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Dear Alex

300 Manchester Road, Auburn – Odour Assessment

1 Introduction

Pacific Environment has been commissioned by PAYCE to assess potential for adverse odour impacts on proposed rezoning and residential/mixed-use development at 300 Manchester Road, Auburn NSW.

Specifically, we have been asked to comment upon potential odour impacts associated with the operation of the Veolia Environmental Services (formerly Collex Pty Limited) Waste Transfer Station (WTS) (hereafter, the 'Veolia WTS') at 322 Parramatta Road, Clyde NSW.

The proposed residential development falls within the former Auburn City Council, which was amalgamated into Cumberland Council in May 2016. The proposed development is still subject to the controls within the Auburn Local Environmental Plan (LEP) 2010 and Auburn Development Control Plan (DCP) 2010. The area is currently zoned IN1 (General Industry).

PAYCE is currently seeking approval to have the land rezoned to permit residential development (R4 High Density Residential) with development to be determined by the Floor Space Ratio and Maximum Building Height controls within the Auburn LEP.

The site breakdown is as follows:

- Site Area – 140,000 m²
- Residential Gross Floor Area – 164,000 m²
- Employment Land Area – 40,000 m²
- Retail GFA – 6,000 m²
- Community Gross Floor Area – 2,000 m²
- Childcare Gross Floor Area – 1,100 m²
- Number of dwellings – approximately 1,800

Auburn Council has responded to the planning proposal submission; however, there are no specific responses relating to odour.

The Veolia WTS (DA No. 205-08-01) was approved on 29 August 2002, and holds Environmental Protection Licence (EPL) No. 117663. Putrescible municipal solid waste is received on site, containerised and transported offsite by rail to the Veolia Crisps Creek Intermodal Facility. One round trip is made per day by rail to Crisps Creek. The maximum approved rate of waste receivable at the facility is 500,000 tonnes per year.

The purpose of this letter report is to provide an assessment as to whether odour from the Veolia WTS will likely negatively impact on future residential land use at 300 Manchester Road, Auburn NSW. This has been completed through a review of the history of any odour complaints associated with the Veolia WTS, applicable legislation and odour guidelines, a review of available literature, a comparison to odour emissions from a similar facility, and an assessment of prevailing winds.

2 Local Setting

2.1 The proposed development

The location of proposed residential development is shown in **Figure 2-1**. This is located on the edge of the Clyburn Industrial Precinct and is largely cut off from the industrial land use to the north and east due to railway lines located to the north. Residential land is located immediately to the south and west of the proposed development site.

