



THE ODOUR  
UNIT *m<sup>3</sup>*



# **Veolia Environmental Services (Australia) Pty Limited**

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**Clyde Waste Transfer Terminal**

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**Odour Audit XV**

**May 2010**

**THE ODOUR UNIT PTY LTD**

**ACN 091 165 061**

**Australian Technology Park  
Locomotive Workshop  
Suite 16012, 2 Locomotive St  
Eveleigh, NSW 2015**

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Report Prepared By: A. Cantlay		Approved By: T. Schulz
Report Title: Veolia Environmental Services (Australia) Pty Limited Clyde Waste Transfer Terminal – Odour Audit XV		

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## 1 INTRODUCTION

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The Odour Unit Pty Ltd (TOU) was commissioned by Veolia Environmental Services (Australia) Pty Ltd (VES) to undertake the fifteenth odour audit on the Clyde Transfer Terminal (CTT) on 13th May 2010. This Odour Audit is the fifth to be carried out since the commissioning of the new forced air extraction system within the transfer building. Odour Audit XV is current for the 6-month period November 2009 to May 2010. Odour Audit requirements of the Conditions of Consent – 48(f) are outlined below:

*48. The Odour Management Plan must address, but is not necessarily limited to, the following issues:*

*(f) An odour audit program which provides for a comprehensive odour audit of the premises and nearby commercial and residential areas, by an independent, appropriately qualified and experienced person, to be conducted 3-monthly for the initial 24 months of receiving un-containerised waste at the terminal, 3-monthly for the 12 months following commissioning the odour control system subject to MOD-133-11-2006, and 6-monthly thereafter, unless otherwise approved in writing by the Director-General.*

As with previous Audits, Odour Audit XV focused on issues relating to general housekeeping, fugitive odour emissions from the transfer building, ground level odour impacts, meteorological monitoring, complaints handling and actions on past Odour Audit recommendations. The approach included a general inspection and smoke testing of the transfer building, inspection of the container packing area and site access roads; inspection of the complaint register; review of the site meteorological data log and equipment maintenance/calibration; and an off-site downwind field ambient odour survey.

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## 2 FINDINGS

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### 2.1 Assessment of General Housekeeping

#### 2.1.1 Transfer Building

There was approximately 250 tonnes of municipal solid waste (MSW) on the floor according to the Site Manager. The transfer building floor area that was not storing MSW had little or no puddles of leachate or litter present. General housekeeping procedures of the transfer building were good, as observed during a truck-unloading sequence. The site's front-end loaders cleaned the floor area on a regular basis during this observed sequence.

There was a low level of odour observed within the building. The Site Manager stated that the #2 compactor was offline for a couple of hours for maintenance on the morning of the odour audit. The air in the Transfer Building was slightly more odorous than last time, possibly due to this reason although there was an additional 130 tonnes of MSW on the floor than in the November, 2009 audit.

#### 2.1.2 Container Packing Area and Site Roadways

The container packing area and site roadways were very clean and well managed with no MSW present. The Site Manager advised that the relatively new road surface assists in reducing pockets of material forming on the roadways around the site. The container compacting/train packing area had a weak garbage odour present but it was confined to this area only.

The Site Manager informed the TOU auditor that the containers are cleaned off site at Veolia's Woodlawn facility. The weight of each container is monitored to determine if there is any waste that has not been removed completely from each container, which in turn reduces the likelihood of the containers contributing to the site's odour levels.

### 2.1.3 Odour Extraction System Maintenance

Service documentation was provided and inspected for the maintenance of the odour extraction system (**Appendix A**). The Site Manager informed the TOU auditor that maintenance of the odour extraction system occurs at the end of each month. Each service log provided shows that the odour extraction system is performing well. The most recent service (April 2010) shows that the fan belts will be replaced next month.

### 2.1.4 Odour Minimising Procedures

Inspection of the document *NSW Clyde Transfer Terminal Minimising Odour Procedure* showed a well planned list of procedures to minimise odour impacts from the Clyde Transfer Terminal. In addition to the procedures mentioned in the above document, the Site Manager informed the TOU auditor that the containers in the container storage area are regularly rotated so that containers are not sedentary for extended periods of time, to reduce the amount of odour in this area of the site. This also reduces the likelihood of leachate forming in puddles on the container storage area ground.

