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AIR SCIENCES

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FACILITY
FIELD ODOUR SURVEY STUDY
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Med-X Clinical Waste Management Facility Field Odour Survey Study January 2023

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1 INTRODUCTION

Todoroski Air Sciences has conducted a field odour survey for the Med-X Clinical Waste Management Facility at Arndell Park, New South Wales (NSW) (hereafter referred to as the Project).

This field odour survey study has been undertaken per the requirements of the approved Project Air Quality Management Plan (AQMP).

This report presents the findings of the field odour survey conducted on 20 January 2023.

The field odour survey was conducted at locations downwind of the Project using a simplified VDI methodology to determine the extent of, if any, odours detected offsite associated with the Project.

This report comprises:

- ✦ A background to Project and description of the site operations;
- ✦ A brief description of the field odour survey methodology; and,
- ✦ Presentation of the field odour survey findings.

2 PROJECT SETTING AND DESCRIPTION

2.1 Local setting

The Project site is located at 9 Kenoma Place, Arndell Park, approximately 3.4 kilometres (km) southwest of Blacktown and approximately 11.5km west of Parramatta (see **Figure 2-1**).

The site is situated in an existing industrial precinct and is surrounded by other industrial and commercial businesses. The nearest residential receptors are located approximately 400 metres (m) to the northeast.

