

TECHNICAL MEMORANDUM

DATE 2 December 2021

Project No. 19130795-033-TM-Rev0

TO Akzo Nobel Pty Ltd,

CC

FROM Golder Associates Pty Ltd

EMAIL csmcnaug@golder.com

AKZO NOBEL SUNSHINE NORTH – OCTOBER 2021 BOUNDARY AND RESIDENTIAL ODOUR MONITORING RESULTS.

Golder Associates Pty Ltd (Golder) was commissioned by AkzoNobel Pty Ltd (AkzoNobel) to conduct an ambient air quality monitoring programme at the AkzoNobel site located at 51 McIntyre Road, Sunshine North (the Site). The aim of this report is to summarise the boundary and residential odour surveys completed as part of the larger ambient air quality monitoring scope outlined in Golder Proposal No. 19130795-014-TM-Rev0, issued on 14 April 2021.

The assessment has been conducted in response to an Amended Clean Up Notice issued to AkzoNobel by the Environment Protection Authority (EPA VIC) issued on 24/12/2020 (CUN No. 90011933).

The following report describes the scope of work, assessment methods, and boundary and residential odour monitoring results for October 2021.

Assessment Location

Each boundary odour assessment was undertaken on foot while walking the entire site perimeter, inside the boundary line fence. On occasion, facility operations or mobile plant being used on the Site may require a minor deviation from the usual boundary assessment route. The boundary odour monitoring route is presented in Figure 1.

The residential odour assessment was undertaken when an odour intensity of three or higher was recorded along the north, east or west boundary of the AkoNobel site. Residential odour assessments are conducted parallel and downwind from the site boundary at four evenly spaced locations (where possible) in the residential area. Example routes for residential odour monitoring are presented in Figure 2. Actual monitoring locations will vary based on wind speed and direction.



Figure 1 Boundary odour monitoring route



Figure 2: Residential odour monitoring locations

Assessment Methodology

Odour intensity assessments are designed to qualify odour emissions from industry and quantify the odour level as a perceived strength. Field based boundary odour monitoring is undertaken twice every six days to assess the general amenity of the area. Residential odour monitoring is undertaken at the downwind location only, and only when an odour intensity of three or higher was recorded during the fence line survey.

Odour assessments were undertaken by Golder staff, who are trained and certified as odour assessors. The staff members participate in annual screening sessions that assess their responsiveness to a reference odour (n-butanol). All staff have been screened within the past 12 months and their Individual Threshold Estimates (ITEs) were within the acceptable range.

The odour assessments were undertaken in accordance with EPA “*Guidance for field odour surveillance*”, Publication 1881, May 2021. Odours detected at the site during the monitoring period were assessed for the following parameters:

- Location;
- Intensity (see next Section);
- Character (classified as ‘paint or solvent’, ‘sickly sweet’, ‘acrid or burnt’, or ‘other’);
- Presence (classified as ‘Constant’, ‘Frequent/Repetitive’ or ‘Transient’); and
- local meteorological conditions.

Assessment Criteria

As part of the implementation of the *Environment Protection Act 2017*, which came into effect on 1 July 2021, the Environment Protection Authority, Victoria (EPA Vic), published the draft *Guideline for assessing and minimising air pollution in Victoria*, Publication 1961, May 2021 (draft guideline). This draft guideline, when finalised, is intended to replace parts of the *State Environment Protection Policy (Air Quality Management)* (SEPP(AQM)). The draft guideline refers to publication 1883, *Guidance for Assessing Odour*, for assessing the impacts of odour, however, this document has not yet been released.

Golder has previously used the German Standard VDI 3940:2010 for assessing the impact of odour. This standard has a seven-point odour intensity scale ranging from 0 to 6 (Table 1). Based on Golder’s experience, odour intensity levels less than three (or ‘Distinct’ comparable to “Obvious” in the EPA publication 1881) are less likely to cause annoyance and result in complaints. Table 1 compares the German Standard intensity scale to the EPA publication 1881.

