AIR QUALITY MANAGEMENT PLAN

MED-X CLINICAL WASTE MANAGEMENT FACILITY

Med-X Pty Ltd

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Job Number 20031098A

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Air Quality Management Plan

Med-X Clinical Waste Management Facility

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1 INTRODUCTION

Med-X operate a Clinical Waste Management Facility at Arndell Park, New South Wales (NSW) (hereafter referred to as the Project). 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 1-1**). 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.

The operations of the Project include the storage of clinical and related wastes at the site and non-thermal treatment of clinical waste using an autoclave. Autoclaving is used to sterilise the waste by subjecting it to a high temperature (approximately 140 degrees Celsius) using pressurised steam. The autoclaving treatment process takes an average of 55 minutes to complete. At the end of the process, the pressurised steam is discharged via a condenser with the captured water cooled (condensed) and treated in a closed loop process. A small amount of residual steam from this process is directed via an over-roof pipe to a stand-alone tank located on the outside of the facility.

The approved hours of operation for the facility are 7:00am to 7:00pm, Monday to Saturday (including public holidays that fall on Saturday).

The throughput of clinical waste and related waste processed at the facility is 2,300 tonnes per annum (tpa) and the maximum quantity of waste on-site at any one time is 8,000 kilograms (kg).

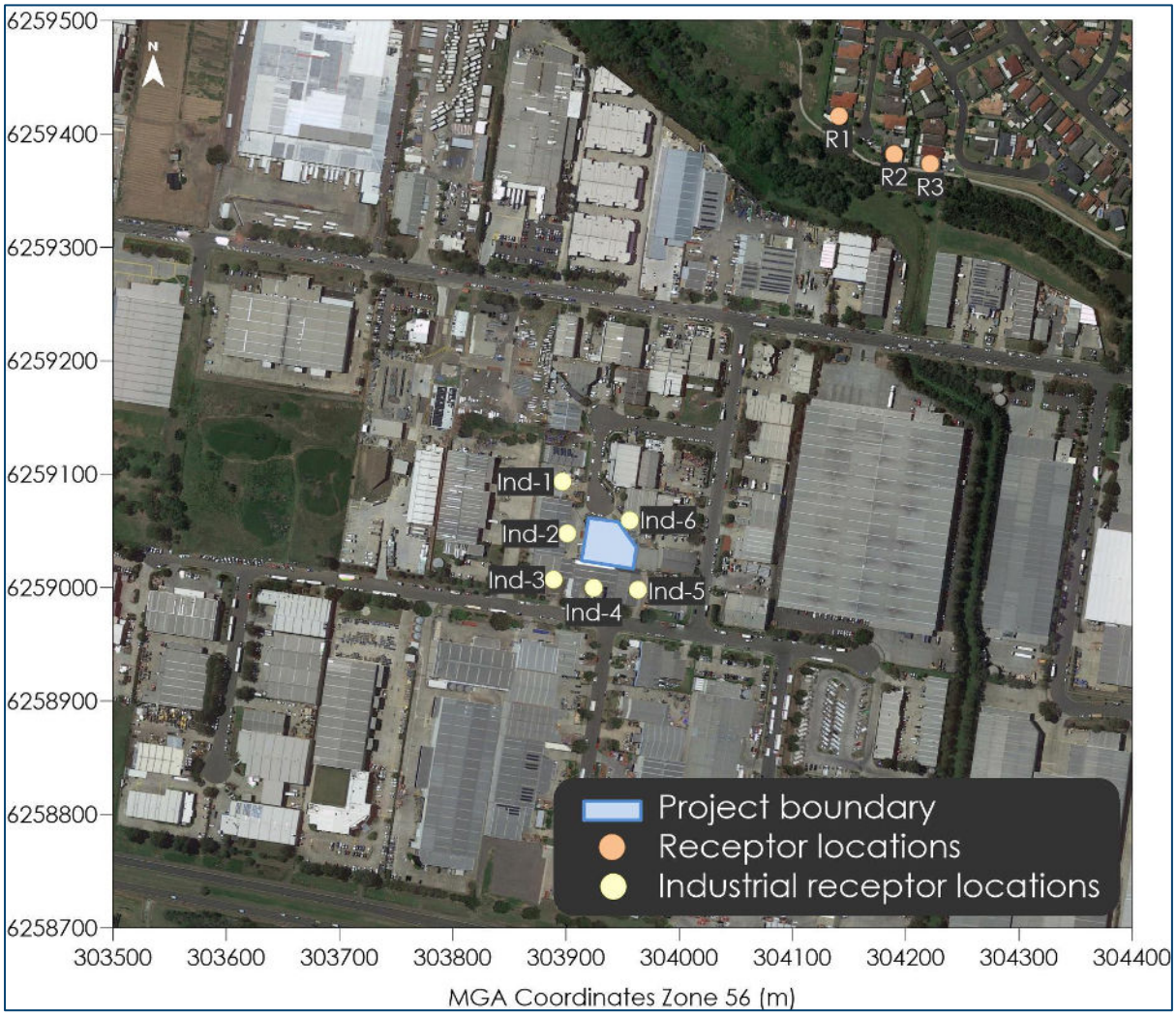

Figure 1-1: Project setting

1.1 Aims

This Air Quality Management Plan (AQMP) defines the best management practices applicable to the operation and details the management framework and mitigation actions to be taken when operating the Project to minimise the generation of air emissions.

1.2 Structure of this AQMP

This AQMP is structured as follows:

Section 2: Outlines the statutory requirements applicable to Project.
Section 3: Provides baseline data.
Section 4: Outlines the applicable air quality and performance indicators.
Section 5: Outlines the air quality management and control measures.
Section 6: Outlines the environmental performance.
Section 7: Outlines the review of the environmental performance.

2 STATUTORY REQUIREMENTS

This AQMP has been prepared in accordance with the development consent for SSD 6761. **Table 2-1** presents the consent conditions relative to the air quality management plan.

Table 2-1: Relevant consent conditions

Development Consent (SSD 6761)	AQMP Section
Air Quality Discharges	
