rise	High level switches in Water Transfer Tank shut-off Well-Pump	Calculate residual liquid in line from pump. About 50 L. None		
2.4a	Zero Flow / Empty	As above					
2.5	Reverse Flow	None					
2.6a	High Pressure	Compressor relief failure	Over-pressurise air lines	Lines and fittings rated for pressure in excess of compressor	None		
2.6b	High Pressure	Fitting failure	Compressed air line whip and injury to personnel. Damage to compressor	Piping mostly one length	Secure major line running to pump. Secure joins and connection to pump	Kingtech	Yes
2.7a	Low Pressure	See low flow					
2.8	High Temperature	Fire, compressor malfunction (e.g. bearing failure)	Equipment damage	Equipment maintenance	None		
2.9	Low Temperature	None					
2.10a	Impurities	Air compressor inlet filter failure / blockage	Compressor damage	Filters maintained	None		
2.10b	Impurities	Moisture filter failure	Inefficient or no operation of air valves leading to spill (high level switch doesn't work)		Check valves during commissioning	EMS	Yes
2.11a	Change in Composition or Concentration / Two-Phase Flow / Reactions						

EHS-Support HAZOP Template (Rev 0)

#	Guide Words	Possible Causes	Consequences	Existing Safeguards	Recommended Actions	By	Done
2.12	Testing - Leaks						
2.13	Plant Items - Faults						
2.14a	Electrical						
2.15	Instruments - insufficient information of system status and						

APPENDIX B WASTE TRANSPORT CERTIFICATES

CLEANAWAY

Service Docket

Driver Copy

Transwaste Technologies Pty Ltd
126 Barry Road
CAMPBELLFIELD VIC 3061

Trip 1008
Driver Ange Dallest
Date 24/08/2016

Job **57221** Order Number **4660515** 3T 00352 Service Reference PICK UP INTERCEPTOR Frequency CAL

Site CLEANAWAY Bill 1091
Private Bag 5
TULLAMARINE VIC 3043
Ph:9359 8210 0417 6

Debtor Cleanaway Pty Ltd
Western Avenue
TULLAMARINE VIC 3043

Receiver Transwaste Technologies Pty Ltd
126 Barry Road
CAMPBELLFIELD VIC 3061

Ref

Veh ZZ00030

Trip 1008

Ring for an appointment: WASH WATER

BarCode

Desc TP WASHWATERS 1 - WASH WATER

Location

Access

CA Note

L150 L INDUSTRIAL WASH WATER 1 LT Litres

Last Service Estimate Actual 3160

Certificate 1267305.

Completed: Yes No

DriverSignature

Customer Name and Signature

Travel Time To	Job Time In	Pump TIme Start	Pump Time End	Job Time End	Travel Time From
1330					

Contact Kevin if any problems 0419 543109

Pick up Interceptor from Tullamarine cleanaway

INT. Pick + Empty
NO-ONE ON SITE.

CLEANAWAY

Service Docket

Customer Copy

Transwaste Technologies Pty Ltd
126 Barry Road
CAMPBELLFIELD VIC 3061

Trip 1008
Driver Ange Dallest
Date 24/08/2016

Job **57221** Order Number **4660515** 3T 00352 Service Reference PICK UP INTERCEPTOR Frequency CAL

Site CLEANAWAY Bill 1091
Private Bag 5
TULLAMARINE VIC 3043
Ph:9359 8210 0417 6

Debtor Cleanaway Pty Ltd
Western Avenue
TULLAMARINE VIC 3043

Receiver Transwaste Technologies Pty Ltd
126 Barry Road
CAMPBELLFIELD VIC 3061

Ref
Veh ZZ00030
Trip 1008

BarCode
Desc TP WASHWATERS 1 - WASH WATER
Location
Access
CA Note

L150 L INDUSTRIAL WASH WATER 1 LT Litres
Last Service
Estimate
Actual 3160
Certificate 1267305.