Table 1 Comparison of odour intensity scales

German Standard		EPA pub 1881
Intensity	Description	Description
0	Not detectable	No Odour
1	Very Weak	Subtle
2	Weak	
3	Distinct	Obvious

German Standard		EPA pub 1881
4	Strong	
5	Very Strong	
6	Extremely Strong	

Results of Boundary Odour Monitoring

From the 1st to 31th of October 2021, 11 boundary odour assessments were undertaken for a total of 97 discrete odour measurements. All boundary odour assessment results are summarized in Appendix A.

Table 2 summarizes all odour intensity measurements recorded as Distinct (i.e., 'Obvious'). Measurements of Distinct odour occurred on 4 of the 11 assessment days and their presence was typically frequent or constant, with one instance being transient. The character of these Distinct odours includes all four types: paint or solvent; sickly sweet; acrid or burnt; and, other.

Table 2: October 2021 boundary odour monitoring results

Boundary	Location	Monitoring period		Wind Direction	Odour		
		Date	Time		Intensity	Presence	Characteristic
South	West	1/10/2021	13:54-14:46	nd	Strong	Constant	Paint or Solvent
North	Centre	7/10/2021	10:43-11:36	SW	Distinct	Frequent	Sickly Sweet
South	Centre	7/10/2021	10:43-11:36	W	Distinct	Frequent	Acrid or Burnt
South	Centre	7/10/2021	10:43-11:36	W	Very Strong	Frequent	Sickly Sweet
South	West	7/10/2021	10:43-11:36	W	Distinct	Frequent	Paint or Solvent
North	Centre	19/10/2021	12:13-13:11	nd	Distinct	Frequent	Paint or Solvent
South	Centre	19/10/2021	12:13-13:11	SWW	Distinct	Constant	Acrid or Burnt
South	West	19/10/2021	12:13-13:11	nd	Strong	Constant	Sickly Sweet
North	East	31/10/2021	12:51-13:54	SW, SWW	Distinct	Transient	Sickly Sweet
South	East	31/10/2021	12:51-13:54	W	Distinct	Constant	Other: Blooming Plant
South	West	31/10/2021	12:51-13:54	E*	Distinct	Frequent	Sickly Sweet

nd = not detectable; *winds predominantly from the West, but were affected by buildings at this location.

Results of Residential Odour Monitoring

From the 1st to 31st of October 2021, only 1 residential odour assessment was undertaken. This assessment was completed east of the site boundary. The results of the residential odour survey are presented in Table 3.

Table 3: October 2021 residential boundary odour monitoring results

Date	Location adjacent to the site boundary	Odour intensity at transect locations								Odour Character
		A	Location	B	Location	C	Location	D	Location	
31/10/2021	East	1	-37.76960, 144.83220	0	-37.76918 144.83231	1	-37.76906, 144.83205	2	-37.76900, 144.83151	Sickly Sweet

Important Information Relating to this Report

Your attention is drawn to the document titled - "Important Information Relating to this Report", which is included in APPENDIX B of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Golder Associates Pty Ltd



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Appendix A – Boundary Odour Monitoring Results
Appendix B – Important Information Relating to this Report