B1. The Applicant must install and operate equipment in line with best practice to ensure that the development complies with all load limits, air quality criteria/air emission limits and air quality monitoring requirements as specified in the EPL applicable to the site.	Sections 4.1, 5 & 6.2
B2. Air from the standalone water tank must be discharged at least 1-metre above the roofline of the building. The ventilation stack must have a sampling plane that has been constructed with consideration of AS 4323.1-1995 Stationery Source Emissions – Selection of Sampling Positions.	Sections 4.1, 5.2 & 6.2
Air Quality Management Plan	
B3. Prior to the commencement of operation, the Applicant must prepare an Air Quality Management Plan (AQMP) to the satisfaction of the Planning Secretary. The AQMP must form part of the OEMP required by condition C2 and:	This report
(a) be prepared by a suitably qualified and experienced person(s);	AQMP prepared by TAS
(b) be prepared in consultation with the EPA;	Section 2.1
(c) detail and rank all emissions from all sources of the development, including odour;	Section 5.1
(d) describe a program that is capable of evaluating the performance of the operation and determining compliance with key performance indicators;	Section 6.2
(e) identify the control measures that that will be implemented for each emission source; and	Section 5.2
(f) nominate the following for each of the proposed controls: (i) key performance indicator; (ii) monitoring method; (iii) location, frequency and duration of monitoring; (iv) record keeping; (v) complaints register; (vi) response procedures; and (vii) compliance monitoring.	Sections 5.2, 6.1.1, 6.2 & 6.5
B4. The Applicant must: (a) not commence operation until the AQMP required by condition B3 is approved by the Planning Secretary; and (b) implement the most recent version of the AQMP approved by the Planning Secretary for the duration of the development.	Sections 7.1
Odour Management	
B5. The Applicant must ensure the development does not cause or permit the emission of any offensive odour (as defined in the POEO Act).	Sections 4.1, 5 & 6.2
B6. The Applicant must carry out an Odour Audit of the development no later than six months after the commencement of operation of the development. Division 9.4 of Part 9 of the EP&A Act applies to this audit which is for the purpose of auditing the development against the odour impact predictions of the development. The audit must: (a) be carried out by a suitably qualified, experienced and independent person(s), whose appointment has been endorsed by the Planning Secretary; (b) audit the development in full operation; (c) include a summary of odour complaints and any actions that were carried out to address the complaints; (d) assess the operation against odour impact predictions in the EIS and RtS; (e) review design and management practices in the development against industry best practice for odour management; and	Section 7.2.1