The Site Manager is aware of the importance of housekeeping in minimising odour around the Clyde Transfer Terminal site. The Site Manager stated that odour minimisation procedures are regularly reviewed at Tool Box meetings and new issues/recommendations are raised with all staff members at these meetings. The Tool Box meeting on 21/04/2010 (**Appendix B**) lists the following recommendation with regard to odour: *All operators are to make sure that the roller door at the back of the waste shed remains closed at all times when not in use to reduce the chance of odour escaping.* The Site Manager stated that the rear shutter is opened once a day (at a maximum) for approximately five to ten minutes if the Transfer Building floor needs cleaning. The rear shutter when opened is often only opened half way, which reduces the amount of odour that is pushed through the building.

## 2.2 Fugitive emissions

### 2.2.1 Transfer Building

Inspection of the transfer building revealed that the rubber mats that act to temporarily seal the breezeways have been re-attached and secured since the last audit in November 2009. All other doors and roller shutters of the transfer building were shut whilst the odour audit was completed, which reduces the likelihood of odour impacts detected offsite. Additionally, the louvers on the walls of the Transfer Building were observed to be shut whilst the odour audit was carried out.

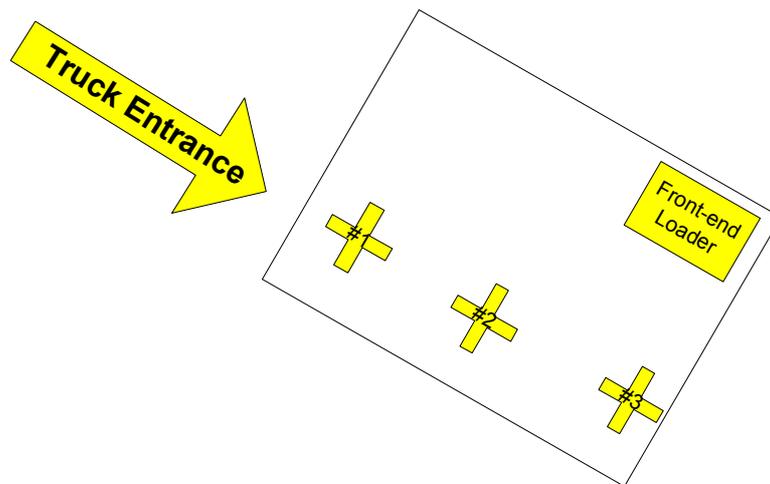
### 2.2.2 Truck Entrance Plastic Strips

The truck entrance strips of the Transfer Building, used to reduce odour escaping through the opening, have been re-attached and secured since the last audit in November 2009 when they had been previously pulled down in an onsite incident.

Maintenance of the plastic strips is part of daily operations. As the site is an operational facility these plastic strips are maintained as required.

### 2.2.3 Smoke Testing

Smoke testing was carried out within the Transfer Building to assist in determining the effectiveness of the forced air extraction system as well as how well the transfer building has been sealed from leaks. Smoke was released from within the building from three different points within the transfer building. **Figure 1** shows the 3 points where the smoke was released within the Transfer Building.



**Figure 1:** Smoke testing release points within the Transfer Building.

### **Smoke Testing Point #1**

The smoke initially was drawn towards the truck entrance and was then pulled back under and into the Transfer Building. The smoke then moved in a swirling motion towards the ceiling and then moved back down again. Smoke testing was carried out at the truck entrance and the smoke was observed to move back into the Transfer Building.

### **Smoke Testing Point #2**

Smoke released from the second point initially moved in eddies near the ground and was gradually drawn up towards the ceiling.

### **Smoke Testing Point #3**

The final point where smoke testing was carried out showed that the air initially lingered near the ground and then was slowly drawn up towards the ceiling.

A front end loader working under the extraction system of the Transfer Building (location shown in **Figure 1**) pushed dust into the air which was in turn drawn quickly up to the extraction system by the fans.

In all instances the smoke was completely contained within the Transfer Building therefore no evidence of any fugitive odour release was observed whilst this odour audit was carried out.

## 2.3 Odour Complaints Handling and Meteorological Data

### 2.3.1 Odour Complaints Handling

Twelve odour complaints were received by VES during this period and are listed along with the handling of the complaints in **Table 2.1**.