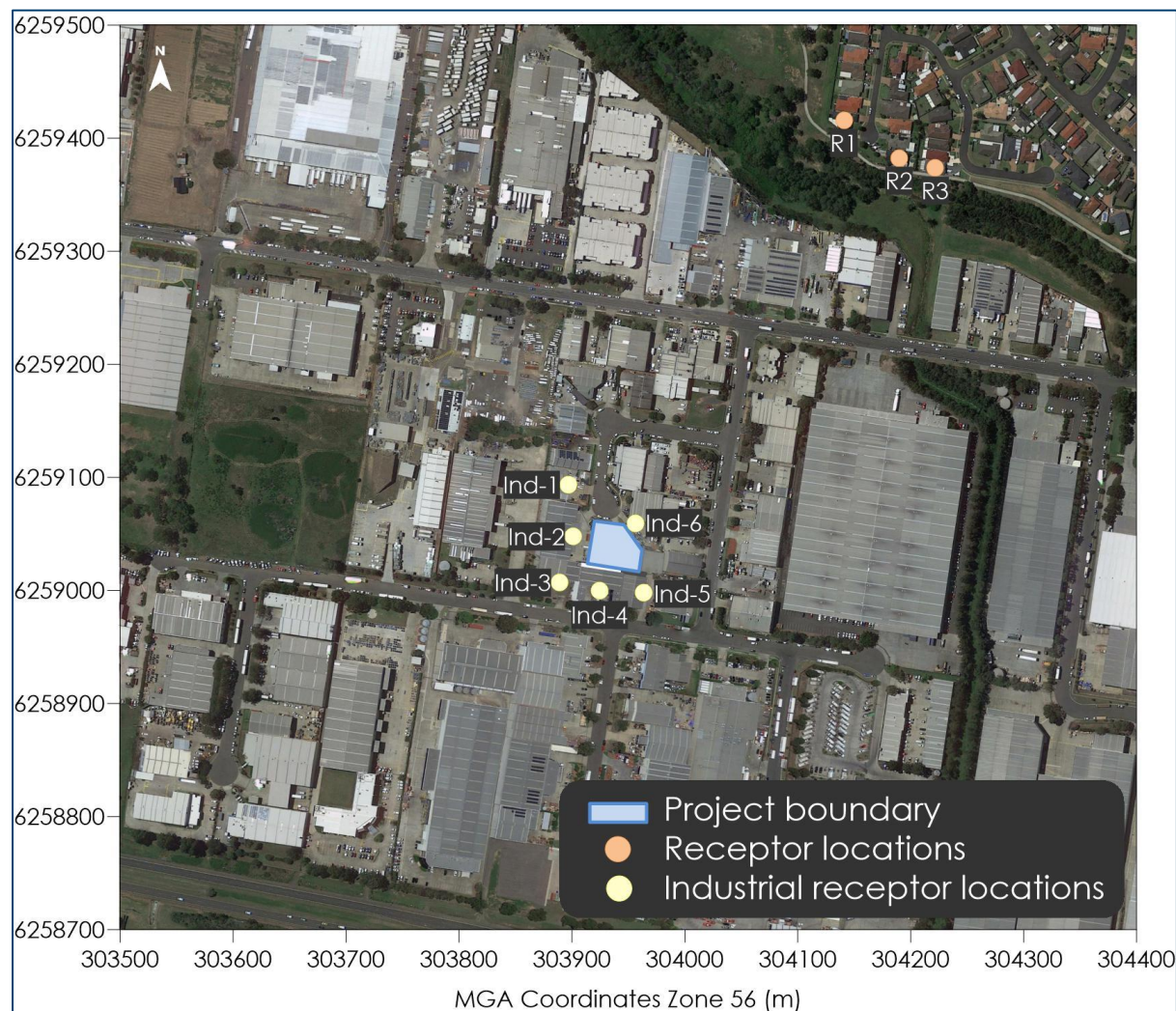


Figure 2-1: Project location

3 SURVEY METHODOLOGY

The field odour survey methodology is based on a simplified version of the German Standard VDI 3940 "Determination of Odorants in Ambient Air by Field Inspections". This prescribes a methodology for the quantification of odour by field observers (assessors) in relation to odour frequency, intensity and character.

3.1 Odour intensity and descriptor

During the field odour survey, a measurement is taken at each location over a period of ten minutes. The assessor tests the ambient air at ten-second intervals with the intensity of the odour and the odour characteristic observed during this time recorded. Sixty observations are recorded in the ten-minute period. **Table 3-1** and **Table 3-2** present the odour intensity rating scale and odour characteristic descriptors respectively, applied for the field odour survey.

Table 3-1: Odour intensity rating scale

Rating	Intensity description
0	No odour
1	Very slight
2	Slight
3	Distinct
4	Strong
5	Very strong
6	Extremely strong

Table 3-2: Odour characteristic descriptors

Odour type code	Odour characteristic descriptor	Odour type code	Odour characteristic descriptor
1	Fragrant	11	Diesel/car fumes
2	Household gas	12	Seaweed, mangroves
3	Burnt smoky	13	Compost
4	Herbal, green, cut grass	14	Musty, earthy, mouldy
5	Oily, fatty	15	Bakery, sweet pastry
6	Rotten eggs, sulfide	16	Chemical, bleach
7	Sour, body odour	17	Fruity, sweet
8	Meaty	18	Garbage
9	Faecal, manure, sewer	19	Cigarette smoke
10	Fishy	20	Paint, solvent

3.2 Odour evaluation

Odours verified as originating from the Project are evaluated using the FIDOL factors (frequency, intensity, duration, odour character and location) to determine whether they are likely to be perceived as offensive. The expectation for what may be reasonable or unreasonable odour depends significantly upon its frequency (how often it occurs), its intensity (how strong it is), the duration (length of exposure), the character of the odour and the receiving environment.

In terms of the intensity and frequency analysis, per the VDI standard, if a recognised odour (i.e. at an intensity of distinct or higher) is recorded for at least 10% of the time during a 10-minute survey period,

then that is regarded as a positive measurement and has the potential to be considered offensive depending on the other factors of the FIDOL evaluation.

3.3 Assessor selection

As per VDI 3940, the suitability of a potential assessor is determined via a series of odour sensitivity tests with the reference odorant n-butanol.

3.4 Survey timing

The survey was conducted during meteorological conditions with the potential for adverse odours i.e. wind speeds below 5m/s and no rain, and under wind directions where there was suitable access to areas downwind of the Project site.

It was confirmed that the autoclave was operating and shredding activities were occurring during the field odour survey on 20 January 2023.

3.5 Meteorological monitoring

Meteorological data for survey period were obtained from the Department of Planning and Environment Prospect air quality monitoring station, located approximately 3km to the west of the Project.

The wind direction during the survey period was predominately from the south and south-southwest with average wind speeds of approximately 2.2m/s.

3.6 Survey locations

Monitoring locations were selected based on the location of the prevailing wind directions and accessibility.

Table 3-3 provides details of the field odour survey monitoring locations and **Figure 3-1** shows the monitoring locations in relation to the Project.