APPENDIX A

**Boundary Odour Monitoring
Results**

Monitoring period		Boundary	Location	Wind Direction	Wind Speed (Min-Max) (m/s)	Odour		
Date	Time (Start-Finish)					Intensity	Presence	Characteristic
1/10/2021	13:54-14:46	North	East	Not Detected	Calm	Not Detected	N/A	N/A
1/10/2021	13:54-14:46	North	Centre	Not Detected	Calm	Very Weak	Frequent	Acrid or Burnt
1/10/2021	13:54-14:46	North	West	E	1.1-1.2	Not Detected	N/A	N/A
1/10/2021	13:54-14:46	East	Centre	Not Detected	Calm	Not Detected	N/A	N/A
1/10/2021	13:54-14:46	South	East	Not Detected	Calm	Not Detected	N/A	N/A
1/10/2021	13:54-14:46	South	Centre	Not Detected	Calm	Weak	Constant	Acrid or Burnt
1/10/2021	13:54-14:46	South	West	Not Detected	Calm	Strong	Constant	Paint or Solvent
1/10/2021	13:54-14:46	West	Centre	Not Detected	Calm	Not Detected	N/A	N/A
6/10/2021	9:46-10:44	North	East	NW	0.0-1.9	Very Weak	Frequent	Other: BBQ Meat
6/10/2021	9:46-10:44	North	Centre	E	Calm	Not Detected	N/A	N/A
6/10/2021	9:46-10:44	North	West	E, W	0.0-0.6	Not Detected	N/A	N/A
6/10/2021	9:46-10:44	East	Centre	N	Calm	Very Weak	Frequent	Other: Petrol (traffic)
6/10/2021	9:46-10:44	East	Centre	N	Calm	Very Weak	Frequent	Other: BBQ Meat
6/10/2021	9:46-10:44	South	East	W	0.3-2.2	Very Weak	Frequent	Paint or Solvent
6/10/2021	9:46-10:44	South	Centre	Not Detected	Calm	Weak	Frequent	Acrid or Burnt
6/10/2021	9:46-10:44	South	Centre	Not Detected	Calm	Very Weak	Frequent	Sickly Sweet
6/10/2021	9:46-10:44	South	West	SE	0.2-0.6	Weak	Frequent	Paint or Solvent
6/10/2021	9:46-10:44	West	Centre	E	0.5-3.3	Not Detected	N/A	N/A
7/10/2021	10:43-11:36	North	East	Not Detected	Calm	Not Detected	N/A	N/A

Monitoring period		Boundary	Location	Wind Direction	Wind Speed (Min-Max) (m/s)	Odour		
Date	Time (Start-Finish)					Intensity	Presence	Characteristic
7/10/2021	10:43-11:36	North	Centre	SW	1.5-3.6	Distinct	Frequent	Sickly Sweet
7/10/2021	10:43-11:36	North	West	Not Detected	Calm	Not Detected	N/A	N/A
7/10/2021	10:43-11:36	East	Centre	Not Detected	Calm	Weak	Frequent	Paint or Solvent
7/10/2021	10:43-11:36	South	East	Not Detected	Calm	Not Detected	N/A	N/A
7/10/2021	10:43-11:36	South	Centre	W	1.0-1.2	Distinct	Frequent	Acrid or Burnt
7/10/2021	10:43-11:36	South	Centre	W	1.0-1.2	Very Strong	Frequent	Sickly Sweet
7/10/2021	10:43-11:36	South	West	W	0.8-1.1	Distinct	Frequent	Paint or Solvent
7/10/2021	10:43-11:36	West	Centre	S, SW	1.2-1.4	Not Detected	N/A	N/A
12/10/2021	9:56-10:54	North	East	NW	0.2-0.9	Not Detected	N/A	N/A
12/10/2021	9:56-10:54	North	Centre	Not Detected	Calm	Not Detected	N/A	N/A
12/10/2021	9:56-10:54	North	West	NE	0.0-0.8	Not Detected	N/A	N/A
12/10/2021	9:56-10:54	East	Centre	NE	0.2-1.0	Not Detected	N/A	N/A
12/10/2021	9:56-10:54	South	East	NE	Calm	Not Detected	N/A	N/A
12/10/2021	9:56-10:54	South	Centre	Not Detected	Calm	Very Weak	Frequent	Sickly Sweet
12/10/2021	9:56-10:54	South	West	Not Detected	Calm	Weak	Frequent	Sickly Sweet
12/10/2021	9:56-10:54	South	West	Not Detected	Calm	Very Weak	Frequent	Paint or Solvent
12/10/2021	9:56-10:54	West	Centre	NE	Calm	Very Weak	Frequent	Other: Grass
13/10/2021	11:50-12:45	North	East	NNE	0.0-4.7	Not Detected	N/A	N/A
13/10/2021	11:50-12:45	North	Centre	NNE	0.0-4.7	Not Detected	N/A	N/A