Development Consent (SSD 6761)	AQMP Section
(f) include an action plan that identifies and priorities any odour mitigation measures that may be necessary to reduce odour emissions. Note: The Odour Audit may be prepared so that it addresses the requirements of this consent and the EPL for the development.	
B7. Within six months of commissioning of the Odour Audit required by condition B6, or otherwise agreed by the Planning Secretary, the Applicant must submit a copy of the Odour Audit report to the satisfaction of the Planning Secretary, together with the Applicant's response to any recommendations contained in the Odour Audit report.	Section 7.2.1

2.1 Consultation

In accordance with Condition B3(b) of SSD 6761, this AQMP has been prepared in consultation with the NSW Environment Protection Authority (EPA).

3 BASELINE DATA

This section describes the existing baseline environment including the climate and meteorology in the area surrounding the Project.

3.1 Local climatic conditions

Long-term climatic data from the closest Bureau of Meteorology (BoM) weather station at Horsley Park Equestrian Centre Automatic Weather Station (AWS) (Site No. 067119) were analysed to characterise the local climate in the proximity of the Project. Horsley Park Equestrian Centre AWS is located approximately 7km south-southwest of the Project.

Table 3-1 and **Figure 3-1** present a summary of data from the Horsley Park Equestrian AWS collected over a 13 to 22-year period for the various meteorological parameters.

The data indicate that January is the hottest month with a mean maximum temperature of 30.1 degrees Celsius (ºC) and July is the coldest month with a mean minimum temperature of 5.8ºC.

Rainfall decreases during the middle of the year, with an annual average rainfall of 748.4 millimetres (mm) over 74.0 days. The data indicate that February is the wettest month with an average rainfall of 103.6mm over 7.1 days and July is the driest month with an average rainfall of 35.2 mm over 5.0 days.

Relative humidity levels exhibit variability over the day and seasonal fluctuations. Mean 9am relative humidity ranges from 61% in October to 81% in March. Mean 3pm relative humidity levels range from 42% in August and September to 55% in June.

Wind speeds during the warmer months have a greater spread between the 9am and 3pm conditions compared to the colder months. Mean 9am wind speeds range from 8.9 kilometres per hour (km/h) in March to 12.5km/h in October. Mean 3pm wind speeds range from 12.9km/h in June to 19.9km/h in December.

Table 3-1: Monthly climate statistics summary – Horsley Park Equestrian Centre AWS

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann.
Temperature													
Mean max. temp. (ºC)	30.1	28.9	26.9	23.9	20.6	17.6	17.4	19.1	22.4	24.8	26.6	28.4	23.9
Mean min. temp. (ºC)	17.9	17.8	16.2	13.0	9.0	7.2	5.8	6.4	9.2	11.8	14.4	16.3	12.1
Rainfall													
Rainfall (mm)	75.6	103.6	83.3	70.3	41.9	74.7	35.2	36.8	37.6	57.6	76.1	63.6	748.4
No. of rain days	7.6	7.1	8.0	6.8	5.0	6.3	5.0	4.0	4.8	5.7	6.8	6.9	74.0
9am conditions													
Mean temp. (ºC)	22.0	21.5	19.4	17.5	13.8	11.1	10.3	12.0	15.6	18.1	19.2	20.9	16.8
Mean R.H. (%)	73	77	81	76	77	80	78	70	65	61	70	71	73
Mean W.S. (km/h)	10.1	9.7	8.9	10.5	10.7	10.3	10.8	11.7	12.2	12.5	11.8	10.7	10.8
3pm conditions													
Mean temp. (ºC)	28.2	27.1	25.3	22.2	19.2	16.6	16.1	17.8	20.8	22.5	24.2	26.5	22.2
Mean R.H. (%)	49	53	54	53	52	55	50	42	42	45	50	48	49
Mean W.S. (km/h)	19.4	17.0	14.8	14.4	13.0	12.9	13.9	16.1	18.1	19.8	19.5	19.9	16.6