Completed: Yes ✓ No

DriverSignature

Customer Name and Signature

Travel Time To	Job Time In	Pump Time Start	Pump Time End	Job Time End	Travel Time From
1330					

TRANSWASTE TECHNOLOGIES
Campbellfied
ABN 88 078 935 109

WEIGHBRIDGE DOCKET

Docket : TWC7259DCS\1
Date: 24/08/2016
Operator:

Vehicle: SHX138
EPA No: 1267305

Product: Wash Waters

Gross: 20.76 t 2:27:12 PM
Tare: 17.60 t 1:13:58 PM

Net: 3.16 t

Printed: 24/08/2016 2:27 PM

TRANSWASTE TECHNOLOGIES
126 Barry Rd, Campbellfield VIC 3061
Phone 03 9358 8999
After Hours 03 9794 7211

ENVIRONMENT PROTECTION AUTHORITY VICTORIA
WASTE TRANSPORT CERTIFICATE 1267305

EPA VICTORIA
GPO BOX 4395
MELBOURNE 3001
1300 372 842
1300 EPA VIC
epa.vic.gov.au

PART A
To be completed by the Producer of the Waste

1. Name of Waste Producer: CLEANAWAY
Address of Site of Waste Source: WESTERN AVE TULLAMARINE
Postcode: 3043
Name of Emergency Contact: KEVIN
Phone: 0419 543 109

2. Proposed ~~Disposal~~/Treatment/~~Storage~~ Facility: TLWT
State: VIC

3. Intended Treatment Option: Recycling ☐ Storage ☐ Landfill ☐ Incineration ☐ Energy Recovery ☐ Immobilisation ☐ Chem/Phys Treatment ☑ Biodegradation ☐ Other ☐

4. Description of Waste: LEACHATE WATER

5. Waste Form: L | Waste Code: L150 | Hazard Category: A | Contaminants: | Waste Origin: 2921
UN Number: 30X9 | Class: • | Packing Group: | Bulk/No. of Packages: BULK
Amount of Waste: 3160 kilograms or cubic metres or litres
I declare that to the best of my knowledge and belief the above information is true and correct.
Name and Position: A. MAURI OPERATOR
Signature .... Date: 24/08/16

PART B
To be completed by the Waste Transporter

6. Name of Transporter: ALLEMTRA
Address: LIEWAN.
Vehicle No. 1 Registration: SHX138 | Transport Permit No.: 28526 | Vehicle No. 2 Registration: | Transport Permit No.:
I acknowledge receipt of the waste described in part A.
Name (in block letters): A. MAURI
Signature .... Date: 24/08/16

PART C
To be completed by the Waste Receiver

7. Name of Disposal/Treatment/Storage Facility: Cleanaway
Licence No.: A997
Address: 126 Barry Rd, Campbellfield
Type of Treatment: D9 [illegible]

8. Amount of Waste: 3166 kilograms or cubic metres or litres

9. Are there any discrepancies between the wastes described above and the waste received?
YES ☐ NO ☑ Briefly note discrepancy: ....

10. Name and address of any other waste receiver to which the waste receiver intends that the waste be transported
....

11. I hereby acknowledge acceptance of the waste described in part A.
Name: Tim M
Signature .... Date: 24/08/16

PLEASE USE BLOCK LETTERS

ORIGINAL – TO BE FORWARDED TO EPA WITHIN SEVEN (7) DAYS BY THE PERSON/COMPANY WHO COMPLETED PART C

EPA-F012

Raeleene Eldridge

From: Kevin Simpson <Kevin.Simpson@ehs-support.com>
Sent: Tuesday, 23 August 2016 7:34 AM
To: Raeleene Eldridge
Subject: RE: Tank pick-up from Tullamarine

Thanks Raeleene

Kevin Simpson
Director – Remediation (Australia) | Principal Engineer
EHS Support Pty Ltd
R1, Level 5, 353 Flinders Lane
Melbourne, VIC 3000
Australia
Mobile Australia: 0419 543 109
Mobile South Africa: 079 105 2495
kevin.simpson@ehs-support.com
www.ehs-support.com

From: Raeleene Eldridge [mailto:Raeleene.Eldridge@cleanaway.com.au]
Sent: Monday, 22 August 2016 3:55 PM
To: Kevin Simpson <Kevin.Simpson@ehs-support.com>
Subject: RE: Tank pick-up from Tullamarine