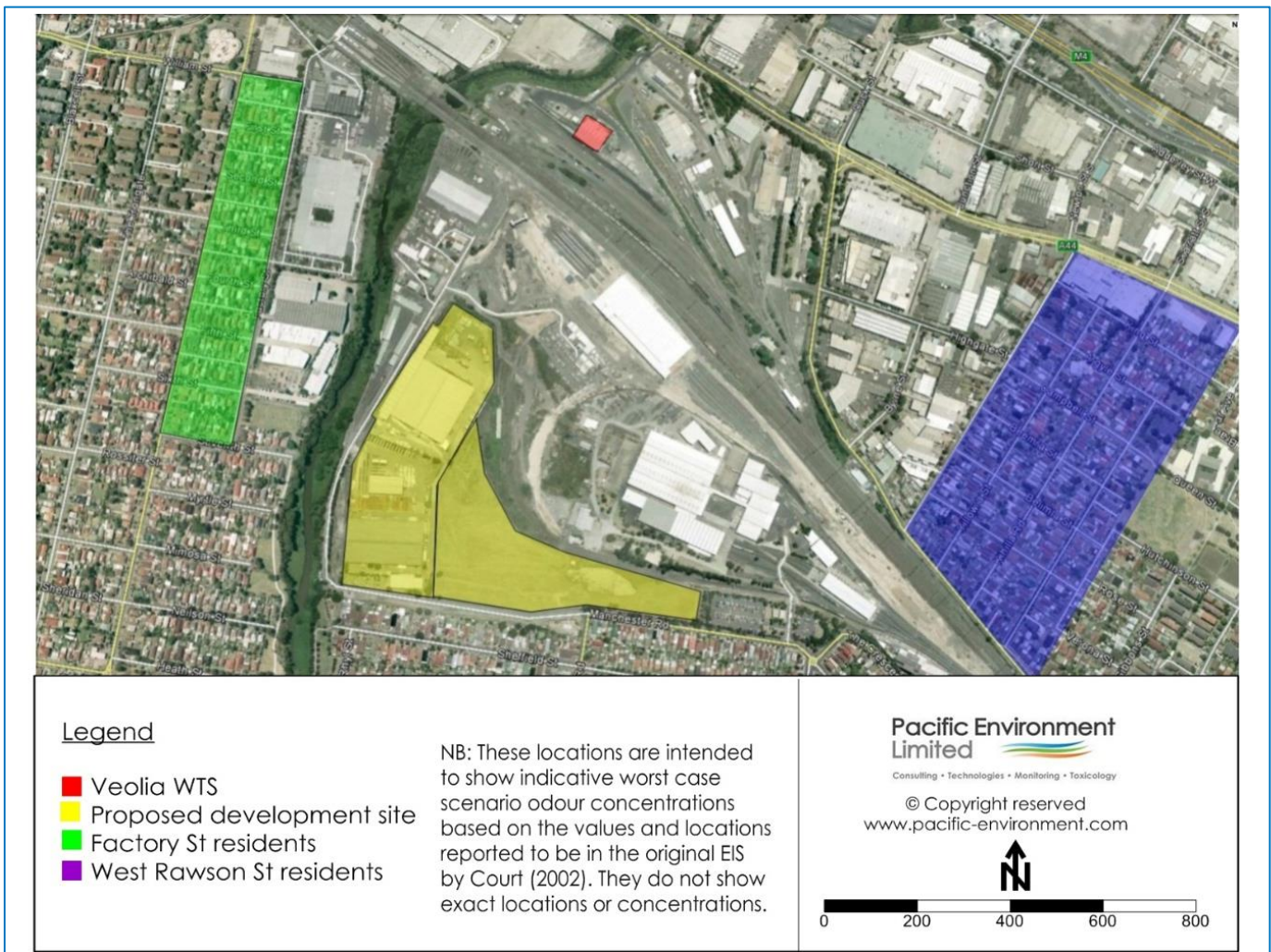


Figure 2-1: Location of the proposed residential development and Veolia WTS

The proposed development site has a total area of 14 hectares. It fronts Manchester Road to the south (approximately 645 m), Manchester Road and Duck River to the west (approximately 560 m), and land owned by Rail Corporation NSW to the north and east (approximately 850 m).

2.2 Meteorology relevant to the proposed development

Air pollutant concentrations, including odour, are strongly influenced by the prevailing meteorological conditions, including wind speed and wind direction. As the proposed residential development is located south of the WTS, adverse odour impacts are most likely to occur during calm conditions / light winds from the north where potential odour emissions are subject to poor dispersion.

As there are no site specific weather data available or weather stations located in the immediate vicinity, two years of data from the Bureau of Meteorology monitoring station at Sydney Olympic Park Archery Centre (2015-2016) have been referenced to determine prevailing wind direction (see **Appendix A**). The Sydney Olympic Park Archery Centre is located approximately 4.5km east of the site. Due to the close proximity and similar locality, both locations can be expected to experience comparable meteorology.

The percentage of 'calms' (wind speeds less than 0.5m/s) for the site in 2015 and 2016 were recorded as 18.4% and 18.6%, respectively. Annually, the predominant wind direction follows a northwest-southeast axis with calmer winds tending to originate from the northwest and occur approximately 25% of the year. Other predominant wind directions include south easterly winds (occurring approximately 12% of the year) and easterly winds (occurring approximately 9% of the year). North to north-easterly winds account for 7-8% of wind direction during the year.

Meteorological data and wind roses (**Appendix A**) indicate that the site (located south of the Veolia WTS) will experience light winds from the north on relatively few occasions. Winds originating from the north of the WTS are typically moderate to strong (>3m/s).