Table 2.1: Odour complaints received by CTT November 2009 – May 2010		
Date	Complainant	Response
27/11/2009	Manildra	<ul style="list-style-type: none"> <li>Site manager &amp; auditor were inside &amp; outside the terminal building and they could not detect any apparent odour</li> <li>Both extraction fans running</li> <li>Waste level on floor noted (100 tonnes)</li> <li>Corresponding meteorological conditions logged (South West)</li> </ul>
08/12/2009	Manildra	<ul style="list-style-type: none"> <li>The Lead Hand walked the boundary of the facility and could not detect any odour</li> <li>Both extraction fans running</li> <li>Waste level on floor noted (100 tonnes)</li> <li>Corresponding meteorological conditions logged (South South West)</li> </ul>
30/12/2009	Manildra	<ul style="list-style-type: none"> <li>Site manager walked around CTT site and could not detect any odour coming from the facility</li> <li>Both extraction fans running</li> <li>Waste level on floor noted (60 tonnes)</li> <li>Corresponding meteorological conditions logged (South East)</li> </ul>
04/01/2010	Manildra	<ul style="list-style-type: none"> <li>Site manager walked around CTT site and surround for presence of odour (no waste odour found) but water was lying on the ground from the weekend rain</li> <li>Both extraction fans running</li> <li>Waste level on floor noted (80 tonnes)</li> <li>Corresponding meteorological conditions logged (South South West)</li> </ul>

Table 2.1: Odour complaints received by CTT November 2009 – May 2010 (Continued)		
Date	Complainant	Response
19/01/2010	Manildra	<ul style="list-style-type: none"> <li>• Leading hand on site could not detect any odour</li> <li>• Both extraction fans running</li> <li>• Waste level on floor noted (100 tonnes)</li> <li>• Corresponding meteorological conditions logged (West South West)</li> </ul>
12/02/2010	Manildra	<ul style="list-style-type: none"> <li>• Site Manager could not detect any odour from the Terminal</li> <li>• Site Manager did note that the wind was in a north-westerly direction and that the odour may have been from another source</li> <li>• Both extraction fans running</li> <li>• Waste level on floor noted (30 tonnes)</li> <li>• Corresponding meteorological conditions logged (South West)</li> </ul>
05/03/2010	Manildra	<ul style="list-style-type: none"> <li>• Site Manager could not detect any odour from the site when walking around the site</li> <li>• Track line 22 (which is the closest point of the Terminal boundary to the Manildra boundary) was also observed for odour and a faint odour was detected which did not appear to be a waste odour which may have come from the Rail Infrastructure field day area which was being dismantled. The Site Manager detected no wind at the time</li> <li>• Both extraction fans running</li> <li>• Waste level on floor noted (50 tonnes)</li> <li>• Corresponding meteorological conditions logged (East South East)</li> </ul>

Table 2.1: Odour complaints received by CTT November 2009 – May 2010 (Continued)		
Date	Complainant	Response
09/03/2010	Manildra	<ul style="list-style-type: none"> <li>• Site manager walked around the CTT site for presence of odour (no odour found)</li> <li>• Both extraction fans running</li> <li>• Waste level on floor noted (80 tonnes)</li> <li>• Corresponding meteorological conditions logged (South West)</li> </ul>
16/03/2010	Manildra	<ul style="list-style-type: none"> <li>• Site manager was supervising the road sweeper working on the Auburn end of the site boundary and no odour was detected</li> <li>• Both extraction fans running</li> <li>• Waste level on floor noted (150 tonnes)</li> <li>• Corresponding meteorological conditions logged (South -South West)</li> </ul>
12/04/2010	Manildra	<ul style="list-style-type: none"> <li>• At the time of the 1<sup>st</sup> complaint the Site manager (that was offsite) instructed an operator to walk around the facility and the boundary and no odour was detected. At the time of the 2<sup>nd</sup> complaint the same operator was sent out and reported no odour but there was an increase in the amount of waste on site (as expected with the morning peak)</li> <li>• Both extraction fans running</li> <li>• Waste level on floor noted (30 tonnes for 1<sup>st</sup> complaint &amp; 60-80 tonnes for 2<sup>nd</sup> complaint)</li> <li>• Corresponding meteorological conditions logged (South West)</li> </ul>