Source: **Bureau of Meteorology (2020)**

R.H. – Relative Humidity, W.S. – wind speed

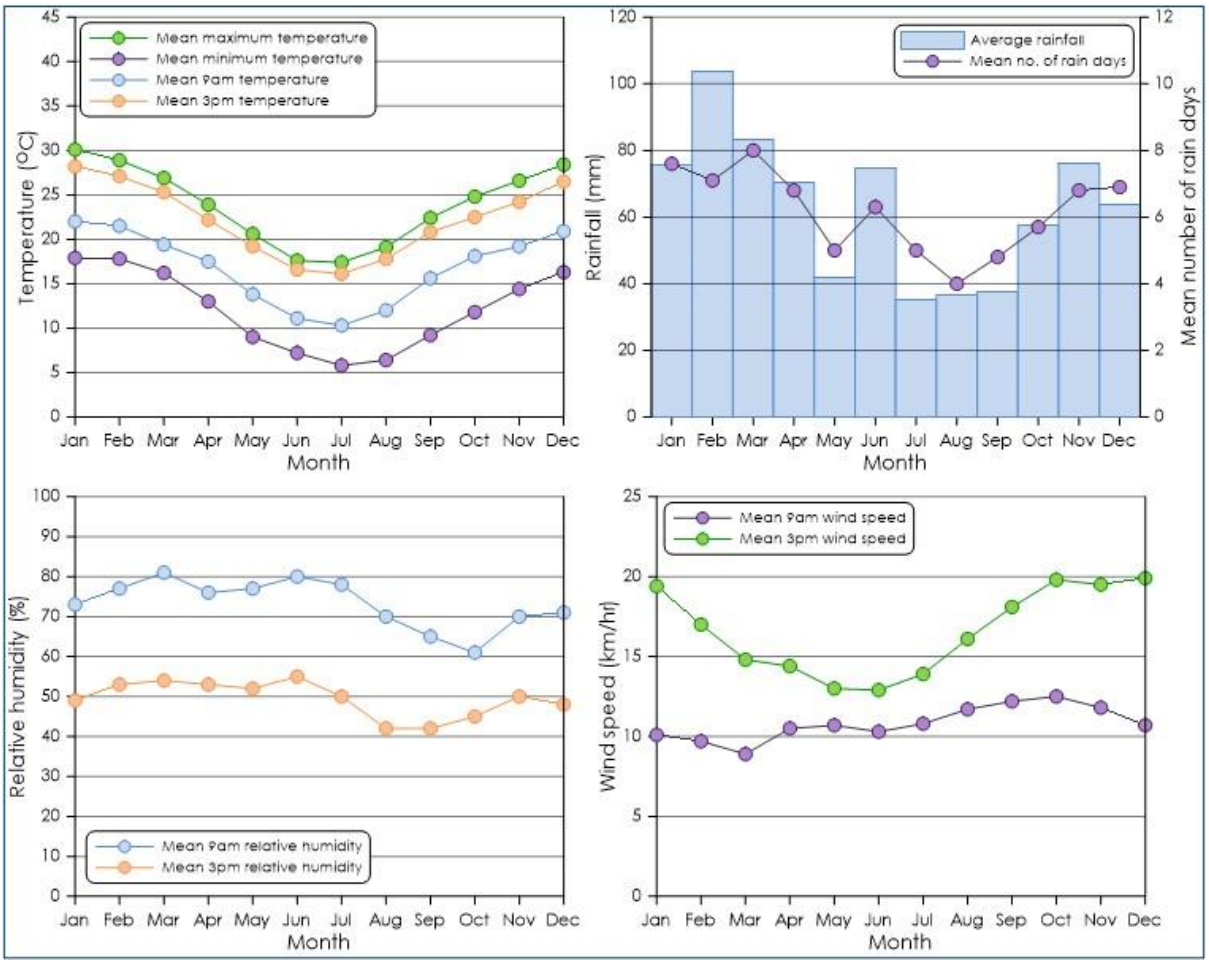

Figure 3-1: Monthly climate statistics summary – Horsley Park Equestrian Centre AWS

3.2 Local meteorological conditions

Annual and seasonal windroses for the Horsley Park Equestrian Centre AWS during the 2015 calendar period are presented in **Figure 3-2**.