Monitoring period		Boundary	Location	Wind Direction	Wind Speed (Min-Max) (m/s)	Odour		
Date	Time (Start-Finish)					Intensity	Presence	Characteristic
13/10/2021	11:50-12:45	North	West	NNE	0.0-3.1	Not Detected	N/A	N/A
13/10/2021	11:50-12:45	East	Centre	NNE	0.0-6.1	Weak	Frequent	Other: Flowers/Fragrant
13/10/2021	11:50-12:45	South	East	NNE	0.0-6.1	Not Detected	N/A	N/A
13/10/2021	11:50-12:45	South	Centre	NNE	0.0-6.1	Not Detected	N/A	N/A
13/10/2021	11:50-12:45	South	West	NNE	0.0-6.1	Weak	Frequent	Sickly Sweet
13/10/2021	11:50-12:45	West	Centre	NE	0.0-4.7	Not Detected	N/A	N/A
18/10/2021	11:39-12:38	North	East	S	0.4-3.0	Very Weak	Transient	Sickly Sweet
18/10/2021	11:39-12:38	North	Centre	SW	Calm	Very Weak	Frequent	Paint or Solvent
18/10/2021	11:39-12:38	North	West	NE	Calm	Not Detected	N/A	N/A
18/10/2021	11:39-12:38	East	Centre	SW	Calm	Very Weak	Transient	Acrid or Burnt
18/10/2021	11:39-12:38	South	East	W	0.5-1.1	Very Weak	Frequent	Acrid or Burnt
18/10/2021	11:39-12:38	South	Centre	Not Detected	Calm	Weak	Frequent	Sickly Sweet
18/10/2021	11:39-12:38	South	West	SE	Calm	Weak	Frequent	Sickly Sweet
18/10/2021	11:39-12:38	South	West	SE	Calm	Very Weak	Transient	Acrid or Burnt
18/10/2021	11:39-12:38	West	Centre	Not Detected	Calm	Weak	Transient	Paint or Solvent
19/10/2021	12:13-13:11	North	East	SE	0.2-1.7	Very Weak	Frequent	Acrid or Burnt
19/10/2021	12:13-13:11	North	Centre	Not Detected	Calm	Distinct	Frequent	Paint or Solvent
19/10/2021	12:13-13:11	North	West	Not Detected	Calm	Not Detected	N/A	N/A
19/10/2021	12:13-13:11	East	Centre	Not Detected	Calm	Not Detected	N/A	N/A

Monitoring period		Boundary	Location	Wind Direction	Wind Speed (Min-Max) (m/s)	Odour		
Date	Time (Start-Finish)					Intensity	Presence	Characteristic
19/10/2021	12:13-13:11	South	East	Not Detected	Calm	Not Detected	N/A	N/A
19/10/2021	12:13-13:11	South	Centre	SWW	1.3-1.5	Distinct	Constant	Acrid or Burnt
19/10/2021	12:13-13:11	South	West	Not Detected	Calm	Strong	Constant	Sickly Sweet
19/10/2021	12:13-13:11	West	Centre	SW	1.1-1.3	Very Weak	Transient	Paint or Solvent
25/10/2021	13:31-14:37	North	East	SSE	0.8-1.0	Not Detected	N/A	N/A
25/10/2021	13:31-14:37	North	Centre	Not Detected	Calm	Not Detected	N/A	N/A
25/10/2021	13:31-14:37	North	West	Not Detected	Calm	Not Detected	N/A	N/A
25/10/2021	13:31-14:37	East	Centre	SE	1.6-2.0	Weak	Transient	Acrid or Burnt
25/10/2021	13:31-14:37	East	Centre	SE	1.6-2.0	Weak	Transient	Other: Petrol
25/10/2021	13:31-14:37	South	East	Not Detected	Calm	Not Detected	N/A	N/A
25/10/2021	13:31-14:37	South	Centre	W	3.0-3.3	Very Weak	Frequent	Sickly Sweet
25/10/2021	13:31-14:37	South	West	W	0.0-0.7	Very Weak	Frequent	Sickly Sweet
25/10/2021	13:31-14:37	West	Centre	SSW	0.0-0.9	Not Detected	N/A	N/A
26/10/2021	13:33-14:27	North	East	S	Calm	Weak	Frequent	Other: BBQ Meat
26/10/2021	13:33-14:27	North	Centre	S, SE	0.3-0.6	Not Detected	N/A	N/A
26/10/2021	13:33-14:27	North	West	E	0.3-1.5	Not Detected	N/A	N/A
26/10/2021	13:33-14:27	East	Centre	S	0.2-1.1	Not Detected	N/A	N/A
26/10/2021	13:33-14:27	South	East	N	0.3-2.6	Not Detected	N/A	N/A
26/10/2021	13:33-14:27	South	Centre	E	0.0-0.3	Very Weak	Frequent	Paint or Solvent