Table 2.1: Odour complaints received by CTT November 2009 – May 2010 (Continued)		
Date	Complainant	Response
13/04/2010	Manildra	<ul style="list-style-type: none"> <li>• Site manager could not detect any but an operator informed the Site manager that the rear roller door was half way up for 10 minutes for cleaning (weekly procedure) which may have allowed the odour to escape the building and the complainant to detect it</li> <li>• Both extraction fans running</li> <li>• Waste level on floor noted (80 tonnes)</li> <li>• Corresponding meteorological conditions logged (South-South West)</li> </ul>
16/04/2010	Manildra	<ul style="list-style-type: none"> <li>• Site manager could not detect any odour from the Terminal but could detect a slight odour on the southern side of the complex in Pacific National's fuel yard (where the odour appeared to originate) and the other side of the rail yard which may have been the source of the odour</li> <li>• Both extraction fans running</li> <li>• Waste level on floor noted (100 tonnes)</li> <li>• Corresponding meteorological conditions logged (South-South East)</li> </ul>

Other details that were recorded included time of complaint, time of when complaint was received by VES, the response date by VES and the status of the extraction fans at the time of the complaint. The response by VES on these occasions was seen to be adequate.

### 2.3.2 Meteorological Data

The meteorological data provided to TOU for the six months from November 2009 to May 2010 is in good order. Observations were recorded in 15-minute intervals, included were all parameters necessary to develop a meteorological dataset for odour dispersion modelling.

The weather station is located in an accessible area with no vegetation overgrown immediately around the weather station pole. Maintenance and calibration was carried out as required in January and April 2010 by Hydrometric Consulting Services. The weather data calibration reports for January and April 2010 are attached in **Appendix C**.

## 2.4 **Ambient Odour Assessment**

At present, no Australian Standard exists for field based ambient odour assessment surveys. Consequently, The Odour Unit utilises a method for assessing the ground level impacts of odour emissions using a modified version of the German Standard VDI 3940 (1993) – ‘Determination of Odorants in Ambient Air by Field Inspections’.

Field based ambient odour surveys are considered a valuable odour impact assessment tool as previous experience with ambient odour sampling and subsequent olfactometry testing suggests that accurate and useful ambient odour concentration data is difficult to obtain. Therefore, TOU has adopted a more practical approach based on the field measurement of odour intensity. With this method, calibrated and experienced odour specialists traverse the downwind surrounds of odour sources in a strategically mapped pattern, assessing the presence, character and intensity of any odours encountered and recording these observations along with wind speed and direction.

An ambient odour assessment was performed offsite of the Clyde facility on 13/05/2010 (1220 – 1343). The ambient odour assessment focused offsite as required by the Conditions of Consent on “.....*nearby commercial and residential areas.....*” (Section 48 (f)). The TOU assessor firstly determined the wind direction using a compass and then assessed downwind locations of the terminal building.

The assessor spent a few minutes at each assessment location in order to gauge the effects of any odour impact. If an odour was detected at a location, the assessor attempted to characterise it. The general aim was to determine the extent of the impact of odours off-site and rank their intensity. The ranking scale for the German Standard VDI 3940 ‘Determination of Odorants in Ambient Air by Field Inspections’ was used for the intensity assessments. The standard’s ranking system is based on the following seven-point intensity scale.

#### **VDI 3940 – Intensity Scale**

- 0 Not Detectable
- 1 Very Weak
- 2 Weak
- 3 Distinct
- 4 Strong
- 5 Very Strong
- 6 Extremely Strong

The results of the ambient assessment survey are depicted in two principal ways. The field log sheets completed by the assessor contain the unprocessed data for each location and the derived result of the survey is illustrated as an odour impact map. The map illustrates the locations assessed, and the level of odour intensity detected. The odour survey results are shown in **Appendix D**.

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## 3 RECOMMENDATIONS/FOLLOW-UP

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### 3.1 Fugitive emissions

#### 3.1.1 Transfer building

An option for sealing the opening above the container compacting area of the Transfer Building is being investigated by the fan maintenance company (TRIPLE M). This may further assist in reducing fugitive emissions from leaving the Transfer Building. This will be checked again in the next odour audit.