On an annual basis, winds are generally varied and feature a predominant southwest wind. In summer, winds tend to occur from the southwest, east-northeast and the southeast quadrants. The autumn wind distribution is similar to the annual distribution with winds predominantly occurring from the southwest, and fewer winds from the northeast. In winter there are fewer winds originating from the east with winds occurring predominantly from the southwest and west-southwest. During spring the winds are varied from all directions with winds from the southwest most dominant.

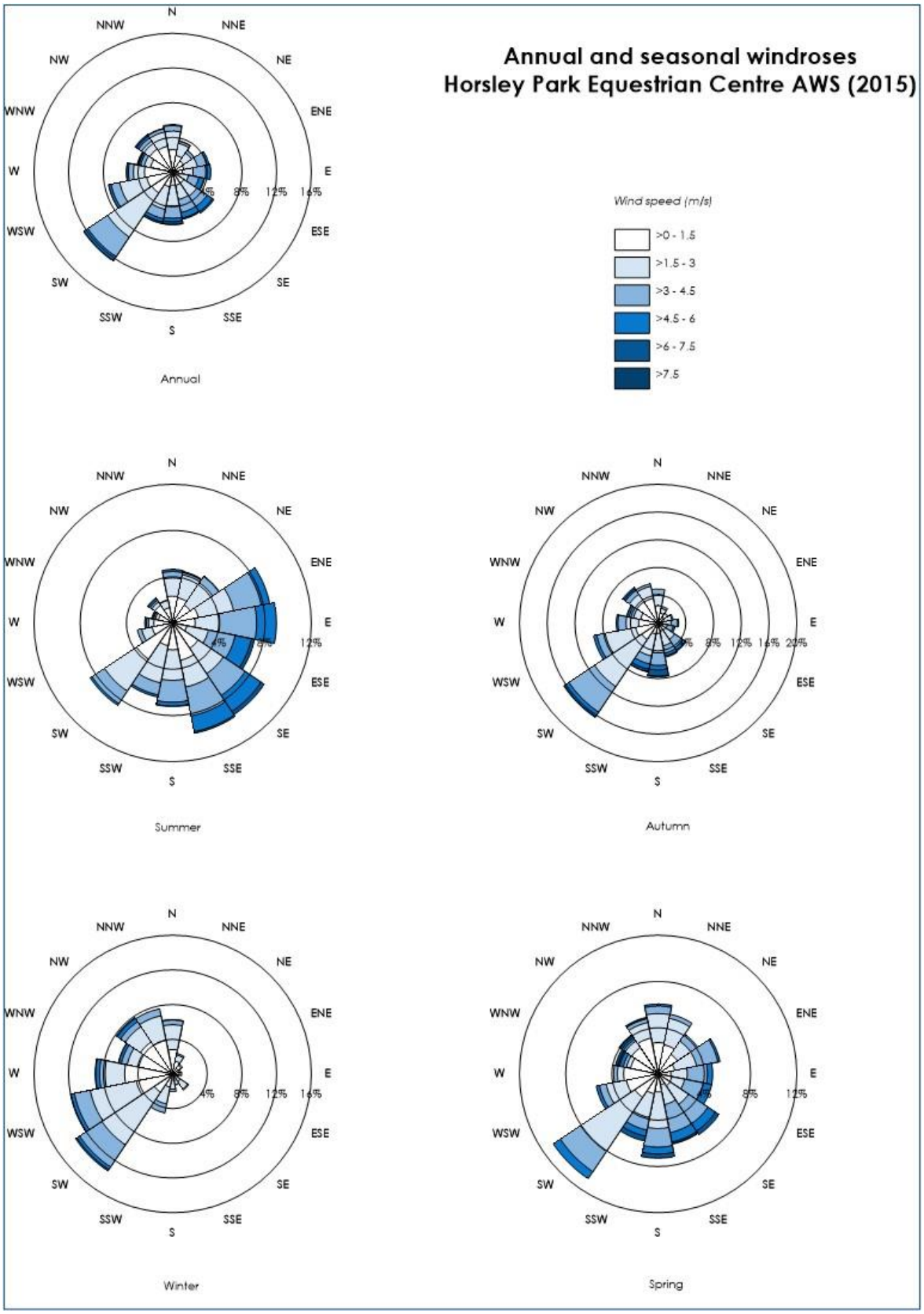

Figure 3-2: Annual and seasonal windroses – Horsley Park Equestrian Centre AWS (2015)

4 AIR QUALITY CRITERIA AND PERFORMANCE INDICATORS

4.1 Development consent operating conditions

The following operating conditions are required under the development consent:

- Condition B1 - The Applicant must install and operate equipment in line with best practice to ensure that the development complies with all load limits, air quality criteria/air emission limits and air quality monitoring requirements as specified in the EPL applicable to the site.
- Condition B2 - Air from the standalone water tank must be discharged at least 1-metre above the roofline of the building. The ventilation stack must have a sampling plane that has been constructed with consideration of AS 4323.1-1995 Stationary Source Emissions – Selection of Sampling Positions.
- Condition B5 - The Applicant must ensure the development does not cause or permit the emission of any offensive odour (as defined in the POEO Act).

4.2 Environment Protection Licence conditions

As per Environment Protection Licence (EPL) 20233 Condition L4, the licensee must not cause or permit emission of offensive odour beyond the boundary of the premises.

5 AIR QUALITY MANAGEMENT AND CONTROL MEASURES

The activities at the site will generate some amount of odour emissions, therefore it is prudent to take reasonable and practicable measures to prevent and minimise excessive generation of odour emissions which may affect the surrounding environment.

The effectiveness of air quality management and control measures will be assessed and continually improved through the plan review (**Section 7.1**).

5.1 Air pollutant sources

The following potential sources of odour are identified and ranked in order of greatest potential for emissions:

- Stand-alone tank – captures residual steam from the autoclave which is cooled and condensed to scrub out odour;
- Processed waste - waste which has been processed/sterilised by the autoclave and is stored within the building;
- Waste receival - receival of clinical and related wastes.

5.2 Control measures

The stand-alone tank is a control measure which acts to scrub out odour.

Med-X is committed to installing equipment in line with best practice. A pipe vent is to be installed on the stand-alone tank, extending at least 1m above the roofline of the building to improve air dispersion and reduce impacts to receptors. The pipe must have a sampling plane that has been constructed with consideration of AS4323.1 1995 Stationary Source Emissions – Selection of Sampling Positions.

5.3 Management practices

Med-X will operate equipment in line with best practice management to minimise the generation of air and odour emissions. Potential odour from waste receival and processed waste would be mitigated through management practices (such as handling and storing material within the building and keeping building doors closed to prevent fugitive emission of odour) rather than through the installation of specific control measures/equipment. The Project is to keep an annual compliance checklist of management practices to confirm they are being implementation.

The management practices to mitigate odour and other air emissions from the Project include:

- Keep building doors closed when not in use;
- Avoid opening the doors after 5pm, especially in the cooler times of the year;
- Ensure all sorting and receiving of waste to occur within the building;
- No open stockpiling of waste materials outside the building;
- Carefully co-ordinate waste delivery and dispatch schedules to avoid a queue of incoming or outgoing trucks for any extended periods of time;

- Spill management procedures to ensure immediate clean-up of any spill;
- Maintain an odour complaint logbook and in the event of a complaint conduct an immediate investigation of any odour sources, together with appropriate actions to eliminate any identified excessive odour (refer to **Section 6.5**);
- Engines of on-site vehicles and plant switched off when not in use;
- Vehicles and plant fitted with pollution control devices in accordance with manufacturer specifications;
- Maintain and service vehicles according to manufacturer's specifications;
- Ensure any waste left overnight is stored in a closed container within the building; and,
- Regular cleaning of all hard stand areas and lower parts of walls in contact with, or near proximity to waste (it is noted that this would already be required for hazard control).

5.4 Contingency plan

In the event that a performance indicator (refer to **Section 6.2**) has not been met or the air quality management criterion exceeded, Med-X will implement the following contingency plan:

- Report the non-compliance or incident if required per Sections 6.3 and 6.4 respectively;
- Investigate and identify the cause of the non-compliance or incident;
- Consider options to manage the identified impacts; and
- Implement the appropriate course of action to ensure that the exceedance/incident ceases and does not reoccur to the satisfaction of the Planning Secretary.

5.5 Training

All employees and contractors working on-site will undergo training relating to air quality management issues. The training will address elements related to air quality management including:

- General environmental awareness;
- The requirements of this AQMP;
- Relevant legislation;
- Roles and responsibilities for air quality management;
- Air quality mitigation and management measures; and
- Procedure to be implemented in the event of an incident/ non-compliance.

Any change to this management plan and its implementation will be communicated to all staff in toolbox sessions as required.

6 ENVIRONMENTAL PERFORMANCE

6.1 Monitoring

6.1.1 Stack testing

Stack testing is to be conducted for the stand alone tank vent pipe by a suitably qualified person(s) in the event that more than one odour complaint is received whereby the cause cannot be identified through investigation of site operations.

Discharge parameters to be measured include diameter, volumetric flow rate, velocity, temperature, and speciated VOC concentrations. Velocity, volumetric flow rate and temperature are to be measured in accordance with Test Method 2 and Speciated VOC's are to be measured in accordance with Test Method 34 of the NSW EPA *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* (2022). The monitoring duration for each parameter is as specified by the relevant testing method/standard.

Records of stack testing results are to be kept for at least 4 years after the monitoring to which they relate took place.

6.1.2 Field odour surveys

Field odour surveys are to be conducted each quarter for the first year of operation and every six months thereafter.

Field odour surveys can be conducted by Med-X personnel. A suitable assessor should not be overly or underly sensitive to odour and must not be suffering from any illness or allergy which impairs the olfactometry sense.

Field odour surveys are to be conducted in the surrounding industrial and residential areas. Monitoring locations for each survey should be selected with consideration of publicly accessible areas and wind direction (such that locations are downwind of the Project). Locations should include at or as close as practical to the Project boundary, and at approximate distances of 50m, 100m and 200m from the Project, subject to accessibility. Field odour surveys should be conducted when wind speeds are less than 5m/s.

During the field odour survey, a measurement is taken at each location over a period of 10 minutes. Over the ten-minute interval, the assessor tests the ambient air at 10-second intervals and records their observation of the intensity of the odour and the odour characteristic every 10 seconds.

Table 6-1 and **Table 6-2** present the odour intensity rating scale and suggested odour characteristic descriptors, respectively, suitable to be applied for the field odour surveys. Note that additional odour type codes may be used in the event that there is a distinct other such odour present. Observations of odour character which relate to the Project are to be noted.

Records of field odour surveys are to be kept for at least 4 years after the monitoring to which they relate took place.

Table 6-1: 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 6-2: Odour characteristic descriptors

Odour type code	Odour characteristic descriptor	Odour type code	Odour characteristic descriptor
1	Fragrant	9	Faecal, manure, sewer
2	Household gas	10	Fishy
3	Burnt smoky	11	Diesel/car fumes
4	Herbal, green, cut grass	12	Seaweed, mangroves
5	Oily, fatty	13	Compost
6	Rotten eggs, sulfide	14	Musty, earthy, mouldy
7	Sour, body odour	15	Other
8	Meaty		

6.2 Performance evaluation

There are no load limits, air quality criteria or air emission limits specified in the development consent conditions or EPL 20233.

Table 6-3 presents the air quality related key performance indicators that will be used to assess the performance of the Project.

Table 6-3: Key performance indicators

Measure	Key performance indicator
Implementation of the management practices	Annual compliance checklist shows that all management practices listed in this plan were implemented
Stand alone tank vent pipe design	Release height ≥1m above roof line Sampling plane consistent with AS4323.1 1995
Results of monitoring show plant equipment is operating at/within design specifications	Stand alone tank vent parameters: Diameter 0.06m Temperature 40°C ± 10°C Exit velocity 16.5m/s ±20%
Odour measurements are consistent with those applied in the air quality assessment	Stand alone tank: 8,200 OU ±25%
Field odour surveys	No offensive odour detected beyond the boundary
Validated odour complaints are minimised and appropriate management actions are implemented following receipt of a complaint	No validated odour complaints

6.3 Non-compliance

The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Applicant becomes aware of any non-compliance.