3 Relevant Legislation and Guidelines

The following guidelines and legislation are relevant to the subject assessment:

- Handbook for Design and Operation of Regional and Rural Transfer Stations (**NSW DEC, 2006a**)
- Technical Framework: Assessment and management of odour from stationary sources in NSW (**NSW DEC, 2006b**)
- Recommended Buffer Distances for Industrial Residual Air Emissions (**EPA Victoria, 1990**)
- Draft Guideline: Recommended Separation Distances for Industrial Residual Air Emissions (**EPA Victoria, 2012**)
- Clyde Waste Transfer Terminal Special Provisions Act (**2003**)
- Approved methods for the modelling and assessment of air pollutants in NSW (“the Approved Methods”; **NSW EPA, 2005**)

3.1 Odour concentration criteria

The Approved Methods include ground-level concentration criteria for complex mixtures of odorous air pollutants. They have been refined by the NSW EPA to take account of population density in the area. **Table 3.1** lists the odour thresholds, not to be exceeded more than 1% of the time, for different population densities.

Table 3.1: Odour performance criteria for the assessment of odour (**NSW DEC, 2006b**)

Population of affected community	Odour performance criterion in Odour Units (OU) (nose response, at the 99 th percentile)
Rural single residence (≤ 2)	7
~10	6
~30	5
~125	4
~500	3
Urban (~2000) and/or school and hospitals	2

The difference between odour criteria is based on considerations of risk of odour impact rather than differences in odour acceptability between urban and rural areas. For a given odour level there will be a wide range of responses in the population exposed to the odour. In a densely populated area there

will therefore be a greater risk that some individuals within the community will find the odour unacceptable than in a sparsely populated area.

Due to the location of the proposed residential development site within the Sydney contiguous urban area, the odour relevant performance criterion is 2 odour units (OU), not to be exceeded more than 1% of the time.

3.2 Buffer distances for waste transfer stations

The NSW DEC (2006a) notes that rural and regional WTS buffer zones of at least 250m from sensitive receptor such as residential housing, schools or hospitals should be implemented. This value is quoted as a guide only, as it is acknowledged that the proposed residential development is located in an urbanised area. Reference has also been made to the Victorian EPA guidelines for odour in *Recommended Buffer Distances for Industrial Residual Air Emissions Modelling (EPA Victoria, 1990)* which suggests buffer zones of 300m for waste transfer terminals located in an urban environment. This 300m buffer distance for waste facilities in urban areas has also been recommended in some NSW government publications (NSW DPI, 2007) and it is considered applicable for this assessment.

It is noted that there is an update to the Victorian guidelines, released as a draft for consultation (EPA Victoria, 2012). This document makes reference to minimum separation distances from transfer stations ('facility for collecting, consolidating, temporarily storing, sorting or recovering, refuse or used materials before transfer for disposal elsewhere') of 250m.

3.3 Clyde Waste Transfer Terminal Special Provisions Act 2003 (Repealed)

At the time that development consent was granted, the Veolia WTS was subject to the *Clyde Waste Transfer Terminal Special Provisions Act 2003*, requiring the filtration of air emissions through carbon filters to mitigate odour emissions. At the time, this requirement exceeded the specification for any waste transfer station in Australia. *The Clyde Waste Transfer Terminal Special Provisions Act 2003* was subsequently repealed in 2011 and it is unknown whether the carbon filters are still used as a means of odour reduction.

Even in the event the carbon filtration referred to within the *Clyde Waste Transfer Terminal Special Provisions Act 2003* are no longer in situ, the implication of repealing this legislation is that odour control is deemed adequate to mitigate adverse impacts without the use of such technology.

4 Literature Review

The following documents have been reviewed to further evaluate the potential for odour impacts from the WTS on residential housing:

- Independent Assessment of Environmental Impact Collex Waste Transfer Terminal at Clyde (**Court, 2002**)
- Assessment report – Proposed Waste Transfer Terminal at Clyde Railway Marshalling Yards, Auburn NSW, by Collex Pty Limited (**NSW Planning, 2002**)
- Banksmeadow Transfer Terminal: Air Quality Impact Assessment (**Wilkinson Murray, 2014**)
- Odour Audit XXVII Final Report – Clyde Waste Transfer Terminal (**The Odour Unit Pty Ltd, 2014**)

4.1 Independent Assessment of the Clyde WTS EIS and SEIS

The original Environmental Impact Statement (EIS) and Supplementary Environmental Impact Statement (SEIS) documents prepared for Collex are not in the public domain and hence information regarding odour predictions in the study area is drawn from the *Independent Assessment of Environmental Impact Collex Waste Transfer Terminal at Clyde* (**Court, 2002**).