## **Appendix A**

### **Odour Extraction System Service Report**



# Service Docket



# TRIPLE 'M'

'the team you can trust'

Triple 'M' Mechanical Services Pty Ltd  
ACN 063 395 013 ABN 50 063 395 013  
Triple 'M' Industrial Estate  
Unit 5, 47 Day Street North  
Silverwater NSW 2128  
Tel: (02) 9737 8711 Fax: (02) 9737 9715  
After Hours Service: 0414 737 666

Charge to: THIS IS NOT A TAX INVOICE - TAX INVOICE TO BE ISSUED UNDER SEPARATE COVER

Name: Clyde Date: 7.13.10  
 Address: \_\_\_\_\_ Job no.: 490377  
 Building/Structure no.: \_\_\_\_\_ Order no.: \_\_\_\_\_  
 Equipment ID no.: \_\_\_\_\_ Type of service: Service call  After hours call  Maintenance   
 Fault: Maintenance  
 OH&S: \_\_\_\_\_

Environmental health and safety site assessment

Risk assessment result factor (H/M/L) ..... <input type="checkbox"/>	Are hazardous materials present? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>
Are there any overhead hazards? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>	Is fire safety equipment available? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>
Are barricades/signs required? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>	Is visibility in work area adequate? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>
Is physical access satisfactory? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>	Do you require safety/lifting harness? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>
Is lifting/handling equipment required? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>	Are work permits required/submitted? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>
Is ventilation to area satisfactory? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>	Are you using all required PPE? ..... Yes <input type="checkbox"/> No <input type="checkbox"/>

Root Cause: \_\_\_\_\_  
 Why: Waiting on belts  
 Why: \_\_\_\_\_

Description of work done: Arrived on site carried out monthly maintenance cleaned out USD's greased bearings

Technician sign on: Done Employee code: Te:01

Materials Used	Order No.	Date	Ordinary	Overtime	Travel	Total

Oxy/Act  Vac pump  Recovery unit  Nitrogen  Consumables  Tolls  Parking  TOTAL : \_\_\_\_\_

Mechanic's signature: [Signature] Client's signature: [Signature]

Claims will be made on a weekly basis for extended service work. If insurance is involved, payment is the responsibility of our client, not the insurance company.

SERVICE REPORT No: 064107

JOB STATUS: 1 - Completed 2 - Not Completed 3 - Quote to Follow 4 - Parts Needed 5 - Customer to Advise

STATUS: 1 STATUS: \_\_\_\_\_ STATUS: \_\_\_\_\_ STATUS: \_\_\_\_\_ STATUS: \_\_\_\_\_

NEW



TRIPLE M

'the team you can trust'

# Service Docket

ACN 063 395 013 ABN 50 063 395 013  
Triple 'M' Industrial Estate  
Unit 5, 47 Day Street North  
Silverwater NSW 2128  
Tel: (02) 9737 8711 Fax: (02) 9737 9715  
After Hours Service: 0414 737 868

**CHARGE TO:** THIS IS NOT A TAX INVOICE - TAX INVOICE TO BE ISSUED UNDER SEPARATE COVER

Name Clyde Date 31/3/10  
 Address \_\_\_\_\_ Job No 490377  
 Building/Structure No. \_\_\_\_\_ Order no \_\_\_\_\_  
 Equipment ID No. \_\_\_\_\_ Type of service Service Call  After hours call  Maintenance   
 Fault maintenance  
 OH&S \_\_\_\_\_  
 Root Cause \_\_\_\_\_  
 Why \_\_\_\_\_  
 Why \_\_\_\_\_

### DESCRIPTION OF WORK DONE

Carried out monthly maintenance on ~~out~~ fan's and  
 USD'S. Checked belts, greased bearings cleaned out  
 USD'S, cleaned lights  
 all running good

Technician sign on Jeno Employee code 10101

### SERVICE RECORDS

Materials Used	Order No.	Date	Ordinary	Overtime	Travel	Total
		<u>31/3/10</u>	<u>2</u>		<u>1/2</u>	
		DD/MM/YY				
		DD/MM/YY				
		DD/MM/YY				
		DD/MM/YY				
						<u>2 1/2</u>

Oxy/Act  Vac pump  Recovery unit  Nitrogen  Consumables  Tolls  Parking  Total 2 1/2

Mechanic's Signature [Signature] Client's Signature [Signature]

Claims will be made on a weekly basis for extended service work. If insurance is involved, payment is the responsibility of our client, not the insurance company.

SERVICE REPORT No. 068034 STATUS:  STATUS:  STATUS:  STATUS:  STATUS:

**JOB STATUS:** 1 - Completed 2 - Not Completed 3 - Quote to Follow 4 - Parts Needed 5 - Customer to Advise

White - Customer Copy Yellow - Office Copy







## **Appendix B**

### **Toolbox Meeting Minutes 21/04/2010**

### VES Tool Box Meeting Record

Date: 21.04.2010.....

Location: Clyde.....

Agenda Items	Examples
1. Safety	Hazard Identification, Injuries, Accidents, Incidents, PPE, JSA completion, Risk Assessment, Permits, Suggestions for Improvements, Innovations, Preventative Action
2. Customer Focus	Positive/Negative Customer Feedback, Suggestions for Improvement, New Business Opportunities, Innovations, Cost Savings, Preventative Action
3. Environmental issues	Hazard Identification, Incidents, Suggestions for Improvement, Innovations, Preventative Action
4. Topic of the meeting	Feedback from audits or surveys, Focus on a particular topic e.g. Manual Handling.

#### SAFETY (POINTS OF DISCUSSIONS)

1				
2	(CM) Raised issue re lights on Line 22 when will repairs commence.(CD) To check with Pac-Nat			
3	(CD) Asked all operators when container doors difficult to close due to twisted doors and body to move trolley to level to make easier to close, not to lift container to level, danger of waste near door falling.			
4	(AK) Raised issue that drivers are speeding of weighbridge both on entry and exit, this cause bridge to rock heavily andTT may cause damage.			
5	(AK) Noted that some vehicles leave waste shed with tail gates not fully closed allowing some waste to fall on driveway.			
6	(CD) Will draft letter on attention to cease these actions and forward to Sales Manager Jim Hennessey to forward to all Clyde Clients.			
7				
Item	Recommendations	Action By	By When	Close Out
1	(CD) Asked all operators to make sure roller door at back of waste shed remain closed at all times when not in use, reduce chance of odour escaping.	CD	AT ALL TIMES	
2	(CD) Reminded all operators and staff of the policy of NO SMOKING in company vehicles and plant equipment at any time	CD	AT ALL TIMES	
3	(CD) Recommended all operators on site when a row of containers is emptied to ran Road Sweeper through to keep clean and free of odour , and to alternate use of rows for that purpose.	CD	AT ALL TIMES	
4				
5				
6				
7				

#### OTHER DISCUSSIONS

1	(CD) A special toolbox meeting to be conducted at a date to be set for Danny Conlon to speak to all staff as a follow up to Safety forum Seminar.
2	(ALL) Discussed light display system for vechile tipping position in waste shed. (CD) Will source quotes and possible systems available from various vendors.
3	
4	
5	
6	
7	



## **Appendix C**

### **Weather Data Calibration Reports**

# Hydrometric Consulting Services Pty Ltd

ABN 16 091 437 071

20 January 2010

Stephen Bernhart  
Environmental Monitoring Officer  
Veolia Environmental Services

## Re – Quarterly service of weather stations

Dear Stephen,

As per our service agreement, on the 19/01/10 HCS undertook the service, calibration and maintenance of the weather stations located at the Clyde and Horsley Park sites. Field readings were obtained by a combination of a Kestral 3500, compass, Monitor Solar Radiation field unit and HS TBRG calibration device. Details are as follows

Clyde

Sensor	Actual (field)	Logger
Temperature – 10m	21 deg *	19.8 deg
2m	21 deg *	21.7 deg
Relative Humidity	32%	30%
Wind Speed	1.5 m/sec	1.5 m/sec
Wind Direction	195 deg	195 deg
Solar Radiation	740 w/sq.m	720 w/sq.m
TBRG	10mm	20 tips (0.5mm per tip)
Battery	13.2v	

\* Note 1: field reading is not inside the radiation shield

Note 2: ignore rainfall tips logged at approx. 09:50am as these were testing and calibration.

### Additional Items

1. Installation sprayed for insects.
2. The tipping bucket rain gauge stand had again been bumped and was resecured with concrete.
3. Vines on fence adjacent to instruments were trimmed.