A non-compliance notification is to set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

6.4 Incident reporting

Incident procedures will be undertaken in accordance Section 4.3.2 of the OEMP. The Planning Secretary is to be notified in writing via the Major Projects website immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 3 Incident Notification and Reporting Requirements of SSD 6761.

6.5 Complaints protocol

The Project operates email and telephone complaints lines for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises. Air quality complaints received by the Project will be recorded in a Complaints Register which will include the following details where available:

- the date and time of the complaint;
- the method by which the complaint was made;
- any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- the nature of the complaint;
- the action taken by Med-X in relation to the complaint, including any follow-up contact with the complainant; and
- if no action was taken by the Med-X, the reasons why no action was taken

Air quality related complaints will be investigated within 24 hours of receipt. For odour complaints, where practical, site personnel should visit the location of the complaint within a short time of receival to verify the nature of any off-site odour related to the Project. The cause of the complaint will be analysed and actions to resolve the complaint taken as soon as possible.

Handling of any air quality related complaints will be managed in accordance with the process outlined in Section 4.3.3 of the OEMP. The Branch Manager will record and manage all complaints in accordance with EPL No. 20233, the Consent Conditions and the Facilities reporting procedures.

The record of a complaint must be kept for at least 4 years after the complaint was made. The complaints register is to be made publicly available on the Project website, updated monthly.

Within six months of the commencement of the development, Med-X will consult with the local council to determine if there has been any material upturn in complaints from the local area received by council that could be related to the Project.

7 REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

7.1 Plan review and continuous improvement

This plan will be reviewed within three months of:

- the submission of a Compliance Report;
- the submission of an incident report;
- the submission of an Independent Audit;
- the approval of any modification of the conditions of this consent; or
- the issue of a direction of the Planning Secretary which requires a review,

The Planning Secretary is to be notified in writing that a review is being carried out.

The review includes where relevant:

- Any changes to site operations with the potential for air quality impacts;
- Monitoring data trends;
- Incidents and non-compliances;
- Complaints records;
- Measures to be implemented to improve the environmental performance of the Project.

The most recent approved version of this AQMP is to be implemented. The most recent approved AQMP is to be made publicly available on the Project website.

7.2 Audits

The submission of an independent audit triggers a review of this air quality management plan as described in Section 7.1.

7.2.1 Odour audit

An Odour Audit is to be carried out no later than six months after the commencement of operation of the development. The audit must:

- be carried out by a suitably qualified, experienced and independent person(s), whose appointment has been endorsed by the Planning Secretary;
- audit the development in full operation;
- include a summary of odour complaints and any actions that were carried out to address the complaints;
- assess the operation against odour impact predictions in the Environmental Impact Statement (EIS) and Response to Submissions (RtS);

- review design and management practices in the development against industry best practice for odour management; and
- include an action plan that identifies and prioritises any odour mitigation measures that may be necessary to reduce odour emissions.

Within six months of commissioning of the Odour Audit required by Condition B6 of SSD 6761, or otherwise agreed by the Planning Secretary, the Applicant must submit a copy of the Odour Audit report to the satisfaction of the Planning Secretary, together with the Applicant's response to any recommendations contained in the Odour Audit report.

7.2.1.1 Odour modelling validation

As per Appendix 2 of the development consent, the odour modelling is to be validated within 12-months of project approval or as soon as practicable after receipt of a valid odour complaint that cannot be addressed by applying the controls identified in this air quality management plan.

Validation of odour modelling can be achieved through the fourth dot point of the Odour Audit which is to include an assessment of the operation against odour impact predictions in the EIS and RtS. Where the measured odour is less than modelled it can be confirmed that there would be no odour impact however if the odour levels are above that modelled, then it may be necessary to revise the modelling.

7.2.2 Independent audit

Within one year of the commencement of the development, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development.

Audit reports prepared as part of any Independent Audit including the Applicant's response to the recommendations in any audit report are to be made publicly available on the Project website.