The odour modelling for the EIS was completed using the air dispersion model Ausplume (**Court, 2002**). Meteorological data was sourced from five years of Bureau of Meteorology data from Homebush Bay. Odour emission rates were based on odour monitoring completed at a similar WTS processing municipal solid waste in Brisbane.

Potential for odour was identified as originating from three sources at the Veolia WTS and include odour from waste stockpiling and movement in the transfer terminal building, loaded rail containers awaiting transport and from trucks bringing waste into the terminal (**NSW Planning, 2002**). It would appear that the largest potential source of odour is anticipated to be associated with waste stockpiling and movement in the transfer terminal building.

No contour plots of the predicted of odour concentrations are available. However, **Court (2002)** provides a textual description of the results that can be used for this assessment. The following provides a summary of the modelled findings under the worst case scenarios:

- 0.2 OU – 0.5 OU northwest of the Veolia WTS between Marsh Street and Berry Street
- 0.5 OU – 2 OU west of the Veolia WTS at the northern end of Factory Street
- 3 OU – 4 OU east of the Veolia WTS at the western end of Rawson Street

For ease of reference, **Figure 4-1** has been produced to show the approximate location of the modelled odour predictions.

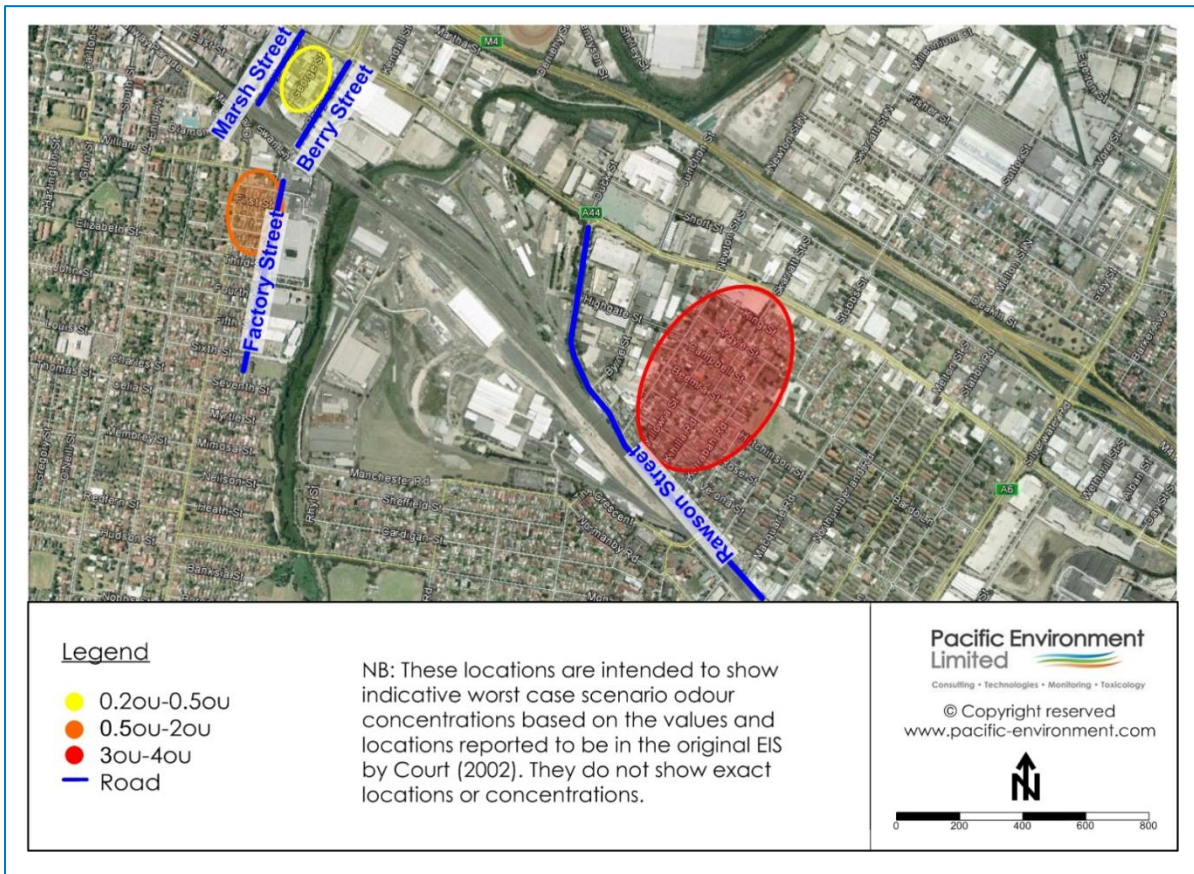


Figure 4-1: Expected worst case scenario odour concentrations at various locations around the Veolia WTS (after Court, 2002)

In the independent assessment **Court (2002)** argues that the modelling and results given in the EIS do not take into consideration any uncertainties and that predictions of peak odour concentrations may be underestimated and this should be taken into account when considering rezoning and residential development at the site. However, Court notes that odour emission values obtained from the Brisbane WTS and used in the modelling appear to agree with emission values also obtained from a Sydney landfill.

Odour modelling completed by Collex’s air quality consultants shows that odour emitted from the WTS would not exceed 2 OU for any of the nearby residential properties for 99% of time (**Court, 2002**). This demonstrates compliance with the odour criterion set out for urban areas by the NSW EPA (**NSW DEC, 2006b**).

Modelled odour concentrations in the EIS appear to indicate more elevated odour predictions to the east of the site, particularly in autumn and winter (**Court, 2002**). This may be attributed to the large amount of light westerly and north-westerly winds during these seasons.

4.2 Odour Impact Assessment: Banksmeadow Transfer Terminal

As no odour contours are available for the Veolia WTS, reference has been made to a recent odour assessment for a similar putrescible WTS site operated by VES in Banksmeadow, NSW (Wilkinson Murray, 2014). This can provide information into potential odour concentrations surrounding the Veolia WTS. Both WTSs are associated with the handling of putrescible waste and process comparable amounts of waste annually. The Banksmeadow facility is proposed to accept 400,000 tonnes of putrescible waste and 100,000 tonnes of non-putrescible waste per annum.

The predicted odour concentrations for the Banksmeadow WTS are shown in Figure 4-2. These results demonstrate that the 99th percentile odour concentrations would be:

- <2 OU at distances greater than 250 m from the WTS
- <1.5 OU at distances greater than 300 m from the WTS

It is noted that these separation distances are consistent with buffer distance values for WTSs referenced in Section 3.2.