# Hydrometric Consulting Services Pty Ltd

ABN 16 091 437 071

15 April 2010

Stephen Bernhart  
Environmental Monitoring Officer  
Veolia Environmental Services

## Re – Quarterly service of weather stations

Dear Stephen,

As per our service agreement, on the 15/04/10 HCS undertook the service, calibration and maintenance of the weather stations located at the Clyde and Horsley Park sites. Field readings were obtained by a combination of a Kestral 3500, compass, Monitor Solar Radiation field unit and HS TBRG calibration device. Details are as follows

### Clyde

Sensor	Actual (field)	Logger
Temperature – 10m	22.5 deg *	21.5 deg
2m	22.5 deg *	24 deg
Relative Humidity	59%	57.5%
Wind Speed	0.8 m/sec	1.0 m/sec
Wind Direction	45 deg	45 deg
Solar Radiation	670 w/sq.m	660 w/sq.m
TBRG	10mm	20 tips (0.5mm per tip)
Battery	13.2v Solar 19.8v	

\* Note 1: field reading is not inside the radiation shield

Note 2: ignore rainfall tips logged at approx. 10:15am as these were testing and calibration.

### Additional Items

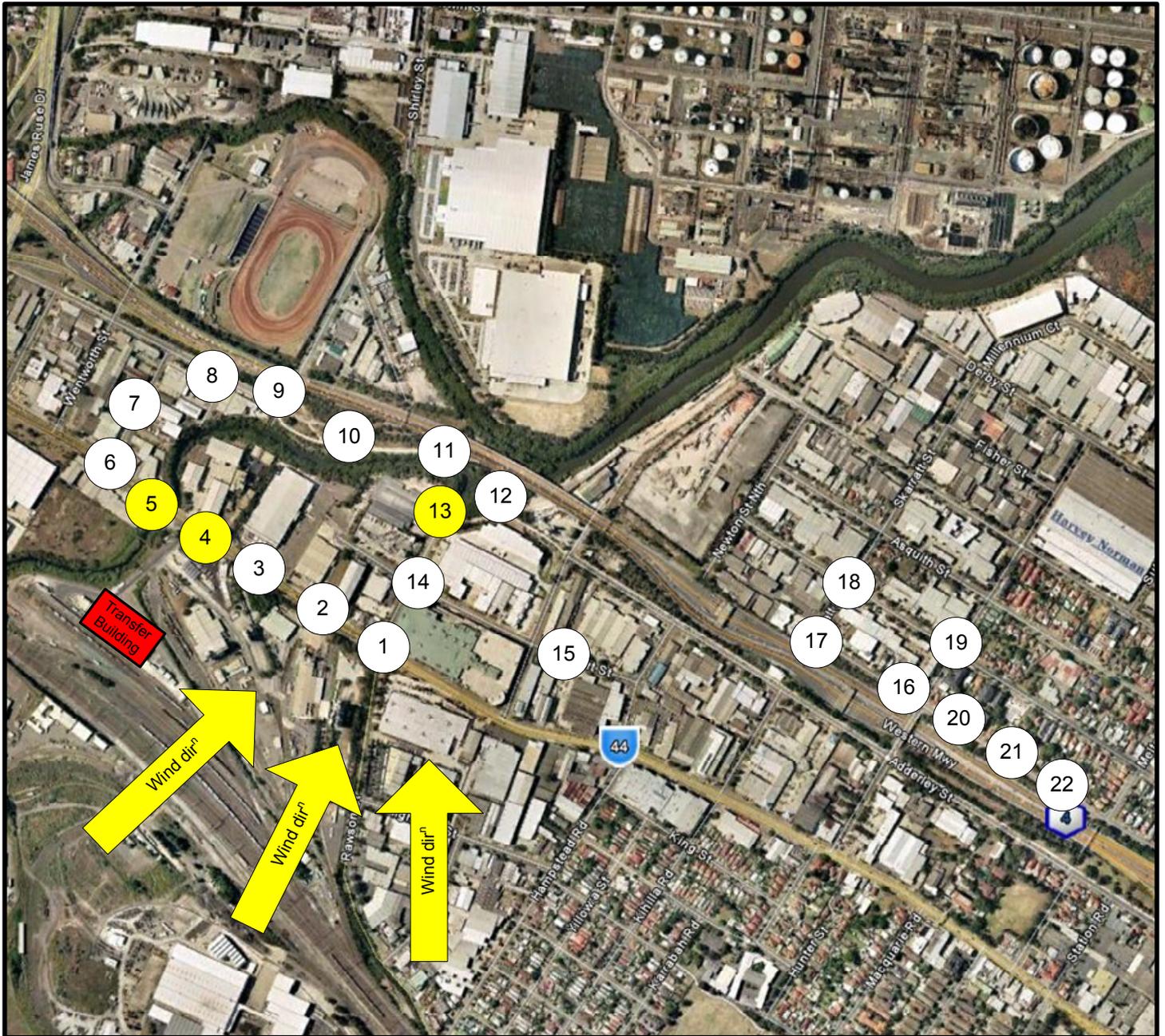
1. Installation sprayed for insects.
2. Data logger time adjusted back from DST to EST.
3. Conduit at base of pole was repaired.
4. Desiccant inside instrument cabinet was replaced.



## **Appendix D**

### **Field Ambient Odour Assessment**

### **Impact Map and Field Log Sheets**



<p>DESCRIPTION</p> <p><b>Field Ambient Odour Assessment Survey</b> Modified German Standard VDI 3940</p> 		<p>LEGEND</p> <p><u>German Intensity Scale VDI3882</u></p> <ul style="list-style-type: none"> <li>○ 0 Not detectable</li> <li>● 1 Very weak</li> <li>● 2 Weak</li> <li>● 3 Distinct</li> <li>● 4 Strong</li> <li>● 5 Very strong</li> <li>● 6 Extremely strong</li> </ul>		<p>CLIENT/PROJECT</p> <p><b>Veolia Environmental Services Clyde, NSW</b></p> <p>Date: 13/05/2010 Time: 1220-1343</p>	
	<p>THE ODOUR UNIT PTY LTD Aust Tech Park, Locomotive Workshop, Suite 16012, 2 Locomotive Street, EVELEIGH, NSW 2015 Phone: (02) 9209 4420 – Fax: (02) 9209 4421</p>	<p>DRAWN BY</p>	<p>A. CANTLAY 18/05/2010</p>	<p>TITLE</p>	<p>DRAWING No. N1473L_XV</p>
		<p>CHECKED</p>	<p>J. SCHULZ 18/05/2010</p>	<p>Clyde Transfer Terminal, Clyde NSW Field Ambient Odour Assessment Survey</p>	
		<p>APPROVED</p>	<p>T. SCHULZ 19/05/2010</p>	<p>JOB No. N1473L</p>	

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## Form 22 - Field Ambient Odour Assessment Log Sheet

DATE: 13/05/2010 ASSESSOR: Andrew Cantlay WEATHER CONDITIONS: Light winds, sunny, clear skies

GRID REF. POSITION	TIME	WIND DIRECTION	WIND SPEED (m/s)	ODOUR PRESENT Y / N	ODOUR CHARACTER	VDI 3940 INTENSITY SCALE 0-6	COMMENTS
1	1220	SW	0.5 – 3.0	N	-	0	None.
2	1225	SW	0.5 – 3.0	N	-	0	None.
3	1230	SW	0.5 – 3.0	N	-	0	None.
4	1234	SW	0.5 – 3.0	Y	Garbage	1	The odour was detected very briefly and was intermittent.
5	1237	SW	0.5 – 3.0	Y	Garbage	1	The odour was detected very briefly and was intermittent.
6	1241	SW	0.5 – 3.0	N	-	0	None.
7	1243	S/SW	0.5 – 3.0	N	-	0	None.
8	1247	S/SW	0.5 – 3.0	N	-	0	None.

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9	1249	S/SW	0.5 – 3.0	N	-	0	None.
10	1251	S/SW	0.5 – 3.0	N	-	0	None.
11	1255	S/SW	0.5 – 3.0	N	-	0	None.
12	1257	S/SW	0.5 – 3.0	N	-	0	None.
13	1259	S/SW	0.5 – 3.0	Y	Garbage	1	The odour was detected in a cul-de-sac where a company called Reefway Environmental Services appears to receive garbage in skip bins.
14	1311	S/SW	0.5 – 3.0	N	-	0	None.
15	1314	S/SW	0.5 – 3.0	N	-	0	None.
16	1323	S/SW	0.5 – 3.0	N	-	0	None.



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17	1326	S/SW	0.5 – 3.0	N	-	0	None.
18	1328	S/SW	0.5 – 3.0	N	-	0	None.
19	1332	S/SW	0.5 – 3.0	N	-	0	None.
20	1335	S/SW	0.5 – 3.0	N	-	0	None.
21	1340	S/SW	0.5 – 3.0	N	-	0	None.
22	1343	S/SW	0.5 – 3.0	N	-	0	None.