Table 3-3: Odour survey monitoring locations

Location ID	Description	Eastings	Northings
1	3 Kenoma Place	303981	6259130
2	Corner of Kenoma Place	303939	6259133
3	5 Kenoma Place	303933	6259095
4	9 Kenoma Place – Project boundary	303940	6259059

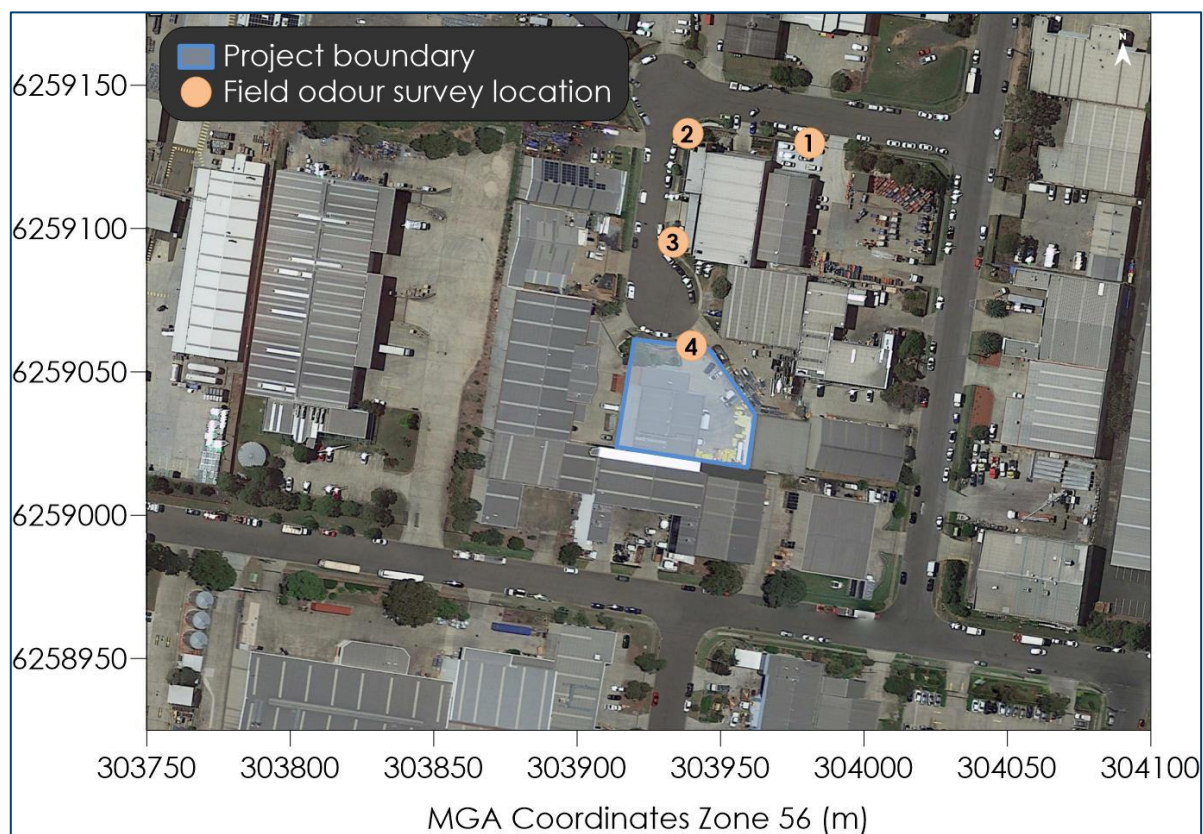


Figure 3-1: Monitoring locations

4 FIELD ODOUR SURVEY RESULTS

This section presents a summary of the field odour survey results and an evaluation of the findings. For the complete survey records, refer to the field sheets in **Appendix A**.

4.1 Summary of odour observations

The predominant odours observed during the surveys were very slight to slight bakery/ sweet pastry smells likely attributed to food processing industries within the greater surrounding industrial area, faint diesel/ car fumes associated with passing or idling trucks, very slight to slight soapy/ sweet odours, slight paint/ solvent odours likely to be originating from the nearby smash repairs workshop, a very slight sour odour, and slight to distinct garbage odours. The garbage odour was more noticeable at the Project's boundary, with weak and infrequent garbage odours observed offsite at location 2, location 3 and location 4.