Yes they can pick it up. If there are any changes of plans I will let you know

Raeleene Eldridge
Transport Supervisor

126 Barry Rd, Campbelfield VIC 3061
P +61 3 9358 8915 F +61 3 9358 8932 M 0466 405 367
E raeleene.eldridge@cleanaway.com.au | www.cleanaway.com.au

CLEANAWAY
Making a sustainable future possible

From: Kevin Simpson [mailto:Kevin.Simpson@ehs-support.com]
Sent: Monday, 22 August 2016 3:54 PM
To: Raeleene Eldridge
Subject: RE: Tank pick-up from Tullamarine

That'd be great on the volume. Not sure any of our chaps will be on-site, is that okay? Can the driver pick it up without assistance?

Kevin Simpson
Director – Remediation (Australia) | Principal Engineer
EHS Support Pty Ltd
R1, Level 5, 353 Flinders Lane
Melbourne, VIC 3000
Australia
Mobile Australia: 0419 543 109
Mobile South Africa: 079 105 2495

kevin.simpson@ehs-support.com
www.ehs-support.com

From: Raeleene Eldridge [mailto:Raeleene.Eldridge@cleanaway.com.au]
Sent: Monday, 22 August 2016 3:48 PM
To: Kevin Simpson <Kevin.Simpson@ehs-support.com>
Subject: RE: Tank pick-up from Tullamarine

Hi Kevin

I can schedule it to be picked up on Wednesday and let the driver know your concerns.
The volume is weighed here. I can send you the volume when it is done if you need it?

Raeleene Eldridge
Transport Supervisor

126 Barry Rd, Campbelfield VIC 3061
P +61 3 9358 8915 F +61 3 9358 8932 M 0466 405 367
E raeleene.eldridge@cleanaway.com.au | www.cleanaway.com.au

CLEANAWAY
Making a sustainable future possible

From: Kevin Simpson [mailto:Kevin.Simpson@ehs-support.com]
Sent: Monday, 22 August 2016 3:32 PM
To: Raeleene Eldridge
Cc: Kieren McDermott
Subject: Tank pick-up from Tullamarine

Hi Raelene

The interceptor tank delivered to the Tullamarine landfill site is now ready for pick-up. It has about 2,500 L of leachate in it we think. We had a hose going into the top hatch and have re-tightened the hatch down but it'd be worth you chaps checking the hatch and other fittings for tightness. Do you measure the volume at the facility? We are interested to get a better estimate on volume.

Kevin Simpson
Director – Remediation (Australia)| Principal Engineer
EHS Support Pty Ltd
R1, Level 5, 353 Flinders Lane
Melbourne, VIC 3000
Australia
Mobile Australia: 0419 543 109
Mobile South Africa: 079 105 2495
kevin.simpson@ehs-support.com
www.ehs-support.com

This Email is confidential and is intended only for the use of the addressee and may contain information that is privileged and/or exempt from disclosure at law. You must not edit this Email or any attachments without

ENVIRONMENT PROTECTION AUTHORITY VICTORIA
WASTE TRANSPORT CERTIFICATE 1267305

EPA VICTORIA
GPO BOX 4395
MELBOURNE 3001
1300 372 842
1300 EPA VIC
epa.vic.gov.au

PART A To be completed by the Producer of the Waste

1. Name of Waste Producer: CLEANAWAY
Address of Site of Waste Source: WESTERN AVE TULLAMARINE
Postcode: 3043
Name of Emergency Contact: KEVIN Phone: 0419 543 109

2. Proposed Disposal/Treatment/Storage Facility: TWT. State: VIC

3. Intended Treatment Option: Recycling ☐ Landfill ☐ Energy Recovery ☐ Chem/Phys Treatment ☑ Storage ☐ Incineration ☐ Immobilisation ☐ Biodegradation ☐ Other ☐