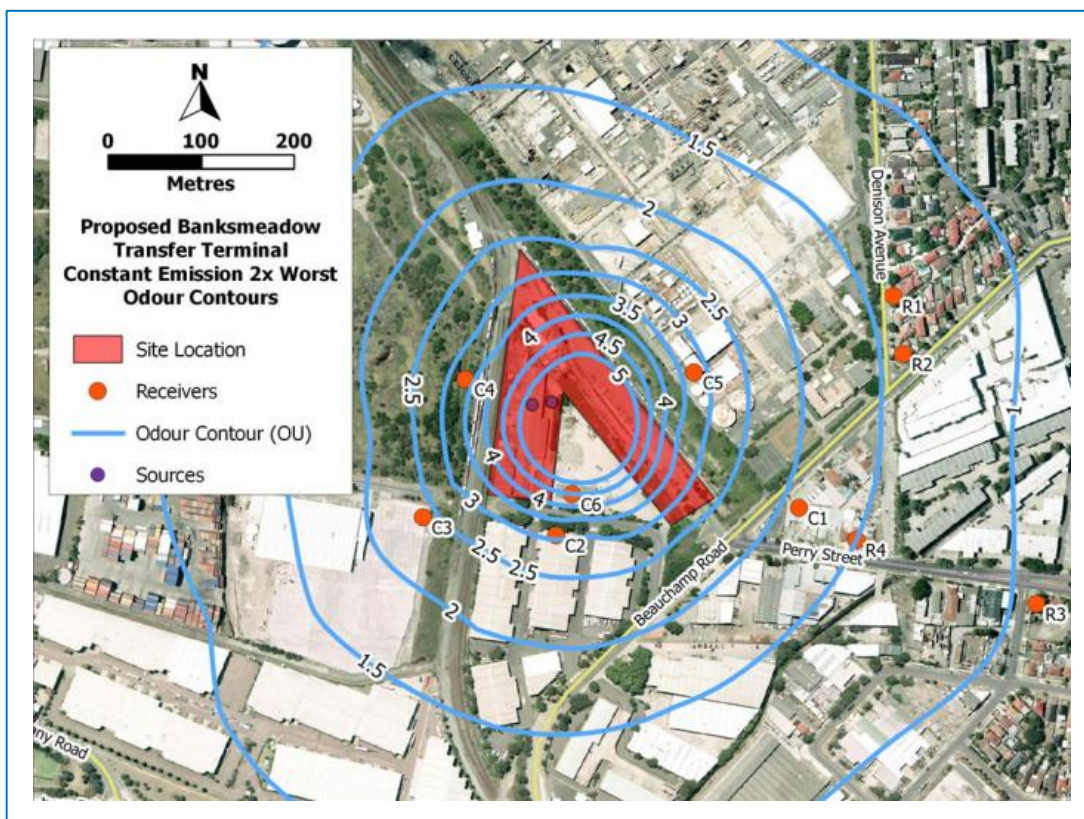


Figure 4-2: Predicted 99th percentile nose-response average ground level odour concentrations at Banksmeadow waste transfer terminal (Wilkinson Murray, 2014)

4.3 Odour Audit XXVII, Clyde Waste Transfer Terminal

The Odour Unit Pty Ltd was commissioned by Veolia (Australia) Pty Ltd to undertake odour audits at the Clyde Waste Transfer Terminal. The most recent odour audit covers the period from November 2015 to May 2016.

The Site Manager has confirmed that there have been no complaints recorded in the site complaints register since March 2012. Field based ambient odour surveys were completed and it was found that no odours were detected off-site that could be linked back to the Veolia WTS and the activities on-site.

5 Odour Complaints History

From March 2010 to March 2013 there were five odour related complaints regarding the Veolia WTS made to the EPA's Environment Line reporting system. As noted above, as part of the Veolia WTS' most recent odour audit, the Site Manager noted that the site has not received a complaint since March 2012. As part of the current study, a request was made to the EPA's Environment Line; however, no response was received during the preparation of this assessment. At the time of writing odour complaints data to Council were not available.

The EPA Environment Line provides a repository of formal complaints regarding a facility with an EPL and is thus considered a representative indicator of complaints frequency related to the WTS. These complaints are not restricted to local resident complaints and may include those received from the nearby commercial locations.

6 Discussion and Conclusion

This report evaluates the suitability of 300 Manchester Road, Auburn for rezoning to permit residential land use. The report has provided a summary of odour concentration guidelines, buffer zone guidance for waste transfer stations, meteorological data from the area and odour complaints history corresponding to the Veolia WTS.

The closest dwelling to the WTS within the proposed residential development would be located at least 400m from the Veolia WTS.

Such a separation distance represents:

- An additional 50 m from the maximum predicted 2 OU criterion that was detailed within the original Veolia WTS odour modelling as explained by **Court (2002)**
- An additional 150 m from the 2 OU contours for the more recent study in Banksmeadow (**Wilkinson Murray, 2014**)
- An additional 100 m beyond recommended separation distances between WTSs and sensitive land uses per current Victorian guidance (**EPA Victoria, 1990**), and 150 m beyond the separation distances quoted in the more recent draft guidance for consultation (**EPA Victoria, 2012**).

The majority of the proposed residential properties would be located at approximately 700m from the Veolia WTS.

In view of the physical distance between the potential odorous activity (the Veolia WTS) and the proposed residential development, it is not considered that adverse odour would be experienced at residential receptors under normal operation conditions at the WTS.

Finally, the available (now historical) complaints history (EPA Environment Line) suggests that an average of one complaint has been made per year regarding the Clyde WTS. It must be noted also that this is not necessarily a residential complaint and may also originate from the nearby industrial sites. Further, complaints are not verified as being legitimate, and attributable to the quoted source, but are 'as reported'. As part of the Veolia WTS' most recent odour audit, the Site Manager noted that the site has not received a complaint since March 2012. The low complaints frequency thus suggests that odour is unlikely to be affecting majority of existing nearby receptors, including those located downwind of the WTS for most of the year.

In view of these findings, it is concluded that the proposed residential development at 300 Manchester Road, Auburn is unlikely to experience adverse odour impacts associated with normal operations at the Veolia WTS.

Do not hesitate to contact the undersigned if you would like to discuss any of the above in additional detail.

Yours sincerely



Damon Roddis
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Pacific Environment (an ERM company)

7 References

- Clyde Waste Transfer Terminal Special Provisions Act 2003, Available at:
http://www5.austlii.edu.au/au/legis/nsw/repealed_act/cwttpa2003509/, Accessed 25/03/2015
- Court, J. (2002), "Independent Assessment of Environmental Impact: Collex Waste Transfer Terminal at Clyde", JD Court and Associates Pty Ltd, Prepared for Planning NSW, May 2002
- EPA Victoria (1990), "Recommended Buffer Distances for Industrial Residual Air Emissions", Victoria, July 1990
- EPA Victoria (2012), "Draft Guideline: Recommended Separation Distances for Industrial Residual Air Emissions", Publication Number 1506, EPA Victoria, October 2012
- NSW DEC (2006a), "Handbook for Design and Operation of Rural and Regional Transfer Stations", DEC, Sydney NSW
- NSW DEC (2006b), "Technical Framework: Assessment and management of odour from stationary sources in NSW", November 2006
- NSW DPI (2007), "Living and working in rural areas: a handbook for managing land use conflict issues on the NSW North Coast"
- NSW EPA (2005), "Approved methods for the modelling and assessment of air pollutants in NSW" New South Wales EPA 59-61 Goulburn Street, Sydney, NSW August 2005
- NSW Planning (2002), "Assessment Report- Proposed Waste Transfer Terminal at Clyde Railway Marshalling Yards, Auburn NSW, by Collex Pty Limited"
- The Odour Unit Pty Ltd (2014) Odour Audit XXIV, Clyde Waste Transfer Terminal, Final Report, December 2014
- Wilkinson Murray (2014), "Banksmeadow transfer terminal: air quality impact assessment", Prepared for Veolia Environmental Services, April 2014

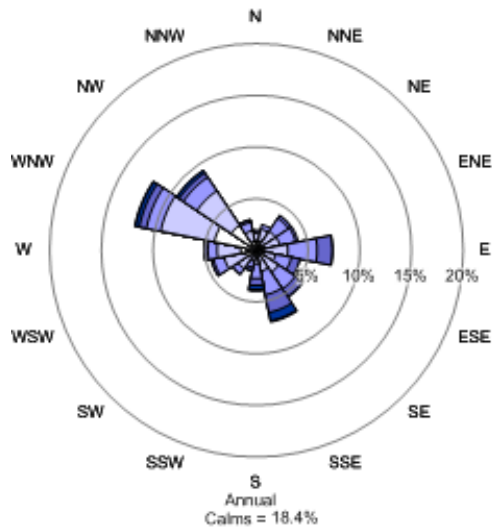
Appendix A

Sydney Olympic Park Archery Centre

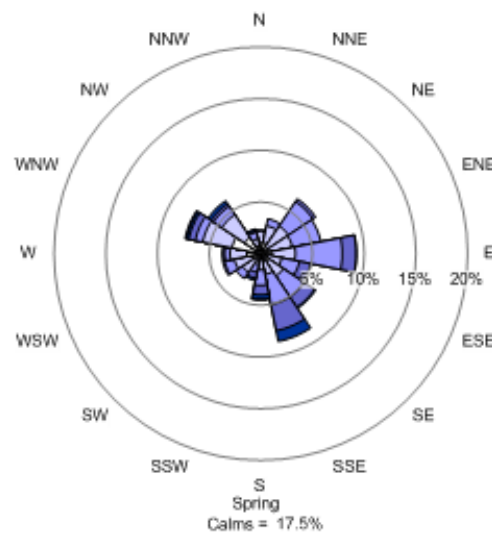
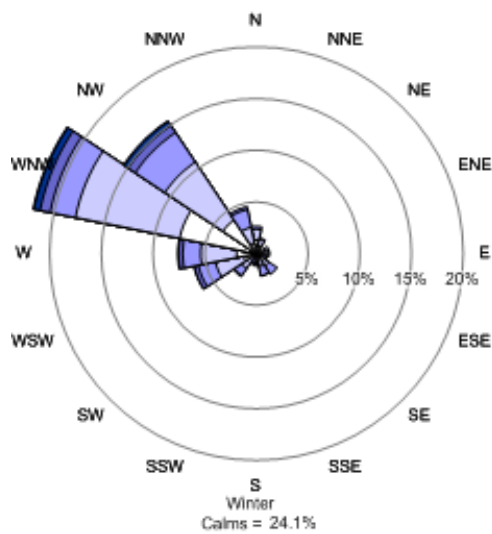
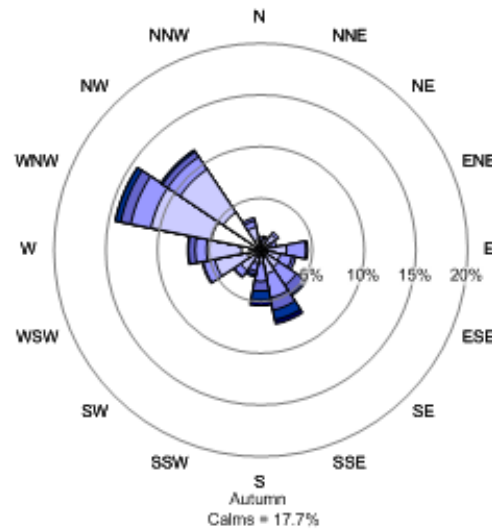
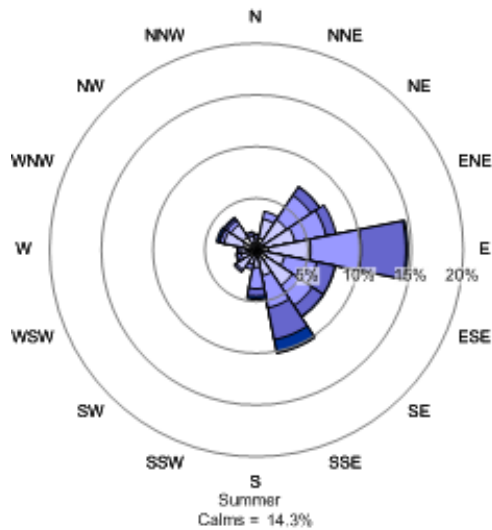
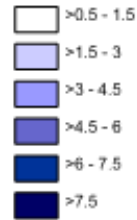
Wind Roses

BoM Sydney Olympic Park AWS (Archery Centre)

Station Number 066212
Year 2015

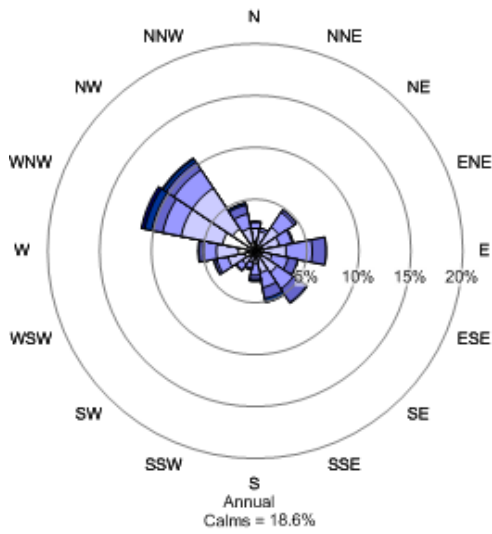


Wind speed (m/s)



BoM Sydney Olympic Park AWS (Archery Centre)

Station Number 066212
Year 2016



Wind speed (m/s)