There were also very slight damp earth odours detected likely due to significant rainfall in the days prior to the survey and a one-off smoky odour detected which was attributed to a nearby smoker. These odour characters were not considered to be associated with Project.

4.2 On-site verification odour

Following the field odour survey, the assessor went onto the Med-X site in order to identify whether there were potential on-site sources of odours similar to those detected in the field.

It is considered that the garbage and sour odours observed offsite likely originated from the Med-X processing building.

The soapy/sweet odours observed offsite had a pleasant hedonic tone and were not identified at the Med-X facility; thus, it was considered that this odour is unlikely to be associated with the Project activities.

4.3 Evaluation of odour

The offensiveness of potentially Project related odour detected during the study period has been evaluated using the FIDOL factors (frequency, intensity, duration, odour character and location).

Table 4-1 presents a summary of the FIDOL evaluation.

Table 4-1: Evaluation of odour using FIDOL factors for odours potentially associated with the Project

Location ID	Address	Frequency	Intensity	Duration	Odour character	Location
2	Corner of Kenoma Place	2%	Very slight	10 seconds	Garbage	Industrial
3	5 Kenoma Place	3%	Very slight	10 to 20 seconds	Garbage	
		2%	Slight	10 seconds		
4	9 Kenoma Place – Project boundary	17%	Very slight	10 to 50 seconds	Garbage	
		7%	Slight	10 to 20 seconds		
		5%	Distinct	30 seconds		
		2%	Very slight	10 seconds	Sour	

While the garbage and sour odour characters are considered to have an unpleasant hedonic tone, as the intensity was predominately very slight to slight (i.e. only just detectable), and the odours frequency and duration was low, it is considered that this odour could not reasonably be perceived as offensive. Only 5% of the monitoring period at location 4 was detected at a distinct intensity for garbage odour which is below the 10% VDI threshold for any odour to be considered offensive.

5 CONCLUSION

Todoroski Air Sciences completed a field odour survey on 20 January 2023 in the area around the Med-X Clinical Waste Management Facility at Arndell Park.

Overall, while some garbage and sour odour characters likely related to the Project were observed offsite during the survey, these were generally of a weak intensity, too infrequent and relatively short lived to be considered offensive. Per the VDI methodology, no offensive odours associated with the Project were identified in the surrounding area.

Appendix A

Odour survey field sheets

Table A-1: Field sheet 1

Assessor	EA	Location ID	1	Start time	8:00am	Wind speed (m/s)	2.2
Date	20/01/2023	Location description	3 Kenoma Place	End time	8:10am	Wind direction	S/SSW
No.	Intensity rating	Odour code	Odour description	No.	Intensity rating	Odour code	Odour description
1	1	15	Bakery, sweet pastry	31	0		
2	2	15	Bakery, sweet pastry	32	0		
3	1	15	Bakery, sweet pastry	33	1	15	Bakery, sweet pastry
4	2	15	Bakery, sweet pastry	34	0		
5	1	15	Bakery, sweet pastry	35	1	15	Bakery, sweet pastry
6	1	15	Bakery, sweet pastry	36	0		
7	0			37	0		
8	1	15	Bakery, sweet pastry	38	0		
9	1	15	Bakery, sweet pastry	39	0		
10	1	15	Bakery, sweet pastry	40	0		
11	1	16	Chemical/bleach	41	0		
12	0			42	0		
13	0			43	0		
14	0			44	0		
15	0			45	2	15	Bakery, sweet pastry
16	0			46	2	15	Bakery, sweet pastry
17	0			47	3	15	Bakery, sweet pastry
18	0			48	2	11	Diesel, car fumes
19	0			49	2	15	Bakery, sweet pastry
20	0			50	2	15	Bakery, sweet pastry
21	1	15	Bakery, sweet pastry	51	2	15	Bakery, sweet pastry
22	0			52	1	15	Bakery, sweet pastry
23	0			53	1	15	Bakery, sweet pastry
24	1	11	Diesel, car fumes	54	0		
25	1	11	Diesel, car fumes	55	0		
26	0			56	0		
27	0			57	1	15	Bakery, sweet pastry
28	0			58	1	15	Bakery, sweet pastry
29	0			59	0		
30	0			60	0		

Table A-2: Field sheet 2

Assessor	EA	Location ID	2	Start time	8:11am	Wind speed (m/s)	2.2
Date	20/01/2023	Location description	Corner of Kenoma Place	End time	8:21am	Wind direction	S/SSW
No.	Intensity rating	Odour code	Odour description	No.	Intensity rating	Odour code	Odour description
1	0			31	0		
2	0			32	1	15	Bakery, sweet pastry
3	1	17	Fruity/sweet	33	1	18	Garbage
4	1	17	Fruity/sweet	34	0		
5	0			35	0		
6	0			36	0		
7	0			37	0		
8	0			38	0		
9	0			39	0		
10	0			40	0		
11	0			41	0		
12	0			42	1	14	Damp/mouldy
13	0			43	1	14	Damp/mouldy
14	0			44	1	19	Cigarette smoke
15	0			45	0		
16	0			46	0		
17	0			47	0		
18	0			48	0		
19	1	18	Garbage	49	0		
20	1	11	Diesel, car fumes	50	0		
21	0			51	0		
22	0			52	0		
23	0			53	0		
24	1	15	Bakery, sweet pastry	54	0		
25	0			55	0		
26	0			56	0		
27	1	15	Bakery, sweet pastry	57	0		
28	0			58	0		
29	0			59	0		
30	0			60	0		

Table A-3: Field sheet 3

Assessor	EA	Location ID	3	Start time	8:22am	Wind speed (m/s)	2.2
Date	20/01/2023	Location description	5 Kenoma Place	End time	8:33am	Wind direction	S/SSW
No.	Intensity rating	Odour code	Odour description	No.	Intensity rating	Odour code	Odour description
1	1	20	Paint/solvent	31	0		
2	1	20	Paint/solvent	32	0		
3	1	20	Paint/solvent	33	0		
4	1	20	Paint/solvent	34	0		
5	0			35	0		
6	0			36	0		
7	0			37	0		
8	0			38	0		
9	0			39	0		
10	1	15	Bakery, sweet pastry	40	0		
11	1	20	Paint/solvent	41	0		
12	1	20	Paint/solvent	42	0		
13	0			43	0		
14	0			44	1	20	Paint/solvent
15	0			45	0		
16	0			46	0		
17	0			47	0		
18	0			48	0		
19	1	20	Paint/solvent	49	1	20	Paint/solvent
20	1	20	Paint/solvent	50	0		
21	1	20	Paint/solvent	51	1	1	Fragrant
22	1	20	Paint/solvent	52	0		
23	1	20	Paint/solvent	53	0		
24	1	20	Paint/solvent	54	0		
25	0			55	0		
26	0			56	0		
27	0			57	0		
28	1	1	Fragrant	58	2	18	Garbage
29	2	1	Fragrant	59	1	18	Garbage
30	0			60	1	18	Garbage

Table A-4: Field sheet 4

Assessor	EA	Location ID	4	Start time	8:34am	Wind speed (m/s)	2.2
Date	20/01/2023	Location description	9 Kenoma Place – Project boundary	End time	8:44am	Wind direction	S/SSW
No.	Intensity rating	Odour code	Odour description	No.	Intensity rating	Odour code	Odour description
1	3	18	Garbage	31	1	18	Garbage
2	3	18	Garbage	32	1	18	Garbage
3	3	18	Garbage	33	0		
4	1	18	Garbage	34	2	18	Garbage
5	1	17	Fruity/sweet	35	0		
6	1	7	Sour	36	0		
7	2	18	Garbage	37	0		
8	1	18	Garbage	38	0		
9	0			39	0		
10	0			40	0		
11	0			41	0		
12	0			42	0		
13	0			43	0		
14	0			44	0		
15	0			45	1	18	Garbage
16	0			46	1	18	Garbage
17	0			47	0		
18	0			48	0		
19	0			49	0		
20	0			50	0		
21	0			51	0		
22	0			52	0		
23	1	18	Garbage	53	0		
24	0			54	0		
25	0			55	0		
26	2	18	Garbage	56	0		
27	2	18	Garbage	57	0		
28	1	18	Garbage	58	0		
29	1	18	Garbage	59	0		
30	1	18	Garbage	60	0		