4. Description of Waste: LEACHATE WATER

5. Waste Form: L Waste Code: L150 Hazard Category: A Contaminants: Waste Origin: 2921
UN Number: 30X9 Class: • Packing Group: Bulk/No. of Packages: BULK
Amount of Waste: ____ kilograms or ____ cubic metres or ____ litres
I declare that to the best of my knowledge and belief the above information is true and correct.
Name and Position: A. NAUST OPERATOR
Signature .... Date 24/08/16

PART B To be completed by the Waste Transporter

6. Name of Transporter: AVERATA
Address: LIMAWN.
Vehicle No. 1 Registration: SHX138 Transport Permit No.: 28526 Vehicle No. 2 Registration: Transport Permit No.:
I acknowledge receipt of the waste described in part A.
Name (in block letters): A. NAUST
Signature .... Date 24/08/16

PART C To be completed by the Waste Receiver

7. Name of Disposal/Treatment/Storage Facility: Licence No.:
Address: Type of Treatment:

8. Amount of Waste: ____ kilograms or ____ cubic metres or ____ litres

9. Are there any discrepancies between the wastes described above and the waste received?
YES ☐ NO ☐ Briefly note discrepancy: ....

10. Name and address of any other waste receiver to which the waste receiver intends that the waste be transported
....

11. I hereby acknowledge acceptance of the waste described in part A.
Name
Signature .... Date

PLEASE USE BLOCK LETTERS

COPY 1 — TO BE FORWARDED TO EPA WITHIN SEVEN (7) DAYS WITH PART A & B COMPLETE BY THE PERSON/COMPANY WHO COMPLETED PART A

EPA-F012

COPY 1

ENVIRONMENT PROTECTION AUTHORITY VICTORIA
WASTE TRANSPORT CERTIFICATE

1216589

EPA VICTORIA
GPO BOX 4395
MELBOURNE 3001
1300 372 842
1300 EPA VIC
epa.vic.gov.au

PART A
To be completed by the Producer of the Waste

1. Name of Waste Producer: CLEANAWAY
Address of Site of Waste Source: WESTERN AVE TULLAMARINE
Postcode: 3043
Name of Emergency Contact: KIEREN McDERMOTT
Phone: 0408996292

2. Proposed Disposal/Treatment/Storage Facility: DANIELS HEALTH
State: VIC

3. Intended Treatment Option: Recycling ☐ Storage ☐ Landfill ☐ Incineration ☑ Energy Recovery ☐ Immobilisation ☐ Chem/Phys Treatment ☐ Biodegradation ☐ Other ☐

4. Description of Waste: LNAPL

5.

Waste Form	Waste Code	Hazard Category	Contaminants	Waste Origin
M	M100			8401

UN Number	Class	Packing Group	Bulk/No. of Packages
3291	6.2	II	20

Amount of Waste ______ kilograms or ______ cubic metres or ______ litres

I declare that to the best of my knowledge and belief the above information is true and correct.

Name and Position: M. KENNA TECHNICIAN

Signature: [signature] Date: 25/11/16

PART B
To be completed by the Waste Transporter

6. Name of Transporter: DANIELS HEALTH
Address: 34 CAHILL ST DANDENONG

Vehicle No. 1 Registration	Transport Permit No.	Vehicle No. 2 Registration	Transport Permit No.
XSN893	39542		

I acknowledge receipt of the waste described in part A.

Name (in block letters): DALE DUFFY

Signature: [signature] Date: 25/11/16

PART C
To be completed by the Waste Receiver

7. Name of Disposal/Treatment/Storage Facility ______ Licence No. ______
Address ______ Type of Treatment ______

8. Amount of Waste ______ kilograms or ______ cubic metres or ______ litres

9. Are there any discrepancies between the wastes described above and the waste received?
YES ☐ NO ☐ Briefly note discrepancy: ......

10. Name and address of any other waste receiver to which the waste receiver intends that the waste be transported
......

11. I hereby acknowledge acceptance of the waste described in part A.
Name ______
Signature ...... Date ______

PLEASE USE BLOCK LETTERS

COPY 2 — TO BE RETAINED BY THE PERSON/COMPANY WHO COMPLETED PART A

EPA-F012

COPY 2