Monitoring period		Boundary	Location	Wind Direction	Wind Speed (Min-Max) (m/s)	Odour		
Date	Time (Start-Finish)					Intensity	Presence	Characteristic
26/10/2021	13:33-14:27	South	West	Not Detected	Calm	Not Detected	N/A	N/A
26/10/2021	13:33-14:27	West	Centre	S	0.0-0.2	Not Detected	N/A	N/A
30/10/2021	12:00-13:10	North	East	W, SW	0.0-2.5	Weak	Transient	Sickly Sweet
30/10/2021	12:00-13:10	North	East	W, SW	0.0-2.5	Weak	Frequent	Other: Grass from Neighbour
30/10/2021	12:00-13:10	North	Centre	E, SW	0.3-1.9	Weak	Transient	Sickly Sweet
30/10/2021	12:00-13:10	North	West	NW	1.4-1.6	Very Weak	Transient	Sickly Sweet
30/10/2021	12:00-13:10	East	Centre	NE	0.2-0.6	Very Weak	Transient	Sickly Sweet
30/10/2021	12:00-13:10	South	East	N	0.0-0.2	Very Weak	Transient	Sickly Sweet
30/10/2021	12:00-13:10	South	Centre	SW	2.6-3.6	Very Weak	Frequent	Acrid or Burnt
30/10/2021	12:00-13:10	South	Centre	SW	2.6-3.6	Weak	Transient	Sickly Sweet
30/10/2021	12:00-13:10	South	West	S	Calm	Weak	Transient	Paint or Solvent
30/10/2021	12:00-13:10	South	West	S	Calm	Very Weak	Transient	Sickly Sweet
30/10/2021	12:00-13:10	West	Centre	S	1.3-2.3	Not Detected	N/A	N/A
31/10/2021	12:51-13:54	North	East	SW, SWW	0.2-1.4	Distinct	Transient	Sickly Sweet
31/10/2021	12:51-13:54	North	Centre	SW	0.4-1.4	Very Weak	Frequent	Sickly Sweet
31/10/2021	12:51-13:54	North	West	Not Detected	Calm	Not Detected	N/A	N/A
31/10/2021	12:51-13:54	East	Centre	SSW	0.0-1.2	Weak	Frequent	Paint or Solvent
31/10/2021	12:51-13:54	South	East	W	0.0-0.9	Distinct	Constant	Other: Blooming Plant
31/10/2021	12:51-13:54	South	Centre	W	0.0-1.6	Weak	Frequent	Sickly Sweet

Monitoring period		Boundary	Location	Wind Direction	Wind Speed (Min-Max) (m/s)	Odour		
Date	Time (Start-Finish)					Intensity	Presence	Characteristic
31/10/2021	12:51-13:54	South	West	E	0.0-0.6	Distinct	Frequent	Sickly Sweet
31/10/2021	12:51-13:54	West	Centre	NWW	0.4-2.6	Not Detected	N/A	N/A

APPENDIX B

**Important Information
Relating to this Report**

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification